Implementing collaborative care for glaucoma patients and suspects in Australia

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Due to a growing and ageing population, the number of Australians living with chronic eye conditions such as glaucoma and ocular hypertension is projected to increase.\textsuperscript{1} The current unmet demand for public hospital ophthalmology appointments have caused waiting periods for routine, non-urgent referrals to often exceed 12 months.\textsuperscript{2} Similar challenges identified in the United Kingdom and New Zealand were addressed through the development of collaborative care schemes.\textsuperscript{3,4} In Australia, a hybrid model of collaborative care was developed between ophthalmologists (Prince of Wales Hospital) and optometrists (Centre for Eye Health) in 2015 in the establishment of a Glaucoma Management Clinic (GMC), which accepts referral of patients requiring confirmation of suspected glaucoma diagnosis or ongoing management of previously diagnosed glaucoma. In consideration of the RANZCO guidelines for collaborative care published in 2014\textsuperscript{5}, the clinic was designed to deliver a stratified model of care. Specifically, following initial examination, patients are classified according to severity and stability of glaucoma and assigned the most appropriate management, either shared care or ophthalmology care. We conducted a prospective study of patients presenting for initial examination and providing written consent during the GMC’s initial 18 months of operation. Patient examination records were reviewed with respect to their suitability for collaborative care according to professional guidelines.\textsuperscript{5} Initial clinical assessment at the GMC included testing of visual acuity and visual field (central threshold 24-2 SITA standard) performed by a technician; measurements of applanation IOP, central corneal thickness, imaging of the optic nerve and macula with stereoscopic photography and also optical coherence tomography by an optometrist; examination of the anterior and posterior eye with slit-lamp biomicroscopy, gonioscopy and funduscopy by an ophthalmologist. At this visit, an ophthalmologist confirmed patient diagnosis (glaucoma, suspect or normal) and management plan (discharge to referring optometrist, review in GMC shared care, review by GMC ophthalmologist or referral to external ophthalmologist).

Patient characteristics were collected from the “worse” eye, defined by lower mean deviation in visual field results or, if unreliable, the eye with the higher IOP. Residential postcodes were used to estimate distances travelled to the clinic. Waiting time was defined as the number of days between referral and examination dates;
excluding postponed appointments at the patient’s request (n=9) or administrative delays due to insufficient contact information (n=5). For patients who had previously attended another practitioner for glaucoma management, reasons for switching to the GMC were extracted from the referral or examination records. Overall, 188 patients with a mean age of 59.9 (±12.0) years were included in this study. Patients waited, on average, 43.4 (± 20.1) days for an appointment. 27.1% (51/188) of the patients resided within 10km of the clinic, whereas 33.5% (63/188) travelled between 10-25km and a further 39.4% (74/188) travelled distances exceeding 25km. Patient diagnoses (Table 1) included 51% (95/188) glaucoma cases, 41% (78/188) glaucoma suspects, 6% (12/188) unaffected patients and 2% (3/188) with other optic neuropathies. The predominant glaucoma diagnosis was primary open angle glaucoma (90%) with smaller proportions of patients with secondary open angle or primary angle closure types (Figure 1).

**Table 1:** Clinical characteristics of patients according to diagnosis

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>N (% )</th>
<th>Age, years Mean±SD</th>
<th>IOP, mmHg Median(IQR)</th>
<th>CCT, μm Mean±SD</th>
<th>MD, dB Median(IQR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glaucoma</td>
<td>95 (51)</td>
<td>62.4 ±11.6</td>
<td>18 (16, 22)†</td>
<td>552 ±35</td>
<td>-3.08 (-5.07, -1.64)</td>
</tr>
<tr>
<td>Suspects</td>
<td>78 (41)</td>
<td>57.4 ±12.1</td>
<td>18 (15, 20)</td>
<td>563 ±32</td>
<td>-1.14 (-2.73, -0.14)</td>
</tr>
<tr>
<td>Normal</td>
<td>12 (6)</td>
<td>57.0 ±13.1</td>
<td>15 (13, 17)</td>
<td>559 ±41</td>
<td>-0.53 (-1.91, 0.20)</td>
</tr>
</tbody>
</table>

† Includes patients on topical treatment. Abbreviations, SD: standard deviation, IQR: interquartile range

**Figure 1:** Diagnosis according to type of glaucoma diagnosed and suspected. Primary open angle was the most common type across glaucoma patients (n=85) and glaucoma suspects (n=64). Causes of secondary open angle included pseudoexfoliation, pigment dispersion or trauma. The primary angle closure group included patients with prior treatment.
Based on RANZCO guidelines, 20 (11%) patients were unsuitable for collaborative care and were referred into ophthalmological care. Reasons included monocular status (n=3), advanced glaucoma with visual field mean deviation exceeding -12dB (n=4), traumatic glaucoma with angle recession (n=2) and co-morbidities that required further ophthalmological investigations for cataract assessment (n=5) or neuroimaging (n=6).

Sixty-four patients were previously managed by another practitioner; including ophthalmologist (83%, n=53), general medical practitioner (11%, n=7) or optometrist (6%, n=4). The most commonly reported reason for seeking transfer of care to the GMC was financial constraint (58%, n=37); possibly reflecting the estimated 8% of Australians who delay or forgo medical specialist appointments due to cost. Other reasons (42%, n=27) included recommendation by the referrer or dissatisfaction with the previous practitioner. Geographical distances travelled by patients reporting financial constraints were not significantly different to patients who reported other reasons for seeking transfer to the GMC (t-test, p=0.48).

Access to appropriate care by patients is influenced by a multitude of factors and in Australia, glaucoma care provided in either public or private clinics are currently burdened with unique barriers. As successful implementation of new collaborative care schemes have been highly dependent on contextual factors, this study provided unique results. The investigated hybrid collaborative care clinic provided a
new pathway for managing glaucoma and our study confirmed the suitability of referred the majority of patients referred for collaborative care. The clinic provided timely patient management with a median wait time of 43 days. However the clinic’s accessibility may be limited by the geographical location, with a 39.4% of patients having to travel in excess of 25 km. Future expansion of the clinic’s services to involve shared care by community optometrists could reduce patient travel time and help minimise current hurdles to appropriate and timely eye care.
REFERENCES


