Despite all the treatments, operations, and medication at our disposal, there is still a significant number of people whose sight we cannot fully restore. What happens to these patients once they leave our care? Without the necessary support, advice, and low vision devices, their remaining vision will not be very good; this can make life a struggle. Support may be difficult to find, as low vision services are often inadequate or inaccessible in many low- and middle-income countries. Professionals, such as rehabilitation workers, ophthalmologists, mid-level eye care workers, optometrists/refractionists, and special education teachers, may not know what to do about people with low vision, leaving them with no-one else to turn to.

Individuals who can only see light or movement of large objects will need rehabilitation that focuses on non-visual strategies for learning and daily tasks. However, there are many people who have slightly better vision, but are still classified as blind, who have the potential to use their sight. These people could benefit from low vision care, which may include refraction, provision of magnifiers, and/or environmental modifications.

The World Health Organization defines a person who needs to be assessed for low vision care as someone “who has impairment of visual functioning even after treatment and/or standard refractive correction, and has a visual acuity of less than 6/18 down to and including 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 task.” The important part of this definition is that people should only be assessed for low vision interventions once all other treatments the person needs (surgical, medical and/or optical) have been given. The definition also emphasises the importance of vision for day-to-day functioning.

People who may be able to benefit from low vision care will want to do a range of different things. In many low- and middle-income countries, for example, many people with low vision are aged over 50 years and cannot read or write. They will have different needs, and require different services, compared to children or adults in employment.

Low vision has a significant impact on people’s lives. People with low vision may struggle to look after themselves without help. Having low vision affects their status in the eyes of others and can make social situations difficult. It reduces the ability of people to pursue an education, to look after their children, and to earn an income. People with low vision are also at greater risk of falls and death.

With our support, people with low vision can make better use of their sight to do the things they want and need to do. We hope this issue will show you how.
Understanding low vision

Clare Gilbert

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Who is likely to have low vision?

As a rule of thumb, the following people are likely to need low vision services and must be referred wherever possible:

- All children who have undergone bilateral cataract operations, both those with pseudophakia and those with aphakia
- People with diabetic macular oedema whose vision remains poor despite laser treatment
- People with age-related macular degeneration
- Children with oculocutaneous albinism
- People with optic atrophy, whatever the cause
- Any person who still has difficulty performing their daily activities because of their vision, even after treatment and refraction.

What does low vision look like?

People with low vision are affected in different ways. They may suffer from some or all of the following:

- Severely reduced visual acuity
- Blurred vision
- Visual field loss: central or peripheral
- Loss of contrast sensitivity
- Increased light sensitivity

Many people with low vision suffer from blurred vision (Figure 1), for example if they have scarring on their corneas.

People with optic atrophy or age-related macular degeneration will have loss of central visual acuity (Figure 2), which means that tasks requiring good central vision will be difficult. For example, reading, writing, threading a needle and seeing, putting on make-up, removing hair or eating. People, where their food is on the plate and whether they have finished eating, seeing if their clothes are clean, finding their own pair of shoes. If they have a full field of peripheral vision then mobility will be less of a problem.

Someone with glaucoma or retinal pigmentosa will have constricted visual fields, i.e. loss of peripheral vision (Figure 3). This makes it difficult to move around without bumping into objects on the floor. People may have difficulty finding things they have dropped. Reading may still be possible, but difficult.

Loss of contrast sensitivity (left) can be problematic for activity like driving or cooking. Even more difficult is the contrast sensitivity loss (right) that becomes more difficult.

Figure 5. Increased light sensitivity. “How you see the world” changes when you are in bright light, or glare (Figure 5).

Low vision in West Bengal

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India has an estimated 280,000 blind children, which is one of the highest in the world. According to different studies, the prevalence of childhood blindness in India varies from 0.62 to 1.06 per 1000 children in 0 - 15 age group as also the causes of blindness. Earlier studies in India attributed corneal scars as the leading cause of blindness in the country (8). However, subsequent studies found reduction in corneal blindness and globe abnormalities emerging as the major cause. In a study done in the north eastern states of India, congenital globe abnormalities was found to be the commonest cause (36%) of blindness among children (2). And according to Andhra Pradesh Eye Diseases Study (APEDS), treatable refractive error caused 33.3% of the blindness, followed by congenital eye anomalies (16.7%) (3).

It is unfortunate that such a large number of children are suffering from visual impairment and blindness but the mechanism of finding them and organizing services for them is a challenge. Different approaches have been tried to find such children: examining children in special schools, ICDS (integrated Child Development Services), school screenings are the usual ones in India. This article depicts the experience of working with the special educator workforce and scaling up the same in a large population. Sarva Shiksha Abhiyan (SSA) (Education for All Movement) is a programme by the Government of India aimed at universalisation of elementary education as mandated in the 86th amendment of the Constitution of India making free education for children aged 6 - 14 a Fundamental Right. SSA is being implemented in partnership with state governments throughout the country. This is an inclusive method of education for all differently able children and visually challenged children constitute a major bulk. Earlier, special education used to be imparted to these children through schools for the blind. But now inclusive education has evolved as the most practical way of educating visually impaired children. In fact, the concept of inclusive education developed because institutional education had some serious drawbacks:

- Number of institutions was inadequate for the total number of persons who needed them
- Establishment and maintenance of institutions was expensive.
- Individuals studying were detached from their families and society.
- Social and vocational adjustment became difficult when the individual returned to the community after training.
- Institutional education in many occasions failed to involve the community where people with disabilities came from.

According to 2011 census, the state of West Bengal has a population of 91,347,736 contributing to 7.55% of India’s population. The State has 19 districts with a population density of 1029 per sq. km. Population in 0 to 6 age group is 11.07%, decadal growth rate is 13.93% and literacy rate is 77% (82% male, 71% female). (7)

During the year 2009-11, Sarva Shiksha Mission, West Bengal took up a large scale project of identifying children with visual impairment and to help them through provision of low vision devices and corrective surgeries. Two organisations having the capacity of providing low vision services were allotted two educational districts each for this extensive work. Our organisation was one of them and we worked among half of the State’s population.

During these two years – 2009 – 11, 10,900 children (6574 (57%) boys and 4726 (43%) girls) were examined in ten districts by our team. Out of them, 3814 children were prescribed low vision devices and 3669 received the required aids. Nine hundred and ninety three students were selected for cataract and other surgeries and from among these, surgeries were performed for 605 children.

For a better understanding of the epidemiological issues related to childhood blindness, we are showcasing our experience in one remote district of West Bengal that borders Bangladesh and Assam. This study depicts our experience in Cooch Behar, an economically underdeveloped district with a population of about 2.5 million with a decadal growth rate of 13.86 and literacy rate of 75% (7).
Still a good response was received from all the stakeholders. Thirty eight special educators were successful in bringing 453 children for examination overcoming all the hurdles of communication. Children screened by teachers had high false positives but needy children were not missed out.

This project has helped many children access to normal print. Previously they were either reading via Braille system or only listening to their teachers. Early introduction of low vision devices will make them visually impaired children more confident, and they will be able to compete with their peers who have normal vision. The project has successfully included several children in the mainstream education. Still many more are left out but there is no information available about their visual status.

Most significant aspect of this project was the successful advocacy with the government and receiving encouraging support from them. In a positive move they have decided to continue this project. Another success was developing continuous relationship with the teachers and special educators are more sensitised about the need of visually challenged children because of their trained background. Their activities are also more focused towards the welfare of their students. This was evident in their involvement in the whole process. Based on their feedback from previous years, training curriculum was effectively modified.

Children with low vision

As the children were from far off places, PCC was done in all cases, since we felt that some of the unidentified children will not be able to come for a regular follow up. Other common surgeries were surgical cataractectomy, pupilloplasty, optical indirectectomy, ptosis correction (blepharochalasis syndrome constituted a major bulk) and squint correction.

A low vision device distribution ceremony was organised at a central location to create general awareness and also to encourage interaction among the parents of low vision children. Policy-makers, politicians and senior government officials attended the function and interacted with children.

Follow up:

Follow up has been conducted for all the operated cases after a period of one and six months at the district head quarters both by optometrists and doctors. A follow up meeting was conducted with the special educators to get their feedback about the use of devices. Data of all the children were analysed using WHO categories of visual impairment before and after refraction. Optometrists were using figures equivalent to N. The visual and follow light. Near vision was assessed by the ability to fix and follow light. VA was assessed by the ability to fix and follow light. VA was recorded using visual acuity test chart. All the identified children with visual impairment. Visual Acuity (VA) was assessed in each eye by using a Snellen’s “E” visual acuity test chart. All the identified children were brought to the Block level Circle Office by the special educators.

SAFETY DELIVERY

In each of the low vision camps, a team of four optometrists did a detailed examination of around 40–45 visually impaired children. A brief demographic detail, medical and family history of each child was recorded. VA was recorded using LogMAR chart. For the uncooperative child, VA was assessed by the ability to fix and follow light. Near vision was assessed using figures equivalent to N.

The visual status of children was recorded using WHO categories of visual impairment before and after refraction. Optometrists then referred the children to ophthalmologists for a final diagnosis and treatment plan.

The ophthalmologists from our organisation carried out a detailed eye examination of each child at SSM district head quarters. Those who needed surgical intervention were referred to the base hospital.

At the base hospital, children above eight years were operated under local anaesthesia, whereas younger children those who were mentally challenged, were administered general anaesthesia. For catactas cases, Intracocular lens implantation with Primary.Posterior Capsulorhexis (IPC) was done to prevent posterior capsular opacification. The children with presenting VA <6/18 in the better eye: 299 (male 111, female 88) Mean: age of children: 10.7 years. Low Vision (<6/18 - 6/60) in the better eye 97 (47.1%). Severe visual impairment and blindness (<6/60 - NPL) in the better eye 102 (52.6%).

Services at a glance

Total surgeries done: 34 children, 44 eyes (includes 29 cataracts, 5 optical indirectectomies, 4 squint, 4 ptosis corrections)

Number of spectacles dispensed: 153

Number of optical devices given: 215 (multiple devices for one)

Number of non optical devices dispensed: 226

We had high false positives but needed children were not missed out. This project has helped many children access to normal print. Previously they were either reading via Braille system or only listening to their teachers. Early introduction of low vision devices will make them visually impaired children more confident, and they will be able to compete with their peers who have normal vision. The project has successfully included several children in the mainstream education. Still many more are left out but there is no information available about their visual status.

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Conclusion and recommendation:

This project is a good example of a comprehensive approach of reaching children in large scale and providing them service with equity and also helping in designing Individual Education Plan (IEP) for the class VI students. This is the first such type of project conducted in India.

Other state governments have shown interest towards this project. Our recommendation is to incorporate this project in the National Programme for Control of Blindness in India.

Anatomical causes of blindness

Data of all the children were analysed using WHO prevention of blindness data base. Very few of them had high false positives but needed children were not missed out. This project has helped many children access to normal print. Previously they were either reading via Braille system or only listening to their teachers. Early introduction of low vision devices will make them visually impaired children more confident, and they will be able to compete with their peers who have normal vision. The project has successfully included several children in the mainstream education. Still many more are left out but there is no information available about their visual status.

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Reach the Unreached: Experience from Pune Region

PUNE'S H.V.DEASI HOSPITAL, PUNE is a tertiary ophthalmic institution with the sub-speciality departments. It received support from CBM in establishing a well equipped low vision service. CBM also helped the hospital in training optometrists and ophthalmologists in providing low vision care. It also supplies low vision devices to the patients.

The department adopted various strategies to reach all those who need low vision care. In a hospital a protocol is adapted that no person will go without visiting the low vision department if that person is in the low vision category. This is communicated to all the ophthalmologists and they are made aware about the available services and its impact on individual’s life.

In order to reach the children who are not able to access services in the hospital, the hospital sends its team of experts to outreach camps held under Sarva Shiksha Abhiyan for distribution of disability certificate to the screened children. Various studies conducted in schools for the blind across India have shown that many children can be benefitted by provision of low vision aids so the hospital conducted regular assessment of these children for low vision and provided them with appropriate devices.

In order to increase the acceptance of services by more ophthalmologists so that they refer their patients to the hospital low vision experts need to create awareness amongst by them providing them with data so the hospital conducted research in impact assessment of outreach care in pediatric and adult population and disseminates the results by presentations and seminars at various forums.

These initiatives have led to screening more than 1000 adults and 700 paediatric patients in last three years.
Low vision: the patient’s perspective

For this issue on low vision, the Community Eye Health Journal contacted low vision practitioners in India, Tanzania, Nepal, and Peru to help gather the views of eighteen people attending their low vision clinics. The people varied in age from 14 to 81, and suffered from a range of vision problems including nystagmus, retinitis pigmentosa, diabetic retinopathy, and bilateral aphakia.

The interviewees (or their parents) described how their low vision had affected them before treatment, how their life changed after they received low vision care, and what they felt they still needed. We hope these experiences of people with low vision will highlight what is important in a low vision service.

Before

Before they received low vision care, the adults said they had been unable to do their desired activities, such as driving or reading. They were worried about their vision and had negative feelings, including stress, depression, anger, and frustration. They had also felt dependent on their family, and that they were a burden to the family. The adults had also struggled to accept their condition as being irreversible.

School-age children and young adults said that they had been unable to attend school, had to drop out, or had faced great difficulties in their schooling, such as being unable to take examinations. Some of them had been treated as blind and taught to use Braille.

These young people had also felt very dependent on their vision, and that they really do need low vision devices and training.

Impact

Adults described how low vision services had resulted in the following:

- Greater independence, confidence, courage, hope, and dignity
- A better understanding of the reality of the visual loss

Children talked about how the low vision service had helped them with the following:

- Starting school
- Doing desired activities, such as reading print, even small print
- Increased independence, for example being able to read the blackboard and learning to write
- Improving the attitudes of peers and teachers...who now see I can do many things.
- Better social interaction, for example...recognising the faces of my friends.

What more is needed?

Some people still lacked the confidence to use their optical devices in public.

Most people also wanted to be informed if there were new technological developments, and hoped for lower prices for software and electronic low vision devices.

Some children did not know enough about their condition and wanted someone to explain it to them in terms they could understand.

In our experience, it is helpful to keep in touch with people who have been helped by low vision services. They can be excellent advocates for the development of better services and may help to convince others with low vision to seek help.

Children who successfully use a low vision device can also inspire other children who are still struggling.

Care provided

The care provided to both children and adults consisted of training in better use of vision, provision of optical devices, and suggestion of environmental modifications. Specific interventions included:

- Changes such as sitting near the window or using a lamp, sitting near the blackboard, using a stand for better reading/writing position and more comfort, increasing contrast through better light, using a reading slit, and using a cap to reduce glare out of doors
- Giving advice about improving the environment through painting lines or applying tape to improve contrast
- Someone taking the time to clearly explain the person’s eye problem and prognosis to him or her
- Counselling, particularly for adults who were able to see before and have lost a lot of their vision. This involved listening, discussing the implications of the vision loss and the effect on their life and emotions, and giving advice if needed.

When someone has low vision

2 Has all the medical, surgical, and optical treatment possible already been given?

3 Has the prognosis for vision been confirmed by a medical professional?

If the answer to any of these questions is ‘no’, refer the person to the appropriate services, where possible.

If we know the diagnosis, this will give us some idea of the likely impact on the person’s visual function and thus on their main visual needs (see page 2).

Ideally, people with low vision should have undergone refraction, and be wearing their spectacles, before they are given low vision support. In practice, many eye care practitioners find it too challenging and/or time-consuming to refract someone with low vision. This is why refraction should always form part of a standard low vision assessment.

Figure 1 shows the difficulties someone is likely to have, based on their distance visual acuity, and what support they may be able to benefit from. These include optical devices, non-optical devices, advice on environmental modifications, and referral to rehabilitation and (special) educational services.

In this article, we will show you how to assess a person with low vision and find out what it is they really want to be able to do. We will then outline the interventions that are possible, and give some guidelines.

Before you start

When you are faced with a person with poor vision, it is important to check that everything possible has been done to improve their vision, and that they really do need low vision services. Here is a checklist:

1. Has the person’s diagnosis been confirmed by an ophthalmologist or other eye care worker?

Once you have established that the person does need low vision services, you can begin the low vision assessment. The following are the steps that normally form part of a low vision assessment:

- Taking a history
- Explaining the eye condition
- Determining the patient’s needs
- Performing an accurate refraction
- Assessing visual functions
- Magnification needed
- Designing a management plan
- Referral for further training and support and contacting educational or rehabilitation services if needed.
- Selecting low vision devices and training the person in their use
- Suggesting non-optical interventions and environmental modifications.

Potential to benefit from optical devices such as magnifiers

Difficulties with activities of daily living: dressing, eating, walking around, recognising faces

Can see 6/18 < 6/18; can see 6/60 < 6/60; can see 3/60 < 3/60; can see 0.1/60 < 0.1/60

Difficulty

Potential to benefit from optical devices such as magnifiers

Highly unlikely

Potential to benefit from making changes to the environment (see page 12)

Need for rehabilitation and special educational services

Figure 1. How the type of assistance provided is influenced by distance visual acuity

Spectrum of distance visual acuity (ideally, with the person wearing the correct prescription)

<table>
<thead>
<tr>
<th>Distance Visual Acuity</th>
<th>Can See 6/18</th>
<th>&lt; 6/18; Can See 6/60</th>
<th>&lt; 6/60; Can See 3/60</th>
<th>&lt; 3/60; Can See 0.1/60</th>
<th>&lt; 0.1/60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty</td>
<td>+</td>
<td>++</td>
<td>+++</td>
<td>++++++</td>
<td>Highly unlikely</td>
</tr>
<tr>
<td>Potential to benefit from optical devices such as magnifiers</td>
<td>+</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td></td>
</tr>
<tr>
<td>Need for rehabilitation and special educational services</td>
<td>+</td>
<td>++</td>
<td>+++</td>
<td>+++</td>
<td></td>
</tr>
</tbody>
</table>
Taking a history

This is an important part of the low vision assessment and provides an opportunity for the patient and the patient to get to know each other. Encourage the patient to talk about their problems. Asking open-ended questions will help; these are questions starting with words such as ‘when’, ‘what’, ‘how’, ‘why’ and ‘which’—questions which don’t have ‘yes’ or ‘no’ as an answer. Ask questions about:

• Their own eye health—how their vision is affected, what makes it worse, and how it has changed over time.
• Their general medical history, their mobility, and their medications.
• Their family’s eye health history.
• Their occupation and hobbies.
• Any previous low vision assessments.

Here are examples of questions you can ask about their eye health and vision:

When did you first notice a problem with your vision?
What kinds of problems have you noticed?
What problems do you have at night?
What changes, if any, have you noticed in your vision?
What makes your vision worse?
What makes your vision better?

Explaining the eye condition

Some people with low vision will not have had their eye condition explained to them, or they may not have understood the explanation at the time. They may not have understood the eye condition explained to them, or they may not have understood the explanation at the time. It is always worthwhile taking time to explain the eye condition again, in terms the person can understand. Even if patients with low vision have heard it all before, they will probably find it reassuring to have you explain it in a new way, and to hear what they have heard from others.

Be positive. Emphasise that they have some residual vision and that you and your colleagues are committed to helping them make the most of that vision. Reassure them that they cannot harm their residual vision by using it—they will not ‘wear out’ their eyes.

Determining the patient’s needs

Start on a positive note by first asking what they can still do, before going on to ask what they cannot.

Ask about their mobility, activities, and participation. Here are some examples.

Mobility

• Can you walk beyond the house without assistance?
• Can you walk around in familiar places without assistance?
• Can you walk around in unfamiliar places without assistance?

Accurate refraction

The importance of good refraction in a low vision assessment cannot be overstated.

Refraction with low vision differs from refraction with normal vision. People with low vision are often very conscious of their vision and may have a low threshold for complaining about vision problems. They may have difficulty seeing stationary objects, stopping at the end of the line, and identifying objects in the distance. They may have difficulty seeing objects in the distance, and may need to rely on others to help them navigate. They may also have difficulty seeing objects in the distance, and may need to rely on others to help them navigate.

A 60-year-old retired professor

With age-related macular degeneration complained that he could no longer read small text, which had been an important part of his life. He had also taught college students and worked extensively on the computer at home. On further questioning, it became clear that he also had difficulties communicating with others. From the history, interview, and diagnosis, we knew that the man had central field loss and reduced contrast sensitivity, which would require improved lighting and contrast.

The low vision team assessed his best corrected distance and near visual acuity, contrast sensitivity, reading and writing ability, and the extent of his field loss.

His visual acuity, tested on a logMAR chart, was 6/36 (0.8 logMAR) in the better eye, and with a +2.00D add his near vision was 1.5M (NB) at 15 cm. His near acuity improved to 0.63M at 25 cm with an add of +3.00D, a reading lamp, and a reading slit. With these, he was able to read the newspaper and his writing was legible.

The professor was advised to wear his bi-focal glasses constantly, to read with a table lamp and reading slit, and to use a reading stand. A signature guide helped him sign documents.

He was taught how to use eccentric viewing (see page 8), which helped him recognize people more easily. He helped himself socially.

The professor was advised about the importance of explaining to his friends and family why he was not able to make direct eye contact.

He was also directed to the local government office to obtain a disability certificate and other paperwork.

Assessing residual visual function

The support we provide depends on having a thorough understanding of the person’s visual function. For example, people with poor contrast sensitivity may require more magnification than suggested by their near visual acuity alone.

When assessing someone with low vision, we therefore need to have a better idea of their overall visual function, including:

• Distance visual acuity
• Near visual acuity
• Contrast sensitivity
• Visual fields
• Light sensitivity
• Colour vision

If you work in a setting with limited resources, the improvement of distance and near visual acuity can be emphasised: the other visual functions can be tested functionally, as suggested here.

When you work at a large eye hospital, use the appropriate tests and equipment.

Distance visual acuity

We are used to testing distance visual acuity using standard Snellen charts at only two distances: six metres (20 feet) or three metres. However, when testing someone with low vision, we should preferably use logMAR charts as they give better measures of acuity. If the person cannot see the letters at a distance of three metres, we must also test at other test distances, such as two metres, one metre, etc.

Near visual acuity

It is very important to test everyone’s near vision, not just those who can read and write. Near vision is needed for a very wide range of other activities. We must know the near visual acuity so that we can prescribe low vision magnifiers for near tasks, if needed.

Near visual acuity can be tested using logMAR charts (Figure 2) similar to those used for testing distance visual acuity. It is important that comparable tests for both are used. The choice of test depends on age, development level, and literacy of the client, e.g., umbilical Es or Landolt rings.

It is useful to assess near vision at a distance of 25 cm (see article on page 9). Note that people with presbyopia may need an appropriate addition in order to read at this distance. In addition to near vision, reading and writing performance should be assessed among those who are literate. This is because reading requires other functions that are not assessed in acuity testing, for example, locating the next line of print. Near acuity is often more difficult to measure, with difficulties in reading often being missed.

The best way to assess reading is to use printed text from a newspaper or book and ask the person to read it aloud. Reading ability can be assessed by asking the person to read a newspaper or book without using magnification. This will allow you to hear mistakes and observe the person’s...
visual skills.

**Contrast sensitivity**

Contrast sensitivity is the measure of the eye's ability to detect differences in brightness and background, or small changes in brightness. Most of our world is in moderate to poor contrast. Visual acuity charts are one of the few things in high contrast!

Reduced contrast sensitivity can be assessed functionally by asking questions such as:

- Do you find it more difficult to walk in very bright sunlight, or at dawn and dusk?
- Can you see the white light switch on the light control panel in your house?
- Can you read your bills (which are often grey paper, with poor contrast)?

There are several ways of testing contrast sensitivity clinically, such as the Pelli-Robson chart, but these charts are expensive and require that the person with low vision is literate. A less expensive alternative is the Lea-low-contrast flip chart (see page 13 for ordering details), which is suitable for those who are not literate, including children. Low contrast may explain why a person with a visual acuity of 6/36 can manage many tasks well, but struggles in poor light.

**Contrast: tips for daily activities**

It is not easy to translate these findings to impact on daily activities. In general, moderate contrast sensitivity might have an impact on reading, whereas very poor contrast sensitivity might indicate the need for visual rehabilitation and mobility training.

You can help people with low contrast sensitivity by advising them how to increase contrast in their environment.

There are two main ways:

1. **Use better lighting.** For example, sit by the window to read or sew, or use a lamp. Brighter lighting can improve contrast, especially when the visual including direct sunlight, can reduce contrast.

2. **Make adaptations in the environment.** For example, use paint or coloured tape to create contrasting strips on steps or around light switches.

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**CASE STUDY 3**

Isabel retinopathy made a 75-year-old woman unsure of her bearings at home, even though she had undergone cataract surgery with intraocular lens implantation. She was unable to identify different utensils and other items, such as spices, in the kitchen. She also could not see the knobs on the gas cooker. She was seen to do her own cooking, gardening, reading, and shopping.

Pseudophakia is accompanied by loss of accommodation, while diabetic retinopathy can result in sensitivity to light, patchy field loss, with reduced contrast sensitivity and color discrimination.

These visual functions were all assessed. Her best corrected distance visual acuity was 6/60 (1.0 logMAR) with astigmatic correction. With a near add of +4.00D, she could read 1.6M at 20 cm.

The interventions recommended focusing on improving her near visual acuity and included an 8 dioptre illuminated stand magnifier, which enabled her to read 1M print, using a standing read to which amount she was comfortable. She could also use the magnifier to identify money.

She was trained in the use of eccentric viewing to assist in daily activities and was shown how to fold paper money in different ways so she could tell which amount they were for.

To help in the kitchen she was advised to use different coloured labels for different foods and to use containers of varying shapes or sizes for her spices. She was also advised to remove all unnecessary furniture in the living areas. Other non-optical interventions she liked were a signature guide for banking, and extra illumination for near work.

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**Central vision**

It is rare for a person to be completely colour-blind, but reduced colour vision occurs more often in people with low vision. This can be assessed by asking questions such as: do you have difficulty when trying to find clothes of matching or similar colours? Have you noticed any problems when discriminating shades of colour?

There are formal methods for colour vision testing, such as Ishihara plates and plates might work better (D-15), which involves colour arrangement. In practice, it is usually sufficient to see whether the person can see or match the different types of lamps in the clinic.

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**Magnification needed**

Many people with low vision can benefit from magnification: using lenses to make objects appear bigger. However, magnification has its limitations. It is important to understand these limitations and explain them to the people you are helping so they have realistic expectations about what is possible.

- **Stronger magnifiers have more power.** You might not have a strong magnifier that has a big lens!
- **Stronger magnifiers have more distortion around the edge of the lens, which means you can see clearly through the centre of the lens only.** So, although the object or word looks bigger, only a few letters or a small part of the object can be seen at any one time (see Figure 4). This reduces reading or working speed.

Therefore, we recommend you prescribe the lowest possible power of magnifier that can be used comfortably for a long time (if needed).

With electronic devices such as closed-circuit televisions and electronic readers, the same limitations do not apply. However, these devices are a lot more expensive than lenses.

**Remember!** To maximise the benefit of magnification, it is important that people wear an up-to-date pair of distance correction spectacles when testing magnifiers and that they wear their reading spectacles with stand magnifiers. For suggestions on predicting the level of near magnification someone will require, see article opposite.

**Designing a management plan**

Develop a management plan based on all the information you have gathered about the person with low vision.

- **Ask yourself:** what does the person need? This depends on their history, their physical capabilities, the nature of their residual vision, and what they want to do. You may suggest some or all of the following:
  - **Optical low vision devices:** for near or distance vision
  - **Non-optical interventions:** such as caps for glare, a reading stand to reduce fatigue, e.g. a reading guide, various lamps, filters, sunglasses, etc. See the ‘tips’ given on pages 7 and 8; the case studies contain useful ideas.
  - **Environmental modifications:** such as painting lines on stairs or using contrasting colours around the home (see page 12 and the case studies in this article).

Think about when the person should come back to see you again. Make an appointment if possible.

This is also the point during the low vision assessment where you consider what other support the person will need, for example, educational support and/or visual rehabilitation and mobility training.

Write the necessary letters or notes and ensure the person knows where to go. If possible, follow up with the referral service to check whether the recommendations have been taken up the referral. If not, why not?
How to predict the near magnification needed

It is possible to use a simple formula to predict the amount of near magnification a person might need. The actual amount of magnification needed will vary according to the person’s visual needs, environment, and the low vision device chosen. However, this is a useful starting point when selecting low vision devices to try out.

In this article, we use the testing distance of 25 cm, rather than the usual 40 cm, for two reasons:

1. Bringer objects closer makes them easier to see and improves contrast, important for people with low vision. 2. If we know the magnification needed at 25 cm, it is easy to calculate the dioptres needed to provide this.

Finding the magnification needed for reading

The formula we use is given below. It lets us predict the amount of magnification the person will need (2x, 6x, etc.).

\[
\text{magnification} = \frac{1}{\text{distance of 25 cm}}
\]

For example, if the person is physically unable to read printed matter with poor contrast (e.g., if the person is physically unable to read printed matter with poor contrast or text), 0.6 m is used; the person could not read the smallest line of text. It is important to check if the person is physically unable to read printed matter with poor contrast.

Near acuity achieved at 25 cm

- Ask the person to read aloud
- The smallest size the person can read with comfort and good speed gives their near acuity at 25 cm (Note: this is not the smallest size they can see!)
- Write down the near acuity achieved at 25 cm, whether in M or N notation.

M or N notation

M = near acuity achieved at 25 cm
N = required near acuity at 25 cm

Step 1. Find the near acuity achieved at 25 cm

- Make sure the person is wearing their distance prescription, if any
- Use a reading chart with sentences. Ask them to hold the chart at 25 cm
- If needed, particularly in older people, add positive lenses (from +1.0 to +4.0) to both eyes, to enable them to accommodate at 25 cm
- Ask the person to read aloud
- The smallest size the person can read with comfort and good speed gives their near acuity at 25 cm (Note: this is not the smallest size they can see!)
- Write down the near acuity achieved at 25 cm, whether in M or N notation.

Step 2. Find the required near acuity at 25 cm

- Ask what they want to be able to read
- Determine the text size and record the required near acuity at 25 cm, in the same notation.

Note: Don’t aim to record the smallest size a person can see. Recording the size the person can read with comfort and speed in Step 2 ensures that you will be able to choose the right amount of magnification.

Step 3. Use the formula to calculate the magnification needed

Divide the near acuity achieved at 25 cm by the required near acuity at 25 cm. This gives the amount of magnification required. For example: near acuity achieved is 2M, required near acuity is 1AK: 2AK magnification is needed to achieve this.

Now that we know the magnification needed, we can calculate which dioptre lenses can provide this level of magnification at 25 cm.

Dioptres at 25 cm = Magnification x 4

So to provide 0x magnification at 25 cm (see example above), a device of 8 dioptres (D) is needed: 2 x 4 = 8D

If you do not know the dioptres, check if the box of the device gives the ‘x’ (e.g., 2x) magnification. This is often given for a reference distance of 25 cm, which is the same distance used in this section.

Table 1. Text sizes in M notation (at both 25 and 40 cm) and in N notation

<table>
<thead>
<tr>
<th>M (40 cm)</th>
<th>M (25 cm)</th>
<th>N</th>
<th>Usual type size</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td>3.2</td>
<td>16</td>
<td>Large print</td>
</tr>
<tr>
<td>1.6</td>
<td>2.5</td>
<td>12</td>
<td>Children’s books</td>
</tr>
<tr>
<td>1.25</td>
<td>2.0</td>
<td>10</td>
<td>Magazine print</td>
</tr>
<tr>
<td>1.0</td>
<td>1.6</td>
<td>8</td>
<td>Newspaper print</td>
</tr>
<tr>
<td>0.8</td>
<td>1.25</td>
<td>6</td>
<td>Paperback print</td>
</tr>
<tr>
<td>0.6</td>
<td>1.0</td>
<td>4</td>
<td>Footnotes</td>
</tr>
</tbody>
</table>

Magnification for tasks other than reading

M = Near acuity achieved at 25 cm

Magnification is useful for many other tasks, not just reading. For example, sewing, sorting seeds, and drawing.

For people who cannot read, test their near vision using an E chart and record the size they can very easily see at 25 cm (Step 1). It is much easier to see the directions of just five ‘E’ letters than it is to read sentences, so the tester must resist the temptation to ask the client to read smaller and smaller sizes. Stop early!

Estimate a size equivalent to the level of detail they would require for their activity (Step 2). You can now predict the near magnification required (Step 3).

Use the actual activity they want to perform to try out the different magnifying devices, so keep sewing thread and needles, or seeds for sorting, etc., in the clinic; or ask the person to bring their materials. Advise them on different ways of holding their work and the magnifier, and give advice on lighting, if they need two hands free for their activity, spectacle magnifiers are the best device to use.

Use this method to help patients choose a suitable magnifying device.

Use a reading chart with sentences (or an E chart for people who cannot read). Hold it 25 cm from the face. VIETNAM

PRACTICAL ADVICE

How to train people to use low vision devices

Ving Fai Chan is an optometrist who works for the International Centre for Eye Care Education (ICEE). He is a lecturer at the Asmara College of Health Sciences in Eritrea and is the only person providing low vision services in that country.

The first time I tried to drive a car, my dad was sitting beside me, expecting me to do it right the first time. When I struggled, I was extremely disappointed and felt I would never drive again.

It is the same when people with low vision try to use a device for the first time. We, as low vision practitioners, may expect them to know how to use the low vision devices perfectly, without giving them any encouragement or training. We think that, as long as we have prescribed a certain product that has achieved his or her desired vision in the clinic, our job is done. Far from it!

Using low vision devices involves the development of completely new skills, often involving complex hand-eye coordination. And this requires practice. What seems natural and easy to us, such as focusing a telescope, feels quite unnatural to a patient the first time. The only way to solve this problem is to support and encourage our patients.

Here are some basic steps:

1. Always explain to patients that if they are unable to perform the task the first time, emphasise that this is normal.

2. Try to explain that there are things they can and cannot do as a result of their decreased vision, even with the help of the low vision devices. If that is not made clear, patients will have unrealistic expectations and will be disappointed with the results – which means they may give up learning how to use the device.

3. Give clear and step-by-step instructions. People with low vision usually respond well to verbal instructions. You can also give written instructions if the person or a family member is literate. Use good contrast and bigger letters where possible.

4. Provide regular, routine training. Teach your patients new skills only after they have mastered the previous ones. Giving too much information at once will make your patients feel stressed.

5. Follow up your patients. Everyone loves to be cared for. Encourage them and praise them when they have done well. Try to build their confidence and listen to their challenges. Sometimes it is better to listen than to talk.

6. Help them to solve their challenges one at a time. Sometimes meeting someone else with low vision can show patients that it is possible to overcome their problems.

7. Whenever my patients come back with a problem, providing support and encouragement is always the best way to help them.

Selecting a low vision device

Start by thinking about the following:
The person’s visual abilities: can both eyes be used? Think about refractive error, ability to accommodate, and age.

The task the person wants to do: can one or both hands be free?

The time for the task: short (such as checking a medicine label) or long (reading a story)? For a short task, a hand-held magnifier is fine, but for longer periods of reading, dome, stand, or spectacle magnifiers would be better.

The physical condition of the person: If the person’s hands tremble, a hand-held magnifier is not useful and a spectacle magnifier would be better.

Other considerations include:

- The availability of the device
- How acceptable it is
- How much it costs
- How much the person has to learn to use the device. Will the person come back if the device is difficult to use?

At the first appointment, try to focus on providing just one low vision device.

Choose the easiest problem to solve, or the one that is most urgent for the patient. It takes time to learn how to use a new low vision device; learning one device successfully builds the person’s confidence and they will be more likely to come back for further support.

Depending on the task the person wants to do, demonstrate one or more low vision devices that will provide the magnification they need. Allow them time to try the devices for themselves to see which work best.

Where possible, let them do something similar to what they would like to do at home, work, or school. Check the ease with which they are able to use the different devices and suggest modifications as needed. For example: add a reading guide, provide a reading stand, or increase available light.

Adapting the magnification to fit the person

The magnification you predict a person will need (see page 9) is merely a starting point. Consider increasing the magnification by the smallest step possible for the following factors:

- Poor light: if there is no electricity or the light is dim and cannot be improved
- Tasks that require a longer time, such as reading or studying
- Poor contrast, such as bills or other printed matter with poor contrast
- A longer working distance needed, for example, if the person is physically unable to hold reading materials closer.

Demonstrate one or more devices that will provide the magnification the person needs to do their chosen tasks, and let them choose which one works best.

It is important to listen to the person: what is comfortable for them? What can they physically manage? There is no point in giving a person a magnifier which they don’t enjoy using.

With thanks to Tanuja Britto (ophthalmologist) and Anita Jayan (rehabilitation professional), Joseph Eye Hospital, Tiruchirapalli, India
Making life easier for people with low vision

Clare Gilbert
Co-director, International Centre for Eye Health, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, UK; Clinical Advice, Sightmatters.

There are many things you can suggest that will help people with low vision make the most of their vision, whether they are able to benefit from magnification devices or not. If you are working at the community or at primary level, remember that these environmental modifications should never be a substitute for professional care: always refer someone with low vision for an eye exami-
nation, refraction and low vision services wherever possible to you or you are working at district/secondary or tertiary level, refer your patient for vision rehabilitation.

The suggestions given here are a good starting point, but some people may require further support and training in order to make the most of their vision. A way of remembering environmental modifications is to think about:

- **Making things bigger and bolder**
- **Using colour and contrast**
- **Improving lighting, using lines, and trying to lift what you want to look at.**

**Bigger and bolder**

Bringing things closer to our eyes makes them appear bigger. This mainly helps young people and children who have very good accommodation.

People (including children) who have had cataract or cataracts with presbyopia will need a near add (a plus lens) to bring things into focus if they bring them nearer.

Use chalk or a felt tip to write **bolder** messages, and write with larger letters than usual (Figure 1). Keep it short and simple! Put it somewhere visible and simple! Put it somewhere visible and simple! Put it somewhere visible and simple! Put it somewhere visible and simple! Put it somewhere visible and simple! Put it somewhere visible and simple! Put it somewhere visible and simple! Put it somewhere visible and simple! Put it somewhere visible and simple! Put it somewhere visible and simple!

If you are working at primary level, remember that these environmental modifications are perhaps the best way to use for people who have lost most of their vision, whether they are able to make the most of what vision they have or not. At meal times, people with low vision can sit near the window or doorway so they can see what they are eating and when they have finished.

**Lighting, lines, and lift**

Lighting is perhaps the best way to improve contrast, so if someone wants to read make sure the page is well lit. Ideally, the light should shine directly onto the page, but without producing glare. It should not shine in their eyes. Good lighting in darker areas of the home is important, particularly where the person may be nervous, e.g., going up and down stairs or going to an outside latrine.

**Colour and contrast**

Colour can be used in many ways to help someone in their home. For example:

- **Use brightly coloured plates (Figure 2)**
- Put red tape around light switches
- **Use paint or red nail varnish to put spots on red to help the person line up the “off” buttons on the gas cooker**
- Stand the person’s shoes on a brightly coloured mat to distinguish them from other family members’ shoes
- Mark the bottle of medication that is to be taken in the morning with a big yellow line (to represent sunrise) and the evening bottle with a big black line (to represent night).

**Lines, nearness, and contrast**

Many people with low vision find it hard to follow a row of text: they may not be able to scan the words easily, they may find it hard to know when they have got to the end of a row of text, or they may struggle to find the beginning of the next line. Partly blanking out the lines above and below the line being read, for example, using a reading slit (see page 10), makes the visible line of print easier to read. A reading slit can be made of black card with a rectangle cut out of it. Lines can help with mobility and safety. For example, paint the edge of stairs in a contrasting colour, or put white paint on the top of stones which mark the path to a neighbour’s home.

**Lift**

Figure 4 shows a locally made, foldable reading stand, lift the page closer to the eyes and makes reading less tiring, particularly if magnifiers are used.

**Useful resources for low vision**

**Low vision devices**

- **Hung Kong Society for the Blind**
  For visual assessment charts, refraction equipment, training materials, and low vision devices. Visit www.blsh.org.hk

- **IC EE Global Resource Centre**
  For low-cost spectacles, frames, lenses, and low vision devices. Prices for low vision aids start from US $2.50. Contact Visvanath Pillay at visvanath@iceeafrica.co.za or +27 310223811.

- **Internet browsing support**
  Get Help Today LowBrowse™ is a free add-on to the Mozilla Firefox web browser, which is also free. It lets users read all text in web pages in a special reading frame at the top of the screen. The frame presents text in a single line and users can choose the size, font, colour contrast, and letter spacing without having to zoom in and out. It has a speech option which reads the text.

- **Online resources for low vision**
  Mozilla Firefox: www.mozilla.org (32 MB)

- **Community Eye Health Journal back issues**
  These back issues are available online (www.cehjournal.org - click on ‘Past issues’) and on the Community Eye Health Update CD which was sent out with Issue 76: Instruments and Consumables. Please let us know if you have not yet received a copy. New subscribers: an updated CD will be sent to you in 2013.

Vol. 20 No. 62, 2007. The visually impaired child


- **How to make an eye care more accessible for people with low vision**

- **Jaya Bhavatana**
  Low Vision Consultant, Spectrum Eye Care, Prasad Chambers, 169, Peters Road, Gopalapuram, Chennai, Tamil Nadu, India 600086.

**Good patient flow**

- • Unit should be laid out in such a way that it is easy for patients to go from one part of the unit to another
- • Some hospitals paint coloured lines on the floor which patients can follow. For example, a brightly coloured line may lead from registration to the first waiting area
- • Remove obstacles that people with low vision may fall over or collide with.

**Use of colour, contrast, and lighting**

- • Use large, clear letters for all the signs in the department. Ensure there is good overall illumination and avoid creating glare, which could be caused by using shiny white tiles on the floor and walls. For signs, use colours with high contrast, e.g., white or yellow lettering on a black or dark background Before you make any changes, make sure people with low vision can read the signs!
- • In the waiting area, use brightly coloured chairs, or paint them in a contrasting colour compared to the walls and floor.This will help people with low vision to find them and see the ones that are empty
- • Use tape or paint to apply a thick line to the edge of steps to make them more visible. Use ramps with a handrail instead of stairs, if possible
- • While handrails and toils against white tiles can make bathrooms very difficult to use. Change the colour of the walls and/or floor to improve contrast
- • If there are lifts, put a brightly coloured arrow or ring around the call button, or paint the door a different colour (Figure 2).

**Staff assisting someone with low vision**

- • Be patient; people with low vision may have visited many eye units or professionals already, and have told their stories many times before
- • Be kind: people may initially be angry when they are told they have treatable visual loss. Listen and be supportive, but do not give false hope.

- **Low vision courses**
  Kilimanjaro Centre for Community Ophthalmology, Tanzania

For information, contact Genes Mng’anya, KCCD, Good Samaritan Foundation, PO Box 2254 Moshi, Tanzania. Tel: +255 27 275 3547. Email: genes@kccd.or.tz or visit www.kccd.net


October 29–30: Population-based approach to establishing a low vision service
Low vision care: who can help?

Karrie van Dijk
IBM global advisor on low vision; low vision consultant to Light for the World Netherlands and the Klinički Centar za Oftalmologiju za Plodno Eye Care System, Serbia.

We know that, in many low- and middle-income countries, low vision services are limited to tertiary or teaching hospitals, which means that most people are not able to access them. If this is the case, who can those with low vision turn to for help?

• People with low vision do not fit comfortably within the job descriptions of most health and education professionals.
• They are not blind, so rehabilitation workers may not feel able to help them.
• Clinicians (ophthalmologists, optometrists, and other mid-level personnel) feel there is nothing more they can do.
• Optometrists and refractionists can improve their vision, but cannot help them see “normally.”
• Special education teachers are usually trained just to work with children who are blind, and may not have the additional training needed to help children use low vision devices and advise them about where and how to use them.

In fact, the services of all of these people are vital to ensure that the person with low vision can live a full life.

Providing a basic low vision service at district level: what is the minimum we need?

The Low Vision Working Group of VISION 2020 has endorsed a Standard List for low vision services.1 However, it may not always be possible to purchase or access all the items on the Standard List. We have put together a list of the minimum equipment and devices you would need to offer a basic low vision service at a district level. This list is based on our experience in the field, and we hope it will help you to start providing low vision support where no other service is available.

Keep accurate records of who you see and how you have helped them. Collect quotes from patients saying how they have benefited, and use these and your records to ask for further training, increased funding, and additional equipment for your low vision clinic. Always refer people with complex needs for services to a higher level.

One of the most important things we can do, whatever our own role, is to be aware of what other services may be available to the person with low vision and refer them. And we must communicate with the person, the family, and our colleagues in these other services about the care the person needs, in clear and simple language.

Importance of referral

People with low vision may need clinical care, referral, and rehabilitation support, and children and others in full-time education will also require educational support. We may be the first point of contact for the person with low vision, or their last hope for help. Whatever the case, it is our responsibility to find out whether the people who come to us have received clinical and refractive care. If they have not, it is essential that we refer them. If they have, we must find out what other support they might need and refer them.

But it is not enough to just refer – it is also our responsibility to make contact with our colleagues in local community rehabilitation and educational support services. Refer people as appropriate, and share information with these colleagues about any changes in the needs and vision-related abilities of the person with low vision.

Different levels of low vision care

Primary/community level

Nurses, optometric nurses, community-based workers, and other mid-level personnel can do the following:
• Be alert and identify people who might have low vision
• Refer them for diagnosis, prognosis, and good refraction
• Refer older children and adults who have useful vision to low vision services at secondary or district level
• Refer young children and adults with complex needs for services at secondary or district level
• After diagnosis, refraction, and referral for low vision care, advise on non-optical interventions and environmental modifications (pages 7, 8, and 12) and refer for educational support and community-based rehabilitation if needed.

Secondary or district level

At secondary or district level, services are aimed mainly at adults and older children who want to access print or perform tasks that require good near vision.

Beyond the clinic

There will be more people with low vision in the community who need our services. Think about how you can reach out to tell them about what you offer. Plan low vision outreach clinics, or link with others working in the community.

Visit schools for the blind – perhaps there are children who will be able to use their remaining vision if they receive low vision support.

Low vision work may be challenging, but it is immensely rewarding!

Improving access to low vision services

Our recent survey1 found that low vision services were often inaccessible to large numbers of people in low- and middle-income countries.

Based on the findings of this research, we suggest three areas for action: human resources, sustainability of services, and advocacy. However, it is important to keep in mind that these strategies must be adapted to suit your situation.

Human resources

• Integrate low vision into existing ophthalmic and optometric curricula and include it in the practical training of rehabilitation and educational workers
• Offer informal low vision workshops and courses for eye care workers who have not received formal training
• Delegate tasks to less specialised health workers

Sustainability

Strengthen community-based rehabilitation and outreach services.

• During outreach, you could explain or show how the home environment can be adapted and make timely referrals to district services. Through outreach, people can be followed up to ensure they are still able to use their low vision devices, and you can give refreshers to those who need it.
• In addition, children with poor vision can be detected and supported early.
• Outreach services should be carried out on a regular basis, although the frequency may vary, depending on need.

Integrate low vision services into existing education, rehabilitation, and eye care systems. Establish appropriate and healthy collaborations between the government and the private sector.

References
1. Chiang PPC, O’Connor, P., Le Mesurier, R.T., Keeffe, J.E. Non-governmental organisations must work together with the private sector and government to support and fund low vision services. Plan to ensure that this work in the long term, the government must take the lead and take ownership of programmes and services.
2. Advocacy We recommend two strategies: 1. Use strong research evidence on which to formulate policy. 2. Encourage NGOs and all stakeholders with an interest in low vision to come together under one umbrella organisation, i.e. a national VISION 2020 or peer organisations. The group can then deliver the policy message with one clear voice. Once advocacy and lobbying have started, low vision planning must be done at the implementation level. For instance, encourage local government and policy makers to include low vision in their district VISION 2020 or eye care plans.

Further reading

Optical low vision devices

• Spectacle magnifiers: locally made high positive add spectacles, from +4D to +12D, in steps of 2D.
• Four hand-held magnifiers (non-illuminated) from 2D to 20D. For example, one of 6D, one of 100, one of 150, and one of 200.
• Non-illuminated stand magnifiers from 2D to 100D. For example, one of 12D, one of 160, one of 240.
• Use a variety of locally available sunglasses in different shades if filters are not available.

Optical low vision devices

• Streak retinoscope
• Direct ophthalmoscope
• An ordinary trial lens set; a full aperture trial set is preferable
• Universal trial frames
• At least one pair of paediatric trial frames
• Pen torch and measuring tape.

Vision assessment equipment

• Distant LogMAR test charts: at least have tumbling Es nearby.
• Near vision tests: at least have tumbling Es.
• Reading acuity test. This can be created on computer using N or M sizes.

Ophthalmic equipment

• Standard裂 field low vision services. Comm Eye Health J 2004; 16(47): B.
• Hassan Vlasic, Establishing low vision services at secondary level. Comm Eye Health J 2004; 16(47): 5. Both available on the Community Eye Health Update CD and online: www.ccmajournal.org/journal.html

Further reading

www.cehjournal.org/journal.html
Improving patient flow through an eye clinic

The flow of patients through our eye programme is about making their journey easier while making the best use of our own time and resources in the eye clinic. It involves understanding the necessary steps and processes, giving us more time to focus on our patients and on providing a good – and friendly – service. Eye care administrators and managers benefit too: better patient flow reduces waste and makes more efficient use of theatre time and human resources, which in turn reduces costs, attracts more patients, and improves cost recovery.

Thinking about what our patients value can help us to optimise patient flow. Generally speaking, patients value everything that provides them with a good outcome, a simple (preferably one-step) referral, a correct diagnosis, the right information and advice, the right treatment, and a convenient follow-up and aftercare. They do not value things that seem unnecessary to them, for example: waiting longer than seems reasonable, having to provide the same information more than once, or travelling to the hospital more than once when two visits can be safely combined.

It is therefore very helpful to look at our eye service as a whole from time to time, particularly if we have received negative feedback from our patients. We must examine everything we do from the moment of first contact with our patients to the time they are finally discharged after a successful follow-up examination.

The good news is that, by thinking about our patients and how to provide them with a good experience in our clinic, we will be able to make changes that benefit the clinic as well. See Table 1 for some examples.

The patient journey

It helps to consider the patient’s visit to the eye clinic as a journey. Here are some examples of the different ‘stations’ along this journey to help plan your patient flow through an eye clinic:

<table>
<thead>
<tr>
<th>What patients want</th>
<th>What the eye unit wants</th>
<th>How improving patient flow could meet the needs of patients and the eye hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficient use of staff time</td>
<td>Efficient use of staff time</td>
<td>If some staff are waiting for patients, find areas where patients are waiting for staff and move the staff to that part of the process. How long do they have to wait before</td>
</tr>
</tbody>
</table>
moving through each station? You could assign a staff member or volunteer to visit waiting areas and monitor the waiting times. What do patients think? You could conduct exit interviews with patients or consider mapping a staff member or volunteer to do patient shadowing (see page 23).

Look at the patient’s physical journey through the clinic. On a detailed plan of the clinic, trace the paths they have to walk between each of the stations. Are there any unnecessary back and forth movements? Do patients know where to go? Do staff often have to stop what they are doing to help direct patients?

Trace the paths different staff members have to take as they carry out their various daily tasks. Include support staff as well, such as administrators, porters, stock room staff, etc. Ask staff: is there anything that could be changed to make their work easier?

Look at the use of equipment. Is there enough equipment taking up valuable space in the passageways or consulting rooms? What are the times and days of the week, month, or year when the clinic is busiest?

Look at the procedures for stores and purchasing, and at how you keep records and identify patients (see ‘Further reading’ on page 35). Are patients required to provide the same information more than once?

Knowing what to change

There are various approaches to analysing patient flow, with names like ‘process mapping’ and ‘value stream mapping’ (see ‘Further reading’ on page 35). Finding and eliminating bottlenecks is another approach and is relatively straightforward. The aim is to reduce waiting times and make better use of equipment and the time of clinicians.

Bottlenecks are easily easy to identify: they are the areas with the longest queues! For example, one often sees long queues in front of the visual acuity testing station, whereas, in another part of the clinic, the screening station is waiting for patients. In this instance, the visual acuity testing station is the bottleneck – it is the part of the clinic where patients are getting stuck. Using an additional person at the visual acuity testing stage would speed up the flow of patients through this area and provide a steady supply of patients at the screening station. Patients will therefore have a quicker journey, and eye care workers’ time will be used more efficiently. It is worth noting that this is a process of ongoing improvement: once one bottleneck has been dealt with, it will very soon become clear if another part of the clinic has become congested and will require attention.

How to make changes
Once we better understand patient flow in our eye clinic, and where the delays and inefficiencies are, the next step is to talk to clinical and support staff about how improvements can be made. It is important to create an atmosphere of teamwork and collaboration, and to encourage everyone to contribute their ideas. Janitors or stock control clerks, for example, may offer valuable insights into everyday processes that can be streamlined.

Giving staff an opportunity to contribute has the added advantage of making staff members feel part of a team; agreeing on a shared goal also makes it easier for people to work together.

Practical suggestions

Becoming better organised allows us to make better use of available clinic space and infrastructure and to make better use of staff time.

This can often avoid or delay the need for an expensive expansion programme! Here are some practical ideas for improving patient flow.

Better systems

• Standardise procedures in the clinic. This will allow more patients to be seen in a day and make it easier to keep quality records.
• Use tags or stickers on charts to make it easier to identify.
• Make use of helpful technology where appropriate. For example, use computers for indexing records or use devices that build up intraocular pressure readings.
• Some days are busier than others (e.g., weekdays are usually busier because of weekend emergencies). Part of a solution to an overcrowded clinic may involve moving clinic activities to times when there will be a better spread of patients throughout the week.
• To reduce unnecessary back and forth movements, the idea is to use logical sequence so that patients can flow through the clinic in an orderly fashion.
• Use mobile phones (cellphones) where possible. This allows for quicker and cheaper communication: staff can talk to one another, or to other services, such as low vision or rehabilitation clinics, must form part of the service you offer.

The spacing of follow-up visits should also reflect the patient’s situation and balance the need for good clinical care with the ability of patients to travel to the clinic. Clearly indicate the date of any follow-up visits on the patient’s record, and send reminder messages by cellphone (mobile phone) if possible.

Optimising patient flow is a journey of ongoing improvement. We hope that this article has helped you take the first steps.

CASE STUDY: KILIMANJARO CHRISTIAN MEDICAL CENTRE (KCMC), TANZANIA

Improvements in the ward and in theatre

Once the new community outreach programme started bringing in large numbers of patients, especially late in the day, the need to make ward and theatre procedures more efficient became critical. The team decided that it would be more efficient if the counselling (a trained nurse) working in the outreach programme recorded vital signs, even those patients who were not being operated on. This educated the patients right there in the field. As a result, the ward nurses had less time to talk to each other’s colleague. New forms, designed by an external nurse consultant working with the eye department, were introduced. In the operating theatre (OT), improving efficiency was partly a matter of clearing unnecessary equipment and supplies from the OT so that an extra operating table could be installed. It also required many discussions with the doctors as to how the OT should be run and the importance of starting on time.

Under the leadership of the nursing co-ordinator, who was supported by positive feedback and praise from the head of the ophthalmology department, more nurses were asked to take pride in their accomplishments; this was a modest but important step forward in achieving better attitudes and motivation.
Media’s role in eliminating avoidable blindness

V Sivridi Sunderarajan, Development Communication Officer, VISION 2020: The Right to Sight – INDIA

There is a need to go to the ground level to understand the situation and then write out the key messages. Stories in the air-conditioned offices will not help us write effective messages.

Mr SK Kulkaari, Advisor, Kesari newspaper.

“Be accurate, consistent and don’t compromise ever on facts but at the same time there is nothing wrong make your story more presentable. "I feel every story has to be saleable. “I feel every story has to be saleable, news worthy, simple and to be immediately approachable by the readers. At the same time, I don’t feel that the communication should be too technical. “We have to make sure that the information is interesting and that is the key thing.”

Mr SK Kulkaari who has travelled far and wide in the country and has been very presentable in promoting development sector news agreed that “if we have to reach out to the masses in the villages, we have to go with the language newspapers. It has to be in a language that is understood by them.”

Ms Aarti Dhar of The Hindu who has been reporting on health issues for a decade now was also of the same opinion, “As far as English versus vernacular papers are concerned, English papers like The Hindu or NDTV may be effective, if one wants to influence the policy makers, but when it comes to the masses, it is best to approach through the vernacular press.”

Dr Neeraja Prabhakar, Programme Executive of government run All India Radio, Chennai and Mr Ranganjan, Chief Reporter, Dinamani, Chennai – leading language daily from south India.

The one common message threaded the presentations of all the media persons was that the communication that is given for publishing should be interesting, saleable, news worthy, simple and to target the vernacular papers.

Participating in the panel discussion for the media, which was conducted by Col (Retd) Dr Deshpande, eminent journalist Mr N Ram emphasised the increasing reach of the language newspaper in India. He said the educational role of the newspapers should be better tapped.

However what is of utmost importance is that such workshops be held different places regularly, “It has to be more presentable. If we are talking about stories on blindness then a visual story is any day more effective than a 200 words story in the print media.” suggested Mr Arun.

Mr Kulkaari came out with an action plan and suggested that NGOs could have a panel of writers, maybe journalist, who could write popular language about eye care messages. “We have to go to the ground level to understand and then write out the messages. Sitting in the air conditioned offices will not help in writing effective messages.”

Senior media persons, Mr Ram and Mr Kulkaari who both have the experience of heading newspapers had some suggestions to encourage media coverage. Mr Ram took the example of MS Swaminathan Research Foundation who had held regular workshops on genetics to sensitise the media. The result may not be immediate but in the long run this strategy does help.

Mr Kulkaari suggested a fellowship where journalist can be assigned to study a particular problem in a particular area. This will take care of creating awareness in remote areas like the north east and most important that writing well is the key.

On damage control reporting and about negative reporting, Mr Ram said that in event of accident/infection, the organisation should reach the media with their story first before the news is distorted and published. He also urged that such workshops be held different regions.

The way forward for VISION 2020: The Right to Sight – India is now to analyse the inputs from the media, prepare a guideline on how in approach and how effectively to utilise them to reach to our target audience.
World Sight Day (WSD) an international day of awareness, held annually on the second Thursday of October to focus attention on the global issue of avoidable blindness and visual impairment is observed by a majority of eye care organisations across the globe. In India, VISION 2020: The Right to Sight – India and its member organisations observed the World Sight Day with a number of events ranging from walkathon, painting exhibition by school children, a cultural programme by the visually challenged children, exhibition, a huge visual acuity chart and many more innovative events nationwide based on this year’s theme ‘Eye Testing for All’. All towards draw attention towards the need for a regular eye check up.

VISION 2020: The Right to Sight – India held programmes over two days – October 10 & 11, 2012; a technical session - ‘Glaucoma: an emerging eye care challenge in India’ at Sankara Eye Hospital, Anand, Gujarat on October 10, 2012 emphasised on various aspects of glaucoma with a special emphasis on problems in Gujarat state, the venue of the session. Eminent ophthalmologist from across the country and from Gujarat through their presentations discussed what needs to be done to manage this emerging eye problem, which is the third leading cause of blindness in India. There was good participation from the government both from the Central and the State government departments of health and offered a platform to VISION 2020: The Right to Sight – India for advocacy.

Banners and flags with messages on the need for a regular eye check up carried by enthusiastic children marching to the tune of popular songs played by a band marked the opening of events on October 11, 2012; the World Sight Day. The event was organised by Care Group, member of VISION 2020: The Right to Sight – India in Gujarat. The walkathon was flagged off by Ms Sujaya Krishnan, Joint Secretary, Ministry of Health and Family Welfare, Government of India and Mr Ashwini Kumar – I.A.S, Municipal Commissioner, Vadodara, Gujarat and saw participation from school children, ophthalmologists from the city who weaved their way through the busy road of Vadodara, Gujarat.

Dr N K Agarwal, Dy Director General (Ophthal), National Programme for Control of Blindness, Government of India and Col (retd) Dr Deshpande, President, VISION 2020: The Right to Sight – India in Gujarat. The walkathon was flagged off by Ms Sujaya Krishnan, Joint Secretary, Ministry of Health and Family Welfare, Government of India and Mr Ashwini Kumar – I.A.S, Municipal Commissioner, Vadodara, Gujarat and saw participation from school children, ophthalmologists from the city who weaved their way through the busy road of Vadodara, Gujarat.

Dr N K Agarwal, Dy Director General (Ophthal), National Programme for Control of Blindness, Government of India and CoI (retd) Dr Deshpande, President, VISION 2020: The Right to Sight – India in Gujarat.

The school children held an exhibition creatively depicting various problems of eye care. The best six paintings from this exhibition will form part of the calendar for 2013. In a unique effort, Ms Elizabeth Kurian, Secretary, VISION 2020: The Right to Sight – India requested a couple of school children and the dignitaries for the event to blindfold themselves for a minute to experience how the visually challenged’s world would feel. After a minute when the children removed the blindfold and were asked to share their experience, prompt came the reply “we cannot see the beauty of the nature.” Ms Sujaya Krishnan, Joint Secretary, Ministry of Health and Family Welfare, Government of India addressed the children advising them to participate in the school screening programme. She also gave them tips on nutritive food to eat for healthy eyes.

Dr NK Dr N K Agarwal, Deputy Director General (Ophthal), National Programme for Control of Blindness, Government of India spoke about the need for eye testing for all and how we can do the basic screening at home.

Visually impaired school children gave hearth warming performance of popular songs from films and dance.