

# Process redesign of a surgical pathway improves access to cataract surgery for Aboriginal and Torres Strait Islander people in South East Queensland

Lisa Penrose<sup>A,C</sup>, Yvette Roe<sup>A</sup>, Natalie A. Johnson<sup>B</sup> and Erica L. James<sup>B</sup>

<sup>A</sup>Institute for Urban Indigenous Health, 22 Cox Road, Windsor, Qld 4030, Australia.

<sup>B</sup>University of Newcastle, School of Medicine and Public Health, HMRI West Wing, University Drive, Callaghan, NSW 2308, Australia.

<sup>C</sup>Corresponding author. Email: [lisa.penrose@uiih.org.au](mailto:lisa.penrose@uiih.org.au)

**Abstract.** The Institute for Urban Indigenous Health (UIIH) aimed to improve access to cataract surgery in urban South East Queensland (SEQ) for Indigenous Australians, without compromising clinical visual outcomes. The Penchansky and Levesque concept of access as the ‘fit’ between the patient’s needs and the ability of the system to meet those needs was used to inform the redesign of the mainstream cataract surgical pathway. The UIIH staff and community stakeholders mapped the traditional external cataract surgical pathway and then innovatively redesigned it to reduce the number of patients being removed by the system at key transition points. The integration of eye health within the primary health care (PHC) clinic has improved the continuity and coordination of care along the surgical pathway, and ensured the sustainability of collaborative partnerships with key external organisations. Audit data demonstrated a significant increase in utilisation of cataract surgical services after the process redesign. Previous studies have found that PHC models involving integration, coordination and continuity of care enhance patient health outcomes; however, the UIIH surgical model extends this to tertiary care. There is scope to apply this model to other surgical pathways and communities who experience access inequity.

Received 2 March 2017, accepted 1 November 2017, published online 9 February 2018

## Introduction

Aboriginal and Torres Strait Islander peoples (hereafter referred to as Indigenous Australians) have a life expectancy ~10 years lower, and experience a burden of disease 2.3-fold higher, than non-Indigenous Australians (Australian Institute of Health and Welfare 2016). Vision loss represents 11% of the health gap, with Indigenous Australians suffering a six-fold higher rate of blindness (Taylor *et al.* 2011). Major causes of visual impairment in Indigenous Australians are refractive error (a need for spectacles), cataract and diabetic retinopathy, all of which are preventable or treatable (Taylor *et al.* 2011). Cataract is a condition where the lens of the eye clouds over, reducing the light entering the eye, and impairing vision. Although blinding cataract rates are 12-fold higher in Indigenous Australians, there is a stark inequity of access to cataract surgery, with surgical rates being seven-fold lower, with little variation between urban, rural and remote locations (Taylor *et al.* 2011).

Access to health care is a complex concept that is central to the performance of the healthcare system. Penchansky and Thomas (1981) postulated access as the ‘fit’ between the patient’s needs and the ability of the system to meet those needs. They identified five dimensions of access that are influenced by both healthcare suppliers and patients: accessibility, approachability,

acceptability, availability and accommodation, and affordability. In 2013, Levesque *et al.* added the dimension of appropriateness. Accordingly, access can be defined as the opportunity to reach and obtain appropriate healthcare services when there is the perceived need for care. This definition recognises crucial transition points where barriers to access can become apparent along the entire pathway of utilisation, including delays in searching for care because of lack of trust in healthcare systems or poor health literacy (Levesque *et al.* 2013).

In 2011, Taylor *et al.* (2011) described the Australian eye health pathway as ‘a leaky pipe’; however, it is really the system itself that fails patients, resulting in them ‘falling through the gaps’ along the pathway at the transition points between different providers. This is consistent with the finding by Boudville *et al.* (2013) that once patients were referred outside of the PHC, poor coordination and follow up often resulted in patients not completing the pathway to cataract surgery. Other barriers included long waitlists, costs of accessing (private) surgery, complexity of the surgical pathway, limited availability of public ophthalmology and that private ophthalmology services were inappropriate because of cultural barriers. These barriers are particularly applicable to urban Indigenous Australians, who have been described as ‘the forgotten

### What is known about the topic?

- Integrated, coordinated, multidisciplinary health care improves outcomes for communities experiencing access inequity. Aboriginal and Torres Strait Islander Community Controlled Health Service addresses key access barriers of acceptability and appropriateness.

### What does this paper add?

- The concept of wrap-around culturally appropriate care is extended into tertiary services. Coordination at the interfaces between levels of care is improved utilising an innovative, primary healthcare-based model.

### Box 1. Eye Health Service in South East Queensland (SEQ) mapping report recommendations

Establish an Institute for Urban Indigenous Health (IUIH) Regional Eye Health Program – that aims to provide onsite in all SEQ Aboriginal and Torres Strait Islander Community Controlled Health Services

- Comprehensive eye examinations by optometrists
- Specialist ophthalmology services within ‘hub’ locations
- Improved access to tertiary eye services, especially cataract surgery
- Access to no-cost Qld Government-supplied spectacles for eligible patients
- Improved coordination and follow up for eye services
- Integration of eye health into multidisciplinary clinical services, case management and health promotion

Australians’; with the stereotype that ‘real’ Aboriginals live ‘out bush’ and that urban Indigenous people are ‘assimilated’ (Scrimgeour and Scrimgeour 2007).

Primary Health Care (PHC) represents the first (primary) layer of services encountered in health care, including general practitioners (GPs), nurses, dentists and allied health professionals (Australian Department of Health 2013). The Institute for Urban Indigenous Health (IUIH) assists, unites, integrates and leads five separate Aboriginal and Torres Strait Islander Community Controlled Health Services (ATSICCHS) in South East Queensland (SEQ) with planning, development and delivery of comprehensive, multidisciplinary PHC services within 18 PHC clinics in the SEQ region (Institute for Urban Indigenous Health 2015). In 2013, IUIH along with its five-member ATSICCHS published its *Eye Health Service in South East Queensland Mapping Report* (Institute for Urban Indigenous Health 2013). Findings were that existing eye health services were fragmented and lacked integration with the PHC. Eye health infrastructure was not available; clients were referred to external eye health providers but this was not translating into eye examinations and surgery. The major reasons cited by patients were ‘perceived costs, lack of coordination and recall, transport, and the low priority of eye health’. Where patients were accessing external eye services, there was limited feedback to the clinics, impeding effective case management and coordination of care. One of the key recommendations from The *Eye Health Service in SEQ Mapping Report* (Institute for Urban Indigenous Health 2013) (see Box 1) was to improve access to tertiary eye health services, especially cataract surgery in SEQ.

The purposes of this paper are: (i) to describe the redesign of the mainstream cataract surgical pathway; and (ii) assess the effectiveness of the new pathway on access to, and visual outcomes of, urban Indigenous Australians in South East Queensland (SEQ).

## Methods

### Study design

Quality improvement methods (The Australian Council on Healthcare Standards 2013) were used to: (i) redesign the mainstream public hospital cataract surgical pathway; and (ii) audit routinely collected data to assess the effectiveness of the new pathway.

### Setting

The Institute for Urban Indigenous Health, a regional organisation, was established in 2009. It currently comprises 18 PHCs and serves an area of 20 000 km<sup>2</sup> from Bribie Island in SEQ’s north, to the Lockyer Valley in the west, and south to the New South Wales border (Institute for Urban Indigenous Health 2015). It has built a trusting relationship with the Indigenous community by implementing a holistic model of care and cultural safety (Baba *et al.* 2014).

### Patients

In June 2015, almost 50% of the total Indigenous population for SEQ (over 26 000 Indigenous Australian patients) had visited a PHC within the IUIH clinic network at least three times during the previous 24 months. Over 400 patients per month had accessed eye health services. The age distribution of the IUIH patient base is similar to the national Indigenous population pyramid. Overall, 6.5% of patients are diabetic, skewed towards the higher age groups, with 38.5% of the 60+ year-old group having diabetes (Institute for Urban Indigenous Health and The Fred Hollows Foundation 2015).

### Process mapping

Through consultation with key stakeholders in SEQ, the traditional external referral cataract surgical pathway was mapped, to show where patients were being removed from the system or experiencing unnecessary delays.

### Process redesign

Collaborative brainstorming discussions between the Ophthalmic Surgeon, Eye Health Manager, IUIH Clinical Director, community members and senior Healthscope Hospital staff resulted in the redesign of the cataract surgical pathway to reduce the number of patient journeys by removing unnecessary steps. The aim was to undertake as many steps as possible ‘under the one roof’ in a culturally appropriate setting; and improve coordination, especially at the interfaces between primary, secondary and tertiary levels of care.

### Audit

Routinely collected patient demographic, health status (including visual measures) and external referral data were accessed from

patient’s electronic medical records, and examined retrospectively. Cataract surgical lists and run sheets were accessed for data regarding use of resources (e.g. transport) and accompanying carers. Patient categorisation and progress along the cataract surgical pathway for all patients referred during the 7-month period (December 2014–June 2015) before, and after the introduction of the revised pathway (November 2015–May 2016) were audited.

**Results**

*Process mapping of the mainstream public hospital cataract surgical pathway*

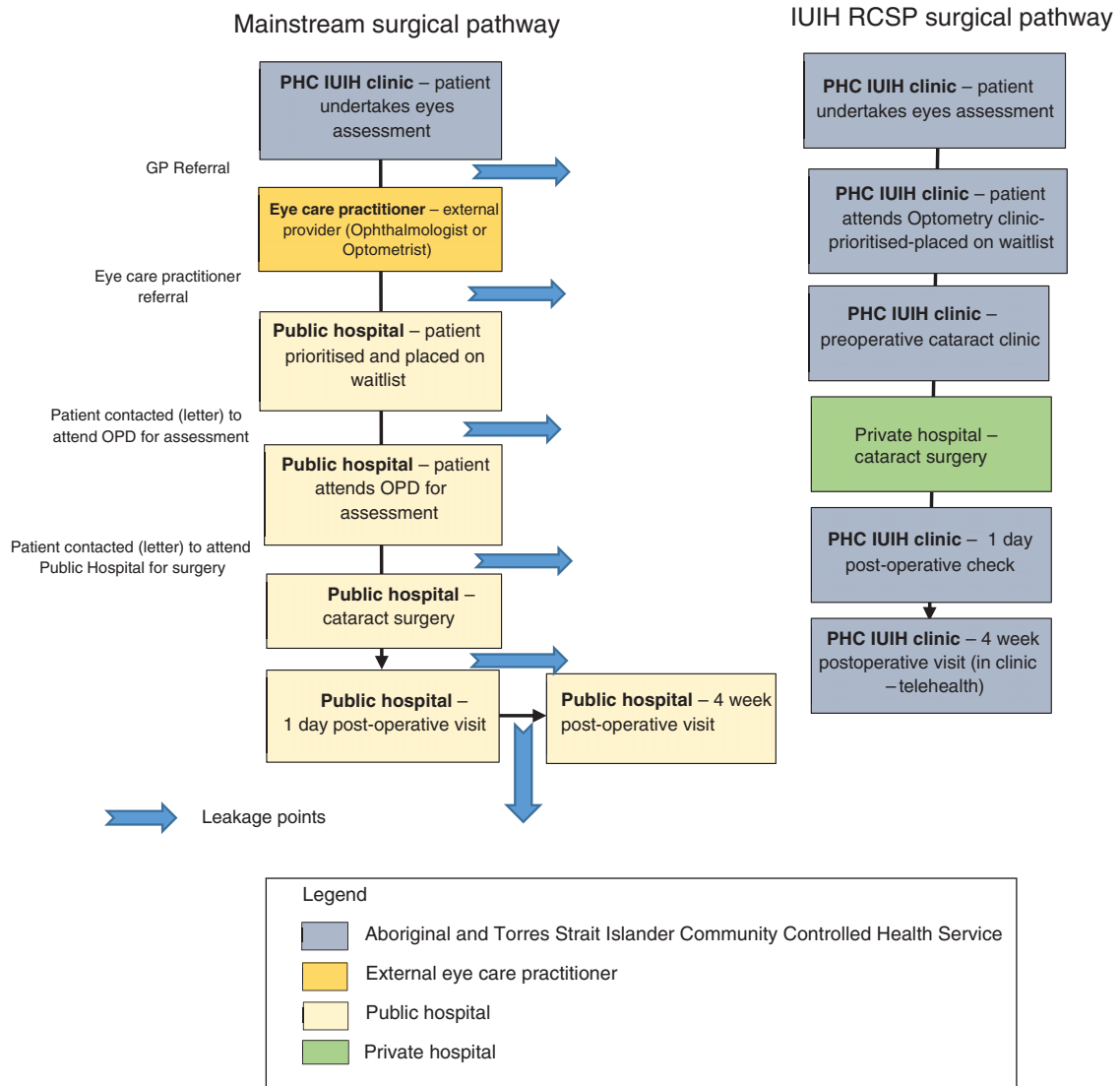
As shown in Fig. 1, the mainstream public cataract surgical pathway involved several external healthcare providers, with little involvement from the PHC service after the initial referral. Lack of transport, inadequate patient information and coordination,

along with poor approachability of the large urban public hospital building itself, were identified as barriers to urban Indigenous patients accessing surgery.

*Process redesign of the IUIH Regional Cataract Surgery Program*

The IUIH Regional Cataract Surgery Program involved fewer healthcare providers and close involvement from the PHC facility along the continuum of the pathway (see Fig. 1). Major changes included the following: (i) all pre- and postoperative appointments were undertaken within the PHC clinic; (ii) the management of the surgical waitlist was undertaken by IUIH eye health; and (ii) the coordination of the entire patient journey was undertaken by IUIH staff.

In addition to the above, an audit of eye-care testing equipment in the region was conducted. The identified gaps were filled through PHC clinic purchases and by funding from the



**Fig. 1.** Cataract surgical pathways – Mainstream compared with the Institute for Urban Indigenous Health (IUIH) SEQ Regional Cataract Surgery Program.

Commonwealth Department of Health and Ageing auspiced by The Fred Hollows Foundation. This resulted in 17 of the 18 PHC clinics being able to provide full-scope optometry services and 2 of the 18 clinics being able to provide ophthalmology consultations and procedures. The entire regional cataract surgical pathway was integrated into the broader health service, and coordinated by a team of regional cataract surgery coordinators, overseen by the Eye Health Manager, who provided patient support and logistics for preoperative, surgery and postoperative clinics.

### *Key elements of the IUIH Regional Cataract Surgery Program*

#### *Integration of services*

Eye health is integrated within the clinic model of care, as part of the chronic disease management process, with a multidisciplinary team-based approach.

Rather than being a visiting speciality service, the eye health team are employed by IUIH. To our knowledge, this is unique and facilitates collaboration and integration with other IUIH program areas. The eye health program has also benefited from the strong relationship between the local Indigenous community and the holistic model of care implemented by IUIH (Baba *et al.* 2014). The centrally organised IUIH regional transport was utilised by over 90% of the patients to attend surgical appointments.

Pivotal to care integration is the nationally available Care Coordination and Supplementary Services Program, which targets Indigenous Australians diagnosed with a chronic disease to ensure that patients are accessing services and managing their complex care needs consistent with their GP Management Plan. Indeed, 81% of the cataract patients accessed this program. Furthermore, the supplementary services part of the program aims to expedite patients' access to essential allied health or specialist services (surgical eye scans), including transport to the service, where such services are not available publicly (Australian Department of Health 2016). The care coordinators are critical to ensuring the seamless integration of services, including organising transport and accommodation for cataract patients and, more importantly, providing systematised care continuity.

The integration of many program areas within the IUIH model of care was integral to the success of the regional cataract surgical program in addition to Care Coordination and Supplementary Services, and regional transport. The IUIH Community Liaison Officers engaged and supported the local Indigenous community and were able to fulfil the role of a support person for the 33% of clients with no accompanying carer. In addition, the IUIH regional pharmacist was onsite to educate patients on administering post-surgery eye drops. The IUIH Telehealth program was utilised for more than 50% of postoperative ophthalmologist consultations. Finally, the IUIH Home Support team and mobile van provided onsite BBQ dinners, as well as a social outing for patients and carers.

#### *Collaborative partnerships with external stakeholders*

Service providers involved in the coordination and delivery of the surgical services included both private and non-government health organisations: (i) Check-up Queensland,

as the Eye and Ear Surgical Scheme (EESS) fund holder for SEQ, provided access to funding for unfunded services; and (ii) Healthscope and Peninsula Private Hospital partnered with IUIH to provide access to surgical facilities. The staff at the hospital were invaluable in welcoming clients; the pre- and postoperative assessments were done at an IUIH clinic, with staff assisting and supporting patients; Zeiss Instruments made available the use of an Intraocular Lens Master machine for essential pre-surgical measurements; The Fred Hollows Foundation funded the intraocular lenses for surgery.

#### *Audit of access before and after the process redesign*

After receipt of a referral, the public hospitals categorise patients for both initial assessment and subsequently for surgical urgency as 1 (urgent – schedule within 30 days), 2 (semi-urgent – schedule within 90 days) or 3 (non-urgent – schedule within 365 days). In a 7-month period before the pathway redesign, only 1 (1.8%) of the 55 referred patients completed cataract surgery at the public hospital, whereas another 8 (14.5%) completed cataract surgery in the private system by temporary funding. Of the 55 referred patients, 74.5% were either on the waitlist, had not been assessed for urgency yet or had been removed from the waitlist (after repeated non-attendances; Table 1).

In the 7-month period after the pathway redesign, 46 of the 103 (45%) referred patients completed cataract surgery. Over two-thirds of these patients were diabetic, and almost 90% suffered from two or more chronic diseases. Four-week postoperative check attendance rates were high (96%) and visual clinical outcomes data showed that 93% of eyes achieved 6/7.5 visual acuity at this visit (Table 2).

### **Discussion**

This study compared a new integrated surgical pathway with an existing external surgical pathway. Integrating the cataract surgical pathway within the PHC service and collaborating with external organisations improved coordination and increased the cataract surgery completion rate for Indigenous Australians in SEQ, with high-quality visual outcomes. Although evidence and data regarding Australia's urban Indigenous population is sparse, several authors have identified characteristics of successful healthcare systems for communities who experience access inequity internationally including: multidisciplinary teams, community engagement, continuity of care and integrated coordinated health care (Few *et al.* 2003; Gottlieb 2013; Joshi *et al.* 2013; Miller *et al.* 2013; Kaufman *et al.* 2014). Our findings concur with the previous research while also presenting a novel model of care to address the barriers to access. Improving access for urban Indigenous patients to cataract surgery required a multifaceted innovative model of care across the entire pathway.

We found that acceptability and appropriateness of healthcare systems are key factors in designing a new surgical pathway; however, the facet of availability, particularly transport, is equally important, even in an urban setting. These findings also align with the study by Scrimgeour and Scrimgeour (2007) who argue that of the 5A Penchansky and Thomas (1981) 'barriers to access', acceptability and appropriateness were particularly important for urban Indigenous people, above availability and affordability.

**Table 1. Cataract surgical completion rates before (December 2014–June 2015) and after (November 2015–May 2016) the South East Queensland regional cataract surgery program process redesign**

The Nov. 2015–May 2016 data source was the Institute for Urban Indigenous Health (IUIH) Regional Eye Health Project 2016. Outsourcing was to private suppliers through temporary surgery connect funding (QLD Government). NA, not applicable

| Variable  | Number (%), December 2014–June 2015, before process redesign | Number (%), November 2015–May 2016, after process redesign |
|---|--|--|
| Total number referred for cataract surgery  | 55 (100)   | 103 (100)  |
| Operations completed (at public hospital before process redesign, or private hospital after process redesign)                           | 1 (2)  | 46 (45)  |
| Operation completed through outsourcing   | 8 (14)   | NA   |
| Total completed through public hospital or outsourcing before process redesign, or completed at private hospital after process redesign | 9 (16)   | 46 (45)  |
| Surgery scheduled but not complete  | 5 (9)  | NA   |
| On waitlist   | 26 (47)  | 57 (55)  |
| Removed from waitlist   | 3 (6)  | 0 (0)  |
| Urgency not assessed  | 12 (22)  | 0 (0)  |
| Assessed as category 1  | 1 (2)  | NA   |
| Assessed as category 2  | 12 (22)  | NA   |
| Assessed as category 3  | 27 (49)  | NA   |
| Uncategorised or removed from list  | 15 (27)  | NA   |

**Table 2. Summary profile data – first 46 Institute for Urban Indigenous Health (IUIH) Regional Cataract Surgery Program cataracts**

Data source: electronic medical records – collated data from IUIH Regional Eye Health Project 2016. For 'Visual status', all eyes operated with VA > 6/9 were 'second eyes' of diabetic patients. Where VA was not measurable, two cases were due to dementia – VA was not measurable and excluded from VA data. For 'Eyes post op', VA ≥ 6/7.5, VA measured at the 4-week follow-up visit. VA (visual acuity); LP, light perception

| Total cataract surgery patient numbers (%)                                       | Male<br>15 (33)                            | Female<br>31 (67)                            | Total<br>46                                |
|--|--|--|--|
| Demographics   | Males number cataract surgery patients (%) | Females number cataract surgery patients (%) | Total number cataract surgery patients (%) |
| Age  | 59 years, 5 months                         | 67 years, 6 months                           | 64 years, 10 months                        |
| Region – south side  | 8 (53)                                     | 19 (61)                                      | 27 (59)                                    |
| Region – north side  | 7 (47)                                     | 12 (39)                                      | 19 (41)                                    |
| Risk factors   |  |  |  |
| Smoking  | 14 (93)                                    | 24 (77)                                      | 38 (83)                                    |
| Diabetes   | 10 (67)                                    | 21 (68)                                      | 31 (67)                                    |
| More than two chronic diseases   | 14 (93)                                    | 27 (87)                                      | 41 (89)                                    |
| Support services   |  |  |  |
| Carer accompanied patient  | 6 (40)                                     | 25 (81)                                      | 31 (67)                                    |
| Regional transport – preoperative clinic   | 14 (93)                                    | 28 (90)                                      | 42 (91)                                    |
| Regional transport – surgery day   | 15 (100)                                   | 28 (90)                                      | 43 (93)                                    |
| Visual status  |  |  |  |
| VA was measurable  | 14 (93)                                    | 30 (97)                                      | 44 (96)                                    |
| Eyes preoperative VA – LP  | 4 (29)                                     | 2 (7)  | 6 (14)                                     |
| Eyes preoperative VA ≤ 6/24  | 7 (50)                                     | 9 (30)                                       | 16 (36)                                    |
| Eyes preoperative VA ≤ 6/12  | 10 (71)                                    | 18 (60)                                      | 28 (64)                                    |
| Eyes preoperative VA ≤ 6/9   | 12 (86)                                    | 27 (90)                                      | 39 (89)                                    |
| Eyes post operative VA ≥ 6/7.5   | 13 (93)                                    | 28 (93)                                      | 41 (93)                                    |
| Post operation support services  |  |  |  |
| Pharmacist's contact   | 15 (100)                                   | 31 (100)                                     | 46 (100)                                   |
| Clinical follow-up 1-day post op attendance                                      | 15 (100)                                   | 31 (100)                                     | 46 (100)                                   |
| Clinical follow-up 4-week attendance   | 14 (93)                                    | 30 (97)                                      | 44 (96)                                    |
| Diabetics 8-week follow-up attendance  | 9 (90)                                     | 20 (95)                                      | 29 (93)                                    |
| Telehealth follow-up consultations (percentage of total follow-up consultations) | 12 (50)                                    | 30 (60)                                      | 42 (57)                                    |

Acceptability barriers included poor linkage and coordination across the healthcare system, and cultural issues resulting in poor communication, system mistrust and institutionalised

racism (Scrimgeour and Scrimgeour 2007). The IUIH model of care, which is based on the Indigenous holistic definition of health (Baba *et al.* 2014), has been integral to the acceptability

of the cataract surgical program because it ensured a high level of trust from Indigenous community members.

Coordinated care was essential, across primary, secondary and tertiary levels, not just PHC. Coordination, which is often seen as a costly, even 'fluffy' aspect of health care, requiring extensive person-power resources (Rich *et al.* 2012), is not simple, and can be difficult to accurately define; however, it can achieve significant gains in efficiencies, including reduced service duplication and intangibles such as patient engagement and health literacy. A dedicated program coordinator, with appropriate skills and knowledge of the referral pathways involved, was critical to the success of the IUIH regional cataract program.

In this cataract surgery project, philanthropic funds and 'in kind' donations were utilised.

These donations, although not essential to establishing a cataract surgery program, were used in this case to reduce the cost outlays for IUIH, allowing more cataract surgeries to be completed within the given budget.

There is a high risk of urban Indigenous patients being removed by the system if the surgical pathway does not have seamless interfaces between levels of care. Access at the interfaces is crucial, and this may be achieved through integrations, innovative collaborations and partnerships with external organisations. Our study demonstrated that with a coordinated patient journey, with as many processes as possible undertaken 'under the one roof', there is improved access to cataract surgery.

## Conclusion

The key elements of the redesigned pathway, which included integration of services and collaboration with external organisations, may be applicable to other tertiary surgical pathways besides cataract surgery. The access dimensions addressed through the revised pathway are common to healthcare services throughout the whole system. The principle of wrap-around care, and bringing health services 'under the one roof' as much as possible within the local, culturally appropriate PHC clinic, could be applied for other health services, primary, secondary and tertiary, to improve health service access for urban Indigenous Australians. Further research into the potential cost benefits of the IUIH cataract surgical program for SEQ's urban Indigenous people is recommended, along with investigating the potential to incorporate key elements of the regional cataract surgery program in a redesign of the external public hospital cataract surgical pathway.

## Conflicts of interest

The authors declare that they have no conflicts of interest.

## References

Australian Institute of Health and Welfare (2016) Australian Burden of Disease Study: impact and causes of illness and death in Aboriginal and Torres Strait Islander people 2011 – summary report. Series number 7. Catalogue number BOD 8. AIHW, Canberra, ACT, Australia.

Australian Department of Health (2013) National primary health care strategic framework – primary health care in Australia. Available at <http://www.health.gov.au/internet/publications/publishing.nsf/Content/NPHC-Strategic-Framework-phc-australia> [Verified 11 October 2017]

Australian Department of Health (2016) Chronic disease early detection and management. (Australian Department of Health: Canberra, ACT, Australia) Available at <http://www.health.gov.au/internet/main/publishing.nsf/Content/irhd-chronic-disease> [Verified 25 October 2016]

Baba JT, Brolan C, Hill P (2014) Aboriginal medical services cure more than illness: a qualitative study of how Indigenous services address the health impacts of discrimination in Brisbane communities. *International Journal for Equity in Health* **13**, 56–66. doi:10.1186/1475-9276-13-56

Boudville AI, Anjou M, Taylor H (2013) Indigenous access to cataract surgery: an assessment of the barriers and solutions within the Australian health system. *Clinical & Experimental Ophthalmology* **41**(2), 148–154. doi:10.1111/j.1442-9071.2012.02840.x

Few R, Harpham T, Atkinson S (2003) Urban primary health care in Africa: a comparative analysis of city-wide public sector projects in Lusaka and Dar es Salaam. *Health & Place* **9**, 45–53. doi:10.1016/S1353-8292(02)00029-1

Gottlieb K (2013) The Nuka System of Care: improving health through ownership and relationships. *International Journal of Circumpolar Health* **72**, 21118. doi:10.3402/ijch.v72i0.21118

Institute for Urban Indigenous Health (2013) Eye health services for Aboriginal and Torres Strait Islander people in SEQ – Mapping Report – Full Report. Internal Report for Fred Hollows Foundation, IUIH, Brisbane, Qld, Australia.

Institute for Urban Indigenous Health (2015) Annual Report 2014–2015. IUIH, Brisbane, Qld, Australia.

Institute for Urban Indigenous Health and The Fred Hollows Foundation (2015) Review of 'provision of Ophthalmic Equipment' Project in SEQ, November 2015. Internal review document. November 2015. The Institute for Urban Indigenous Health (IUIH), Brisbane, Qld, Australia.

Joshi C, Russell G, Cheng I, Kay M, Pottie K, Alston M, Smith M, Chan B, Vasi S, Lo W, Wahidi S, Harris M (2013) A narrative synthesis of the impact of primary health care delivery models for refugees in resettlement countries on access, quality and coordination. *International Journal for Equity in Health* **12**, 88. doi:10.1186/1475-9276-12-88

Kaufman S, Ali N, DeFiglio V, Craig K, Brenner J (2014) Early efforts to target high-risk diabetic patients into urban community-based programs. *Health Promotion Practice* **15**(Suppl.), 62S–70S. doi:10.1177/1524839914535776

Levesque JF, Harris M, Russell G (2013) Patient-centred access to health care: conceptualising access at the interface of health. *International Journal for Equity in Health* **12**, 18.

Miller A, Cunningham M, Ali N (2013) Bending the cost curve and improving quality of care in America's poorest city. *Population Health Management* **16**(51), S-17–S-19. doi:10.1089/pop.2013.0038

Penchansky R, Thomas WJ (1981) The concept of access: definition and relationship to consumer satisfaction. *Medical Care* **19**(2), 127–140. doi:10.1097/00005650-198102000-00001

Rich E, Lipson D, Libersky J, Parchman M (2012) Coordinating care for adults with complex care needs in the patient-centered medical home: challenges and solutions. Agency for Healthcare Research and Quality, White Paper, Rockville, MD, USA.

Scrimgeour M, Scrimgeour D (2007) Health care access for Aboriginal and Torres Strait Islander people living in urban areas, and related research issues: a review of the literature. Cooperative Research Centre for Aboriginal Health, Darwin, NT, Australia.

Taylor HR, Boudville AI, Anjou MD, McNeil RJ (2011) 'The Roadmap to Close the Gap for Vision.' (Indigenous Eye Health Unit, Melbourne School of Population Health, The University of Melbourne: Melbourne, Vic., Australia)

The Australian Council on Healthcare Standards (2013) 'Risk Management and Quality Improvement Handbook.' (ACHS: Sydney, NSW, Australia)