

## Refractive error

EDITORIAL

### Uncorrected refractive error: the major and most easily avoidable cause of vision loss



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In the late 1990s, two papers from very different parts of the world, Australia and India, highlighted the fact that uncorrected refractive error was a significant cause of blindness and the major cause of impaired vision.<sup>1,2</sup> Since then, the World Health Organization (WHO) and the International Agency for the Prevention of Blindness (IAPB), both separately and in their joint initiative, VISION 2020: The Right to Sight, have worked very hard to put uncorrected refractive error on the blindness prevention agenda and to develop strategies for the elimination of this most simple avoidable cause of vision loss. They have been joined in these efforts by international non-governmental development organisations with expertise or programmes in this field, such as the International Centre for Eyecare Education (ICEE), Sightsavers International (SSI), Christian Blind Mission (CBM), Helen Keller International (HKI), and the World Council of Optometry (WCO).

WHO revealed the magnitude of the

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Dhivya Ravilla

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## EDITORIAL *Continued*

problem on World Sight Day, October 12, 2006, when it released its findings about the prevalence of uncorrected refractive error: 153 million people are either blind or visually impaired due to uncorrected distance refractive error.

Commenting on the importance of uncorrected refractive error, the WHO Assistant Director General, Dr Catherine Le Gales-Camus, said: "These results reveal the enormity of the problem. This common form of visual impairment can no longer be ignored as a target for urgent action." She also stressed the link between uncorrected refractive error and poverty: "Without appropriate optical correction, millions of children are losing educational opportunities and adults are excluded from productive working lives, with severe economic and social consequences. Individuals and families are frequently pushed into a cycle of deepening poverty because of their inability to see well."<sup>3</sup>

Adding the number of people who are blind and visually impaired due to uncorrected refractive error to those blind and visually impaired due to eye disease has virtually doubled the figures for the global burden of blindness and visual impairment (Table 1).

The categorisation of overall blindness and visual impairment related to eye disease into treatable and permanent vision loss is an important issue, but one for which definitive analyses and data are not yet available. In the interim, however, for planning purposes, it is important to try to estimate what might be the situation in each category. As outlined in Table 1, the estimates are as follows:

- 7 million people are totally blind, with no light perception
- 30 million are blind, with vision ranging from light perception to <3/60 in the better eye; half of these cases may be treatable (e.g. cataract)
- 124 million are visually impaired (vision <6/18 in the better eye) from eye disease; approximately half of these cases may be treatable, while the rest suffer from permanent visual impairment (i.e.

low vision).

With regards to the new figures for uncorrected refractive error released by WHO, it has been estimated that, of the 153 million affected by uncorrected distance refractive error:

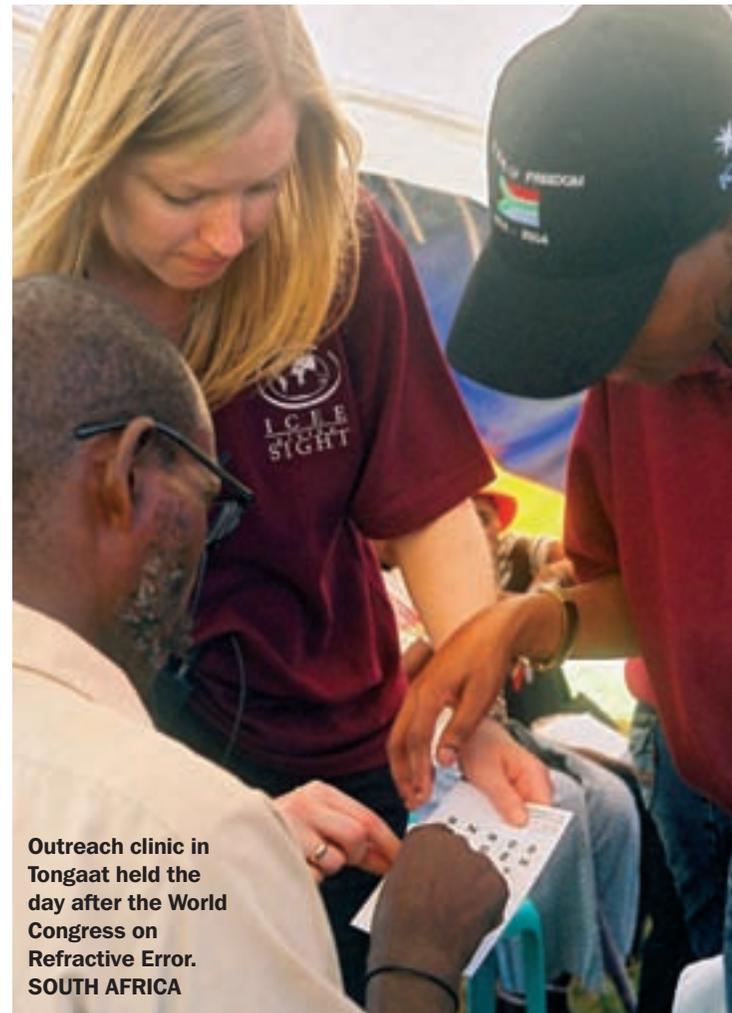
- 8 million are blind
- 145 million have significant distance visual impairment.

In addition to the 153 million people with vision loss due to distance refractive error, there are hundreds of millions who have severe near vision impairment (near vision equivalent to <6/18 in the better eye) due to uncorrected presbyopia.

Though no definitive data are yet available

from WHO on global uncorrected presbyopia, estimates can be made of the range and magnitude of the problem. For example, papers published on uncorrected presbyopia in Africa<sup>4</sup> and Asia<sup>5</sup> show that in some countries up to 94 per cent of people with presbyopia have no vision correction at all. Those who cannot access an eye examination and receive spectacles may therefore number well over 500 million people.<sup>6</sup> For the moment, ICEE is using a conservative planning figure of 150 million people with significant near visual impairment due to

## 'Refractive error can no longer be ignored as a target for urgent action'



Outreach clinic in Tongaat held the day after the World Congress on Refractive Error. SOUTH AFRICA

Jeeva Rajgopaul, courtesy of ICEE

**Table 1. Estimated number of blind and visually impaired people (including presbyopia)**

		Number of people (millions)		
		Permanent vision loss	Correctable vision loss	Total
<b>Vision loss due to eye disease</b>				
Blind	No light perception	7	-	7
Blind	Vision from <3/60 to light perception in the better eye	15	15	30
Visually impaired	Vision from <6/18 to 3/60 in the better eye	62	62	124
<b>Subtotal</b>		<b>84</b>	<b>77</b>	<b>161<sup>b</sup></b>
<b>Vision loss due to distance refractive error</b>				
Blind	Vision from <3/60 to light perception in the better eye	-	8	8
Visually impaired	Vision <6/18 to 3/60 in the better eye	-	145	145
<b>Subtotal</b>		<b>-</b>	<b>153</b>	<b>153<sup>a</sup></b>
<b>Vision loss due to near refractive error</b>				
Visually impaired	Near vision equivalent to <6/18 in the better eye	-	>150	>150 <sup>b</sup>
<b>Subtotal</b>		<b>-</b>	<b>&gt;150</b>	<b>&gt;150<sup>b</sup></b>
<b>Total</b>		<b>84</b>	<b>&gt;380</b>	<b>&gt;464<sup>b</sup></b>

a WHO figures

b Those with presbyopia who cannot get access to spectacles may number over 500 million people

Uncorrected refractive error causes serious visual problems for children trying to learn and adults trying to work. The urgency of this problem and its unacceptability in today's world was partly the stimulus for the first World Congress on Refractive Error (WCRE) hosted by the ICEE in Durban, South Africa, in March 2007. The congress attracted 650 people from national and international government agencies, professional councils, and international non-governmental development organisations, who spent four days discussing every aspect of the problem of uncorrected refractive error, as well as potential solutions.

The congress resulted in the Durban Declaration,<sup>7</sup> which was negotiated and unanimously endorsed by the 650 delegates. These included representatives of the World Council of Optometry (WCO), The International Council of Ophthalmology, IAPB, hosts ICEE, representatives of civil society, and regional and national government ministries and department representatives. The Director General of the Department of Health for South Africa, the honourable Mr Thami Mseleku, said that he was proud that South Africa was chosen as the site for the inaugural WCRE and observed that the congress was "making the world realise that this is a very important commitment to VISION 2020. The resolution shouldn't just remain on paper – we should talk about how to take it forward."

And that, of course, is the key: it has become essential to plan and fund the solution to uncorrected refractive error.

In the words of the Durban Declaration<sup>7</sup>:

"We call upon governments, professional bodies, manufacturers, suppliers, international organisations, and civil society to:

- make refractive services a priority
- support the development and deployment of appropriate human resources, infrastructure, and technology for the effective delivery of refractive services within the public sector
- rationalise the tariffs, duties, and taxes imposed on spectacles, equipment for refraction, and optical laboratory equipment
- support and facilitate organisations working towards the elimination of avoidable blindness."

The world must make every effort to meet the goals of VISION 2020 and eliminate uncorrected refractive error within the next 13 years. A tall order? Not really. ICEE has estimated (based on its own data from Africa, Timor-Leste, and Sri Lanka, as well as on data from the LV Prasad Eye Institute in India) that it will cost US \$1,500 million to give 300 million people access to an eye examination by a trained local eye care person and a pair of spectacles.

US \$1,500 million for 300 million people to see by 2020 is a small price to pay for eliminating the direct loss of opportunity and productivity due to uncorrected refractive error. Better yet, it will also eliminate the indirect costs of having sighted children with uncorrected refractive errors in programmes for the blind, of uncorrected myopic children failing at school unnecessarily, and of the older needlessly blind and visually impaired depending on society and the community. In total, a saving of many tens of billions of dollars.

Optometry Giving Sight, a joint initiative of IAPB, WCO, and ICEE, is galvanising optometry professionals and their patients

throughout the world into donating a substantial part of the total cost of 'giving sight'. This initiative has been successfully launched in five countries thus far.

The commitments needed to achieve the ultimate objective of VISION 2020: The Right to Sight for those with uncorrected refractive error, as outlined in the Durban Declaration, include: quantifying vision loss due to uncorrected presbyopia; undertaking the necessary advocacy, knowledge base development, and research needed to deliver best practice service in line with cultural needs; coordination and cooperation to develop a supply of affordable spectacles and the necessary human resources and infrastructure.

If the world cannot eliminate blindness and visual impairment by delivering spectacles to those in significant need, the world is in a sorry state. For that reason alone, we must cooperate, mobilise our resources, and make sure it happens – preferably before 2020.

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## PRESBYOPIA

# Presbyopia: prevalence, impact, and interventions



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Presbyopia is an age-related loss of lens accommodation that results in an inability to focus at near distances. It is the most common physiological change occurring in the adult eye and is thought to cause universal near vision impairment with advancing age.

People who become presbyopic may complain of headaches and eye strain, and hold objects progressively further away from their eyes in order to be able to focus on them. However, while objects may then be in focus, they may become too small to be identified. The length of the arm also limits this compensatory mechanism. The most common remedy is the prescription of a pair of reading spectacles.

It is now increasingly recognised that presbyopia is an aspect of refractive error that needs to be addressed. Good near vision is important, even among populations who use it for tasks other than reading and writing.

## Prevalence

The prevalence of presbyopia in low- and middle-income countries is not well known, as most studies of refractive error in these countries have been limited to distance vision. There are few presbyopia studies that have used a population-based approach, making it difficult to draw conclusions about the prevalence of presbyopia in the general population.

Another major problem with research in this area is that there is no universally accepted definition of presbyopia and no standardised technique to measure it. The prevalence of presbyopia will therefore depend on how it is defined, for example, the end point chosen and the distance at which near vision is tested.

Some studies, however, including our own study in rural Tanzania, can be used to construct a picture of the prevalence of presbyopia in low- and middle-income countries.

For our study (of people aged 40 and over), we used the N8 optotype (1M or 20/50 Snellen acuity) as the end point of near vision testing. This was selected as it matched the type size for newsprint in the country. We measured near vision by placing the near chart 40 cm away from the subject.

We defined people as presbyopic if both of the following were true:

- they were unable to read the N8 optotype with distance correction in place, if needed
- they were able to read at least one more line with the addition of a plus lens.

The degree of presbyopia was determined as the minimum amount of plus lens needed to achieve the maximum improvement in lines read to the end point (N8).

Using this definition, the prevalence of presbyopia in this population was found to be 62 per cent, with prevalence increasing with age.<sup>1</sup> Age-adjusted data showed higher prevalence among women than men. In multivariate analysis, women had 46 per cent higher odds (odds ratio of 1.46) of being presbyopic. Women also had more severe presbyopia than men across all age groups. Secondary education and residence in town (as opposed to a village) were also significantly associated with a higher prevalence of presbyopia. Only six per cent of the people with presbyopia in our study had the spectacles they needed.

A survey of ocular morbidity in rural Ugandan adults found presbyopia to be the most common cause of visual impairment in that country for which treatment was sought. Patients with uncorrected presbyopia accounted for 48 per cent of those presenting with visual impairment.<sup>2</sup>

Morny, using hospital chart reviews, found a prevalence of presbyopia equal to 65 per cent in Ghanaian women.<sup>3</sup>

In southern India, Nirmalan et al. used the same definition for presbyopia. They found a prevalence of 55 per cent in people aged 30 years and older.<sup>4</sup> As in our study, prevalence of presbyopia worsened with increasing age. Female sex, rural residence (as opposed to urban), myopia, and hyperopia were associated with presbyopia. A third of subjects with presbyopia were currently using spectacles.

Duarte et al. in Brazil estimated the prevalence of presbyopia in 3,000 adults of 30 years and older at 55 per cent.<sup>5</sup> Once again, age and female sex were associated with higher prevalence. In those who had near vision spectacles, 30 per cent had corrections that were ineffective. A total of 58 per cent of the sample reported requiring near vision for their routine daily tasks.

Studies of hospital patients conducted in Africa showed a younger onset of presbyopia and more severe presbyopia than studies conducted in Europe and North America.<sup>6,7,8,9</sup> Pointer, in his clinic-based study, observed that presbyopia affected women earlier than men.<sup>10</sup> In addition, several studies have correlated geographical variations in the age at onset of presbyopia with latitude and climate; hotter climates



are associated with earlier onset of presbyopia.<sup>11,12,13</sup>

In summary, the studies to date of presbyopia in low- and middle-income countries suggest the following:

- more than half of adults over the age of 30 have presbyopia
- women have both a higher prevalence of, and more severe, presbyopia
- the majority of those with presbyopia do not have corrective spectacles.

## Impact

Presbyopia affects quality of life. This seems straightforward in high-income countries, where reading and writing are the main near vision tasks undertaken. For example, McDonnell et al. showed that presbyopia was associated with substantial negative effects on health-related quality of life in a US population.<sup>14</sup>

However, it is a misconception to think that presbyopia has no impact on quality of life in populations where reading and writing are less a part of daily life, for example in the rural populations of low- and middle-income countries.

Our study in Tanzania showed that in rural communities, where near vision tasks other than reading and writing are predominant, uncorrected presbyopia had a substantial impact on quality of life.<sup>15</sup> We found that near vision was needed for winnowing grain, sorting rice, weeding, sewing, cooking food, dressing children, and lighting and adjusting lamps. Almost 80 per cent of people with presbyopia reported having problems with near vision and 71 per cent were dissatisfied with their ability to do near work.

Good near vision is needed in many work-



**Near vision testing in a rural community. TANZANIA**

Ilesh Patel

presbyopia require modest expertise and can be undertaken independently of fixed optical services. The ScoJo Foundation, which works in Africa, Latin America and Asia, has demonstrated a sustainable model to distribute high-quality, low-cost reading spectacles in rural areas. This organisation trains women to start their own small business to prescribe and dispense presbyopic spectacles at low prices. Such an approach can be an independent but integrated part of a comprehensive eye health solution, as it may be the first point of contact for those with other eye problems and could identify those in need of further eye care services (see box on page 44).

## The future

Further research should be conducted to determine why women and persons who live in urban environments have more presbyopia. As low- and middle-income countries undergo the demographic transition towards an ageing population, the number of people with presbyopia will increase. The impact on quality of life for older persons is now clear and presbyopia should be part of the WHO refractive error agenda. Clearly, presbyopia poses an important public health challenge, because it affects older people's ability to maintain their economic independence. We need to start working towards effective solutions.

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related tasks. For example, research in India showed that presbyopic factory workers were less productive than their co-workers (personal communication with Praveen K Nirmalan, LV Prasad Eye Institute, Hyderabad, India). After correction, their productivity improved significantly, which made the investment in corrective spectacles very beneficial. Also, as more transactions are done in writing, adults with poor reading vision will be at an economic disadvantage.

Finally, uncorrected presbyopia can hamper development. The World Health Organization (WHO) has placed increasing emphasis on adult literacy to improve attainment of development goals, but people require good near vision to be able to benefit from programmes to improve literacy.

## Interventions

While new treatments are being developed for presbyopia, spectacles represent an effective, economic option for low- and middle-income countries. However, there is little research on the determinants of, and barriers to, the use of near-vision spectacles. We are still awaiting data on the availability and affordability of near-vision refractive error services, including a system for efficient dispensing of high-quality, affordable spectacles.

In our study in Tanzania, 92 per cent of people with presbyopia reported using the near-vision spectacles we gave them. Almost half of the people we studied were using them a few times a week. This gave us an indication of the usefulness of adequate near vision in rural Tanzania, where many subjects did not routinely read or write. Better near vision resulted in reported

improvements in overall quality of life. An appreciation of the usefulness of having adequate near vision made subjects willing to pay for spectacles and obtain replacements if the need arose. A high proportion of people (69 per cent) were able to afford spectacles at a price that covered the cost and shipping of the spectacles. Men were more likely to be able to afford spectacles, whereas a higher proportion of women needed to rely on another person to help them afford spectacles.

The majority of people in our study did not know where to get spectacles. Among those who knew where to go, ten per cent were misinformed about where they were available and a third could not afford to travel to a location where spectacles could be obtained. In general, lack of knowledge about refractive services, poor accessibility, and additional costs (such as transport) raise further challenges for intervention programmes.

Our experience in Tanzania also suggested that many subjects were not aware that correction could return adequate near vision to them. Because presbyopia is a gradual process, others had forgotten the value of having good near vision. Refractive error correction programmes need to recognise this, and community awareness of presbyopia needs to be promoted.

Our data suggest that it is very difficult to obtain reading spectacles for persons in rural villages and small towns in Tanzania.<sup>15</sup> In southern India, Nirmalan et al. showed that a major proportion of people with presbyopia who had spectacles (93 per cent) had obtained their spectacle prescriptions from ophthalmologists, who work primarily in large cities.<sup>4</sup>

In general, assessment and correction of



# Delivering refractive error services: primary eye care centres and outreach



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Addressing refractive errors, the second major cause of preventable blindness, is now a priority for eye care programmes.

Although a simple pair of spectacles will correct refractive error, there exists a high prevalence of uncorrected refractive error. This is due in large part to the cost and inaccessibility of refraction and spectacle dispensing services, which are usually offered only at secondary and tertiary eye care centres.

The optometrists and ophthalmologists who provide these services are often kept very busy providing a range of other eye care services as well. This means that the number of refractions they have time for falls short of community needs. The distance to these secondary and tertiary eye care centres also hinders access.

In addition, people who have been refracted and who have received a spectacle prescription need to have access to an affordable spectacle dispensing service. Since most spectacle retailers are concentrated in bigger towns, accessibility is a major challenge for communities in rural areas.

To solve the problem of uncorrected refractive error in low- and middle-income countries, it is therefore important to provide comprehensive services – both refraction and dispensing of spectacles – at the primary level of eye care, where they will be most accessible to the community.

The delivery of comprehensive refractive error services at the primary level requires the following:

- a trained person to refract and provide counselling about refractive error as part of a general eye examination and service
- equipment for vision testing, refraction, and spectacle dispensing
- spectacles which are acceptable and affordable to the patient.

There are two strategic options for improving access to comprehensive refractive error services at the primary level:

- 1 Integrate refractive error services at all levels of eye care delivery and patient



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## ‘People who have been refracted also need access to affordable spectacle dispensing services’

- 2 Integrate refractive error services into outreach services, thereby bringing primary level eye care closer to communities.

- refraction by a refractionist or optometrist using a simple Snellen chart and trial set to determine the best possible correction and to issue a spectacle prescription
- spectacle dispensing, which includes offering a range of frames from which patients can choose.

### Primary eye care centres (vision centres)

Dispensing spectacles in addition to providing refraction may improve the sustainability of a refractive error service and increase uptake by patients. The primary eye care centre or vision centre is a model that combines both these components of refractive error services at a single service point, close to where communities live.

Primary eye care centres serve populations of 50,000 and offer the following:

### Estimating demand

An important first step when planning a primary eye care centre is to estimate the potential demand for spectacles.

The prevalence of refractive error varies between age groups. Where reliable data are available on the age distribution of the population at country and sub-country levels, the rate of refractive error in different age groups can be estimated (preferably from studies done in that area, or from personal experience) and the total demand can be calculated, as shown in Table 1 (using data for India).

**Table 1. Estimating demand for refractive error services for a population of 50,000 in India, using available data**

Age group	Percentage of total population	Number of people in each age group	Percentage with refractive error in each age group	Number of people with refractive error in each age group
Pre-school (0–5)	12%	6,000	Unknown (but low)	Unknown (but low)
School (6–20)	34%	17,000	5%	850
Adult (21–45)	37%	18,500	10%	1,850
Adult >45 (presbyopic age)*	17%	8,500	90%	7,650
Total	100%	50,000	n/a	10,350

\* Many may also require correction for distance

In most situations, one can expect about 20 per cent of the population in total to require refraction services. A primary eye care centre serving a population of 50,000 therefore has a big enough potential market to make it economically viable.

### Marketing

Given the very low coverage and penetration of existing primary eye care services, a primary eye care centre should not only cater for those who visit it, but it should also proactively seek out those who need correction.

Marketing strategies should be specific to each age group, as suggested in Table 2.

**Table 2. Marketing strategies for a population in India**

Age group	Marketing strategy
Pre-school (0–5)	General awareness about squint, amblyopia Networking with paediatricians for early referral
School (6–20)	School eye examinations
Adult (21–45)	Eye examinations in the workplace Refraction services in comprehensive eye camps
Adult >45 (presbyopic age)	General awareness about the advantages of near vision correction Refraction services in comprehensive eye camps

Preliminary vision tests are conducted by trained field workers or teachers (in the case of schools and colleges) to identify those with vision worse than 6/9 (or 6/12 for school children). These people are then referred to the primary eye care centre for further investigation. When a large number of prescriptions are expected at a school, college or workplace, the complete range of refractive services, right up to dispensing of spectacles, can be provided on the spot.

**Table 3. Basic equipment required at the primary eye care centre for refraction services**

Refraction equipment	Spectacle dispensing equipment
Snellen chart	Marking pencil/pen
Near vision chart	Lens chipper, cutter
Trial lens set	Lens edger
Trial frame	Screwdrivers
Streak retinoscope (recommended)	Frame warmer
Jackson cross cylinder (recommended)	Adjustment pliers

Essential inventory items are:

**Frames.** There should be a variety of frames available to reflect personal and local preferences. As most people are willing to spend more on an attractive pair of spectacles, this can provide the required income to sustain the services of the vision centre. Smaller frames need to be available for children.

**Lenses.** Only commonly required dioptr powers should be stocked – other lenses must be ordered. With proper inventory planning, on-the-spot dispensing of about 85 per cent of orders can be achieved. However, this will require an inventory that is roughly ten times the expected number of orders. The proportion of on-the-spot dispensing therefore depends on the inventory size that can be achieved.

**Other accessories.** Spectacle cases, cleaning materials.

## Aravind's vision centres

Aravind Eye Hospital in South India has developed an innovative approach to addressing all aspects of eye care in remote and rural areas. It has set up a network of special vision centres to serve rural areas around each of its secondary and tertiary eye hospitals.

Each Aravind vision centre covers a population of about 40,000 to 50,000. The centres are equipped for refraction and the dispensing of spectacles. For comprehensive diagnostics, they have a slit lamp fitted with a digital camera, a glucometer, and a computer with webcam and internet connectivity (this enables real-time interaction with ophthalmologists at the base hospital). The centres are run by well-trained ophthalmic assistants, who perform slit lamp examinations and refraction, treat minor ailments, provide counselling, and so on. They are also trained to dispense medicines and spectacles. Patients who require further investigation or advanced interventions are referred to the base hospital.

Field workers identify people with eye problems and refer them to the centre. They conduct school screening camps and awareness campaigns, and take care of the many marketing activities required. Field workers also provide community-based rehabilitation for the incurably blind.

At the vision centre, patients are charged a nominal fee for the examination and pay for spectacles and medicines. Income from the sale of spectacles is helping the centres to move towards financial sustainability.

**Table 4. Statistics from five Aravind vision centres during the year 2006**

Outpatients	6,717
Total income	US \$23,402
Number of spectacle prescriptions	2,334
Number of spectacles ordered and dispensed	2,191 (94% of total prescribed)
Average sales price of a pair of spectacles	US \$6.70
Income from spectacles	US \$14,654 (63% of total income)



Dhivya Ravilla

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Jeena Rajgopal

**Community members are screened for refractive error in Tongaat, KwaZulu-Natal. SOUTH AFRICA**

## Outreach clinics

Outreach refractive services can only be a short-term strategy to meet needs. However, an outreach strategy can play a big role in supporting permanent vision centres or health centres, as well as enhancing the reputation of the provider and reducing costs for patients by meeting their needs there and then.

The International Centre for Eye Care Education (ICEE) has been conducting outreach clinics in KwaZulu-Natal, a province of South Africa. ICEE sent teams to outlying and rural areas by road and by air, the latter in partnership with Red Cross Air Mercy Services and the South African Department of Health.

ICEE is acutely aware of the many problems that exist with outreach clinics and refractive error services in general, and it structures its outreach clinics so as to minimise any possible negative impact. The problems include the following:

- free spectacles create expectations and patients wait for the return of the free service, which in most cases never occurs
- programmes run by non-governmental organisations (NGOs), independent of government services, negatively affect the public sector. Patients wait for the NGOs to come back, instead of accessing the (possibly limited) services available
- improperly matched recycled spectacles often result in visual complications and poor cosmetic appearance (these should only be used as a last resort).

### Key components of the ICEE outreach strategy

**Relationship building.** In order to ensure that there is cooperation and support (buy-in) from the department of health, ICEE clinics are held in rural primary eye care centres or rural hospitals. The service is advertised with the help of local health centres.

**Equipment.** Includes a trial case, trial frame, occluder, ophthalmoscope, retinoscope, E chart, pupillary distance (PD) rule and tape measure. An autorefractor is carried by the Red Cross Air Mercy Services.

**Sustainability.** In order to make these services as affordable as possible, ICEE

does not make any profit. However, to ensure that services are sustainable, ICEE calculates what it costs them to provide the service and then charges patients accordingly. Patient numbers are kept high by the advocacy efforts of local clinics and department of health in the community; this makes services economically viable.

**Exit strategy.** The ICEE exit strategy entails handing over refractive services to local health care providers. ICEE trains local personnel (ophthalmic nurses) in refraction services and advocates for optometrists to be employed. No optometrists were employed in the public sector when the ICEE program started; currently there are 13 in employment. Out of 11 health districts visited initially, ICEE is now serving only four. This reflects the belief that outreach clinics are a short-term strategy: they help to show that there is a need for services, which then prompts government and other providers to develop permanent services.

**Spectacles.** Ready-made spectacles (which have the same prescription in each lens) are dispensed immediately. Custom-made spectacles are produced and sent to the clinic where the patient was seen. With basic equipment and a small inventory of lenses and frames, some spectacles for simple refractive errors can even be fitted and delivered there and then.

**Case finding.** Screening in schools and in communities is critical to boost patient numbers and to ensure that clinicians' time is used optimally. With funding from USAID, ICEE has trained 50 'vision screeners' who visit schools on a daily basis. The provincial department of health has agreed to employ these screeners once the funding runs out; this will strengthen human resources capacity in the long term.

**Volunteers.** If necessary, volunteers should be incorporated into existing outreach programmes and function within that ethos. Changing the strategy when volunteers are available and then reversing this later is not in the best interests of the programme.

**Outreach for advocacy.** ICEE programmes target areas where there are no services and the potential for a future eye clinic is high. To do this, ICEE links up with the government outreach clinics and adds refractive services to the package of existing services. This demonstrates the value of refractive services.

### Conclusion

Outreach programmes have the potential to serve as an advocacy tool and to meet short-term needs in underserved areas. In order to ensure the maximum is gained from these programmes, there should be:

**Caring.** Ensure that outreach does not imply lower standards of care; adopt clear management protocols.

**Consistency.** Develop appropriate guidelines regarding the structure of the

programme, its pricing policy, and the type of spectacles offered in different areas, as well as protocols to maintain standards of care. Convince other service providers to adopt a similar approach.

**Comprehensiveness.** Refractive services should be linked to a comprehensive package of eye and health services, either by direct delivery of services or through an appropriate screening and referral network.

It is important to fully exploit the potential of refraction services in order to achieve the goals of VISION 2020: to bring sight to the millions of people who are blind or visually impaired due to refractive error. The income generated by providing refractive error services to more people will in turn provide the required economy of scale for these services to become sustainable – a win-win situation.

## Refraction as a case-finding mechanism in outreach programmes

Refractive error services provide an opportunity to identify patients with other conditions, such as glaucoma, cataract, and diabetic retinopathy, although they are not often used in this way.

A service dispensing spectacles is in fact more likely to attract patients than a surgical programme, as fear of surgery may prevent some patients from attending.

Developing refractive error as a screening strategy therefore becomes an attractive option. Rather than including the correction of refractive error as just one of the services in an outreach programme, it may be more useful to consider refractive error as the anchor of an outreach programme; it has the potential to attract all patients with visual impairment. Patients needing eye care can then be identified from among those who need refractive error services.

This strategy is particularly relevant, given the fact that patients with presbyopia are usually at high risk of age-related eye diseases as well. However, it demands a coordinated and integrated approach to outreach clinics, rather than having separate programmes which result in unnecessary duplication of efforts.

In order to function as a screening tool for other eye conditions, refractive error programmes must ensure that they include comprehensive eye examinations. If they don't, they will squander the opportunity to identify other eye conditions that require intervention.



**SUSTAINABILITY**

# Making refractive error services sustainable: the International Eye Foundation model



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The International Eye Foundation (IEF) believes that the most effective strategy for making spectacles affordable and accessible is to integrate refractive error services into ophthalmic services and to run the refractive error service as a business – thereby making it sustainable. An optical service should be able to deal with high volumes of patients and generate enough revenue – not just to cover its own costs, but also to contribute to ophthalmic clinical services.

IEF assists public and private eye hospitals in low- and middle-income countries to build sustainable refractive error services, both by helping them reorganise their management processes, and by improving their infrastructure through sub-grants and technical assistance. With this model, the IEF estab-

lishes professional optical businesses that can be accessed by anyone, regardless of socioeconomic background. Net profits then go toward improving quality, expanding services, and subsidising ophthalmic care in the eye unit. This combined approach increases the number of patients accessing ophthalmic as well as optometric services and earns revenue to support both types of services.

This article discusses some important aspects of the IEF model.

## Planning

When designing an optical service, it is important to clearly formulate its purpose (for example, to offer services to all

patients, including the poorest). It is also essential that everyone involved agree beforehand about the control and management of the business and,

in particular, the management of human and financial resources.

It is important to determine beforehand the capacity of the optical service (the number of people it can serve) and its market (the

**‘The customer must be satisfied with the service, the product, and the result’**

estimated number of people who need or want optical services). It is also important to establish relationships with relevant stakeholders, for example, with local businesses

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**The optical sales showroom at Penya Optical. MALAWI**

## Penya Optical, Malawi

Penya Optical was established within the government eye unit in Blantyre, Malawi, one of the world’s ten poorest countries. IEF’s initial investment was US \$42,000; Penya Optical broke even after seven months. Now in its third year, Penya Optical’s assets are US \$65,800 and it has US \$47,766 cash in the bank. The estimated return on investment is 156%. Penya Optical contributes 15% of its gross monthly sales to the Blantyre Eye Unit’s sustainability fund.

Victoria M Sheffield

Victoria M Sheffield



**The optical workshop at the Lions SightFirst optical centre at the Kimuzu Central Hospital in Lilongwe. MALAWI**

and community leaders. The resulting business plan should define the market potential, evaluate the competition, and describe the range of products offered, the procurement and inventory requirements, pricing, and revenue projections.

**Procurement and implementation**

Before establishing an optical service, the team must ensure that the location is convenient, is prominently visible to the public, is close to an optical workshop, and allows for efficient patient flow (with space for patients to wait, enough examination rooms, and a space where patients can try on new frames). Optometrists skilled in objective and subjective refraction should be used, rather than automated equipment. In addition, having basic workshop equipment on-site will minimise downtime due to maintenance and repair. Strong management is critical: lines of authority and accountability should be clear.

Finally, efficient procurement practices must be adopted to ensure lower costs. The following points are important:

- order large volumes to lower costs, but avoid being overstocked
- look for the most cost-effective source of spectacles
- stock a wide choice of frames and lenses,

some in the latest designs, to satisfy patients' individual needs and tastes.

Monitoring the quality of refraction, the craftsmanship of spectacles, and turnaround time is critical. The customer must be satisfied with the service, the product, and the result: improved vision. Quality counts!

**Financial considerations**

It is important to establish clear policies governing the use of revenues. In general, IEF recommends that 70 per cent of revenue be reinvested into the spectacle inventory, with revenue equal to three to four months' operational costs retained in the bank. It is also important to agree on a strategy to manage the devaluation of funds, especially where customs and taxes are high.

IEF's hospital partners include the refraction fee as a fixed amount in the general outpatient fee. Patients requiring additional services such as spectacles are charged separately for frames and lenses.

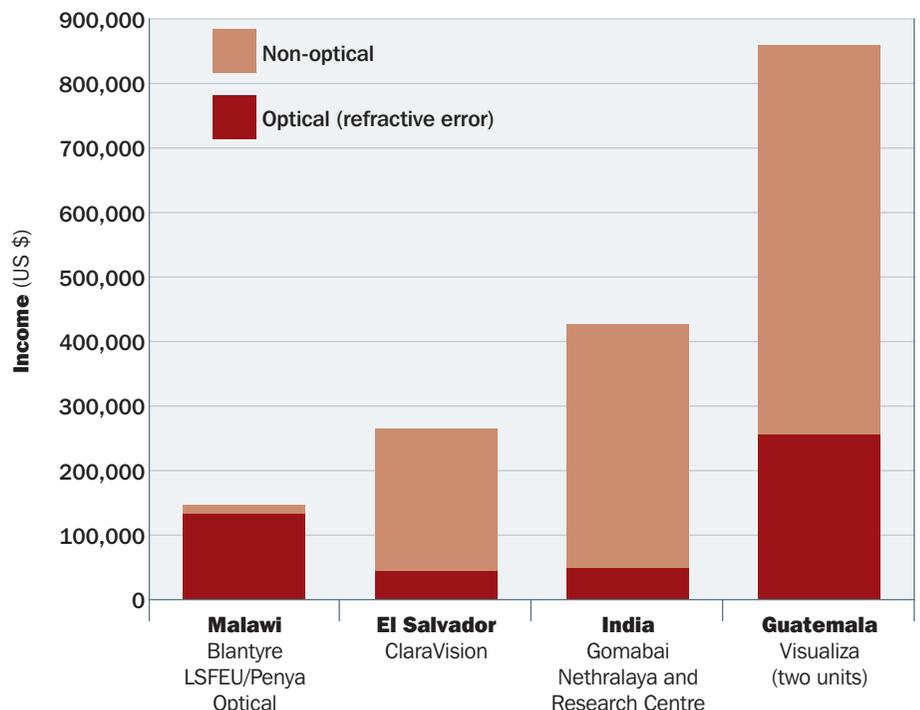
Building an optical service from scratch requires between US \$40,000 and US \$50,000 for equipment, inventory, supplies, furniture, and staffing. This is usually provided by a grant or donor initially, and does not include the indirect costs to IEF of providing support.

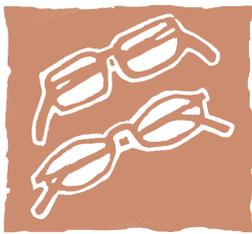
In IEF partner hospitals, the percentage of total hospital earnings generated by revenue from the refractive error service ranges from 12 per cent in northern India and 18–30 per cent in Central America to 98 per cent in Malawi, where most other services are provided free of charge (Figure 1).

IEF believes in having an exit strategy: this involves handing over assets and management responsibilities to local hospitals/charities eventually and maintaining only a monitoring and advisory role.

In conclusion, combining a high-quality optometric business with ophthalmic services helps to reduce rates of uncorrected refractive error and contributes to the financial health of the entire eye care service.

**Figure 1: Relative contribution of optical and non-optical services to total revenue**





# Sourcing acceptable spectacles

ICEE



**Spectacles should be cosmetically appealing. JAMAICA**



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## The need

Spectacles are the simplest and most inexpensive way to correct refractive errors. Sadly, the cost of a pair of spectacles is out of the reach of most people in low- and middle-income countries. This is true even in countries with the capacity to manufacture and distribute spectacles.

One solution is for hospitals or governments to provide spectacles free of charge or at a minimal fee. However, this can use up available funds very quickly, which means fewer people can be helped.

In addition, most spectacles available commercially are expensive and access to them is limited. On the other hand, cheaper spectacles can often be of very poor quality.

Ensuring that spectacles are both accessible and affordable is therefore one of the key challenges facing any programme aiming to deliver refractive error services.

The non-governmental organisation (NGO) sector is a major consumer of spectacles. This offers a possible solution to the problem of sourcing acceptable spectacles: organisations can pool their spectacle orders and buy spectacles in bulk, thereby lowering their costs significantly.

## The challenge

Purchasing affordable and acceptable spectacles requires the following:

- knowledge of the market (knowing your environment and the trends that exist therein)
- ensuring that the product is cosmetically appealing
- knowledge about what customers can afford
- an easy-to-use and accessible procurement system
- coordination of efforts (because higher volumes drive prices down)
- warehousing and stock control
- open communication and networking.

## The ICEE experience

Analysing the data from various projects can provide us with significant information on

purchasing trends. This knowledge can then be used to make informed decisions.

In order to gain better knowledge of the market and to understand dispensing challenges, the International Centre for Eyecare Education (ICEE) analysed data from their project with the KwaZulu-Natal Red Cross Air Mercy Service and conducted a market analysis. In this project, a total of 4,458 patients were examined between 2005 and 2006 and 1,981 pairs of spectacles were dispensed. The dispensing patterns are depicted in Figure 1.

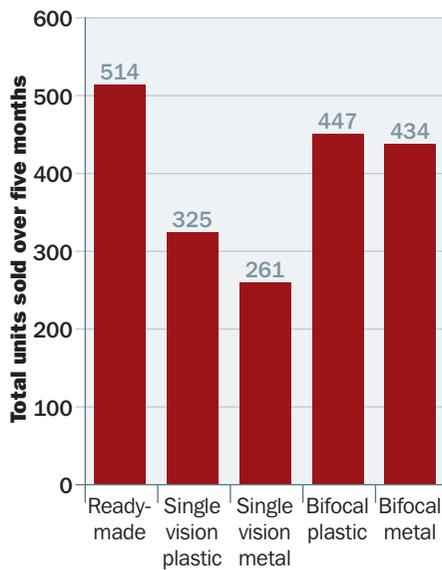
Other factors, such as the age of the patient and what the target market could afford, were also used to determine purchasing trends. Consultations with partner organisations resulted in a wealth of knowledge about current ordering volumes and prices.

## The response

As a result of this analysis, ICEE decided to create a system that would have the potential to address both African and global needs: the Global Resource Centre ([www.iceegrc.org](http://www.iceegrc.org)). The Global Resource Centre (GRC) aims to act as a centralised purchasing and shipping centre which allows like-minded organisations to pool their buying power. The GRC is a collaborative endeavour; it is supported by Sightsavers International (SSI) and Christian Blind Mission (CBM), and it is managed by ICEE. The GRC aims to:

- use large volumes to drive down unit costs
- use large volumes to drive down shipping costs

**Figure 1. Analysis of dispensing patterns**



**Categories of spectacles**

- eliminate the duplication of effort and resources between NGOs
- promote the tracking of worldwide trends to inform purchasing decisions and resource allocations
- be a single contact for the procurement of devices and equipment from multiple suppliers
- give both large and small customers access to spectacles at the same low prices
- ensure quality checks
- promote easy ordering of products via the web.

## Key lessons

Pilot projects were conducted to test the GRC system. The key lessons learnt were:

- 1 It is imperative to have offices and a distribution network in the country from which one is sourcing. This forms a critical part of the supply chain. Prior to the dispatch of every order, the products supplied can be scrutinised to assure quality. New trends in products can be adequately assessed and exploited to the benefit of the programme.
- 2 Transportation, shipping, and other costs need to be kept to a minimum, as an inexpensive product could become very costly by the time it reaches the purchaser.
- 3 A huge stock (inventory) is required, which requires sufficient funds and space as well as stringent stock control. ICEE, CBM, and SSI are assisting with funding to address this issue.

## Conclusion

There are two key aspects to sourcing affordable spectacles. The first is to have a one-stop system that addresses the issues of affordability, accessibility, and acceptability. The second is to know the patterns and trends within the target market, as this influences the financial outlay, the type of stock carried, and stock levels.



# Training to meet the need for refractive error services



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In many low- and middle-income countries, there are inadequate refractive error services for the many people who are currently either blind or visually impaired because they lack a pair of spectacles.

The prioritisation of refractive error and low vision services within VISION 2020: The Right to Sight has provided an impetus and framework for the development of refractive error programmes to meet this need for services.

To ensure the success of a refractive error programme, there have to be enough people with the right skills in order to provide refraction services throughout the programme. Therefore, careful thought should be given to setting up an appropriate training programme that will support the human resource needs of a refractive error programme.

The following steps are generally advisable:

- Step 1: Estimate the need for services
- Step 2: Analyse existing resources and services
- Step 3: Determine the tasks, skills, and human resources needed for refractive error services
- Step 4: Devise a training plan.

This article shows how two countries, The Gambia and Pakistan, approached the training and integration of refraction personnel in their respective eye care programmes.

## The Gambia

### Step 1: Estimating the need for services

We estimated the need for refractive error and low vision services by looking at population trends in different age bands (e.g. 10–15 years or >45 years), patient volumes and patterns of diagnosis in hospitals (who is diagnosed as having what refractive error), and trends in spectacle and lens prescriptions.

In the rural population of The Gambia, the people needing refractive error services are mostly literate adults (such as teachers and religious leaders), men, and school children. The urban population needing refractive error services presented a similar profile, with the addition of civil servants in the public sector and workers in the private sector.

We also investigated the importance attached by different populations to the

cosmetic appearance of spectacles, and we found that it was of more importance to the urban population.

### Step 2: Analysing existing resources and services

In The Gambia, a country with a population of just over one million, the national eye care programme had already achieved full national coverage. In this country, therefore, our approach to meeting refractive error needs was to incorporate refractive error services within the national programme, which could easily be done.

We found that refractive error services in The Gambia were being provided by a single private practice shop in the main capital and an optical service centre in the tertiary eye unit of the main teaching hospital.

The eye care resources, human and material, of the existing national eye care programme were also analysed.

### Step 3: Determining the tasks, skills, and human resources needed for refractive error services

First, we considered what tasks would have to be carried out, and what competencies and skills were needed for each of these. We then identified different types of eye health practitioners who would be needed to carry out these tasks in the different service delivery areas of the national eye care programme. This ensured that the refractive error service programme would be integrated into existing services (Table 1).

We identified existing staff in the national eye care programme who could receive additional training and expanded their duties to include refractive error tasks. We also identified gaps where new practitioners and workers would be needed.



Momodou Bah

A community member tests her own vision at an outdoor 'vision corridor', a component of the national refractive error programme at community level. THE GAMBIA

**Table 1. The various service delivery areas of The Gambia's refractive error programme (within the existing national eye care programme)**

Service delivery area	Tasks	Team
Community (urban and rural)	<ul style="list-style-type: none"> <li>Dissemination of information/health education on near vision, the benefit and use of spectacles, and where best to obtain them</li> <li>Counselling on the use of spectacles and low vision aids</li> <li>Making near vision spectacles available</li> <li>The use of vision corridors for self-testing of distance and near vision and for raising awareness, particularly in urban areas</li> </ul>	Community-based vision and eye-oriented workers, e.g. 'friends of the eye' <sup>1</sup> (usually non-health service personnel, selected by the community and covering a population of 250)
School eye health programme (this covers all primary schools, but the refractive error component is extended to secondary schools as well)	All the above, plus: <ul style="list-style-type: none"> <li>Vision screening using Snellen E chart and occlusion</li> <li>Identification of children (11–15 years) with visual problems</li> <li>Keeping records and tracking children referred for refraction and for their annual or bi-annual follow-up visits as required</li> </ul>	Teachers, school nurses, community ophthalmic nurses
General health facilities, e.g. health centres (frontline health facilities)	<ul style="list-style-type: none"> <li>Self-check for distance and near vision</li> <li>Proper care of own spectacles</li> </ul>	Integrated eye workers
Primary health facilities, where a community ophthalmic nurse serves a population of 10,000–30,000	<ul style="list-style-type: none"> <li>Training and supportive supervision of community-level workers</li> <li>Holding stock of near vision spectacles</li> <li>Tracking referrals, especially of school children, for spectacle wearing and offering support for repairs or replacements</li> <li>Data management of refractive error and low vision as part of comprehensive eye care</li> </ul>	Community ophthalmic nurse as part of community health facility staff
Secondary eye unit covering a population of 100,000–150,000	<ul style="list-style-type: none"> <li>Screening for presbyopia and refractive errors in government ministries, industries, and other work places (in urban areas only)</li> <li>Eye health education</li> <li>Basic refraction</li> <li>Basic dispensing of simple and near spectacles (following strict referral criteria)</li> <li>Tracking, counselling, and supporting patients needing low vision services</li> </ul>	Refractionist* within a secondary eye unit team, which is led by a cataract surgeon
Tertiary eye unit covering a population of about 1,000,000	All of the tasks assigned to the secondary eye unit, plus: <ul style="list-style-type: none"> <li>Basic and complex refractions for walk-in patients and referrals</li> <li>Low vision services</li> <li>Optical workshop services</li> <li>Investigations: visual field tests, keratometry, etc.</li> <li>Training</li> <li>Supportive supervision</li> </ul>	Optical sub-unit of the eye care team made up of: <ul style="list-style-type: none"> <li>Optometrist*</li> <li>Refractionist/optical technician*</li> <li>Receptionist or display shop assistants*</li> <li>Optical stores keeper*</li> <li>Accounts clerk*</li> </ul>

\* New staff (not part of the existing national eye care programme)

Certain new staff, such as the receptionist or display shop assistant, the optical stores keeper, and the accounts clerk, could be recruited from the existing human resource pool in The Gambia, while an optometrist could be recruited from another country in the sub-region.

However, customised training would be required to meet the need for refractionists, also known as optical technicians. These eye health practitioners would be based in the secondary and tertiary units, but they would offer specific intermittent population-based services.

The refractionist/optical technician would perform the following tasks:

- refraction services (including simple subjective and retinoscopic refraction)
- low vision services (including assessment and prescription of low vision aids)
- optical workshop services (including glazing lenses of all kinds into frames)
- investigations (including visual field tests, colour vision tests, and keratometry)
- community services (including screening for refractive errors and presbyopia, prescription and dispensing of simple

presbyopic spectacles, and eye health education)

- referral of non-refractive error visual loss and eye problems, as well as complex refractive errors, to the ophthalmologist and the optometrist, respectively.

### Step 4: Devising a training plan

Based on the task and skill analysis (Step 3), a training programme was developed and implemented.

#### Existing staff

The skills of existing staff in the national eye care programme needed to be updated. In addition, existing training programmes had to be expanded to include refractive error components.

The following steps were taken:

- Community-level eye care training** was expanded to include refractive error components. This was at most 1–2 hours.
- The **pre-service training modules** for general nurses, community ophthalmic

nurses, medical students, and other health workers were reviewed and improved to include refractive error and low vision components.

- In-service training:** The existing eye care programme staff, service delivery staff, and faculty received customised training to consolidate their skills in refractive error services and training.

#### Training refractionists/optical technicians

The tertiary unit was made responsible for the training course for refractionists/optical technicians. An optometrist was recruited from Nigeria to join the eye team at the tertiary unit and, with the help of the eye programme senior staff, to develop the training modules.

This new course trained refractionists/optical technicians to provide services where there are no optometrists in the community. Their role would also include assisting the optometrist or ophthalmologist where there was one.

Community eye health, primary eye care,

*Continues over page ►*

and optical dispensing components were included in the module in order to equip the refractionists to provide optical and primary eye care at an affordable price. It was decided that the refractionists would work as members of an eye care team and at the following service delivery points: refraction clinics, low vision clinics, optical workshops, and secondary and tertiary units.

The criteria for enrolment were:

- twelve years of schooling (general certificate of education or equivalent)
- passes in English, mathematics, physics and/or biology or equivalent.

Practical experience in an eye unit was considered to be an advantage.

Candidates for this training programme were nominated by a supervising optometrist or ophthalmologist and sponsored by government and non-government agencies. To accept a candidate from the private sector would be an exception. (For improved integration, absorption and career growth, the programme is currently recruiting from the now sizeable pool of community ophthalmic nurses who already work in rural areas at the secondary eye units.)

The duration of the course was six months, consisting of three months of intensive studying and practical experience at the base hospital and three months of practical experience in the community.

Continuous assessment was carried out and logbooks were used to track the skills the candidates had learnt. This was followed by a final written and practical exam. Certification was done by the Regional Ophthalmic Training Programme, which conducts all mid-level eye care training in The Gambia.

Existing faculty and staff, such as optometrists, ophthalmologists, residents, and cataract surgeons, as well as existing tertiary unit facilities, were used to conduct training. The practical experience component included work in secondary units, schools, community screening, and eye camps. This practical work was mainly supervised by the optometrist.

Each student received a kit and textbooks, which would become part of the equipment at their posts on graduation and not the personal property of the students. Graduates also received extensive post-training support for at least six months in order to help them set up services, to ensure these are of the required standard and quality, and to help the graduates integrate their work into existing services.

The following lessons were learnt:

- having a community-oriented optometrist with excellent training and management skills is absolutely essential for successful management of such a training programme
- the training has to be competency-based and intensely practical, with continuous emphasis on quality assurance
- to ensure the continued job satisfaction of the refractionists/optical technicians, it would be necessary to provide opportunities for further training. A multi-entry and multi-exit scheme would allow for the

coverage of population needs, as well as enable the further training of the smaller number of refractionists who could progress to other aspects of service delivery, such as that provided by ophthalmic technologists or optometrists

- it is essential to maintain quality assurance by providing full, supportive supervision to the refractionist and any allied health practitioner
- in many countries in West Africa, it may be necessary to advocate and work with the ministry of health to establish a council for allied health practitioners, as only the traditional medical and nursing councils exist.

## Pakistan

### Step 1: Estimating the need for services

Pakistan has a high prevalence of refractive error: 63.5 per cent in adults, according to the national blindness survey of 2002.

In addition, four per cent of children below the age of 15 have refractive errors.

Given that 40 per cent of the population is younger than 15 and 34 per cent is older than thirty, we calculated that a minimum of 230,200 people per million population would need refractive error services (the figures for the age group 15–30 are not yet known). This figure excludes those with presbyopia.

### Step 2: Analysing existing resources and services

There were few existing optometrists in Pakistan, and they were practising only in cities. Most of the optometrists were trained abroad and worked in tertiary eye care institutions. There were no institutions in Pakistan that ran accredited and certified training programmes for optometrists. Most people in need of refraction saw opticians in the local market place. Few of these opticians had received any certified training in Pakistan; they were mostly operating as family businesses. Other patients had to

travel to ophthalmologists in the city for refractive error services.

### Step 3: Determining the tasks, skills, and human resources needed for refractive error services

It was determined that refractive services had to be integrated at the district level. Therefore, the National Committee for the Prevention of Blindness decided to train ophthalmic technicians and refractionists who could serve in the districts and have clear career pathways. Optometrists, orthoptists, and ophthalmic technologists would be trained to assist ophthalmologists in tertiary eye care institutions and to meet the need for eye care teaching, training, and research in Pakistan.

The role of refractionists, in particular, was considered to be very important. At district or secondary level, they could carry out simple and complex refraction, as well as provide support to the ophthalmologists. They could also take part in school screening programmes and outreach clinics, providing refraction to those being screened.

### Step 4: Devising a training plan

The National Committee for the Prevention of Blindness approved job descriptions and tasks for ophthalmic technicians, refractionists, optometrists, orthoptists, and ophthalmic technologists (Table 2).

In order to train these practitioners, it was decided to upgrade the ophthalmic technician course offered at the Pakistan Institute of Community Ophthalmology into a four-year, multi-tiered curriculum. The content of the curriculum was based both on the tasks the practitioners would be required to perform and on the needs of the community at different levels. The multi-tiered approach allowed human resources to be produced for each level of eye care.

At present, three additional institutions are offering this four-year programme.



Students practising refraction on a model of an eye. PAKISTAN

PICO

**Table 2. Tasks and areas of work for different eye care personnel**

Qualification	Tasks	Level
Ophthalmic technician	<ul style="list-style-type: none"> <li>• Detection and referral</li> <li>• Providing vitamin A capsules and tetracycline at primary eye care level</li> <li>• Providing services for simple refraction</li> <li>• Using mydriatics and local anaesthetics cautiously and responsibly</li> <li>• Removing superficial conjunctival/corneal foreign bodies</li> <li>• Providing health education and counselling</li> </ul>	Primary and secondary eye care
Refractionist	All the functions of ophthalmic technicians, plus: <ul style="list-style-type: none"> <li>• Using cycloplegics</li> <li>• Undertaking advanced refraction</li> <li>• Prescribing contact lenses and contact lens solutions (depending on infrastructure available)</li> <li>• Prescribing simple low vision aids (depending on infrastructure available)</li> </ul>	Secondary eye care (district level: vision centres and district hospitals)
Optometrist	All the functions of ophthalmic technicians and refractionists, plus: <ul style="list-style-type: none"> <li>• Assisting ophthalmologists at tertiary level with simple and complex refractions</li> <li>• Carrying out low vision assessments and prescribing low vision devices</li> <li>• Running a contact lens practice</li> <li>• Assisting in data entry and analysis using computers</li> <li>• Acting as faculty members (teaching others)</li> </ul>	Tertiary eye care (hospital)
Orthoptist	All the functions of ophthalmic technicians and refractionists, plus: <ul style="list-style-type: none"> <li>• Assisting ophthalmologists at tertiary level with assessment and management of advanced visual functions</li> <li>• Carrying out squint assessment and optical management (the management of squint by providing optical devices, spectacles, or patches)</li> <li>• Assisting in data entry and analysis using computers</li> <li>• Acting as faculty members (teaching others)</li> </ul>	Tertiary eye care (hospital)
Ophthalmic technologist	All the functions of ophthalmic technicians and refractionists, plus: <ul style="list-style-type: none"> <li>• Assisting ophthalmologists at tertiary level with sophisticated ophthalmic diagnostic and therapeutic procedures</li> <li>• Assisting in data entry and analysis using computers</li> <li>• Acting as faculty members (teaching others)</li> </ul>	Tertiary eye care (hospital)

The four tiers of the training programme are as follows (Figure 1):

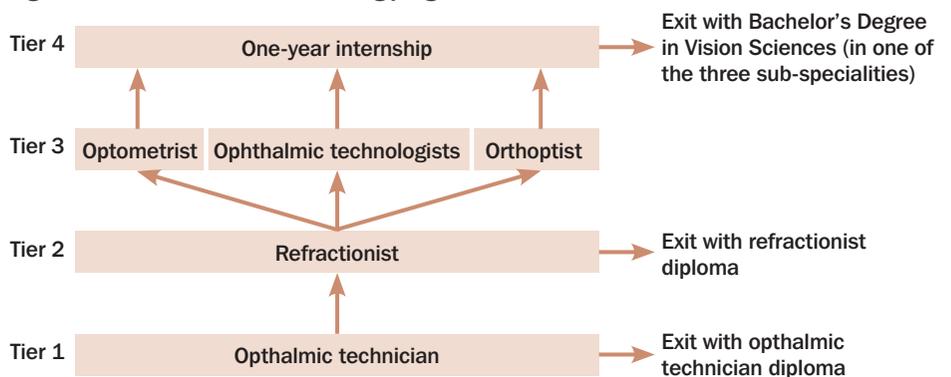
**Tier 1.** A one-year ophthalmic technician course. Entry requirement: 12 years of schooling (with science subjects). After one year, students can exit with an ophthalmic technician diploma. They may come back within five years to continue to the next tier. Those attaining marks of 70 per cent or more overall and wishing to continue can go on to the next level.

**Tier 2.** A one-year refractionist course. Entry requirement: 12 years of schooling (with science subjects) and successful completion of the one-year ophthalmic technician course. After one year, students can exit with an ophthalmic technician diploma. They may come back within five years to continue to the next tier. Those attaining marks of 70 per cent or more overall and wishing to continue can go on to the next level.

**Tier 3.** A choice of one-year courses in one of the following sub-specialities: optometrist, ophthalmic technologist, or orthoptist. Entry requirement: 12 years of schooling (with science subjects) with the successful completion of both the one-year ophthalmic technician course and the one-year refractionist course.

**Tier 4.** A one-year internship that would give students training under supervision and entitle them to receive a Bachelor's Degree in Vision Sciences in one of the three sub-specialities.

**Figure 1. Pakistan's four-tier training programme**



For these graduates to successfully deliver services, there has to be a sense of ownership; candidates must be well equipped to put in practice the skills they have learnt. Therefore, a kit is provided to ophthalmic technicians, refractionists, and optometrists on their exit (Table 3), so that they can start to practise what they have learnt. (Orthoptists and ophthalmic technologists don't receive a kit – their specialised equipment is provided by the hospital where they will work.)

There is also a refresher course every five years, which allows graduates to come back and share their experiences, and to receive any new knowledge in the field. The institute continues to provide graduates with whatever institutional support they may require, including sending them the *Community Eye Health Journal*.

**Table 3. Professional kit provided on exit from the course for different qualifications**

Ophthalmic technician	Ophthalmoscope, Snellen charts, torch, and Binomag
Refractionist	<ul style="list-style-type: none"> <li>• Refraction box</li> <li>• Retinoscope</li> <li>• Cross cylinders</li> <li>• Trial frame</li> <li>• <i>The practise of refraction</i> by Steward Duke-Elder</li> <li>• <i>The ophthalmic assistant</i> by Harold A Stein</li> </ul>
Optometrist	Same kit as for refractionist, plus low vision assessment and contact lens kit

**Reference**

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## HOW TO ...

# Test distance vision using a Snellen chart



**Sue Stevens**

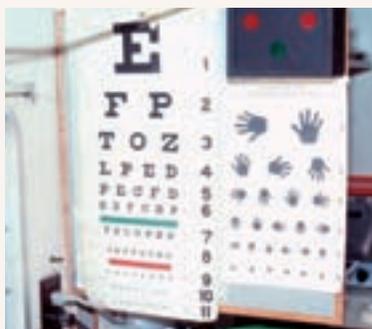
Nurse Advisor to the *Community Eye Health Journal*, International Centre for Eye Health, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, UK.

### Indications

- To provide a baseline recording of visual acuity (VA)
- To aid examination and diagnosis of eye disease or refractive error
- For medico-legal reasons

### Equipment

- Multi-letter Snellen chart
- E or C Snellen chart or a chart with illustrations for patients who cannot read or speak
- Plain occluder (not essential)
- Pinhole occluder
- Torch or flashlight
- Patient's documentation



**A multi-letter Snellen chart (left) and a chart with illustrations**

### Procedure

- Ensure good natural light or illumination on the chart
- Explain the procedure to the patient
- Wash and dry the occluder and pinhole. If no plain occluder is available, ask the patient to wash his/her hands as they will use a hand to cover one eye at a time
- Test each eye separately – the 'bad' eye first
- Position the patient, sitting or standing, at a distance of 6 metres from the chart
- Ask the patient to wear any current distance spectacles, to cover one eye with his/her hand (or with a plain occluder), and to start reading from the top of the chart
- The smallest line he/she can read (the VA) will be expressed as a fraction, e.g. 6/18 or 6/24 (usually written on the chart). The upper number refers to the distance the chart is from the patient (6 metres) and the lower number is the distance in metres at which a person with no impairment should be able to see the chart
- In the patient's documentation, record the VA for each eye, stating whether it is with or without correction (spectacles), for example:

Right VA = 6/18 with correction

Left VA = 6/24 with correction

- If the patient cannot read the largest (top) letter at 6 metres, move him/her closer, one metre at a time, until the top letter can be seen – the VA will then be recorded as 5/60 or 4/60, etc.
- If the top letter cannot be read at 1 metre (1/60), hold up your fingers at varying distances of less than 1 metre and check whether the patient can count them. This is recorded as counting fingers (CF). Record as: VA = CF
- If the patient cannot count fingers, wave your hand and check if he/she can see this. This is recorded as hand movements (HM). Record as: VA = HM
- If the patient cannot see hand movements, shine a flashlight toward his/her eye from four directions of a quadrant. Record this in the documentation, in the relevant quadrant, as perception of light (PL or √), or no perception of light (NPL or X). Record as:

Right VA =  $\frac{\text{NPL} \mid \text{NPL}}{\text{NPL} \mid \text{NPL}}$

Left VA =  $\frac{\text{PL} \mid \text{NPL}}{\text{PL} \mid \text{NPL}}$

or

Right VA =  $\frac{\text{X} \mid \text{X}}{\text{X} \mid \text{X}}$

Left VA =  $\frac{\sqrt{\phantom{x}} \mid \text{X}}{\sqrt{\phantom{x}} \mid \text{X}}$

- If 6/6 (normal vision) is not achieved, test one eye at a time with a pinhole occluder (plus any current spectacles) and repeat the above procedure at 6 metres only. The use of the pinhole enables assessment of central vision
- If the vision improves, it indicates the visual impairment is due to a refractive error, which is correctable with spectacles or a new prescription
- Repeat the whole procedure for the second eye
- Summarise the VA of both eyes in the documentation, for example:

Right VA = 6/24 with specs, 6/6 with pinhole    Left VA = NPL

### If using the E or C chart:

- Point to each letter on each line and ask the patient to point in the direction toward which the open end of the letter is facing
- Follow the same procedure and recording methods as above.

## EXCHANGE

# Community perceptions of refractive errors in Pakistan



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Project Officer



**Hasan Minto**

Refractive Error and Low Vision Advisor

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Pakistan's national survey of blindness and visual impairment in 2002–2004 reported the prevalence of blindness to be 0.9 per cent. Of this total, 3 per cent can be attributed to uncorrected refractive errors. As Pakistan has a population of 150 million, this is equivalent to just over 40,000 people. Given these figures, there is an urgent need to increase refraction services in a comprehensive manner.

Whereas many studies have been conducted on the scientific and programmatic aspects of refractive error services, there is insufficient data available about the consumer's perspective and possible reasons for the low uptake of services.

We designed a study to investigate communities' perceptions of refractive errors, to assess sociocultural patterns, practices, and attitudes towards the use of spectacles, and to investigate issues related to the affordability and availability of spectacles in rural and urban communities.

Focus group discussions and participatory rapid appraisal techniques were used to collect information from the community. A structured questionnaire was developed and field-tested to ensure validity. A team of two female and three male interviewers carried out the field research and 479 questionnaires were completed. Participants were members of different communities, chosen from 11 clusters representing urban, semi-urban, and rural settings. Each cluster contained from 15–25 participants. We did not encounter any substantial refusals to participate. The quantitative data was cleaned and then analysed using the SPSS statistical package, version 11.

Out of the total sample interviewed, 41 per cent were female and 59 per cent were male. The age breakdown of the participants was as follows: 1–15 years, 41 per cent; 16–30 years, 27 per cent; 31–40 years, 18 per cent; and 41 and above, 14 per cent. Many of the respondents (44 per cent) were married, 32 per cent attended school, and all ethnic groups were represented.

Many people did not understand what refractive error services were offered and did not consider themselves as having refractive errors. Affordability was the major reason given by people for not purchasing the spectacles they had been prescribed.

Cosmetic factors were important for all

communities surveyed. The main reason for discontinuation of spectacle wear in women was given as community pressure and cosmetic factors. The stigma attached to spectacle use was apparent in women, who were keen to know about the other options available, such as contact lenses and refractive surgery. These women reported that they often had to face social pressure, not only in terms of appearance, but also because of the perception that their children may inherit their visual impairment.

In rural areas, 69 per cent of people thought that using spectacles would cause their vision to deteriorate; they therefore tried to avoid it. However, the perception of most of the respondents was positive with regards to the use of spectacles by children. Respondents said that it helped children to continue their education and improved their quality of life. However, they also felt that spectacle wear hindered children's participation in sport and other extracurricular activities.

The majority of respondents countrywide reported accessing refractive error services in the private, rather than public, sector. They said this was because, in the private sector, they could access both refraction and spectacle dispensing services at the same location. They were also not satisfied with the attitudes of service providers in the public sector.

The average amount paid for spectacles in poorer communities ranged from US \$1.5 to US \$4. In most instances, refraction was included in the price. The average amount spent by middle-class families on spectacles ranged from US \$6 to US \$10. Throughout Pakistan, a range of affordable spectacle frames were available; however, there was a clear lack of high-quality, modern spectacle frames in the smaller towns.

In summary, this study suggests that there are currently a number of barriers to the effective correction of refractive errors:

- lack of awareness and recognition of refractive error as a correctable cause of visual impairment, compounded by the non-availability of affordable services
- cultural factors which lead to discontinuation of the use of spectacles, especially in women
- lack of awareness among providers that good quality, attractive, and comfortable spectacles are essential to ensure continued use of spectacles.

When designing refractive error programmes, consumers' perspectives are often ignored. However, we feel strongly that community studies should form part of the planning process.

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## Experiences with optical centres in West Africa



**Trent Huon**

Optometrist and Advisor to Sightsavers International, West Africa Regional Office, PO Box 18190, Airport, Accra, Ghana.

While working for Sightsavers International in 2003, I took over the management of an optical centre in Hohoe, Ghana (established in 1999), with the view to making it sustainable by improving profitability.

The basic changes we made were to run the centre more like a business.

However, after two years, the model proved to be unsustainable because of cost issues (the expense of running outreach trips, too many staff members), as well as a lack of community ownership, staff commitment, and patronage in the local area.

The lessons learnt in Ghana were subsequently applied to the setting up of optical centres within existing Sightsavers International-sponsored eye care facilities in hospitals in Cameroon, Nigeria, Mali, and Guinea. These lessons were also put in practice when reorganising two existing facilities in Sierra Leone.

In order to avoid the problems we experienced in Ghana, such as lack of patronage in the local area, we undertook an assessment of the potential centres. We considered several factors beforehand: available space at the clinics, local private and public optical suppliers, local population numbers, the proximity of the optical centre to the main population centres, patronage at the current clinic, existing facilities available at the clinic, available staff or training institutions, hospital administration and local government commitment, the influence of other stakeholders, current memoranda of understanding, and so on.

After this assessment, we compiled orders for equipment and materials. The stock for the centres included fashionable frames, lenses (single vision and bifocal), readers, cases, cords, and low vision supplies (providing low vision services forms

part of the centres' remit).

Staffing was a delicate issue, as optical centres often do not fit into existing government salary and employment structures. This is an area that requires extensive advocacy by NGOs and private providers to improve the acceptance of optical providers within the public system. Optical and low vision service provision is further complicated by the lack of training facilities available.

Our experiences in Ghana suggested that we needed a strong outline of procedures in the optical centres. This led to the development of an extensive handbook that is used in day-to-day operations.

The handbook outlined the records to be kept, operational guidelines, storeroom procedures, outreach guidelines, staff job descriptions, administrative requirements, and a monitoring checklist.

A generic version of this document was developed as the basis for organising the new optical centres. However, it was heavily adapted to suit local circumstances; the organisational structure, in particular, was adapted to fit within existing eye clinic and hospital procedures.

Another lesson we learnt was to treat our patients as customers: we are aiming for profit and independence, and frames are as much about style as they are about function. Frame styles and lens types should be considered with the local population in mind.

The centres have only been operating since the beginning of 2007, and reports are now coming in. The biggest issues are with record keeping (store room procedures, recording payments, taking patient details) and improving the refraction and dispensing skills of staff. The focus now is also on generating awareness of refractive errors within the local communities.

In my opinion, the long-term success of the centres is dependent on the close monitoring of their operations, particularly proper stock keeping, financial accountability, and quality of service. This can indeed be accomplished if we train staff and set up appropriate systems.

*Exchange continues over page* ➤



**Participants in a staff training workshop. GUINEA**

Trent Huon

## A public-private partnership to provide spectacles for Timor-Leste

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<sup>a</sup> The Fred Hollows Foundation, New Zealand, Private Bag 56908, Dominion Road, Auckland 1446, New Zealand; <sup>b</sup> Fo Naroman Timor-Leste; <sup>c</sup> Timor-Leste Ministry of Health.

Refractive error is a leading cause of low vision in low-resource settings<sup>1,2</sup> and its correction is now a priority of VISION 2020. However, spectacles are not included on most essential medicines and supplies lists, and schemes to make them available do not generally receive government support. Additionally, in many countries in the Pacific region, legislation and regulation prohibit the sale of spectacles from public health facilities or by government-employed health workers. This is based on the belief that health services should be provided free of charge. Where spectacles are available from private suppliers, these are mainly in urban areas and are too expensive for most people.

Timor-Leste is one of the poorest countries in the world; 40 per cent of its people live on less than US \$0.55/day. There are many barriers to the use of health services, especially for rural inhabitants. As in other countries,<sup>3,4</sup> there is a large unmet need for spectacles. An estimated 87,500 Timorese aged ≥40 years need spectacles, but half



cannot afford to pay even US \$1 for them.<sup>5</sup>

Permanent refraction services are available within some government facilities – the referral hospital in Dili, the capital, and four rural eye clinics. In Dili, private optical shops provide spectacles at a price unaffordable to most. Various government and private community health centres offer spectacles, usually donated ‘recycled’ spectacles selected by potential users on a trial and error basis, or handed out by health workers with no training in dispensing. Visiting expatriate teams provide brief, intermittent refraction and dispensing services (mostly ready-made spectacles) in Dili and elsewhere.

To address the identified need for sustainable refraction services and spectacles, Timor-Leste has set up a national spectacle programme as part of its National Eye Health Strategy.<sup>6</sup> It aims to provide equitable access to good quality refractive services and affordable spectacles through a financially self-sustaining scheme that uses cross-subsidisation to help those unable to pay.

The programme involves a three-way public-private partnership between: the ministry of health; a local non-governmental organisation, Fo Naroman Timor-Leste; and an international non-governmental development organisation, the Fred Hollows Foundation New Zealand.

Each partner brings particular expertise and makes complementary contributions:

- the ministry of health is responsible for **regulation**: it brings political, regulatory, and staff support capacity (including active participation by ministry of health eye nurses)
- the local non-governmental organisation, Fo Naroman Timor-Leste, has an understanding of the social setting and is able to work effectively within the constraints of the country. It is responsible for the **implementation** of the project: management, service delivery, and supply
- the international non-governmental development organisation, the Fred Hollows Foundation New Zealand, supplies ready-made and custom-made spectacles to the government eye clinics. It also undertakes its own refraction and spectacle dispensing activities. This organisation has experience in systems to address refractive error, quality control, and transparent management, so it provides **capacity building and systems development**.

All partners have agreed beforehand on activities, stock management, pricing, subsidisation, collection and use of funds, data collection and analysis, reporting requirements, and governance.

Already, despite the civil unrest in Timor-Leste and just 12 months since the partnership commenced, the number of spectacles dispensed has increased by 40 per cent (from 2,050 pairs in 2005/6 to 2,880 in 2006/7), as have the proportion dispensed in rural areas (from 36 per cent in 2005/6 to 45 per cent in 2006/7) and the number dispensed to the poor at subsidised prices (from 12 per cent in 2005/6 to 38 per cent in 2006/7).

The public-private partnership and its excellent working relationships make the Timor-Leste national spectacle programme innovative. Once its cost-effectiveness and adaptability have been assessed, this partnership may be suitable as a template for a sustainable approach to the provision of a complete refraction service in other low-resource settings.

**Table 1. Aims and activities of the national spectacle programme**

Aim of the partnership	Activities for 2006/7
Increase equity	<ul style="list-style-type: none"> <li>• Conduct outreach refraction services in rural areas</li> <li>• Use information, education and communication (IEC), and social marketing strategies to raise awareness of gender and equity issues in eye health service utilisation</li> </ul>
Increase affordability	<ul style="list-style-type: none"> <li>• Undertake a willingness-to-pay survey to investigate the feasibility of a subsidised price of US \$0.10 for spectacles in rural areas</li> <li>• Develop a strategy for self-selection of ready-made spectacles at US \$0.10, US \$1.00 and US \$3.00</li> <li>• Develop a subsidisation protocol for those unable to pay US \$0.10 for spectacles</li> </ul>
Improve quality	<ul style="list-style-type: none"> <li>• Apply quality standards to ready-made and custom-made spectacles</li> <li>• Implement and monitor a rational system for prescribing and dispensing spectacles</li> </ul>
Improve efficiency	<ul style="list-style-type: none"> <li>• Integrate with existing ministry of health systems (e.g. distribution system)</li> <li>• Network with other agencies active in health care, with the aim of sharing resources</li> <li>• Facilitate support and incentives for motivated ministry of health staff to dispense spectacles</li> </ul>
Improve satisfaction/acceptability	<ul style="list-style-type: none"> <li>• Measure patient satisfaction</li> <li>• Implement improvements to services</li> </ul>
Maintain financial accountability	<ul style="list-style-type: none"> <li>• Maintain and improve accurate financial management systems</li> <li>• Undertake an annual audit</li> </ul>
Ensure sustainability	<ul style="list-style-type: none"> <li>• Develop a business plan to ensure there are enough funds (and income diversification) for restocking and for cross-subsidisation of the poor</li> <li>• Establish staff motivation and incentive schemes to minimise staff attrition</li> </ul>
Evaluation	<ul style="list-style-type: none"> <li>• Evaluate the partnership annually and implement identified modifications to the project</li> </ul>

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## USEFUL RESOURCES

# Useful resources: refractive error

## Optical suppliers

**ICEE Global Resource Centre.** The International Centre for Eyecare Education's Global Resource Centre provides low-cost spectacles, frames, lenses, and low vision aids to organisations working in disadvantaged communities. Prices start from US \$1.00 for a spectacle frame. Visit [www.iceegr.org](http://www.iceegr.org), email [spex@iceeafrica.co.za](mailto:spex@iceeafrica.co.za) or write to ICEE Global Resource Centre, 272 Umbilo road, Durban 4001, South Africa.

**VISION 2020 Low Vision Resource Centre.** The centre provides low vision devices and assessment materials at low cost. Write to The Low Vision Resource Centre, 2nd Floor, East Wing, Headquarters Building, 248 Nam Cheong Street, Shamshuipo, Kowloon, Hong Kong, email [lvrc1@hksb.org.hk](mailto:lvrc1@hksb.org.hk) or visit [www.hksb.org.hk/VH/hksb/lvrc/LVRC%20Front.htm](http://www.hksb.org.hk/VH/hksb/lvrc/LVRC%20Front.htm)

## Websites

**The International Centre for Eyecare Education (ICEE).** Look in 'Publications' on the website for free ICEE research articles on a range of topics. [www.icee.org](http://www.icee.org)

**The ScoJo Foundation.** The ScoJo Foundation improves access to reading spectacles in low- and middle-income countries by training and equipping local entrepreneurs to establish businesses that sell these spectacles. [www.scojofoundation.org](http://www.scojofoundation.org)

## Books

**Mayer S. Refraction training course manual.** Available from the International Centre for Eye Health. UK £5 plus post and packing.

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## Community Eye Health Journal back issues

**Volume 13, Issue 33, 2000** Refractive errors  
**Volume 15, Issue 43, 2002** The role of optometry in VISION 2020

## Suppliers' addresses

**International Centre for Eye Health,** London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, UK. Fax: +44 20 7958 8325.

**WHO:** World Health Organization, WHO Press, CH-1211 Geneva 27, Switzerland. Email: [publications@who.int](mailto:publications@who.int)

## NEWS AND NOTICES

### News

#### World Sight Day

World Sight Day 2007 will highlight blindness and visual impairment in children as a major public health issue around the world. For more information, go to [www.v2020.org](http://www.v2020.org)

#### Technology

#### publications available The Standard List for a

**VISION 2020 Eye Care Service Unit** contains information about the medicines, equipment, instruments, optical supplies, and educational resources needed to set up a VISION 2020 service delivery unit, typically serving a population of 500,000 to 1 million. For each item listed, it gives guidance on price and the contact details of the suppliers.

**The Technology Guidelines for a District Eye Care Programme** builds on the information in the Standard List to provide guidance on the quantities of equipment, pharmaceuticals, etc., needed at each level of a district programme. The guidelines are also available in French.

These publications can be downloaded from [www.iceh.org.uk](http://www.iceh.org.uk) and [www.v2020.org](http://www.v2020.org). CD-ROMs and print versions can be obtained from the International Centre for Eye Health, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, UK. Fax: +44 20 7958 8325.

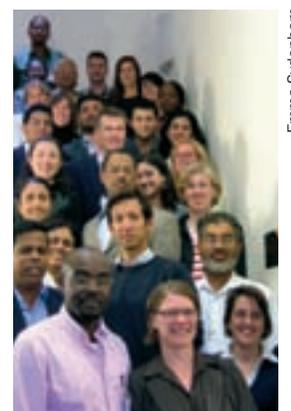
#### World Congress on Refractive Error presentations

The presentations given at the first World Congress on Refractive Error, held in Durban in March this year, have recently been made available online. [www.icee.org/events/congress\\_video/index.asp](http://www.icee.org/events/congress_video/index.asp)

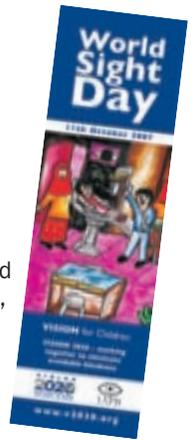
#### VISION 2020 workshop held in London

A total of 27 participants from 13 countries attended the annual 'Planning for VISION 2020' workshop held by the International Centre for Eye Health at the London School of Hygiene and Tropical Medicine in July. The main aim of the workshop was to familiarise participants with the goals and objectives of VISION 2020: The Right to Sight and the planning principles involved in establishing community eye health programmes. In addition to lectures about eye diseases and programme planning, the participants worked in teams to develop a model for eye care interventions in their selected regions. To apply for future short courses, email:

[shortcourses@Lshhtm.ac.uk](mailto:shortcourses@Lshhtm.ac.uk)



**The participants in the 'Planning for VISION 2020' workshop, July 2007. UK**



Emma Sydenham

## Meetings

**All India Ophthalmological Society 66th Annual Conference**, 31 January to 3 February, 2008, Bangalore, India. For more information, email [sanhangopal@gmail.com](mailto:sanhangopal@gmail.com) or write to KS Santhan Gopal, #81, first floor, 7th Cross, 4th Block Koramangala, Near BDA complex, Bangalore 560 034, India.

**World Congress on Optometric Globalisation**, 11–13 April, 2008, London, UK. For more information, email the World Council of Optometry at [wco@pco.edu](mailto:wco@pco.edu) or fax +1 (0)215 780-1325.

**Unite For Sight Fifth Annual International Health & Eye Care Conference**, 12–13 April, 2008, Connecticut, USA. For more information, visit [www.uniteforsight.org/conference/2008](http://www.uniteforsight.org/conference/2008) or write to Unite For Sight, 31 Brookwood Drive, Newtown, CT 06470, USA.

**World Ophthalmology Congress**, 28 June–2 July, 2008, Hong Kong. For more information, visit [www.woc2008hongkong.org](http://www.woc2008hongkong.org) or write to Angela Cho, Department of Ophthalmology & Visual Sciences, The Chinese University of Hong Kong, 3/F, Hong Kong Eye Hospital, 147K Argyle Street, Kowloon, Hong Kong.

**IAPB General Assembly**, 25–28 August, 2008, Buenos Aires, Argentina. For more information, write to Louis Pizzarello, Secretary General, International Agency for the Prevention of Blindness, IAPB Central Office, LV Prasad Eye Institute, LV Prasad Marg, Banjara Hills, Hyderabad 500 034, India.

## Training

### International Centre for Eye Health, London, UK

For application information, email [registry@Lshtm.ac.uk](mailto:registry@Lshtm.ac.uk) or write to Registry, 50 Bedford Square, London WC1E 7HT, UK.

### Short course in Tropical Ophthalmology

**Date:** 9–11 April, 2008. **Objectives:** The primary purpose of the course will be to familiarise participants with the main causes of blindness in the world, with emphasis on the tropics. **Target audience:** Ophthalmologists from high-income countries. **More information:** Visit [www.Lshtm.ac.uk/prospectus/short/sto.html](http://www.Lshtm.ac.uk/prospectus/short/sto.html)

### Planning for VISION 2020

**Date:** July 2008. **Objectives:** The main aim of the workshop is to familiarise participants with the goals and objectives of VISION 2020: The Right to Sight and the planning principles involved in establishing community eye health programmes at regional or national level. **Target audience:** Ophthalmologists and eye health charity programme managers. **More information:** Visit [www.Lshtm.ac.uk/prospectus/short/spv](http://www.Lshtm.ac.uk/prospectus/short/spv)

### MSc in Community Eye Health

**Date:** 29 September, 2008 to 18 September, 2009. **Objectives:** To equip eye health professionals with the knowledge and skills to reduce blindness and visual disability in their own country. **Target audience:** Eye care professionals who have, or could have, leadership roles either within their governments or in the NGO sector. This course is not appropriate for people wanting training in clinical ophthalmology. **Scholarships:** Contact Emma Sydenham ([emma.sydenham@Lshtm.ac.uk](mailto:emma.sydenham@Lshtm.ac.uk)) for information. Please apply in October 2007 to ensure you are accepted before the scholarship closing dates in December 2007. **Information and admission procedures:** Visit [www.Lshtm.ac.uk/prospectus/masters/msceh.html](http://www.Lshtm.ac.uk/prospectus/masters/msceh.html) or email [registry@Lshtm.ac.uk](mailto:registry@Lshtm.ac.uk)

### Diploma in Community Eye Health

**Date:** 13 February to 23 May, 2008. **Objectives:** To equip eye health profes-

sionals with knowledge of the major blinding eye diseases and the VISION 2020 initiative.

**Target audience:** Eye care professionals who want to receive training in community eye health, but cannot be away from their place of work for a longer training course.

**Scholarships:** Contact Emma Sydenham ([emma.sydenham@Lshtm.ac.uk](mailto:emma.sydenham@Lshtm.ac.uk)) for information. **Information and admission procedures:** Visit [www.Lshtm.ac.uk/prospectus/short/sdceh.html](http://www.Lshtm.ac.uk/prospectus/short/sdceh.html) or email [shortcourses@Lshtm.ac.uk](mailto:shortcourses@Lshtm.ac.uk)

### Kilimanjaro Centre for Community Ophthalmology (KCCO), Tanzania

For information and admission procedures, visit the KCCO website ([www.kcco.net](http://www.kcco.net)) or contact Genes Mng'anya, KCCO Course Administrator. **Email:** [genes@kcco.net](mailto:genes@kcco.net)

### Bridging communities and eye care providers to achieve VISION 2020 in Africa

**Date:** 12–16 November, 2007. **Objective:** To provide eye care programme managers with the skills necessary to develop, implement, and monitor strategies for increasing utilisation of services by the population in need. **Target audience:** Eye care programme managers (from government, NGOs, or service groups), trainers, and key decision makers of national prevention of blindness programmes.

### Management for VISION 2020 Programme Managers

**Date:** 19–30 November, 2007. **Objective:** To provide practical (African-tested) strategies for either developing or strengthening management systems to facilitate increased efficiency, coverage, and satisfaction with eye care services. **Target audience:** Heads and key decision makers of VISION 2020 planning areas.

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Dark & Light Blind Care

Journal design by Lance Beillers

## Next issue



Hannah Kuper

The next issue of the *Community Eye Health Journal* will be on the theme **Advocacy**