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Original Article

# Coordination of outreach eye services in remote Australia

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## Abstract

**Background:** This paper aims to describe models for service integration between ophthalmology and optometry when conducting outreach eye services. The effect of good coordination on clinical activity and cost-effectiveness is examined.

**Design:** Cross-sectional case study based on remote outreach ophthalmology services in Australia.

**Participants:** Key stake-holders from eye services in nine outreach regions participated in the study.

**Methods:** Semistructured interviews were conducted to perform a qualitative assessment of outreach eye services' levels of coordination. Records of clinical activity were used to statistically compare the effects of good coordination.

**Main Outcome Measures:** Clinical activity (surgery and clinic consultation rates), waiting times and costs per attendance. Surgical case rate being the proportion of surgery that results from a clinic.

**Results:** Service integration between optometry and ophthalmology resulted in an increased surgical case rate for ophthalmology clinics ($R^2 = 0.57$). There were trends towards increased clinical activity and reduced waiting times, and costs/attendance were stable.

**Conclusions:** Coordination of eye services with better integration of ophthalmology and optometry roles may improve efficiency of services for patients. Coordination of eye services has multiple facets including facilitating engagement with the local community, eye professions and health facilities. The varied roles of eye health coordination require further definition and appropriate funding.

**Key words:** eye, research, survey.

## Introduction

Outreach services for eye health care exist in most states and territories in Australia.

The rich history of Ida Mann, Frank Flynn and Fred Hollows among others has left an indelible mark on the attitude of generations of ophthalmologists and optometrists to provide services to remote and disadvantaged communities.

From the available evidence, it is generally accepted that outreach visits are an important and appropriate part of delivering efficient, equitable and effective eye health services.[1] A population-based observational study showed specialist outreach visits to remote disadvantaged Indigenous communities in Australia improve access to specialist consultations and procedures without increasing elective referrals or demands for hospital inpatient services.[2]

Unlike most specialties, eye health care has two primary health-care providers; the general practitioners and optometrists who may work synergistically with visiting ophthalmologists to effectively screen patients so that only those needing secondary management from the ophthalmologist are referred. Although evidence is limited,[3] the coordination of ophthalmology and optometry in providing outreach services to remote areas has been very successful in some jurisdictions but efficient coordination appears to be lacking in others.

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Given the geographic and population diversity across Australia's remote areas, it is not surprising that there is considerable variation in how the services operate across the country. This is accentuated by the fact that most health planning is usually done by State governments whereas Indigenous health has often been planned and coordinated by Commonwealth departments. In addition outreach optometric services are funded from the Commonwealth, and ophthalmology services are State-funded in many jurisdictions.

## Methods

Between January and April 2009, nine selected outreach ophthalmology services were visited. Selection of these services was partly related to timing of visiting ophthalmologists and partly designed to reflect services with different funding models in diverse settings, for example, different states, territories, coastal, inland, rural, remote, very remote, mainly Indigenous population or mainly non-Indigenous.[4]

Key stake-holders from differing backgrounds identified as information rich sources were selected. This included nurses, clinic clerical staff, Aboriginal health workers, hospital administrators, optometrists, ophthalmologists, eye service managers and regional eye health coordinators (REHC). One-on-one semistructured interviews were conducted within the context of the participant's work environment. Eye services were graded according to the quality and level of coordination – service integration. Factors included in the scoring were the scheduled, simultaneous or sequential collaboration and cooperation of the visiting optometrists and ophthalmologists, clarity and strength of communication channels for shared care and referrals and a history of a REHC facilitating systems between the two professions.

Clinical activity, waiting times and cost[4] were compared with binary data relating to coordination ratings for each service. STATA version 10.2 (Stata Corporation, College Station, TX, USA) was used to perform Student's *t*-tests.

## Results

### Service integration

Outreach service coordination scores are listed in Table 1 with adjacent rationale. Examples of the highest ranked services for coordination and their characteristics are also presented in Table 2 and Figure 3. Good service integration between ophthalmology and optometry showed trends towards increased clinical activity and reduced waiting times but had little bearing on cost. Those services with coordination scores of five or more showed 1.9 times ($P = 0.13$) more surgical throughput and 1.4 times ($P = 0.20$) greater clinic throughput. The waiting times were also 42% shorter ($P = 0.19$), and the costs per attendance were 15% more ($P = 0.35$) (Fig. 1).

The surgical case rate is a marker for effective referrals from primary to secondary eye-care providers. This measure is based on the number of surgical cases per clinic attendance. There is a significant correlation between surgical case rate and service integration ($r^2 = 0.57$, Fig. 2).

These quantitative findings are supported by opinions in interviews where there is consensus that coordination between the two professions is of paramount importance. Those regions satisfied with current service integration commented:

> We undertake less primary screening than in the city thanks to the optometrists that work ahead of us – Qld.

**Table 1.** Service integration scores

| Region | Rating | Rationale |
|---|---|---|
| Cape York | 10/10 | • 10 years of REHC + assistant + sequenced and simultaneous clinics |
| Longreach | 10/10 | • Run privately with co-located optometry and ophthalmology planned to visit simultaneously |
| Great Southern WA | 3/10 | • No coordinators or collaboration with local optometrists |
| Pilbara | 8/10 | • Roving optometrist who coordinates remote community visits with good communication channels. No effective REHC |
| Kimberley | 5/10 | • Roving optometrist coordinates, no effective REHC, but because of multiple clinicians, less effective communication than Pilbara. |
| NSW (OES) | 7/10 | • 2 managers and simultaneous optometry clinics. But poor communication channels with ICEE optometry network |
| NT Top End | 2/10 | • Multiple coordination agencies but poor communication between optometry and ophthalmology and REHC |
| NT Central Outreach | 7/10 | • Effective REHC, simultaneous clinics |
| NT Central Alice Springs | 4/10 | • Less collaboration of professions than on outreach |
| South Australia (IES) | 9/10 | • Long-term REHC with simultaneous clinics and optometry pre-screening. |

ICEE, International Centre for Eyecare Education; REHC, regional eye health coordinators.

**Table 2.** Service integration options as demonstrated in most efficient regions

| Options for coordination | | Demonstrated in most efficient regions |
|---|---|---|
| 1 Informal | • Optometry and ophthalmology not coordinated, but close communication at all times | • Pilbara: close relationship between optometrists and ophthalmologists, including direct phone contact any time |
| 2 Sequenced | • Early optometry trips for screening purposes followed later by joint trips and postoperative optometry-only visits<br>• Pros: improves efficiency and less duplication of screening roles<br>• Cons: additional screening appointments can result in patient fatigue | • Cape York: optometrists play screening role for ophthalmologist in sequenced visits |
| 3 Same day | • Initial vision screening and refraction performed by optometrist and review and operation by ophthalmologist on same day if required<br>• Pros: good communication between service providers<br>• Cons: patients may have to wait for next ophthalmologist visit if busy schedule | • Cape York & Longreach: trips are coordinated so optometrist/ophthalmologist visit at the same time and same site |

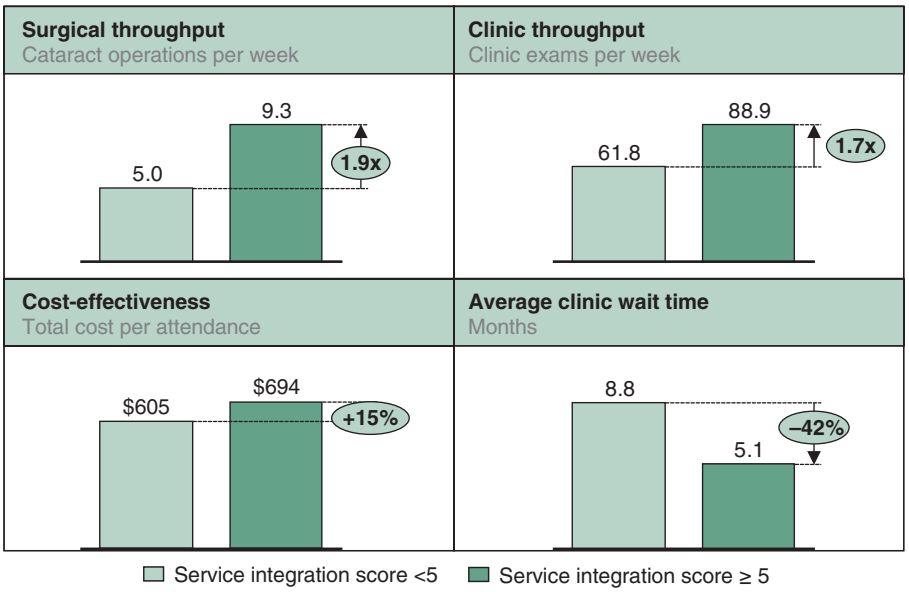


**Figure 1.** Comparison between services according to service integration scores.

In contrast those regions with poor service integration made comments such as:

> A large proportion of our outreach ophthalmology is primary screening – NT.
> Eye health co-ordination could be improved significantly with appropriate resources – WA.
> Ophthalmologists would ideally visit less but do more if coordination with optometry was better – NT.
> There is very little communication between visiting optometry services and the Outback Eye Service – NSW.
> We need a sole coordinator to organise all VOS, MSOAP, ophthalmology and optometry visits – NT

## Regional eye health coordinators

The Taylor report in 1997[5] led to the creation of REHC. Recommendations from the report were implemented but modified to become an Aboriginal REHC based in an Aboriginal Medical Service (AMS). It was envisaged that 35 posts would be created, but some were never filled. Across the

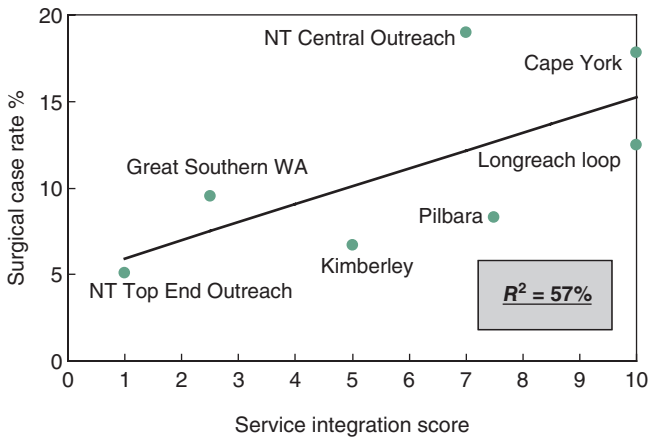


**Figure 2.** Surgical case rate in relation to service integration scores.

CASE STUDY – Cape York has 4 visiting rounds:

1. Optometry only: screening visits
2. Optometry and Ophthalmology simultaneously: preoperative preparation and laser treatment for diabetic retinopathy
1. Ophthalmology only: Intensive surgery week on previously identified patients
2. Optometry only: Postoperative checks and refractive correction plus further screening

**Figure 3.** A case study showing coordination in Cape York.

regions, the roles are varied (Table 3). This scheme was funded federally. After a review in 2003 the specific eye health funding for these posts was replaced by pooled funding for chronic disease management for the AMS to determine their own priorities.[6]

> The shift of REHC funding from Eyes to global health (2008) has seen a focus on eye care evaporate – WA.
> Change of funding to global health has resulted in a complex, multi-tasked role and difficulty recruiting to these positions – NSW.
> Recent dilution of REHC funding is a problem for (NGO's) work in NSW as there is less clear liaison with community controlled clinics – NSW.

Although some REHCs have forged a successful role working with visiting teams acting as community liaison officers or clerks, the expectation that all those appointed to the role would have sufficient experience in management was not realistic.

> There has been little guidance or mentoring to help REHCs act effectively in the role – NT.
> The role of coordinating all the eye services in a large region, with state government, community controlled clinics and many individual optometrists and ophthalmologists requires high level management skills – NSW.

The importance of liaison officers to communicate well with community controlled clinics and act as cultural brokers with patients must not be overlooked in all the eye services. In some regions local Aboriginal liaison officers or Aboriginal health workers are employed when the eye team visits. This role is seen as vital by eye health practitioners:

> Patient attendance relies on motivated Aboriginal health workers and clinic administrators – SA.
> Increased investment in cultural brokers is essential for eye outreach programs – NT.

## Other eye coordinators

In NSW, the Outback Eye Service has two coordinators/managers who administer a programme of visiting eye services. This runs under the auspices of the Prince of Wales Hospital, Sydney and is supported with federal funding. Both managers are former nurses and although they are based in Sydney, they attend all visits with clinicians.

Medical Specialist Outreach Assistance Program (MSOAP) that apportions federal funds to cover accommodation, travel and meals for visiting specialist teams is coordinated by agencies in each state. Non-government organizations also perform coordination roles in the NT and NSW. These include The Fred Hollow's Foundation and the International Centre for Eye Care Education.

In the Kimberley and Pilbara, an individual optometrist has coordinated eye services for many years. The State government recognized this role and offered some funding to support it in 2009. Similar coordination has occurred in parts of Queensland. The State government has funded the associated costs.

## Continuity and leadership

Opinions relating to the eye service leadership and responsibility pointed to different approaches. One model is for the responsibility for an eye health programme to rest with a public hospital and multiple consultants. The other option is for a single consultant to be responsible for coordination. Having multiple people involved results in a service being:

> . . . less susceptible to sudden cessation compared to solo practitioner leading a program – WA.

**Table 3.** Regional eye health coordinator roles in surveyed regions

| | Number | Relationship with optometrists/ophthalmologists | Main roles |
|---|---|---|---|
| Cape York | 2 | Yes | Organizes all outreach trips, liaise with clinics, audit patient numbers |
| Great southern WA | 0 | N/A | N/A |
| Kimberley | 1.15 | No | Diabetic screening |
| Longreach | 0 | N/A | N/A |
| NSW | 5 | Mainly with optometrists | Help facilitate optometry visits to AMS. One has contact with OES |
| NT Central Outreach | 2 | Yes | Coordination, administration, assist with clinics |
| NT Top End Outreach | 3 | Moderate | Some diabetic screening, assistance with outreach visits |
| Pilbara | 1 | No | Not clear |
| SA (IES) | 1 | Yes | Coordinate optometry/ophthalmology visits, attends trips, helps admin |

AMS, Aboriginal Medical Service; N/A, not applicable.

> . . . less reliant on one individual ophthalmologist which works well sometimes but can be a disaster if a poor communicator/leader is in charge – NSW. NGOs play an important role acting as advocates for eye healthcare . . . but government should take on the responsibility for proven programs – NT.

However, there are also disadvantages to the service being under the auspices of an urban public hospital:

> Lack of a unified voice to provide authority because each clinician is only loosely involved. A lack of leadership and personal responsibility to improve efficiency may result – WA.

Some of the most efficient services have relied on strong individual leadership and appear to depend on the continuity of a single consultant ophthalmologist acting as the driver to maintain the high standards of the service, for example, Cape York, Pilbara, Longreach.

## Discussion

Outreach services for ophthalmology and optometry are often well intentioned, but require further efforts to integrate the two professions with better coordination in some regions. By integrating the visiting optometry and ophthalmology services, less primary health care is performed by ophthalmologists, which improves the surgical case rate. There are increased levels of clinical activity and reduced waiting time without any additional costs. The investment in administrative assistance and coordinators is therefore cost-effective as these programme expenses were included in the cost/attendance data.

Our observations suggest that three levels of assistance and coordination are required for eye care in remote settings. Most functions already exist in some form but need clarification and definition.

First, we need people skilled in primary eye care at the community level and be able to diagnose and remove a corneal foreign body, treat conjunctivitis, recognize and manage simple ocular trauma and refer more severe cases. They also would identify people with other eye conditions that need referral to an eye-care practitioner, whether an optometrist or an ophthalmologist.

The second level is the Indigenous assistance required by a visiting eye team whether optometric or ophthalmic. Involvement of a community person who is familiar with the local community members, able to identify people, translate local language and help round up those who need to be seen, is essential. This community outreach or community liaison role is of fundamental importance to the success of the visit and the provision of quality eye care to patients.

The third role is that of an eye service manager. Depending on the size of the population and area they are responsible for, this person may only handle eye services (including optometry visits) or they may also coordinate visits for a community or several communities for additional specialists such as ENT, gynaecology, paediatrics and so on. The advantage of coordinating a range of specialties is that the clinic is not overloaded with two teams visiting at the same time or a community is not overwhelmed with back-to-back visiting teams. The eye service manager also needs to be in touch with the appropriate regional hospital so that people who need referral for surgery or other assessment of the hospital can have these visits properly coordinated. This person requires sufficient management skills and experience to make authoritative decisions with hospital staff and the visiting specialists, as well as with the staff in the AMS. They may also have clinical skills (e.g. optometry or nursing) and could attend some of the outreach trips to be sentient to the workings of the visiting teams.

Current guidelines for the REHC include aspects of all these roles described in the preceding text. They are expected, for example, to remove corneal foreign bodies, to know how to fit or adjust glasses, book surgery, to coordinate eye team and patient visits and to arrange for transport.

The detail of the specific roles and functions requires further careful consultation and development with the full engagement of representatives from all the relevant stake-holders. Training strategies would then need to be developed to equip people with the appropriate wherewithal for these different positions. In addition it is worth bearing in mind the sage advice of several people in the field that 'a one-size fits all approach does not necessarily work for Australia's diverse regions'.

This case study of the provision of outreach eye services has shown a number of successful but diverse models. These services are the product of a lot of hard work and commitment by a group of dedicated practitioners. Better coordination and integration of eye services at all levels is an area that reaps dividends for patients and makes for a better working environment for practitioners.

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