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VISION 2020 THE RIGHT TO SIGHT

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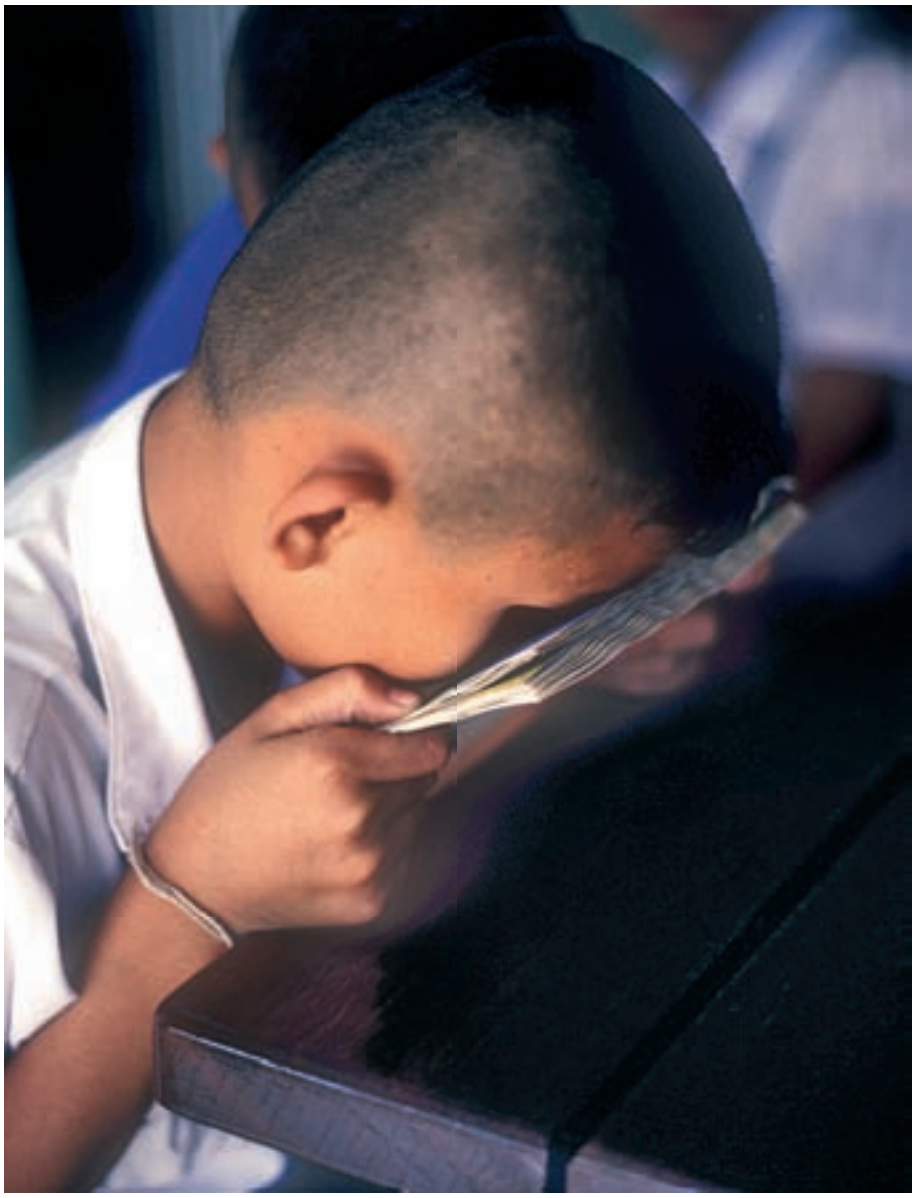
The visually impaired child

Clare Gilbert



Many children with low vision are able to read by using their strong ability to focus on near objects (accommodation). THAILAND

EDITORIAL

Providing educational services

Larry Campbell
President, International Council for Education of People with Visual Impairment (ICEVI), 6333 Malvern Avenue, Philadelphia, PA 19151-2597, USA.

MNG Mani
Secretary General, International Council for Education of People with Visual Impairment (ICEVI), 3 Professors' Colony, Jothipuram, Coimbatore 641 047, Tamil Nadu, India.

At least eighty per cent of the world's visually impaired children live in low- and middle-income countries, where less than ten per cent of them have access to education. This sad fact almost guarantees that these children face a lifetime of poverty and illiteracy.

But why are so few of these visually impaired children enrolled in education? Some of the contributing factors are a lack of sensitivity to the needs of such children in the general education system, inadequate human resources and materials, and a lack of parental awareness and involvement.

Another major factor is the failure of health and education systems to work together, which means that children are not identified and referred to the services they

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Editorial Office
Community Eye Health Journal
International Centre for Eye Health
London School of Hygiene and Tropical Medicine,
Keppel Street, London, WC1E 7HT, UK.
Tel: +44 (0)207 612 7964/72
Fax: +44 (0)207 958 8317
Email: anita.shah@Lshtm.ac.uk

Information Service
Sue Stevens
Email: sue.stevens@Lshtm.ac.uk
Tel: +44 (0) 207 958 8168

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Newman Thomson

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need, whether health or education.

In order for children to receive appropriate help, there needs to be a seamless two-way referral network between health and education. Such a network would ensure that visually impaired children who are identified within the health system are referred to the appropriate educational services as early as possible, and that those identified within the education system are referred to the health system for examination, diagnosis, and possible treatment.

For this to happen, educators and eye health care providers must understand and respect each other's work, be familiar with referral networks at the local level, and above all acknowledge that they have the same goals: providing the best possible care for children with visual impairment.

It can be exceedingly difficult to get two or more government ministries to work together. However, this should not serve as an excuse for a lack of action on an individual level: educators and eye health professionals should make a personal commitment to understanding and using the services and referral networks available to them.

The importance of visual assessment cannot be overemphasised (see article on page 24). The correction of a refractive error or the prescription of a simple low vision device can often dramatically alter the educational interventions a child will require. Eye health care professionals and educators should be working together from the outset on this critical matter.

Educational service delivery models

Once children with visual impairment have received all the ophthalmic, refractive, and low vision support they need, there are several models for delivering educational services to them.

Throughout the world, the **special school model** has been the most common model of service delivery for children with visual impairment. Most of these special schools are residential; not only are they costly, they remove the child from the family and home environment. Although special schools play a very important role, the sheer cost of creating enough such facilities to

Karin van Dijk

A child's ability to identify different colours and shades is assessed. FIJI

serve the unmet need is beyond the economic capabilities of most low- and middle-income countries.

Integrated education emerged out of a need to increase the availability of educational opportunities for children with visual impairment. Most countries have adopted the **resource model** of integrated education, which encourages the admission of 8–10 visually impaired children into one school. In this model, a special teacher working at the school provides support to the visually impaired children and their teachers.

In the **itinerant model** of integrated education (see article on page 26), visually impaired children are also enrolled in local schools, but in this model visiting (itinerant) teachers provide support to the children and their teachers.

At present, there is a growing awareness of and movement toward **inclusive education** throughout the developing world. An inclusive approach to education calls for schools to make appropriate adaptations to the learning environment so that each classroom in a community school is able to address the learning needs of all children, including those with disabilities.

The inclusive approach to education has been increasingly embraced by parents, educators, and persons with visual impairment. However, this approach still presents significant challenges: children with visual impairment have unique learning needs that may require the use of low vision devices and alternative forms of media, such as Braille or large print, in the classroom. These children may also need additional areas of instruction, including reading and writing Braille, orientation and mobility, and daily living activities.

It is a real challenge to prepare general educators to respond effectively to the unique needs of visually impaired children, and to provide the specialised support services and materials required. A variety of approaches are now being used, but policy makers and educators continue to struggle.

Given the growing popularity of the inclusive approach, special schools are likely to redefine their roles to serve as resource centres for a cluster of general schools in order to help them be more inclusive. Special schools are also likely to focus more attention on services to children with multiple disabilities.

The inclusive approach is considered to be the least expensive model. Cost, however, should not be the sole criterion for the selection of a good model of educational services.

Essential components of an educational service model

Out of all the programme models available, each community must select the one that best suits its needs and available resources. However, whichever model of educational service delivery is chosen, it should allow all visually impaired children to access appropriate education and accord them the same right to education as any sighted child in that community.

Hasan Minto

Children have access to closed-circuit televisions in a local library. These enlarge printed text, making it much easier to read. PAKISTAN

In addition, the model should provide children with certain vital core services. These include early intervention, assessment for educational placement, training for effective use of functional vision, development of mobility skills, evaluation of social skills, training for the effective use of low vision devices, and assessment of aptitude for vocational activities.

Community-based rehabilitation

There are a number of situations in which none of the proven models of educational service delivery may work, i.e. when there is a lack of human resources, inadequate facilities and material resources, or a lack of defined policies on education of children with visual impairment.

In such situations, community-based rehabilitation (CBR) workers and local volunteers with some training may be pressed into serving these children in the community.

In general, the CBR worker is equipped to provide basic training to persons who are blind or have low vision. These same workers may also be trained to help parents or carers understand and address the needs of a child with visual impairment. Wherever possible, CBR workers will refer a visually impaired child for formal education in the local community. If no formal education options are available, they may provide basic literacy training.

One source of CBR workers is the many eye hospitals who are currently trying to provide comprehensive eye care services (including prevention, treatment, and rehabilitation). These hospitals appoint eye health workers to perform a variety of tasks, such as identifying children and adults with visual impairment, referring them for assessment, and providing community-based rehabilitation and 'non-formal' education services.

EFA-VI global campaign

The estimated 4.4 million visually impaired children worldwide that have no access to any form of education are the target of a new global campaign: Education for All Children with Visual Impairment (EFA-VI). The International Council for Education of People with Visual Impairment (ICEVI), acting in partnership with the World Blind Union (WBU), recently launched this campaign to ensure that all visually impaired girls and boys enjoy the right to education.

The EFA-VI campaign is working closely with the International Agency for the Prevention of Blindness (IAPB) to ensure that a range of services, including early identification, assessment, intervention, and appropriate education, are made available to these children.

One of the major objectives of EFA-VI is to develop models of best practice, based on sound data, in order to address the challenges of an inclusive approach to education.

More information

For more information on EFA-VI, go to **www.icevi.org/efa/efa_world_conference.html**

Providing care for children with low vision

Karin van Dijk
CBM Low Vision Specialist, Low Vision Consultant to Dark & Light Blind Care and to Kilimanjaro Centre for Community Ophthalmology.
Grutto 21, 7423CZ Deventer, The Netherlands. Email: **kvdijknl@yahoo.com**

The importance of providing care for children with low vision is recognised by many initiatives, such as VISION 2020, the 2004 Oslo Workshop on Low Vision,[1] and the United Nation's global campaign, Education for All.

In 1992, the World Health Organization (WHO) published a working definition of low vision[2]: "A person with low vision is one who has impairment of visual functioning even after treatment and/or standard refractive correction, and has a visual acuity of less than 6/18 to light perception, or a visual field of less than 10 degrees from the point of fixation, but who uses, or is potentially able to use, vision for the planning and/or execution of a task for which vision is essential."

Functionally, low vision is characterised by irreversible visual loss and a reduced ability to perform many daily activities, such as recognising people in the street, reading blackboards, writing at the same speed as peers, and playing with friends.

Many children with low vision can perform better than their parents or carers expect and have the same quality of life as any other child, provided that their treatment follows these steps, and in this order:

1. Examination to establish the cause of visual loss
2. Surgical interventions where appropriate (such as cataract surgery)
3. Assessment of the child's various visual functions (distance vision, near vision, contrast sensitivity, and visual field)
4. Accurate refraction and provision of spectacles
5. Assessment for and prescription of low vision devices, such as magnifiers
6. Suggestions for non-optical low vision devices such as reading stands or reading slits
7. Educational support and training in the use of low vision devices (with follow-up).

Comprehensive care: an ideal

Care for children with low vision involves diverse groups, such as eye hospitals, schools, and community programmes. It should be provided in a structured and integrated way, known as comprehensive care.

A comprehensive system of care for people with low vision has clinical, educational, and social components. It ideally starts by locating people with visual problems and referring them to eye care or clinical low vision services. This is not always straightforward: differences exist between genders in access to care. A retrospective study of low vision programmes undertaken by the author in Asia[3] showed that girls have poorer access to low vision care than boys. Girls may therefore need to be approached directly, and not only indirectly via community leaders or schools/school teachers.

Once children with low vision are identified, professionals in eye units can provide the clinical components of low vision care. They provide a diagnosis, treat acute problems, perform surgery, assess the most relevant visual functions (for instance distance vision, near vision, contrast sensitivity, and visual field), and prescribe distance glasses and/or low vision devices.

Regular follow-up visits to clinical services are very important, as the visual needs of children can change rapidly (e.g. the size of the text used in school books gets smaller as they progress through school).

Social and educational care

The social and educational components of care for children with low vision, such as training and counselling others in their environment, are often overlooked by clinical staff. This can include such diverse activities as informing peers of the visual abilities of their classmate, convincing the head of a pre-school to include a child with low vision, and teaching parents activities which can improve their baby's visual skills (such as fixation and tracking).

Educational care for children with low vision includes training children directly in the effective use of their best vision. This can involve their learning to write at closer distance, to use magnifying devices, or to use creative strategies to determine what is written on a blackboard (such as asking a child seated nearby to read aloud while the teacher writes). This training is important, as it enables children to attend local schools. Itinerant teacher programmes (see page 26) are one way of achieving many of these social and educational components of care for children with low vision.

Responsibility and co-ordination

A major obstacle to the provision of low vision services is a lack of co-ordination between eye care services and education or rehabilitation services. Each believes that the other will arrange for children to come for an eye examination and/or clinical low vision care or ensure that they obtain the surgery and/or spectacles needed.

Experience teaches that, in most cases, it is vital for staff in eye units to ensure that children with low vision are treated and managed appropriately. In situations where the eye care service provider is unable to do this, education

David de Wit

Some children with low vision are taught to read Braille unnecessarily. This child is clearly able to see the Braille dots on the page and, with refraction and/or the provision of low vision devices, should be able to read normal print. TANZANIA

programmes must take responsibility.

Caregivers, (special) schools, and community-based rehabilitation programmes often give cost as a reason for a child not receiving the clinical components of low vision care. However, transport costs, hospital fees, and the cost of a pair of glasses compare well to the long-term costs of interventions, such as enlarging print using photocopiers, the use of Braille, and education in a special school, for children who may not actually need them.

The importance of refraction

The importance of accurate refraction is illustrated in the study of low vision programmes undertaken by the author in Asia.[3] Among the children aged 4–15 years enrolled in these programmes, more than two-thirds could achieve a distance visual acuity of 6/60 or better after receiving the correct spectacles. For many children, this level of vision is sufficient to allow them to read a blackboard from the front row in a classroom; these children generally only require minimal additional support. However, only 36% of the children in the study already had spectacles when they presented, and half of those needed a new pair.

A total of 75% of the children examined achieved a best corrected near vision of 1.25M (N10) or better, and an additional 18% could read a large print size of 2–2.5M (N16–N20) after refraction and/or magnification. These children thus had sufficient near vision to read the print used in school books (sometimes with some assistance). None of them needed to learn Braille (although some had already been taught it), and they gained the ability to attend local mainstream schools with their fully sighted peers.

'It is vital to consider both distance and near vision'

This study illustrates that, even in the absence of a special clinical service dedicated to low vision, any eye unit can help many children with low vision, as long as it is capable of providing accurate refraction services.

It is important to recognise that any improvement in distance visual acuity for a child with low vision can make a big difference to his or her life; it can also improve near vision. This is particularly true for children with hyperopia, aphakia, or nystagmus. When providing low vision care for children, it is therefore vital to consider both distance and near vision.

The use of magnifying devices can be important for children whose near vision, after refraction, still remains insufficient to read print of the size used in their school books (children should be asked to bring their school books to the low vision clinic). Such devices are not necessarily expensive: in the 2005 study, 83% of the magnifying devices were locally produced and cost, on average, US $5 (ranging from US $0.5 to US $10).

Another lesson learnt from the study is that interventions should not be provided free of charge. When parents are charged according to their ability to pay they tend to be more motivated and to value the services. This requires co-operation between all service providers.

In conclusion, eye care providers, community workers, and teachers should firstly direct their efforts towards organising access to eye care, then towards providing surgical and optical interventions, and lastly towards determining what educational support is needed by a child with low vision.

References

1 Toward a reduction in the global impact of low vision. Report on an October 2004 meeting in Oslo. Published by The International Society for Low-vision Research and Rehabilitation. New York, March 2005.

2 WHO. Management of low vision in children. Bangkok, 1992.

3 Van Dijk K. Unpublished retrospective study of low vision programmes in Asia, 2005, which analysed data extracted from standardised clinical records of 1,823 children, aged from 0 to 15 years, attending six low vision programmes in India, Indonesia, and Nepal in 2002 and 2003.

The role of itinerant teachers


Paul Lynch
Research Fellow


Steve McCall
Lecturer

Visually Impaired Centre for Teaching and Research (VICTAR), School of Education, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK.

Providing education for visually impaired children is a challenge for many governments. Traditional solutions based around special schools can only cater for a small proportion of children who need support. Therefore, for practical reasons, local mainstream schools are often the only places where these children will have a chance of receiving education. However, visually impaired children attending a mainstream school will need additional support in order to cope with the demands it places on them.

Because a great majority of early learning comes through vision, children who are blind or visually impaired will be slower to learn many skills than their sighted peers. Intervention at the pre-school stage is thus very important as well – both to encourage these children to learn and develop, and to prepare them for mainstream schooling.

One approach to providing support is to employ itinerant teachers, also known as 'visiting' or 'peripatetic' teachers.

Who are itinerant teachers?

Itinerant teachers are usually qualified school teachers who have had some formal training in the education of children with visual impairment, either through a residential course or a distance education programme (e.g. a three-year diploma in Special Educational Needs). These teachers travel around local mainstream schools and communities to offer advice, resources, and support to visually impaired children, their teachers, and their parents.

Itinerant teacher programmes have been established in several low- and middle-income countries (including Kenya, Uganda, and Malawi) in partnership with local ministries of education, and often with the support of non-governmental organisations.

An itinerant teacher normally works under the direction of a full-time co-ordinator (usually someone with a background in teaching children with visual impairment) and may be given responsibility for a cluster of mainstream schools and homes in a given district (often 8–12 schools, depending on their geographical distribution). Itinerant teachers are usually released from their main teaching work for two days a week in order to carry out their itinerant duties. This release arrangement is agreed at ministry level; in practice, however, itinerant teachers can only travel to schools and homes if they have previously arranged for colleagues to teach their class in their absence.

An itinerant teacher supports a child at home during the school holidays. INDIA

Clare Gilbert

'Itinerant teachers play an important role in the pre-school development process'

Duties of an itinerant teacher

The duties performed by an itinerant teacher can vary between teachers and from one district to another. There are no official job descriptions to help define their role, but many of the following duties are common to itinerant teaching services in Uganda and Kenya.

Working with teachers and children at school

Itinerant teachers travel to mainstream schools to provide individual tutoring in reading and writing Braille (using a frame and stylus) for blind children and those with severe low vision. They transcribe class work, tests, and examinations to and from Braille for both teachers and children, provide advice to class teachers on how to

meet children's needs in the classroom (e.g. the best position for a child in the classroom), and instruct children in the use and care of low vision aids.

Working with pre-school children at home

Evidence shows that, for children with visual impairment, the pre-school stage is when the basics of learning, literacy, daily living skills, personal organisation, and mobility are established.[1]

Itinerant teachers play an important role in this development process by spending time with visually impaired children at home in order to prepare them for primary school education. They provide tutoring in pre-Braille skills (e.g. sorting and matching activities) and daily living skills. They also play an important role in developing young children's orientation and mobility skills by assisting local rehabilitation workers with home-based programmes.

Identification, assessment, and referral

Itinerant teachers are often the first professionals to identify that a child has a problem with vision. They will normally alert their co-ordinator, who will then refer the child for clinical assessment. In the case of older pre-school children, itinerant teachers may carry out a preliminary functional visual assessment (perhaps using an E-chart) and may set the child a range of practical tasks to assess their current level of visual functioning.

These teachers are often an important link between families and clinicians. They can provide health professionals with useful background information about a child's circumstances and visual functioning. They also follow up children who have been prescribed spectacles or low vision aids, provide parents with information on where to buy aids, and seek funding for parents who are unable to afford them.

Counselling, practical support, and advocacy

Itinerant teachers provide individual and family counselling on how to raise a child who is visually impaired. They can also help the family to see their child in a positive light and to develop a supportive attitude towards their child. This will help with schooling and independence. Itinerant teachers also provide practical support to families, such as organising hospital and eye clinic visits for parents.

Itinerant teachers can sensitise local primary schools about issues related to teaching a visually impaired child in a mainstream class. In Uganda and Kenya, itinerant teachers play a key role in sensitising communities about the importance of sending children with disabilities to school.

Challenges

The lack of clear job descriptions and support makes it very difficult for itinerant teachers to organise their work in order to reach the children who most need their help. Some teachers have to overcome many barriers, including:

- struggling to obtain permission from their own head teachers to visit children on their caseload
- having to travel long distances, without adequate transport, to visit schools
- poor access to appropriate teaching and learning materials
- a lack of moral support from the teaching profession.

One of the biggest challenges itinerant teachers face is working with visually impaired children who have additional complex needs or disabilities. Teachers who work with these children at home need to be able to deliver a programme of training in basic development areas (i.e. motor, communication, and social skills) and involve parents in practising these skills with the child. Unfortunately, many itinerant teachers are not sufficiently trained to work with these children.

Making it work

In spite of the many challenges they face in their work, itinerant teachers still offer a range of skills that can complement the skills of other professionals in eye care and rehabilitation. This will ensure that visually impaired infants and young children go on to take part in education and training, including mainstream schools.

We would like to encourage health professionals in eye care and paediatric care to work closely with itinerant teachers in districts and sub-districts where these teaching services are available.

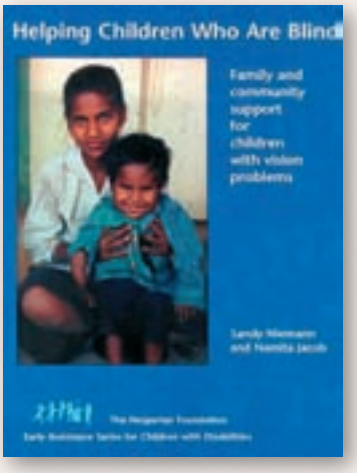
Health workers should be able to draw on the skills of itinerant teachers and on their knowledge of the community, family, and children when deciding which intervention programmes to implement, or when prescribing low vision aids or other equipment.

Provided they are given adequate support from their school and other professionals, itinerant teachers can play an essential part in ensuring visually impaired children receive the care and skills training they need.

Reference

1 Brouillette J, Thorburn M, Yamaguchi K. Early childhood special education: an international perspective. In: Mittler P, Brouillette R, and Harris D, eds. World education yearbook of education: special needs education. London: Philadelphia, 1993.

Book review



Helping children who are blind

Reviewed by **Paul Lynch**

This resource book was written primarily for parents, but it is also very useful for professionals working with visually impaired children, e.g. teachers, itinerant teachers, and mobility and rehabilitation workers.

The book explains how to help a baby or young child who is blind develop communication skills, daily living skills, and movement. Each chapter takes a step-by-step approach to helping a parent or carer through a specific skill; attractive pencil drawings illustrate each step.

The appendices provide a helpful resource for those developing intervention programmes for different age groups. There are also useful suggestions on how to make simple toys from local materials that help develop a child's use of hands and sense of touch.

See page 34 for ordering information.

Low vision devices for children


Susanna MY Lee
Senior Optometrist


Joseph CW Cho
Director

Hong Kong Society for the Blind, 248 Nam Cheong Street, Shamshuipo, Kowloon, HKSAR.

The majority of children with low vision can have their visual functions enhanced by a combination of environmental modifications and low vision devices.

Environmental modifications include placing children near windows to give them better light when reading, allowing them to use felt-tipped pens (which produce thicker lines, thereby making the children's own writing easier to read), or encouraging them to wear hats and caps to prevent glare, especially when outdoors.

The low vision devices available for children can be grouped into three main categories: optical, non-optical, and electronic.

Optical low vision devices

Most children with low vision can significantly increase their near visual acuity by employing their strong ability to focus on nearby objects (accommodation), or by 'squinting' to produce a pinhole effect if they have poor accommodation. Children with low vision normally achieve the required magnification by the 'approach method', i.e. by moving their eyes closer to the object of interest to see it in more detail. The magnification gained in this way is called relative distance magnification.

Children who cannot see near objects well enough will need some type of magnifier.


Hong Kong Society for the Blind

Single-vision spectacle magnifiers
Children often favour the use of single-vision spectacle magnifiers, because they do not mind the close working distances needed and have short and flexible limbs. Single-vision spectacle magnifiers can provide a large field of view and relax eye strain; this prolongs a child's viewing time. (By contrast, adults who acquire low vision later in life tend to resist putting reading materials close to them.) The other advantage of the single-vision spectacle magnifier is that it is hands-free. Its greatest disadvantage, however, is that it involves a relatively short viewing distance, which usually causes head and neck fatigue after prolonged use.


Hong Kong Society for the Blind

Hand-held magnifiers
Hand-held magnifiers are favoured by children with low vision because they are easy to handle.[1] They offer flexibility in magnification: children can change both the distance between the magnifier and the object or text, and the distance between the eye and the magnifier. The greater the distance between the magnifier and the object or text (provided it is less than one focal length), the higher the magnification will be. Decreasing the distance between the eye and the magnifier also increases the magnification power. Hence, children can choose the most suitable and comfortable viewing distance for each of their activities, depending on the size of the object or the text. In addition, the availability of strong magnification powers and built-in illumination also make hand-held magnifiers a good choice, especially for those children who need above-average illumination,[2] such as children with retinitis pigmentosa and maculopathy. However, the use of hand-held magnifiers requires steady hands and good eye-hand co-ordination, especially for high-power lenses. This limits the usefulness of these devices for young children and those with upper limb disabilities.


Hong Kong Society for the Blind

Stand magnifiers
Stand magnifiers offer the most stable image compared to single-vision spectacle magnifiers and hand-held magnifiers; this makes them a good choice for beginners, especially those who require high magnification. Built-in illumination, usually provided by means of a relatively bulky battery handle, is also available. However, stand magnifiers are comparatively more expensive and bulkier than hand-held or single-vision spectacle magnifiers; they also require a smooth surface on which to rest the stand.

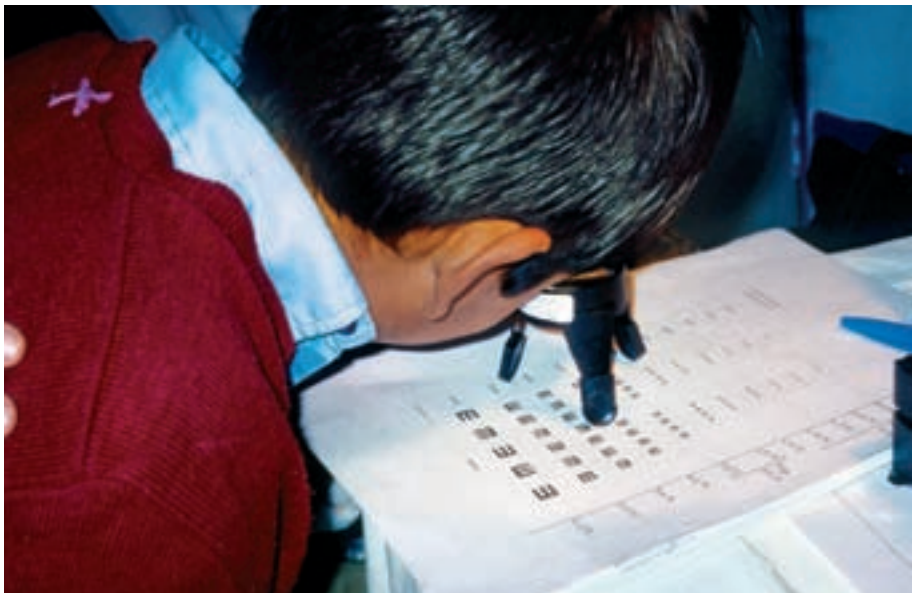

Hong Kong Society for the Blind

Dome magnifiers
Dome magnifiers are a type of specially designed stand magnifier that can double the magnification for those who use relative distance magnification, single-vision spectacle magnifiers, and hand-held magnifiers. They are easy to use, but 1.8x is the only available magnification power.


UNIFESP-Brazil

Extra-short focus monocular telescope
Many children with low vision like to use an extra-short focus monocular telescope, an optical low vision device that can conveniently bring the image of a distant object many times closer. A 4x telescope can make something that is 20 m away visible at 5 m, and an 8x telescope can shorten the distance to 2.5 m. The telescope offers advantages to children in many daily activities, such as reading what is written on the blackboard and reading street signs and bus numbers. Children require intensive training to learn the focus control and target searching techniques they need to use the telescope well. This low vision device also requires good eye-hand coordination to track targets, especially those that move.

Karin van Dijk



An E-chart is used to assess a child's vision while using a stand magnifier. INDIA

Non-optical low vision devices

The use of non-optical devices can compensate for some of the disadvantages of optical low vision devices. For example, tables with adjustable tilt help to improve poor posture caused by short viewing distances and the bending of body and neck over the table.

The use of a table lamp with a 'goose-neck' to control the direction of the light can be helpful for those children who need above-average illumination. On the other hand, children with media opacities such as corneal scarring are sensitive to glare; special absorptive filters, preferably with side shields, are useful for filtering scattered and glare-producing light. Caps and hats are also advised for outdoor activities.

Non-optical devices are reasonably easy to obtain; they can often be bought in stationers', furniture shops, or optical shops. In addition, parents, teachers, or clinicians can make simple devices to assist children with writing or drawing: they can cut black cardboard into frames or 'windows' to create reading slits or writing and drawing guides; they can also draw bold black lines on white paper, which make for easier writing.

Electronic low vision devices

Electronic low vision devices provide the largest field of view, the most comfortable viewing distances, and the highest magnification. However, they are also the most expensive type of low vision device.

The most commonly used electronic low vision device is closed-circuit television (CCTV). It offers brightness and contrast enhancement controls and is a good choice for children with severe visual impairment. However, because CCTV systems are so big and heavy, they are usually fixed in one place, such as a library.

Portable electronic low vision devices are also available, although they are very expensive. They consist of a digital camera which captures images and enlarges them to the desired magnification.

The importance of early intervention

Early intervention with low vision devices can strengthen the visual abilities of children with low vision by reducing visual deprivation at an early age. Low vision devices will provide them with enriched and more accurate visual information, which in turn will improve their ability to learn and their chances of receiving education in mainstream schools with their sighted peers. In addition, learning to use low vision devices at an early age helps children to become confident with their use; it also allows them to feel less socially awkward as they grow up and continue to use these devices.

Important factors for the successful prescription of low vision devices

The successful prescription of low vision devices for all children is dependent on a good knowledge of a child's case history, and of the diagnosis and prognosis of his or her eye disease. Appropriate techniques should be used to obtain detailed information on children's refractive errors and visual abilities (such as visual acuity, visual field, amplitude of accommodation, contrast sensitivity, light adaptation ability, etc.). The practitioner should also have a good understanding of the functions and features of the various low vision devices, and he or she should know how to select and apply the most appropriate low vision devices for children to accomplish their various visual tasks. Training in the use of low vision devices is critical and home trials of low vision devices are advisable; these should be arranged immediately after the initial assessment.

Children should attend their first follow-up visit one to two months after their initial assessment. This will ensure that they have enough time to try the prescribed low vision device at home and at school. Because visual requirements change with age, children should attend follow-up visits every three to six months. This should include those children who have rejected low vision devices at initial visits.

Involving parents and teachers

Children accept low vision devices more readily than adults and with a higher rate of success.[3] They tend to use more than one device, depending on the task: the average number of devices prescribed per child with low vision varies from 1.3 to 2.3.[3,4]

Good communication with parents and teachers is important in order to maximise the successful use of low vision devices. Parents and teachers should be encouraged to note any difficulties children may have when using their low vision devices, especially during the first home trial. They should also listen to any complaints children might make.

Difficulties may include:

- head and neck pain after using low vision devices for a long period
- difficulty in finding the image; too small a field of view
- shadows cast by the low vision device on the item being viewed
- using an unusually close reading distance
- no improvement in viewing posture or no reduction in fatigue.

This information should be discussed in the follow-up assessment. It will allow the practitioner to provide appropriate recommendations.

Resources for low vision devices

Many high-quality and low-cost low vision devices for children are now available from the VISION 2020 Low Vision Resource Centre. It provides low vision devices at an affordable cost, ranging from US $0.4 (for a hand-held magnifier) to US $60 (for a camera to use as part of a CCTV reading aid). Information about the centre and its supplies can be found on the Hong Kong Society for the Blind's website (in the project section): **www.hksb.org.hk**.

References

1 Cho J, Cho P. Low vision findings in China and Hong Kong. In: Proceedings of the International Conference on Low Vision, 1996: 335–343.

2 Lee S, Chow B, Cho J, Au Yeung A. Preference of low-vision devices in the Hong Kong low-vision population. In: Proceedings of the International Conference on Low Vision 2005. International Congress series 1282, September 2005: 196–200.

3 Cho J. The preference of low vision devices of the Hong Kong low vision students. Paper presented in the 12th World Conference of the International Council for Education of People with Visual Impairment 2006: EA034.

4 Cho J, Cho P. A survey of low vision patients in Hong Kong. In: Proceedings of the International Conference on Low Vision, 1999: 589–593.

KEY INFORMANT METHOD

Finding children who are blind

Mohammad A Muhit
Clinical Research Fellow, International Centre for Eye Health, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, UK.
Email: **Mohammad.Muhit@Lshtm.ac.uk**

Children who are blind need to be found as early as possible so they can be examined, treated, referred, or rehabilitated. This is crucial if they are to have the best possible chance of proper childhood development, education, and participation in broader social life.

The key informant method is an effective, community-based, and participatory approach. It is particularly suited to identifying children who are blind in low- and middle-income countries, where the remoteness of rural communities and poor access to health, education, and rehabilitation services in many areas make most other research methods less effective. The key informant method was developed and piloted by means of extensive field research in Bangladesh,[1] and it has since been successfully piloted in Ghana[2] and Malawi.[3]

This method can fulfill two very important roles: providing data on the frequency and causes of blindness in children in the community, and finding a large number of children who need services, whether clinical, educational, or rehabilitative.

The method involves using volunteers who know their community well, whether through their occupational or social roles, in order to identify children who are blind. These volunteers, called key informants, can be health workers, school teachers, non-governmental organisation (NGO) staff, government staff, religious leaders (imams, church leaders, etc.), traditional healers, local journalists, or other people who are actively involved in the social network of the community.

Ideal key informants should be reliable and willing to contribute their time voluntarily. They should also have the opportunity, through their role in the community, to disseminate information to a large number of community members, either directly or indirectly.

Although key informants are volunteers, they need to be motivated and mobilised with a specific objective: in this case, to find blind children. This is the responsibility of the member of the project team known as the community mobiliser. The community mobiliser stays and works in a defined community for the duration of the project (approximately six weeks) to identify, train, motivate, and mobilise the key informants. The success of the key informant method relies heavily on the networking, social and communication skills, motivation, and commitment of the community mobiliser.

The method works best when it is conducted in a relatively small, defined geographic or administrative area, ideally a sub-district with a total population of 100,000 to 250,000. Larger areas can be covered through a phased approach or by using a larger number of community mobilisers. The physical size of the sub-district and the local transport and communication infrastructure should also be taken into account: a community mobiliser should ideally be able to visit every corner of the sub-district several times during the six weeks he or she will spend there.

During such a six-week period, one community mobiliser, working with 40 key informants who he or she has trained, should be able to identify 60–80 blind children. One community mobiliser can cover eight sub-districts in a year and identify 500 to 600 blind children from a total population of 1–1.5 million.

Ten steps for implementing the key informant method

The following steps are implemented, one after the other, over a period of six weeks, as shown in the timeline in Table 1.

1. **Mapping social networks:** The community mobiliser identifies possible groups through whom key informants could be recruited, e.g. local organisations, development, education, or health NGOs, government departments, schools, disability-related projects, women's groups, and other relevant individuals and organisations. A start can be made on this before visiting the community.
2. **Networking and sensitisation:** The community mobiliser holds one or more half-day 'sensitisation' meetings with representatives of the agencies, organisations, or groups identified, in order to explain the reasons for finding children who are blind. Groups are asked to suggest suitable key informants.
3. **Organising a local group of key informants:** After sensitisation, key informants may decide to divide the sub-district into four or five smaller segments (each with a population of 50,000), depending on where they live and/or work, as well as on the local transport systems. Each segment can be covered by five to ten key informants, ideally from a mix of different groups or organisations. This is done in order to avoid duplication and to ensure intensive coverage of the population.
4. **Key informant training:** Once the segments are agreed, the community mobiliser trains key informants in groups

Table 1. A timeline of activities for the key informant method

Activities	Weeks 1	2	3	4	5	6
Mapping social networks	■					
Networking and sensitisation	■					
Organising a local group of key informants	■					
Key informant training		■				
Health communication and case finding		■	■	■	■	
Supporting key informant activities		■	■	■	■	
Planning and organising the eye examination day				■	■	
Eye examination day					■	
Documentation and monitoring					■	
Referral and follow-up						■

Mohammad Muhit

Key informants motivate parents to bring their children for eye examinations by the mobile eye care team. BANGLADESH

of up to 20. The sessions last half a day and key informants are taught how to find blind children in their local community. Training includes an explanation of blindness and its causes in children; emphasis of the fact that many blind children can benefit from treatment, education, and other services; and assessment of vision. 'Counting fingers' at three metres is used for children aged 6 to 15. In order to ensure that pre-school children are not missed, key informants are trained to refer a child for examination if the mother thinks there is an eye or vision problem. The key informants are also encouraged to network over the following three to four weeks in order to identify children thought to be blind or to have 'serious visual problems'. They may work in pairs or small groups to encourage and support each other.

5 **Health communication and case finding:** Key informants are responsible for two tasks over the following three to four weeks.The primary task is to spread the message (often through their social and/or occupational role) that case detection of children who are blind is taking place in the sub-district, and to encourage community members and parents to report to them the name of any child who is blind. The second task is to identify children who they think are blind and to make a list of their names, ages, and addresses so that they can be examined by the visiting eye team on the eye examination day.

6 **Supporting key informant activities:** While key informants are networking in the community, the community mobiliser's main task is to provide continuous support and encouragement, for example by visiting each key informant to discuss progress, visiting households with blind children together with the key informants, conducting community level meetings on the issue of childhood blindness, distributing posters and leaflets in public gatherings, and attending various community meetings.

7 **Planning and organising the eye examination day:** The community mobiliser is responsible for organising the date and venue for eye examinations. Key informants then tell all parents and carers of identified children where and when children should attend to be examined by the visiting eye team. In cases of significant poverty or distance from the eye examination site, parents may need to be provided with transport or to have their transport paid for by the project.

8 **Eye examination day:** On this day, the visiting eye team (which includes one or two ophthalmologists) examines all the children identified by the key informants, confirms whether these children are blind, determines and documents the cause(s) of blindness, and refers children who need services. The eye team also gives feedback to the key informants.

9 **Documentation and monitoring:** The standard WHO form can be used to record the examination findings. All data can be entered into a database and the findings reported back to the key informants.[4]

10 **Referral and follow-up:** Specific referrals should be made for children who require medical, optical, or surgical interventions. Children should also be referred for inclusive education, early intervention, low vision, and social services. A list of all referrals should be drawn up by the community mobiliser in consultation with an ophthalmologist; this is to allow the community mobiliser to follow up attendance both with the family and with service providers. The community mobiliser should ensure that services are available and accessible to all referred children.

Training and communication materials for the key informant method

Simple but locally appropriate training and communication materials can contribute to the success of the key informant method. In Bangladesh, a standard training manual for the community mobiliser and a flipchart (flipbook) for key informant training has been developed in the local language, Bangla (an English version is available from the author). Simple, colourful posters (Figure 1) can be distributed by key informants at community level to increase community awareness about childhood blindness and to increase the reporting of children who are blind. Local radio and television can be used to announce activities. Small leaflets can be distributed in large quantities during public gatherings: this is a low-cost, but effective, means of mass communication.

Figure 1. Poster in a local language (Bangla) highlighting the main cause of childhood blindness in the area (cataract)

Child Sight Foundation

References

1 Muhit MA, Shah SP, Gilbert CE, Hartley SD, and Foster A. The key informant method: a novel means of ascertaining blind children in Bangladesh. Br J Ophthalmol. First published online on 12 April 2007, **http://bjo.bmj.com/cgi/content/abstract/bjo.2006.108027v1**

2 Boye J. Validating key informant method in detecting blind children in Ghana. J Comm Eye Health 2005;18(56): 131.

3 Kalua K. Use of key informants in determining the magnitude and causes of childhood blindness in Chikwawa district, southern Malawi. J Comm Eye Health 2007;20(61): 8.

4 Gilbert CE, Foster A, Negrel AD et. al. Childhood blindness: a new form of recording causes of vision loss in children. Bull World Health Org 1993;71: 485–489.

STATISTICS

Blindness in children: a worldwide perspective

Parikshit Gogate
Head, ORBIS-supported Dept of Paediatric Ophthalmology, HV Desai Eye Hospital, 93/2 Taravde Vasti, Mohamadwadi, Hadapsar, Pune 411 028, India.

Clare Gilbert
Reader, International Centre for Eye Health, Chief Medical Advisor, Sightsavers International, UK.

Children in a school for the blind. KENYA

Clare Gilbert

Many of the causes of childhood blindness are avoidable, being either preventable or treatable.[1] Only three per cent of the world's blind population are children. However, because children have a lifetime of blindness ahead of them, the number of 'blind person years' resulting from blindness starting in childhood is second only to cataract.[2] Controlling blindness in children is a priority of VISION 2020[3,4]; however, as its causes differ from that of blindness in adults, different strategies, personnel, infrastructure, and equipment are required to combat it. There is also a greater urgency when managing children, as delays in treatment can lead to amblyopia (lazy eye).

Classifying the causes of blindness in children

The World Health Organization's (WHO) system for classifying blindness and low vision in children uses two methods.[5] The first method, a descriptive classification, refers to the anatomical site most affected. The following categories are used:

- whole globe (e.g. anophthalmos, microphthalmos)
- cornea (e.g. corneal scarring, keratoconus)
- lens (e.g. cataract, aphakia)
- uvea (e.g. aniridia)
- retina (e.g. retinal dystrophies)
- optic nerve (e.g. atrophy)
- glaucoma
- conditions where the eye appears normal (e.g. refractive errors, cortical blindness, amblyopia).

The information necessary for this descriptive classification can be collected on every child following examination and clinical assessment.

The second method, an aetiological classification, classifies blindness according to underlying cause. This method uses categories based on the time of onset of the condition:

- hereditary (at conception, e.g. genetic diseases, chromosomal abnormalities)
- intrauterine (during pregnancy, e.g. due to rubella or thalidomide)
- perinatal (e.g. retinopathy of prematurity, birth injury, neonatal conjunctivitis/ ophthalmia neonatorum)
- childhood (e.g. vitamin A deficiency disorders, measles, trauma)
- unknown/cannot be determined (e.g. congenital abnormalities).

Information about underlying causes of blindness, although often more difficult to collect, is more useful for planning.

Regional variations

Most data from low- and middle-income countries have come from examining children attending schools for the blind, whereas data from industrialised countries come from multiple sources. Data are available from almost 15,500 children from 38 countries (Tables 1 and 2).

Table 1. Regional variation in childhood blindness: descriptive classification by World Bank region

	Wealthiest region ←							→ Poorest region
	EME	FSE	LAC	MEC	China	India	OAI	SSA
Number of countries	3	4	8	4	1	1	6	11
Number examined	None[a]	504	1,007	1,758	1,131	4,712	2,950	1,748
Estimated no. of blind children	50,000	40,000	100,000	190,000	210,000	270,000	220,000	320,000
Globe (%)	10	12.1	11.0	16.0	25.5	33.3	16.5	8.8
Cornea (%)	1	2.2	8.4	5.8	4.3	24.6	24.3	36.2
Lens (%)	8	10.7	7.4	16.7	18.8	9.7	27.4	10.0
Uvea (%)	2	5.4	2.3	2.7	1.5	4.3	2.3	4.5
Retina (%)	25	44.2	46.5	42.4	24.9	16.6	15.8	20.0
Optic nerve (%)	25	14.7	11.6	7.4	13.6	6.0	7.5	9.5
Glaucoma (%)	1	2.8	8.3	6.4	9.0	2.5	4.6	6.2
Other (%)	28	7.9	4.5	2.6	2.4	3.0	1.6	4.8
Total (%)	100	100	100	100	100	100	100	100

EME = Established Market Economies; FSE = Former Socialist Economies; LAC = Latin America and Caribbean; MEC = Middle Eastern Crescent; OAI = Other Asian Countries and Islands; SSA = Sub-Saharan Africa.
a Data from published studies (1,623 children)

Table 2. Regional variation in childhood blindness: aetiological classification by World Bank region

	Wealthiest region ←							→ Poorest region
	EME	FSE	LAC	MEC	China	India	OAI	SSA
Number of countries	3	4	8	4	1	1	6	11
Number examined	None[b]	504	1,007	1,758	1,131	4,640[c]	2,950	1,748
Estimated no. of blind children	50,000	40,000	100,000	190,000	210,000	270,000	220,000	320,000
Hereditary (%)	45	17.7	22.1	55.1	30.7	19.3	20.1	20.0
Intrauterine (%)	7	5.8	8.1	1.1	0.1	2.7	1.1	2.5
Perinatal (%)	24	27.8	27.8	1.3	2.2	1.5	22.6	5.9
Childhood (%)	10	5.0	9.8	6.1	14.0	21.8	6.2	34.6
Unknown (%)	14	43.7	32.2	36.4	53.0	54.7	50.0	37.0
Total (%)	100	100	100	100	100	100	100	100

b Data from published studies (1,623 chidren) *c* Data not available for 72 children

Most of the data were collected using best corrected visual acuity, as had been recommended by WHO. This meant that blindness due to uncorrected refractive error was not included. Recently, however, the WHO definition of blindness has been changed: it now uses 'presenting visual acuity' rather than 'best corrected visual acuity'. This means that uncorrected refractive errors can now be included as a cause of blindness; hopefully, the corresponding data will be reported in the future.[6]

The data suggest that the causes of blindness in children vary widely from region to region (Table 2). Corneal scarring due to childhood factors (measles, vitamin A deficiency disorders, traditional eye medicines) and neonatal conjunctivitis/ophthalmia neonatorum are more important in poorer developing countries. In affluent regions, lesions of the central nervous system (often associated with prematurity) predominate, whereas hereditary diseases are more important in industrialised countries and the Middle East. Perinatal factors, such as retinopathy of prematurity, are important in middle-income regions, i.e. Latin America and the former socialist economies of Eastern Europe. In all regions, the underlying causes could not be determined in a high proportion of children.

The anatomical site most commonly affected is the retina (353,000 children), followed by corneal scarring (265,000), and lesions of the whole globe (258,900). Hereditary factors (381,300) are the commonest underlying causes, followed by acquired conditions of childhood (241,200).

Changes in the causes of blindness over time

Economic development and specific interventions are changing the pattern of blindness in children all over the world, including India.[7] For example, more extensive programmes of measles immunisation and better control of vitamin A deficiency disorders are reducing corneal blindness in many low-income countries; cataract is becoming more important. In middle-income countries, neonatal intensive care services are expanding; retinopathy of prematurity is now a major potentially avoidable cause of childhood blindness in many countries in Latin America, Eastern Europe, and cities in Asia.[8]

Table 3. Magnitude and causes of blindness in children per 10 million total population in different regions

	Affluent	Middle-income	Poor	Very poor
% children in population	20%	30%	40%	50%
No. of children/10 million total population	2 million	3 million	4 million	5 million
Prevalence of blindness	0.3/1,000	0.6/1,000	0.9/1,000	1.2/1,000
Blind children/10 million total population	600	1,800	3,600	6,000
No. of children blind by:				
Corneal scar	0	0	720	2,000
Cataract or glaucoma	60	360	720	1,000
Retinopathy of prematurity	60	450	0	0
Others (mainly unavoidable)	480	990	2,160	3,000

Planning for the control of blindness in children

VISION 2020 advocates planning for the control of blindness in children for a total population of 10 million.[4] Table 3 illustrates how the magnitude and causes of blindness vary by level of economic development; different regions will, therefore, have different priorities for control. Preventable causes can be reduced at the primary level of service delivery, whereas treatable causes require specialised paediatric ophthalmology units, systems for early identification, referral and follow-up, and increased public awareness. Holistic, comprehensive, multi-sectoral approaches are needed, including provision for children with low vision.

Ideally, data on the causes of blindness should be obtained by examining children in the community, not in schools for the blind; the key informant method (discussed on page 30) has been proven to be highly effective.[9]

References

1 Gilbert C, Rahi J, Quinn G. Visual impairment and blindness in children. In: Johnson, Minassian, Weale, West, eds. Epidemiology of Eye Disease. 2nd edition. London: Arnold Publishers, 2003.
2 Rahi JS, Gilbert CE, Foster A et.al. Measuring the burden of childhood blindness. Br J Ophthalmol 1999;83: 387–8.
3 World Health Organization. Global initiative for the elimination of avoidable blindness. WHO/PBL/ 97.61. Geneva: WHO, 1997.
4 World Health Organization. Preventing blindness in children. WHO/PBL/00.77. Geneva: WHO, 1997.
5 Gilbert CE, Foster A, Negrel AD et. al. Childhood blindness: a new form of recording causes of vision loss in children. Bull World Health Org 1993;71: 485–489.
6 Negrel AD, Maul E, Pokharel GP, Zhao J, Ellwein LB. Refractive error study in children: sampling and measurement methods for a multi-country survey. Am J Ophthalmol 2000;129: 421–6.
7 Gogate PM, Deshpande M, Sudrik S, Kishore H, Taras S, Gilbert CE. Changing pattern of childhood blindness in Maharashtra, India. Br J Ophthalmol 2007;91: 8–12.
8 Gilbert CE. Retinopathy of prematurity: a global perspective of the epidemics, population of babies at risk and implications for control. In: Early Human Development. In press.
9 Muhit MA, Shah SP, Gilbert CE, Hartley SD, Foster A. The key informant method: a novel means of ascertaining blind children in Bangladesh. Br J Ophthalmol. First published online on 12 April 2007, http://bjo.bmj.com/cgi/content/abstract/bjo.2006.108027v1

Managing a young child for an eye examination

Sue Stevens
Ophthalmic Resource Co-ordinator/Nurse Advisor, International Centre for Eye Health, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, UK.
Email: sue.stevens@Lshtm.ac.uk

Indications
A young child, or a child who is unable to co-operate, needs to be managed carefully when he or she is being examined by an ophthalmologist or other eye health practitioner. The following steps aim to guide the health worker who has to manage such a child whilst assisting the examiner.

You will need
- A sheet or blanket
- A torch or flashlight

Preparation
Gain the child's confidence by taking time to be friendly and playful.

While the child is relaxed, the examiner will have an opportunity to look at the way he or she uses his or her eyes and to note whether one is held shut with pain or whether there is any watering or squinting. (It may be helpful to observe babies' eyes while they are breastfeeding or being held by their parent or carer.)

Explain to the parent or carer, and to the child if he or she is old enough to understand, what you and the examiner are going to do. Talk reassuringly to the child and continue to do so throughout the examination.

Method
- Lay the child in the middle of the sheet or blanket with feet facing you
- Restrain the child's right arm close to the body by wrapping the left side of the sheet or blanket around both the arm and the body (Figure 1)
- Restrain the left arm by wrapping the right side of the sheet or blanket around the whole body of the child (Figure 2)
- In a sitting position, hold the wrapped child firmly, with the feet on your lap, and support the head
- The examiner, having washed his or her hands, then sits directly opposite you and takes over steadying the child's head in his or her own lap. If necessary, a second helper may hold the torch (Figure 3)
- The examiner can now start to examine the child's eyes.

Figure 1

Sue Stevens

Figure 2

Sue Stevens

Figure 3

Sue Stevens

Useful resources: the visually impaired child

Online resources

Embracing diversity. Toolkit for creating inclusive, learning-friendly environments. Available to download from www.unescobkk.org/index.php?id=2950

Helping children who are blind (Hesperian Foundation). Available in English and Spanish. Download (free) from www.hesperian.org

Low vision online. This is an online training manual for non-specialists that can be used to identify children with visual problems for referral to clinical services and to train children with low vision after a clinical eye examination has been done. www.lowvisiononline.org

The International Council for Education of People with Visual Impairment (ICEVI). ICEVI publishes *The Educator*, which is available free of charge on its website (under 'Publications'). The site also contains information about ICEVI activities and contact information for different regions of the world. www.icevi.org

Enabling Education Network (EENET). An information-sharing network on the issue of inclusive education. Back issues of the EENET newsletter contain some useful and interesting articles on this topic. www.eenet.org.uk

Overbrook School for the Blind. This website contains free and useful information for parents of children with visual impairment, including those with additional disabilities (under 'Family and student info', in the section called 'Parent resource centre'). www.obs.org

Books

Embracing diversity. Toolkit for creating inclusive, learning-friendly environments. Available from the UNESCO Asia and Pacific Regional Bureau for Education.

Helping children who are blind (Hesperian Foundation). Available from TALC. UK £9.50 plus post and packing.

Inclusive education for children with visual impairments: a guide for non-formal schools. Available from Helen Keller International, Bangladesh.

Sonksen P and Stiff B. Show me what my friends can see. A developmental guide for parents of babies with severely impaired sight and their professional advisors. Available from the Institute for Child Health, London.

Stubbs S. Inclusive education: where there are few resources. Available from The Atlas Alliance, Norway.

Reports

Management of low vision in children. Report of a WHO consultation, Bangkok, 23–24 July, 1992. WHO/PBL/93.27. Available online at **http://whqlibdoc.who.int/hq/1993/WHO_PBL_93.27.pdf**

Journal articles

Verweyen P. Measuring vision in children. Community Eye Health J 2004;17(50): 27–29.

Community Eye Health Journal back issues

Volume 17, Issue 49, 2004 Low vision care: the need to maximise visual potential
Volume 14, Issue 40, 2001 New issues in childhood blindness
Volume 11, Issue 27, 1998 How can blind children be helped?

Suppliers' addresses

Atlas Alliance: Shweigaardsgt 12, PO Box 9218, Grønland, 0134, Oslo, Norway. Email: **atlas@atlas-alliansen.no**

Helen Keller International, Bangladesh: Technical Assistance for the Education and Rehabilitation of the Blind, Helen Keller International, Bangladesh House 38, Road 14 A, Dhanmondi Dhaka 1209, Bangladesh. Email: **amin@hkidhaka.org**

Institute for Child Health: Overseas applications should be sent in writing to: 'Developmental Guide', The Wolfson Centre, Mecklenburgh Square, London WC1N 2AP, UK, or by fax to: +44 207 833 9469.

TALC: PO Box 49, St Albans, Herts, AL1 5TX, UK. Email: **info@talcuk.org**

UNESCO Asia and Pacific Regional Bureau for Education: PO Box 967, Prakhanong Post Office, Bangkok 10110, Thailand. Email: **bangkok@unescobkk.org**

WHO: World Health Organization, WHO Press, CH-1211 Geneva 27, Switzerland. Email: **bookorders@who.int**

News

Correct formula for Timolol Maleate 0.5% m/V eye drops

An incorrect formula for Timolol Maleate 0.5% m/V eye drops appeared in the Local Small Scale Preparation of Eye Drops manual, and the Technology Programme Committee of Vision 2020 is concerned that it may have been copied in other manuals in its incorrect form.

Please ensure that you use the correct formula, shown in Table 1.

This manual is no longer available in its printed form, but is downloadable from the World Health Organization website (**www.who.org**). It now contains the correct formula.

Exchange contributions wanted

The *Community Eye Health Journal* would like to invite readers to submit short articles (500 words) for the Exchange section of the journal. For Issue 64 (December 2007) and Issue 65 (March 2008) we are particularly interested in experiences related to advocacy and cataract complications, respectively.

Farewell

Sue Stevens will be retiring and leaving the International Centre for Eye Health (ICEH) and the *Community Eye Health Journal* at the end of July. She has been here since 1993, giving professional nursing input to the journal and providing educational information and resource services to eye health workers all over the world. Sue will be sorely missed and we wish her well in her future endeavours. For information please contact Jenni Sandford: **jennisandford@lshtm.ac.uk**

Acknowledgement

Many thanks to the late Dr Hans Hirsch and his family for their support to the Community Eye Health Journal over the next three years. Dr Hirsch and his wife Gertrude had a strong interest in helping those who are blind, both through education and through clinical interventions.

Meetings

The 30th Annual Congress of the Ophthalmological Society of Pakistan and 4th Khyber Eye Symposium will take place in Pakistan from 22–24 February, 2008. For more information, contact Dr Tariq Farooq Babar. Email: **osp_nwfp@hotmail.com**

The International Conference on Prevention of Avoidable Blindness and Visual Impairment in South-East Asia will take place in Pasir Panjang on 5 October, 2007. For more information, contact Mr John SY Tan at **cipremie@singnet.com.sg**

Training

Paediatric ophthalmology fellowship

The CCBRT Hospital in Tanzania is offering a six-month fellowship in paediatric ophthalmology. **Requirements:** Candidates should be qualified ophthalmologists and have performed at least 500 adult cataract operations. They should also be able to demonstrate that there is a need for paediatric ophthalmology services at their place of work, and that they have been or will be given the resources to put into practice the skills that they acquire during the fellowship. **Fees:** US $5,000 (tuition only), board and lodging US $25 per day, expenses for necessary documents approximately US $200. No salary is paid by CCBRT to the candidate.
Contact: Dr Richard Bowman, Training Director, CCBRT Hospital, PO Box 23310, Dar es Salaam, Tanzania.
Email: **richardbowman@bol.co.tz**

International Centre for Eye Health Diploma in Community Eye Health

Date: 13 February–23 May, 2008.
Venue: The International Centre for Eye Health at the London School of Hygiene and Tropical Medicine, 8 Bedford Square, London WC1B 3RE, UK. **Objectives:** This course is aimed at people who want to know more about the major blinding eye diseases and the VISION 2020 initiative. Participants will be expected to research and write up a strategy document outlining plans which will be instituted on return to their home country. **Target audience:** Eye care professionals (including ophthalmologists, optometrists, and project managers) who want to receive training in Community Eye Health, but cannot be away from their place of work for a longer training course. **Scholarships:** Please contact Emma Sydenham (**emma.sydenham@lshtm.ac.uk**) for assistance with securing funding from your home country to cover part of the course fee. **Further details and admission procedures:** Applications for this course are available on the London School of Hygiene and Tropical Medicine's website: **www.Lshtm.ac.uk/prospectus/short/sdceh.html**.
Email: **ShortCourses@Lshtm.ac.uk**

New and notices continue over page ➤

Table 1. Correct formula for Timolol Maleate 0.5% m/V eye drops

	For 100 ml	For 500 ml
Timolol Maleate 0.5%	680 mg	3.4 g
Dihydrogen Sodium Phosphate	400 mg	2.0 g
Disodium Hydrogen Orthophosphate 2H20	1.4 g	7.0 g
Stock Solution Cetrimide 0.5%	4 ml	20 ml
Freshly distilled water	100 ml	500 ml

MSc in Community Eye Health
Date: 20 September, 2007–19 September, 2008. **Venue:** The International Centre for Eye Health (ICEH) at the London School of Hygiene and Tropical Medicine, 8 Bedford Square, London WC1B 3RE, UK. **Objectives:** To equip eye health professionals with the knowledge and skills to reduce blindness and visual impairment by developing a community-oriented approach to eye health and the control of blindness, in line with the aims and objectives of VISION 2020: The Right to Sight. **Target audience:** Eye care professionals (including ophthalmologists, optometrists, and project managers) 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:** Please contact Emma Sydenham (emma.sydenham@Lshtm.ac.uk) for assistance with securing funding from your home country to cover part of the course fee. **Further details and admission procedures:** Applications for this course are available on the London School of Hygiene and Tropical Medicine's website: www.Lshtm.ac.uk/prospectus/masters/msceh.html and through contact with the Registry, 50 Bedford Square, London WC1B 3DP, UK. Telephone: +44 (0)20 7299 4646 Fax: +44 (0)20 7323 0638.
Email: Registry@Lshtm.ac.uk

Planning for VISION 2020
Date: 9–13 July, 2007. **Venue:** The International Centre for Eye Health at the London School of Hygiene and Tropical Medicine, 50 Bedford Square, London WC1B 3DP, UK. **Objective:** 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, participants will work in teams to develop a model for eye care interventions in their selected regions. **Target audience:** Ophthalmologists and eye health organisation programme managers involved in the drive to eradicate all treatable blindness globally by the year 2020. **Information and admission procedures:** Visit the London School of Hygiene and Tropical Medicine's website: www.Lshtm.ac.uk/prospectus/short/spv.html.
Email: ShortCourses@Lshtm.ac.uk

Kilimanjaro Centre for Community Ophthalmology (KCCO), Tanzania
For information and admission procedures for all courses listed below, visit the KCCO website (www.kcco.net) or contact Genes Mng'anya, KCCO Course Administrator.
Email: genes@kcco.net

Integrating Childhood Cataract into VISION 2020 Programmes
Date: 1–5 October, 2007. **Objective:** To provide an understanding of the various strategies needed to improve uptake, counselling, surgery, follow-up, spectacle prescription, and low vision care for children with congenital or developmental cataract. **Target audience:** Ophthalmologists or managers in settings with paediatric eye care services or programme staff responsible for organising childhood blindness activities.

Community Ophthalmology Certificate
Date: 15 October–7 December, 2007. **Objective:** To equip eye health professionals with the skills necessary to develop, implement, and manage a VISION 2020 programme. These include disease control, planning, human resource development, management, bridging strategies, and budgeting. **Target audience:** Ophthalmologists, project managers, or other eye care professionals who are responsible for developing and implementing district-based VISION 2020 plans.

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.

New resources available

Technology Guidelines for a District Eye Care Programme
This booklet is produced by the Technology Programme Committee of VISION 2020 to provide guidance on the type and quantity of equipment and supplies, as well as personnel, needed to set up a district eye care programme. As described in the booklet, such a programme is based on the concept of a district health service for a population of at least 500,000 and consists of a base eye unit, satellite health centres, and community-level services. The booklet contains information on ordering and stock management, and all items are cross-referenced to the Standard List for a VISION 2020 Eye Care Service Unit, which contains information on suppliers and prices.

The guidelines are available to download from www.v2020.org and www.iceh.org.uk. For printed copies, contact the International Resource Centre, International Centre for Eye Health, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, UK. Available in French and English.

Community Eye Health JOURNAL

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Journal design by Lance Bellers

Next issue

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

Dhivya Ravilla