



stromal scars at the flap wound margins develop, these biomechanical changes resulted in greater corneal stability, allowing the posterior cornea to revert to its preoperative state. With regards to the posterior corneal astigmatism, there were no changes in either the vector components. No evidence of myopic regression or progressive corneal ectasia was observed during our 3 years of follow up. Similar to Scheimpflug photography, SS-OCT can directly evaluate the corneal topography from the posterior corneal surface. Evaluating the posterior corneal elevation is of particular importance for early detection and monitoring of post-LASIK ectasia. A shorter scanning duration is essential to reduce motion artefacts, while a longer wavelength permits better light penetration with less scattering through the LASIK flap. We believe that due to the shorter scan duration (0.3 vs 2 s) and longer wavelength of light source (1310 vs 475 nm) in SS-OCT than Scheimpflug imaging, the former provides a more precise and accurate assessment of the posterior corneal surface. Further studies should evaluate posterior corneal elevation at various optical zones to ascertain the stability of the posterior corneal surface demonstrated in this SS-OCT study.

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## Implementing collaborative care for glaucoma patients and suspects in Australia

Owing 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.<sup>1</sup> The current unmet demand for public hospital ophthalmology appointments has caused waiting periods for routine, non-urgent referrals to often exceed 12 months.<sup>2</sup> Similar challenges identified in the United Kingdom and New Zealand were addressed through the development of collaborative care schemes.<sup>3,4</sup> 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 Royal Australian and New Zealand College of Ophthalmologists (RANZCO) guidelines for collaborative care published in 2014,<sup>5</sup> 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.<sup>5</sup> 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 intraocular pressure, central corneal thickness, imaging of the optic nerve and macula

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

Diagnosis	n (%)	Age, years, mean $\pm$ SD	IOP, mmHg, median (IQR)	CCT, $\mu$ m, mean $\pm$ SD	MD, dB, median (IQR)
Glaucoma	95 (51)	62.4 $\pm$ 11.6	18 (16, 22) <sup>†</sup>	552 $\pm$ 35	-3.08 (-5.07, -1.64)
Suspects	78 (41)	57.4 $\pm$ 12.1	18 (15, 20)	563 $\pm$ 32	-1.14 (-2.73, -0.14)
Normal	12 (6)	57.0 $\pm$ 13.1	15 (13, 17)	559 $\pm$ 41	-0.53 (-1.91, 0.20)

<sup>†</sup>Includes patients on topical treatment. CCT, central corneal thickness; IOP, intraocular pressure; IQR, interquartile range; MD, mean deviation.

with stereoscopic photography and also optical coherence tomography by an optometrist; and 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 intraocular pressure. 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.

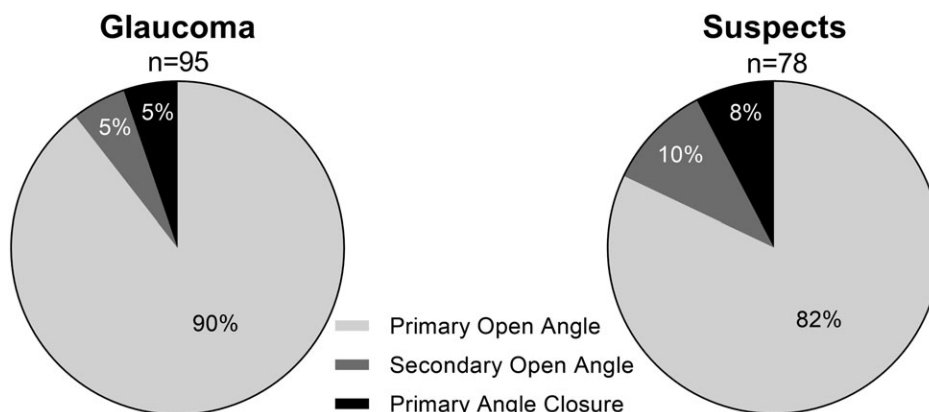
Overall, 188 patients with a mean  $\pm$  SD age of 59.9  $\pm$  12.0 years were included in this study. Patients waited, on average, 43.4  $\pm$  20.1 days for an appointment. 27.1% (51/188) of the patients resided within 10 km of the clinic, whereas 33.5% (63/188) travelled between 10 and 25 km and a further 39.4% (74/188) travelled distances exceeding 25 km. 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 (Fig. 1).

Based on RANZCO guidelines, 20 (11%) patients were unsuitable for collaborative care and were on-referred into ophthalmological care. Reasons included monocular status ( $n = 3$ ), advanced glaucoma with visual field mean deviation exceeding -12 dB ( $n = 4$ ), 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.<sup>6</sup> 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,



**Figure 1.** Diagnosis according to the 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.

glaucoma care provided in either public or private clinics is currently burdened with unique barriers. As successful implementation of new collaborative care schemes have been highly dependent on contextual factors,<sup>3</sup> this study provided unique results. The investigated hybrid collaborative care clinic presents a new pathway for managing glaucoma and our study confirmed the suitability of 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 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 minimize current hurdles to appropriate and timely eye care.

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## Long-term progression after laser peripheral iridotomy in Caucasian primary angle closure suspects

Laser peripheral iridotomy (LPI) can prevent acute attacks and open the angle in primary angle closure suspects (PACS), yet up to 35% of patients have a 'closed angle' after LPI.<sup>1</sup> Are only these eyes at risk of progression?

We reviewed the clinical course of PACS patients under usual care, who underwent LPI as prophylaxis for PACS. The aims were to determine how many PACS progressed after LPI and to investigate whether angles that failed to open following LPI were associated with higher rates of progression.

Patients who underwent LPI in 2009 and 2010 in one private practice (MJW) were retrospectively identified through billing data and their 5-year follow-up was assessed. Where eligible, both eyes of patients were included.<sup>2</sup>

All patients underwent complete general ocular examination, including gonioscopic, field and disc assessments. PACS was defined as non-visibility of the posterior trabecular meshwork in two or more quadrants as determined by undilated static gonioscopy under dim light conditions using a Sussman 4-mirror lens.<sup>3</sup> PAS were determined by indentation.

Angles were graded by the Modified Shaffer system (0–IV).<sup>4</sup> Mean angle grade derived from decimal-converted values from the four quadrants (Table 1). Plateau iris configuration was an angle open to less than Grade II, with a sine wave sign on indentation.

Laser was offered for PACS where at least *three* quadrants were closed (<Grade II). Exclusion criteria were: iridotomy for reasons other than PACS, previous laser treatment/intraocular surgery or incomplete follow-up. A closed angle following LPI was defined as for PACS stated above.

Progression at final follow-up was defined as a change in ISGEO angle closure diagnostic category; or increase in vertical cup-to-disc ratio of  $\geq 0.2$ ; or progressive glaucomatous visual field loss.<sup>5</sup> Need for additional treatment was noted.

A total of 73 eyes of 42 patients were included in the analysis: 84.6% were female and average age at the time of LPI was  $62.5 \pm 10.4$  years. Average follow-up was  $5.49 \pm 1.5$  years. The majority of patients were Caucasian (95%). All were phakic.

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