

FAMILY MEDICINE, OPTOMETRY AND OPHTHALMOLOGY: A SYNERGISTIC APPROACH TO TOTAL EYECARE

Dr Wilfred Tang

THE CONCEPT OF TOTAL EYECARE

Family physicians often hear their patients complain about vague symptoms such as sore eyes, fuzzy vision and headaches after work. The ability to differentially diagnose patients with abnormal eye conditions from those with benign complaints will thus be an important part of clinical decision-making process of family physicians. Accurate diagnosis can then lead to an early referral of patients with abnormal eye conditions for treatment, and thus provides patients with the opportunity to retain their best possible vision. In line with this thinking, it is sensible to synergistically align the strengths of family physicians, primary care optometrists and ophthalmologists in jointly caring for patients with ocular complaints. The concept of total eyecare recognises that family physicians are the primary providers of healthcare to the community. They play an integral role in engaging the expertise of optometrists in assessing the quality of visual perception in patients, or when appropriate, refer their patients to ophthalmologists who are adept in performing advanced ocular diagnostic and surgical skills (Figure 1).

Positive synergistic relationships exist between family physicians and optometrists, since these two groups of professionals share the responsibility of providing primary healthcare to the community. The common areas of patient care are seen in systemic diseases such as diabetes, hypertension and thyroid abnormalities that have ocular

manifestations at the early stages of the conditions^{1,2}. Primary care optometrists can provide useful referrals and feedback to the patients' family physicians regarding the onset of ocular signs of these systemic diseases, and possibly the effectiveness of medications given to patients for managing these conditions. The close relationship between primary healthcare practitioners allow patients to benefit from the expertise of the respective professionals.

THE ROLES OF PRIMARY CARE OPTOMETRISTS

Grosvenor³ described a primary care optometrist as one who 'serves as a patient's point of entry into the healthcare system'. In the management of patients with abnormal eye conditions, primary care optometrists usually require the services of secondary and tertiary care practitioners consisting of family physicians, ophthalmologists and a small number of highly qualified optometrists. The secondary and tertiary care of patients include the management of chronic diabetes and hypertension, expertise in paediatric, geriatric and low vision, and performance of sophisticated ocular diagnostic procedures. Although optometrists are able to act as a point of entry into the healthcare system, their roles are largely confined to the healthcare problems that are routinely uncovered in eye examinations.

Primary care optometrists have the ability to detect, diagnose and manage common eye conditions through a comprehensive eye examination. Primary care optometrists are trained to provide consultations to patients as young as three months old, low vision patients and even in assisting those who wish to enhance their visual performance in competitive sports. Although there

WILFRED TANG, BSc(Optom), PhD
Optometry Section Head (Ag), School of Chemical and Life Sciences, Singapore Polytechnic

Visiting Research Fellow, The Eye Institute, National Healthcare Group, Tan Tock Seng Hospital

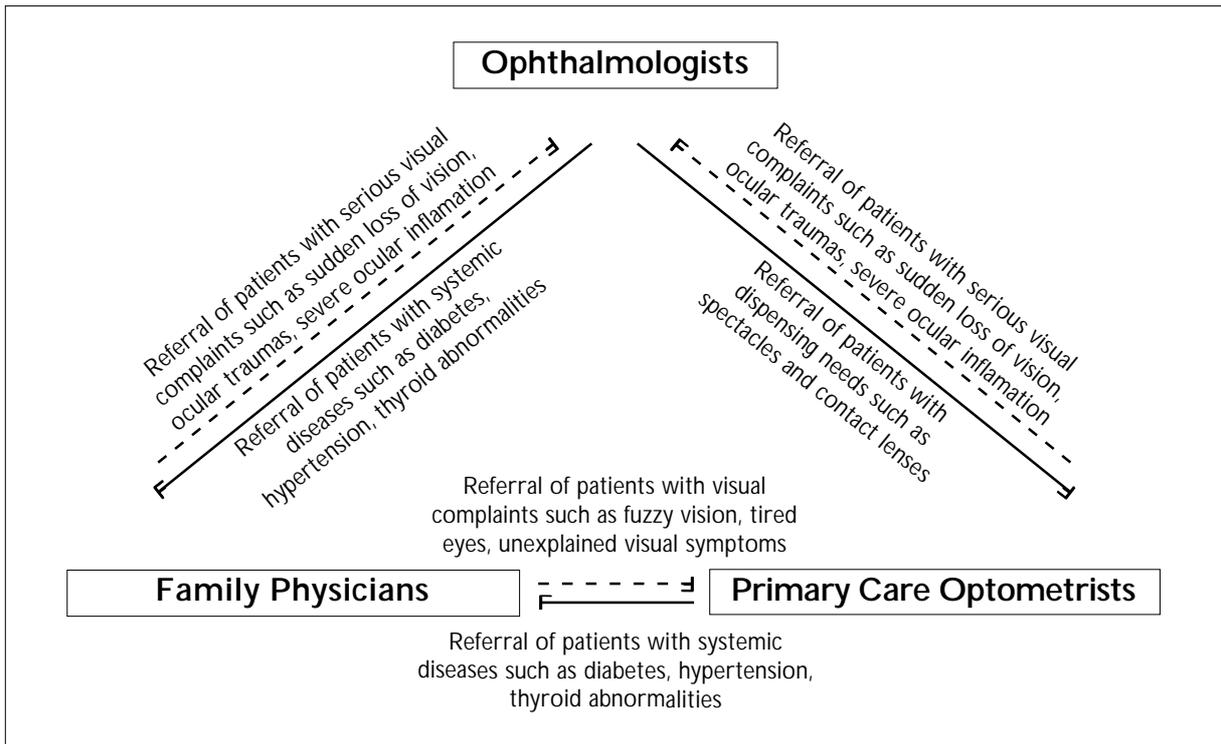


Figure 1: Flow chart showing a possible model of total eyecare provided by family physicians, primary care optometrists and ophthalmologists.

are minor differences in the approach of each primary care optometrist, a general eye examination usually consists of history taking, assessments of visual acuity, refractive errors, binocular vision (the ability of the two eyes to work together) and ocular health of the patient (Table 1). Optometrists are also able to gather additional clinical information from patients with techniques such as visual field analyser (Figure 2), fundus photography and binocular indirect ophthalmoscopy.

Taking a thorough case history of patients is the first step to a successful eye examination. Information relating to the chief complaints, occupation, ocular history, common visual tasks,



Figure 2: Visual field analyser performed by students from the Diploma in Optometry, Singapore Polytechnic. (Photo courtesy of Anna Yeo)

Table 1: A brief summary of clinical routines carried out by primary care optometrists during an eye examination

Routine Procedures	Remarks
1. Case History	Ascertain the chief complaints for the visit
2. Visual acuity measurements (Distance and Near)	High contrast letter charts and reading charts are used for distance and near testing respectively
3. Ocular Excursions	Assess the status of the extraocular muscles of the eye
4. Binocular vision assessments	Assess the working relationship between two eyes of each individual, especially in young patients
5. Pupillary distance measurements	Measure the distance between two pupils so that ophthalmic lenses can be correctly centred
6. Pupil reflexes	To evaluate the integrity of visual pathways
7. Refraction (Distance and Near)	To determine the refractive errors of the eyes objectively and subjectively
8. Ocular health examination (Anterior and Posterior)	Assessments carried out using instruments such as slit-lamp, direct and indirect ophthalmoscopes
9. Non contact tonometry	Routinely carried out for all patients over 40 years of age to check intra-ocular pressure
10. Colour vision	Routinely performed in children during the first visit to assess normalcy of colour perception, especially in boys
11. Stereopsis	Routinely performed in children during the first visit to assess depth perception
12. Contrast sensitivity	Performed based on chief complaints or a loss of visual acuity unexplained by other techniques
13. Visual field	To determine if there is a loss in the patient's ability to see

hobbies and family ocular history is systematically sought from patients (Figure 3). Primary care optometrists can then proceed to carry out a series of investigations based on the case history of patients. The monocular and binocular visual acuities of patients are usually assessed using high contrast letter charts for distance and near (Figure 4). It is often necessary to use alternative charts such as Sheridan Gardner and Tumbling E for young children who are unable to read yet. In addition, an elaborate technique called "preferential looking" could also be used to assess the visual status of infants less than a year old. Apart from evaluating visual acuity, optometrists will need to determine whether the two eyes of each patient are able to coordinate well to provide optimum visual performance (Figures 5a and 5b).

This is especially important in young children who are actively learning to read and write. The breakdown of binocular vision in children has been linked with myopia in some studies⁴⁻⁷.

Optometrists usually spend a substantial portion of their eye examination routines determining the refractive status of the eye and assess the ocular health of patients. Both objective and subjective refraction techniques are normally used to measure the refractive errors of the patients to provide assurances that the refractive results are consistent. Refractive status of very young children is often determined using objective techniques alone, and it takes great clinical experience to perform these procedures on young patients with short attention spans. Although an auto-refractor can be used to measure refractive errors of children,

The expertise of an optometrist in eye examination, such as the assessments of contrast sensitivities, is recognised to be uniquely different from that of family physicians and ophthalmologists, and will add substantial value to the delivery of total eyecare to patients.

Contrast sensitivity is a phenomenon whereby the eye is able to differentiate an object from its background. This visual sensation manifests itself in many aspects of daily living. For example, a person with normal contrast sensitivity is able to quickly detect a fast moving vehicle coming towards him at night and take evasive actions. A breakdown of this ability to perceive objects under dim illumination could bring about many dire consequences.

It has been widely reported that evaluations of visual performance using targets of varying contrasts are able to provide much earlier indications of pathological processes of diseases such as diabetes⁹, glaucoma¹⁰, keratoconus¹¹, retinal degeneration^{12,13} and retinitis pigmentosa¹⁴ compared with assessments of high contrast visual acuity of patients (a test that is routinely carried out by many ocular health practitioners). Contrast sensitivities of many patients with corneal refractive surgeries have similarly been found to be decreased post-surgically¹⁵⁻¹⁷. Current collaborative efforts between ophthalmologists and optometrists are proving to be beneficial in ensuring more reliable visual outcomes to patients with corneal refractive surgeries. Apart from contrast sensitivity, colour vision of patients with eye diseases such as retrobulbar neuritis and macular dystrophy is also affected at various stages of the conditions¹⁸. These findings suggest that early detection of eye diseases using visual psychophysical methods is of high clinical significance, and these skills are within the

domains of suitably qualified optometrists.

Juvenile-onset myopia is an area of mutual interest for family physicians, optometrists and ophthalmologists since Singapore is saddled with a high prevalence of myopia amongst her young population¹⁹⁻²² (Chew et al 1988, Au Eong et al 1993, Wu et al 2001, Saw et al 2001). Singaporean optometrists and ophthalmologists are partners in undertaking clinical research work relating to myopia²²⁻²³. Ocular health practitioners are also active in projects that aim to educate communities about the importance of eyecare. In addition, some practitioners volunteer their time doing visual screening among the local community, while others engage in overseas activities to deliver basic eyecare services to the disadvantaged. Indeed, the synergies of ocular health practitioners go beyond fulfilling their professional responsibilities of only serving the local communities.

Primary Care Optometrists in Singapore

The concept of optometrists being able to provide primary care to patients is mostly found in countries with a long history of healthcare services. In Singapore, the responsibilities of primary care practitioners to their patients will vary from one optometrist to the next, since the profession has not been recognised by the legislative body in the country.

There are a substantial number of optometrists currently practicing in Singapore who hold Bachelor degrees from institutions of higher learning in Australia and United Kingdom, and are capable of carrying out the roles of a primary care optometrist. Family physicians and ophthalmologists should therefore be encouraged to form new working relationships with this group of optometrists and engage them in the task of

providing primary healthcare to the community.

In addition, much progress has been made in the last decade with the introduction of the Certificate in Contact Lens Practice and Diploma in Optometry courses at Singapore Polytechnic. These courses have provided a structured training framework of future optometrists in Singapore, albeit at a lower level of education. New initiatives have also been introduced for active exchanges of expertise between ophthalmologists and optometrists in educating young Singaporeans in the field of optometry, and will lead to more synergistic collaborations with family physicians in advancing the cause of eyecare in Singapore.

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