

- von Noorden GK. Binocular vision and ocular motility. *Theory and Management of Strabismus*, 5th edition. St Louis: Mosby, 1996: 350.
2. Rowe F. *Clinical Orthoptics*, 2nd edition. Oxford: Blackwell Science, 2004: 140.
  3. Ansons AM, Davis H. *Diagnosis and Management of Ocular Motility Disorders*, 3rd edition. Oxford: Blackwell Science, 2001: 267–268.
  4. Kushner BJ. Diagnosis and treatment of exotropia with a high accommodative convergence–accommodation ratio. *Arch Ophthalmol* 1999; **117**: 221–224.
  5. Reynolds JD, Wackerhagen M, Olitsky SE. Overminus lens therapy for intermittent exotropia. *Am Orthopt J* 1994; **44**: 86–91.
  6. Caltrider N, Jampolsky A. Overcorrecting minus lens therapy for treatment of intermittent exotropia. *Ophthalmology* 1983; **90**: 1160–1165.
  7. Watts P, Tippings E, Al-Madfai H. Intermittent exotropia, overcorrecting minus lenses, and the Newcastle scoring system. *J AAPOS* 2005; **9**: 460–464.
  8. Rowe FJ, Noonan CP, Freeman G, DeBell J. Intervention for intermittent distance exotropia with overcorrecting minus lenses. *Eye* 2007; doi:10.1038/sj.eye.6703057
  9. Walsh LA, LaRoche GR, Tremblay F. The use of binocular visual acuity in the assessment of intermittent exotropia. *J AAPOS* 2000; **4**: 154–157.
  10. Hasebe S, Nonaka F, Ohtsuki H. Accuracy of accommodation in heterophoric patients: testing an interaction model in a large clinical sample. *Ophthalmic Physiol Opt* 2005; **25**: 582–591.
  11. Nonaka F, Hasebe S, Ohtsuki H. Convergence accommodation to convergence (CA/C ratio) in patients with intermittent exotropia and decompensated exophoria. *Jpn J Ophthalmol* 2004; **48**: 300–305.
  12. Semmlow JL, Heerema D. The role of accommodative convergence at the limits of fusional vergence. *Invest Ophthalmol Vis Sci* 1979; **18**: 970–976.
  13. Gnanaraj L, Richardson SR. Interventions for intermittent distance exotropia: review. *Eye* 2005; **19**: 617–621.

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## Orthoptists providing a cost-effective alternative glaucoma service

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**Summary:** With a short period of in-house training and a small increase in staffing levels, the orthoptists at the Princess of Wales Hospital, Bridgend have established a glaucoma service, which has brought about a reduction in the waiting times of new referrals to under 12 weeks and care of review cases. This service has significant benefits to the patients and is cost-effective. As experienced decision-making clinicians within the hospital eye care team, orthoptists are well placed to participate in glaucoma care at a high level.

### The problem

The prevalence of primary open angle glaucoma (POAG) in Britain is estimated at 1230 cases per 100 000 population.<sup>1</sup> In recent years the number of referrals to hospital glaucoma units has been increasing due to an ageing population, greater patient expectation, better technology and disease awareness. As a result, hospital eye clinics have become overwhelmed with new referrals and the subsequent follow-up required. As a

reaction to this, community-based services led principally by optometrists have developed across the country<sup>2,3</sup> with varying success and cost implications. Hospital eye units are also looking at how better to address these issues.

In Bridgend all patients were assessed through general clinics, and although referrals were prioritised, even urgent glaucoma referrals waited over a year for their first appointment. The other problem facing all ophthalmic services is that of follow-up capacity. It is considered that one-third of all ophthalmic review cases are due to glaucoma and ocular hypertension.

### A solution

Orthoptists had historically run the visual field clinics. In 2001 we persuaded management and ophthalmologists that the orthoptists could extend their role to the provision of a glaucoma service. The initial appointment was for a 0.6 WTE orthoptist. Equipment start-up costs were a new slit lamp and Humphrey visual field analyser. Training was in-house with the ophthalmic consultant and initially involved the acquisition of tonometry skills and the development of a shared care glaucoma pathway.

### The beginning of the orthoptic glaucoma service

To address the new waiting list, the orthoptist triaged the new patients on the basis of intra-ocular pressure (IOP) measurement and field defect. The orthoptist spent 4 sessions per week assessing patients, 1 session per week on training and 1 session in a joint clinic where the consultant examined the patients triaged by the orthoptist. Within 6 months the waiting list for new referrals had reduced to less than 12 weeks from receipt of the referral to initial assessment.

Once the new waiting list was under control, attention was directed at taking the review patients into the orthoptic glaucoma service thereby reducing pressure on the ophthalmic service.

### Training

After the initial 6-month period, the training session ceased. All further training has been integrated into continuing professional development or clinic time with no cost expenditure to the Trust. Skills gained include anterior chamber examination, HRT image acquisition and analysis, gonioscopy and stereo disc assessment. This has allowed refinement of the triage system. The orthoptists are now competent to assess and diagnose all referred patients attending the glaucoma clinic. Any pathology detected during the orthoptist glaucoma examination which is outside their competency is passed to the general ophthalmology clinic for advice. The joint clinic with the consultant has continued as it proved to be invaluable for verification of clinical decisions, development of knowledge and skills and for integration into the ophthalmic team.

### The benefits

Audit of the orthoptic glaucoma service has proved that it has been successful in maintaining the new patient

waiting list at below 12 weeks. With some cases, such as referrals with IOP of >30 mmHg, we try to see the patient within 48 hours of receipt of the referral.

A band 7 orthoptist undertaking this work removed the need to employ an additional staff grade ophthalmologist. Using this staff cost saving the service has expanded. Currently there are 1.3 WTE orthoptists seeing approximately 500 new referrals and 2000 follow-ups a year, which represents all the new referrals for glaucoma including visual field testing, a weekly joint clinic with the consultant, all HRT imaging requests and pachymetry measurements required by the eye unit, and any requests for phasing. In addition we have trained a 1 WTE Band 2 orthoptic technician to test visual fields instead of the orthoptists, and to capture HRT images and perform optical pachymetry.

The orthoptic glaucoma service provides patients with a fast-access, streamlined approach to their care. No complaints have been received in the 7 years the service has been running.

At present The Welsh Assembly Government want glaucoma services such as these to be taken into the community.<sup>4</sup> We have been included in the local discussions and time will tell if we are able to pioneer the first orthoptic-led community service.

I thank Mr K. N. Rajkumar, Consultant Ophthalmologist, Princess of Wales Hospital, Bridgend and Mrs C. Hawke, Head Orthoptist, Princess of Wales Hospital, Bridgend.

## References

1. Kroese M, Burton H, Vardy S, Rimmer T, McCarter D; Prevalence of primary open angle glaucoma in general ophthalmic practice in the United Kingdom. *Br J Ophthalmol* 2002; **86**: 978–980.
2. www.eyecare.nhs.uk/Birminghampilot.aspx
3. www.eyecare.nhs.uk/devonpilot.aspx; last updated January 2007; last accessed 28 January 2008
4. www.wales.nhs.uk/documents/Designed-for-life-e.pdf; last updated May 2005; last accessed 28 January 2008

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## Vision screening: a benchmarking audit

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**Summary:** A benchmarking exercise carried out in 2006 found that despite the recommendations for an orthoptist-led vision screening service<sup>1–5</sup> many primary care trusts were not providing comprehensive vision screening (vision testing of every child of one age group). Where screening is carried out it is not always orthoptist-led and tests may be performed by health visitors, school nurses and school nurse assistants. Selective testing (testing a proportion of an age group using risk criteria) is being organised by health promotion groups and school health advisors rather than clinicians. The assessments vary from questions to identify children at risk<sup>6</sup> to the recommended crowded logMAR letters test,

but many children are being tested with single optotype pictures or letters. The exercise highlighted the inequality of access to screening for children from neighbouring primary care trusts, and in London it was generally the most deprived areas with the greatest health needs which had the least provision.

## Introduction

The publications that state orthoptists are the preferred professionals to carry out vision screening are a welcome endorsement of their expertise.<sup>1–5</sup> A British and Irish Orthoptic Society (BIOS) survey of heads of service in 2006 showed that 76 services had one or more forms of screening (16 had primary orthoptic screening of 3- to 3½-year-olds and 35 for 4- to 5-year-olds; 51 provided secondary screening). A report from the Optometry Association<sup>7</sup> recommended a nationwide review of the availability and effectiveness of vision screening for children. To establish what orthoptic services were available, a questionnaire was designed and distributed to orthoptic heads of service.

## Method

The questionnaire was sent to 199 UK orthoptic departments in May 2006 asking for details of vision screening services which existed in the previous year. Questions related to the professionals carrying out the screening, age tested, location, tests used, results of audits, referral pathways, methods used to improve attendance and costs of the service. A further telephone survey was carried out of the 31 primary care trusts (PCTs) in the London region.

## Results of the questionnaire

Twenty-five heads of service returned the questionnaire, all from England. They represented 60 PCTs (20% of all PCTs in England) and 13.93% of the total live births in England.<sup>8</sup> The regional distribution of responses was as follows: Trent, 12; Northern, 4; Southern, 2; London, 6. There were 28 types of orthoptic screening, with some services providing a different service to neighbouring trusts. Fig. 1 shows the breakdown into types of orthoptic screening. Nineteen services had additional primary health visitor screening using verbal questions (11 used a questionnaire to assess risk factors and 15 referred due to family concern); one protocol had been agreed by an orthoptist.

Fig. 2 shows the age screened and Fig. 3 the vision tests used by the health professionals. Three health visitor services assessed corneal reflections and two performed the cover test. A second screening occurred from a school nurse in 84% and an orthoptist in 38.5%. Screening from all three professionals occurred in three services.

Seventeen services had school nurse primary screening over 4 years of age (see Fig. 2). Of these 88% were comprehensive screening services, 73% were trained by