

Low Vision Care in Africa:

*Practical Approaches to Clinical Services,
Educational Engagement and Planning*

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FOREWORD

Childhood blindness is included as one of the main disease programmes under the VISION 2020 Right to Sight initiative. Low vision, whether in children or adults, has received much less attention, however there is a growing interest in addressing this difficult and complex problem.

While the global estimates of the prevalence of vision loss in children and the prevalence of low vision remain unclear there has been considerable evidence of a reduction in vitamin A related blindness and infectious causes of blindness in children. Most of these causes lead to total blindness as opposed to low vision and it is unlikely that reductions in these causes of blindness has had much impact on the prevalence of low vision in children.

The Kilimanjaro Centre for Community Ophthalmology (KCCO) started working in the area of low vision in 2005 with the recognition that childhood eye care in much of Africa was not comprehensive in nature; in many settings there were well trained paediatric ophthalmologists working in isolation while in other settings there were “low vision technicians” without any link to the eye care or education networks.

This manual has been developed with the providers and planners in mind; it is an attempt to provide those individuals at hospitals, training schools, and other settings with the knowledge and understanding of implementing low vision within an overall VISION 2020 programme. While the focus is primarily on children, this manual can also assist programmes to manage the low vision needs of adults. In this manual we are not trying to create an advocacy tool but some of the messages in the planning section can be adapted for this purpose.

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INTRODUCTION

Low vision can be defined functionally as an irreversible loss of vision that (severely) impedes an individual's ability to learn or perform some or all of their usual and age-appropriate tasks but still allows some functional use of vision for daily activities.

The World Health Organization (WHO) formulated a working definition of low vision in 1992 to identify persons who would benefit from low vision services: "A person with low vision is someone who, after medical, surgical and/or optical intervention, has a corrected visual acuity in the better eye of $< 6/18$ down to and including light perception or a central visual field of < 20 degrees, but who uses or has the potential to use vision for the planning and/or execution of a task."

The use of these two definitions ensures that visual acuity is not the only criterion determining access to low vision care but that a person's vision-related problems and needs are taken into account. Important messages are that low vision cannot be corrected to normal vision levels and covers a range from mild to severe visual loss but excludes people who have no light perception and those who have no functional use of vision.

This manual uses both the functional definition of low vision and the WHO working definition. We do, however, include refractive correction in planning for low vision care for a simple reason: in most settings where a low vision service is

being planned and/or implemented, personnel involved in planning for or providing these services also have to ensure that refractive correction is provided.

The epidemiology of low vision is still little understood; how many children have low vision? What are the primary causes of low vision? Is there variation in low vision epidemiology in different settings and what might account for any variation? This manual will not be able to address these questions; instead we aim to provide a practical guide on how to plan and implement low vision services.

This manual covers clinical low vision services, linking clinical services with educational services, and planning and monitoring low vision services. Information included in this manual should be viewed as current preferred practices; as more knowledge and experience is obtained, this manual can be improved.

There are likely to be incorrect beliefs about the use of limited vision, the benefits of low vision care and the services that children with low vision need; these often delay appropriate treatment, hinder educational advancement, and limit the daily activities of these children. It will require a concerted effort by both the eye care and the educational community to address many of these myths.

Children with low vision deserve our support and assistance to achieve the best possible quality of life.

COMPONENTS OF LOW VISION SERVICES

Providing low vision care to children requires the cooperation and involvement of many different people: clients, family or principal carers, the community in which the client lives, community based workers, health and eye care staff, education staff, other professionals involved in working with children with disabilities, and local and regional level government officials responsible for eye care, education, and services for people with special needs.

In order to ensure that people with low vision access and benefit from low vision care, they need to be identified as needing low vision services, referred to eye care personnel with the appropriate skills, obtain all eye care interventions needed (surgery, spectacles, optical and non-optical devices), receive advice and training in how to use their (improved) vision in the best possible way at home, at school and at work, and need to be followed up regularly (**Box 1, 2**). The stages listed in **Box 1** will be described in detail in the next sections.

Box 1: Education of children with low vision

Stages	Who is responsible?
<ul style="list-style-type: none"> • Detection + identification <p>↓ Referral to eye care</p>	Education, Parents, Health/eye care
<ul style="list-style-type: none"> • Clinical assessment + Advice + first training <p>↓</p>	Eye care
<ul style="list-style-type: none"> • Getting the interventions needed <p>↓ Referral to education, rehabilitation, employment</p>	Parents? Eye care? Education?
<ul style="list-style-type: none"> • Assistance in use of 'best' vision in school + training in use devices <p>↓</p>	Education
<ul style="list-style-type: none"> • Monitoring / follow-up 	Education, Parents + Eye care

(‘Best’ vision = Vision after eye care interventions: with spectacles, devices, if prescribed, *and* with non-optical interventions such as good lighting and optimal placement in the classroom)



Looking at the different stages needed to provide comprehensive low vision care, it is evident that good coordination between the different stakeholders is vital. It needs to be clear to all involved who is responsible for what activity (including funding) at different stages in a child's life.

Ongoing training of clients, their carers and the different professionals involved in the provision of low vision care needs to be organised to ensure that quality services address the needs of the clients (see section **Training**).

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Box 2: Low vision needs of children as they start school

- Timely access to eye care services (before they start school)
- Access to good quality eye surgery
- Access to quality refraction and affordable spectacles, to low vision assessment and low vision devices
- Appropriate enrolment: in the local school (with regular specialist support if needed) or in a resource centre/special school where a specialist teacher is permanently based
- Educational assistance at school to promote use of vision for learning as much as possible, including facilitating access to their own print schoolbook, large print or Braille as needed
- Regular (annual) follow-up by eye care

DETECTION AND IDENTIFICATION; REFERRAL TO EYE AND LOW VISION CARE

Unless poor vision clearly limits daily activities or eyes look distinctly abnormal, parents might not realise their infant is developing life skills more slowly or not at all because of visual problems. Older people may just think having poor vision is part of ageing and nothing can be done about it.

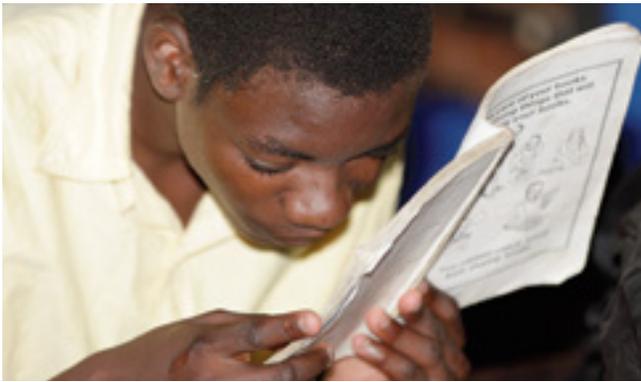
Children in school and adults at work may seek help more readily when they face vision-related problems such as the inability to read small print or the text messages on their mobile phone.

There are different ways to identify and refer people who might need low vision care at district level. All examples strengthen existing strategies to identify people with eye problems and are not separate, new services.

District eye care services should refer those whose vision does not improve sufficiently through refraction or with treatment to low vision services. Proactive methods by eye care to identify children include:

- Adapt the message used to announce outreach services: In addition to advertising for people with cataract to attend, announce that children who seem to have poor vision are also welcome for a check-up.
- Visit special schools near the hospital or near outreach locations. First, conduct vision screening of all children; include those labeled blind by the teachers as they might need cataract surgery or actually have some useful vision that could be improved through refraction or other measures. Plan further assessment for those with poor vision.
- Train community-based key informants (KI) to identify all children with vision loss in their community and organize a special outreach to examine them.
- Inform the eye care staff at the district hospital to list clients who still have poor vision, even after eye assessments and refraction have been performed at the Outpatient Department (OPD), and send them for a low vision assessment (possibly available at the same hospital on the same day). They may benefit from low vision related interventions such as magnification or illumination. Remind eye care staff regularly to refer these clients and give them some success stories of how a child with low vision referred for low vision services can now read the print school book for the first time (**Box 4**).





A child who reads schoolbooks at a very close distance needs referral for an eye examination.

- Teach staff at a local vision centre which clients might benefit from low vision services and where to refer.
- Expand the goals of surveys (e.g. Rapid Assessment of Avoidable Blindness) to include identification of children with vision loss. Trained Key informants (KI) in survey communities can be used. (**Annex 10** includes some references on key informants and strategies to identify and refer children).

Strategies for identifying children who may need low vision services that can be used by education authorities, teachers and in the community are listed in **Box 3**.

Here are some ways to find children with low vision that might **not** be so effective remembering that the prevalence of low vision in children is low and might be less than 1 in 1000 children (see for further details in **planning section**):

- Train every community Health Volunteer or primary health care worker. Example: In a village with 1000 people, 500 might be children of 0-15 years old. This would mean that only 0.5 children per village may have low vision.
- General school screening. Example: At most 19 children with low vision may be found after screening 19,000 children from 9 - 15 years

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Box 3: Strategies for identifying children who may need low vision services for use by education and at community level

- Give local teachers the checklist in **Annex 1** so they can refer children who seem to have problems with vision to the eye care unit. This is especially useful if schools are functioning as 'inclusive education' schools.
- Inform district education authorities about the low vision service, give them the checklist in Annex 1, and ask them to inform all schools with inclusive, itinerant or special education programs.
- Give community based rehabilitation staff or health staff the 5 questions in **Annex 2**. They can use these questions in community meetings or when making home visits.
- Use key informants, such as village and religious leaders, head teachers, leaders of disability groups and leaders of women's groups, to list children who have visual problems.
 - The Key Informant Manual can be found at the following link: <http://www.kcco.net/manuals--reports.html>

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Box 4: OPD Patients in Need of Low Vision Care

In general the following OPD (outpatient department) patients need low vision care:

- Anyone, who after refraction, still has a poor distance or near visual acuity: for example a person who still cannot read small print, recognise a friend across the street or read the blackboard
 - All children who had cataract surgery, as they will need to be helped to see better at near distance and always benefit from a thorough refraction
 - All people with oculocutaneous albinism, as they need a thorough refraction, and often benefit from illumination control and low to medium magnification
 - Adults with poor vision (even after treatment and surgery) because of diabetic retinopathy, glaucoma or macular degeneration
-

A LOW VISION SERVICE, WITH EMPHASIS ON THE ROLE OF EYE CARE

Often eye care programmes use the name 'clinical low vision service', which may suggest that all other eye care assessments and interventions, such as surgery or refraction, already have been done. However, this might not be the case. A child with low vision might not have had a thorough eye examination yet, and this needs to be organized first, before any clinical low vision assessments are done. In some cases the diagnosis may have been made, but refraction was not done or done quickly. This may have happened because little improvement was expected by the refractionist or optometrist. It is good to realise that any improvement in vision is important for someone with poor vision. A thorough eye examination and provision of any needed medical, surgical and optical treatment should be done before the low vision assessment.

The following elements can all be part of a low vision assessment by eye care staff, and can be adapted according to what has been done already and according to the clients' needs. The 2012 low vision issue of the CEHJ (issue 77) describes a number of elements of a clinical low vision assessment (**Annex 10**).

Eye health examination, diagnosis and prognosis for vision

This might have been done previously, but unless there is a copy of a report by an ophthalmologist, it is better to repeat it. An explanation of the results, including the cause



of low vision and its practical implications, needs to be given in understandable language to the client and family (see **Annex 3** for an example of a form to summarise all results).

History taking and the client's vision-related needs

- Questions regarding the client's visual and medical status, including dates and locations of any previous eye care and low vision evaluations, can be asked of parents and the client. This information might also be found in (eye) medical records if available.
- Background information on use of vision relating to educational tasks, mobility, work and activities of daily living are essential to form a picture of what the current situation is



.....
This child cannot read the blackboard unless sitting very close to it.

and what might be needed from the low vision service. Your questions also need to help clients to think of expanding their activities.

Here are two examples:

- A child is attending a special school and in grade 5, but cannot read a print text book. Parents report their child can use vision to play cards and are worried. Good questions may reveal that the child is reading Braille (using vision) at school and has no support to learn print despite having an adequate level of near vision to do so.
- A girl of 9 years old is not in school and illiterate. You might conclude that she does not need improvement of near visual acuity (VA) for reading as this is not an activity she now does. You might not assess her need for magnification. However if you ensure she has a near VA that allows her to read print school books, her parents may enrol her in the local school.

Your questions need to be realistic. For example, consider a school child who can easily read print school books and write notes but who cannot read the blackboard, not even from the front row or with newly prescribed distance spectacles. You need to ask about light in the classroom (it can be quite dark), the condition of the blackboard (it might be grey and have poor contrast) and the methods the child

currently uses to learn what is written on the blackboard. From these questions a decision can be made if you need to assess the benefit of a telescope (if available and affordable) or if this should not be attempted at this stage. If you do not have telescopes in stock yet, the assessment should not be done till you have these available as you will give false hope to the child and parents.

Assessment of vision

Assessment of visual functions includes distance visual acuity (VA) and near VA; contrast sensitivity, visual fields, light sensitivity and colour vision: the latter 4 can be informally tested with practical activities if formal tests are not available.

Accurate refraction

Low vision assessment ideally involves objective and subjective refraction. Distance visual acuity (VA) can often be improved considerably (**Box 5**). Sometimes children who were considered to have poor vision are NOT actually low vision, but just have a refractive error and need distance spectacles to have normal vision.

Spectacles prescribed to improve distance VA often improve near VA too. Most children with a refractive error also need to wear their distance spectacles to be able to use a magnifier (**Box 6**).

Box 5: Distance VA before and after refraction of 183 children attending resource centres (annexes) in Northern Tanzania

	Presenting % (N)	Best corrected % (N)
LP - < 3/60	24 (N=44)	19 (N=35)
3/60 - < 6/60	16 (N=30)	8 (N=15)
6/60 - < 6/18	47 (N=86)	52 (N=95)
6/18 and better	13 (N=23)	21 (N=38)

Children enrolled in annexes and schools for the blind in Northern Tanzania. In this setting, only 12% of the children were already using distance spectacles. Half of the children were prescribed new distance spectacles.



Box 6: Case Study - School Child with Hyperopia

A boy of 12 years old attended grade 4 and was prescribed a pair of +6D distance spectacles and a stand magnifier of 28D a year ago.

His teacher reported he could not read the text in his schoolbook, although he tried with his stand magnifier. When asked if he was also prescribed distance spectacles, he replied that he left them at home. His teacher reported she had never seen him wearing spectacles.

What can we learn from this?

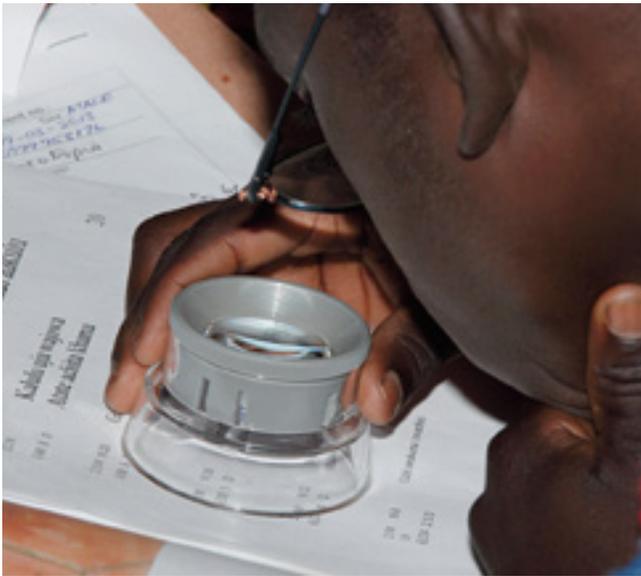
1. Give information with results of eye care/low vision assessments to the child, the (special) teacher, and the parents so they can encourage a child to use spectacles
2. Always ask why spectacles are not used. In this case the boy did not feel there was much improvement in distance vision, but he had **not** been told that he could only successfully use his magnifier if he also wore his spectacles!
3. Implement a system to ensure that any child prescribed distance spectacles actually obtains them! Many low vision programs provide magnifying devices for a low cost but have no system to help with distance spectacles.

Assessment for magnification

Assessment for magnification needs to be conducted for near activities such as reading, use of mobile phones and – if applicable – for distance tasks such as reading the blackboard. This should take into account what the eye care programme can currently provide at an affordable cost to the client. **Box 7** shows a minimum list of tests and devices needed to start services at district level. (**Annex 5** compares the minimum list with the standard list of equipment and devices recommended by the Vision2020 low vision group in 2004). If you only have non-illuminated magnifiers available then only use those for assessment, and try out the use of a reading lamp to provide illumination if required.

Box 7: Minimum list of tests and devices for low vision services at district level

Minimum list - lessons from practice	
Ophthalmic Equipment	Notes
Streak retinoscope	✓
Direct ophthalmoscope	✓
Trial lens set (full aperture)	Preferably, but can start with ordinary trial set
Universal trial frames	✓
Paediatric trial frames (2 pairs of different sizes)	Minimum 1 pair to start with
Vision Assessment Equipment	Notes
Distant LogMAR test charts - letter, number, tumbling Es, Landolt Cs (one of each type)	Tumbling Es essential
Near vision tests (same as distant but calibrated for 40 cm)	Tumbling Es essential
Reading acuity test (continuous text in English and local language)	Yes, can be 'home made' on computer using M sizes
Optical Low Vision Devices	Notes
Spectacle magnifiers (High + spectacles)	Locally made; from 4 Dioptres (D) to 12D in steps of 2D
Foldable and hand-held magnifiers with and without built-in light source	Handheld magnifiers (non-illuminated) between 5 and 20 D (e.g. 1 of 6D, 1 of 10D and 1 of 15D, 1 of 20D)
Stand magnifiers	Non illuminated stand magnifiers from 10D to 25D, e.g. 1 of 12D, 1 of 16D, 1 of 24D)
Filters	Variety of locally available sunglasses in different shades
Non-optical devices	Notes
Good example of a reading lamp	Preferably one that does not become very hot
Reading/writing stand	Locally made
Reading slit; signature guide; writing guide	Locally made



Assessment for magnification

Once the best magnifying device with the optimal power has been found, it is vital to do one last reality check: for example, ask a school child to use the magnifying device (with distance correction if required) to read from her school book.



Reality check: Can the child now read the schoolbook?

Need for non-optical interventions

Non-optical interventions include increased (or sometimes decreased) illumination, better contrast, use of bright colours, large print books, the writing of larger text and numbers on the blackboard, and a closer working distance.

Box 8 shows some examples.

The need for and benefit of non-optical interventions can be assessed best in the real situation (in the classroom for example), but the eye care staff needs to give guidance and recommendations.



A reading stand ensures that a child using a hand magnifier has better posture.

Box 8: Non optical interventions; some examples

- Illumination: is more light needed? Sitting near a window might help.
- Is the client bothered by glare when walking outside? A cap might be beneficial.
- Improvement of contrast: does the child write more comfortably with a black pen or very dark pencil, compared to the standard pencil?
- Using larger size: does writing larger make it easier to read back school notes?
- Adapting distance: does sitting in the front row make it possible to read the blackboard? Does writing larger make the working distance better, thus increasing comfort?

Demonstration of use of spectacles and devices

Often children or their parents/guardians do not like the look of spectacles and devices that have been prescribed. It is important to demonstrate the improvements made in visual acuity by using real tasks such as the ability to read what is written on a poster in the eye clinic with the new distance prescription or the ability to read smaller size text in the schoolbook with the magnifier just prescribed. Improvement on the acuity chart has little meaning to clients or their relatives.



The improvement in vision made with distance correction and magnification can be best demonstrated to parents and teachers using a real task.

Taking time to give training in the correct use of the magnifying device prescribed is vital, as only then will the client be able to experience the benefit of magnification.



Training is important to ensure the correct use of a magnifier (and should generally include instructing the child to wear prescribed distance spectacles when using the magnifier).

It is recommended to have a table and chair in a quiet corner near the examination room, where a child can practice reading with the new magnifier for 20-30 minutes, while the eye care staff examines other clients. A quick check by the eye care staff after that practice will show if there are any problems in using the magnifier and if any adaptations are needed. This process will help to convince the child and parent of the benefit of the prescribed magnifying device.

Final prescriptions and summary advice

Clients, carers and teachers often do not remember what the eye care staff actually advised because they might be nervous about the results of the assessment, do not understand the technical terms used or were themselves not present at the assessment at the eye care service. It is therefore essential to provide all assessment results – the final prescriptions and summary advice – orally as well as on paper.

Annex 3 gives an example of an “advice form” that can be filled in by eye care and given to the client or the accompanying person after explaining the results of the assessment. Ideally eye care staff should send a copy of the form to the child’s school or give an extra copy to the client to give to the teacher.



This child can read the blackboard with her spectacles: this needs to be clearly explained and written on the advice form so parents and teacher encourage the child to use the spectacles even if she is the only one in the class wearing spectacles!

If magnifying devices are prescribed it is important to give guidelines for their use on paper to the client and carer (and an extra copy for the teacher).

If teachers have received training in low vision, they can assist in deciding on the best non-optical interventions by trying out the benefit of different interventions in the classroom.

Agreement on how to obtain devices

Obtaining distance spectacles and magnifying devices is often one of the most difficult parts of the whole low vision care process and there are different approaches you may try (**Box 9**). If children or adults do not obtain the spectacles and magnifying devices their vision is not improved and, in many cases, children remain illiterate (even if they attend school), can only read very slowly, need their peers to read to them or even have to use Braille.

Where to get the magnifying devices (globally) is described in the CEHJ issue listed in **Annex 10**.



A child who does not obtain prescribed spectacles and magnifying devices will need the help of sighted peers to read.

Box 9: Obtaining and use of spectacles and low vision devices

A system to ensure children receive and use

1. distance spectacles and hard cases
2. non-optical devices such a reading/writing stand or cap
3. magnifying devices

needs to consider the following:

- Who is coordinating and responsible for checking that children obtain what they need?
- Who does follow-up to check all is being used?
- Who pays for what (transport, eye checks, spectacles, devices)?
- Who trains the child in use of magnifying devices?

Look at the role and responsibility of the following groups to answer these questions

- Parents
- Eye care
- School
- District/provincial education authorities
- District/provincial eye care
- National Ministry of Education: admission policy (**Annex 4**)
- National Ministry of Health

Examples to organise payment for services, spectacles and low vision devices:

- After convincing clients and their family of the benefit of the spectacles and devices, discuss the price and judge if they are willing to pay the full costs or at least can give a contribution
 - Set up a subsidy system for poor clients with the help of local companies and philanthropists. You can make it known which local companies support children with low vision
 - Set up a fair pricing system where you can build up a small reserve which is then used to subsidise devices for poor clients
 - Ask wealthy parents who are happy with the low vision service their child receives to donate the cost of a pair of spectacles or a magnifier to a child who cannot afford it
 - Approach district education authorities and find out if they have a budget for assistive devices for children with special needs
 - Demonstrate to district education authorities that many children with visual impairment do not need Braille anymore if they receive eye care and low vision assessment and support. The cost of Braille books and equipment is high, and some of this budget may be used to provide low vision care and devices.
-

Box 10: Follow up training and support

The following activities need to be included.

- Assessment in the classroom of the ways in which a child with low vision can use her 'best' vision (vision with distance spectacles and optical and non-optical low vision devices if prescribed/advised) in the best possible way. For example, should he or she
 - always sit near a window and not be part of a seat-rotation system?
 - have her own print school book since sharing with others is not possible due to a closer reading distance?
 - be allowed extra time to do exams?
 - Frequent encouragement and reminders to use spectacles, magnifier and non-optical interventions as advised at home, in the classroom, in the resource room and at the hostel
 - Orientation and Mobility training for a child with very poor vision who cannot move around independently
 - Training in print reading and writing of a child who was using Braille, but who now has enough vision to learn to use print (in addition to or instead of Braille); sighted peers could help teach print if teachers do not have enough time
-

Stocking devices

It is better to start low vision services with a small variety of devices that are continuously in stock than starting with many types and powers for which the eye care service can only afford to stock 1 or 2 each. Bulk orders of the devices that will be regularly prescribed and sold, are more cost-effective.

For example, eye care programmes in Northern Tanzania started with a few hand magnifiers, one stand magnifier and locally made high plus spectacles, none exceeding 12 Dioptres (D). After one year, hand and stand magnifiers up to 25D were added as there was evidence of need for higher power devices for a growing number of clients accessing the low vision services in the area.

Follow-up for further training and support

This should be done by eye care personnel, (special) teachers, CBR workers, other professionals trained in low vision, and last but not least parents/guardians and peers (**Box 10**).



Whilst it is important to encourage children to use distance spectacles, they also need to be trained to use their improved vision for reading **print**.

Follow-up: annual (or biannual) clinical low vision assessment

Periodic follow-up is needed to check

- the current level of visual functioning (especially near and distance VA)
- the use of vision for common daily activities and for progress in reading and writing: for example one can ask if the reading tasks in the classroom can be finished faster compared to one year ago or in the same time as sighted peers
- the activities for which spectacles, magnifying devices and non-optical interventions are used, and frequency of use
- if spectacles and low vision devices need changing

In principle all children with low vision need to be reassessed at least once a year by eye care personnel with low vision expertise. Sometimes programmes think that only those who were prescribed spectacles and devices need a follow-up, but this is not correct. Children's vision, refractive errors and the vision-related tasks they need to perform change over time. For example: Schoolbooks in the lower grades generally have large size text and many children might not need magnification. However print becomes smaller in higher grades, meaning a child might need magnification for the first time, needs higher magnification or other strategies to access the school text. Strategies to ensure children come for follow-up are discussed in the section on links between eye care and education.



The need for regular follow-up: A child progressing into a higher grade may no longer be able to read the text of their schoolbooks comfortably, as the size of the text decreases in higher grades.

Ababa agula bedi.

Tagula zipewa zoyera.

Pirira wavala diresi. Ana nali agogo.

Ali na



548 - 2000 D

Mwami ni pa dize. Leti ni
Mwami ni pa dize. Leti ni
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ACCESSIBILITY OF SERVICES AND INFORMATION

Children and adults with low vision should be able to access all information that concerns them and be able to easily access the examinations rooms; the clinic should be low vision friendly.

The 2012 low vision issue of the CEHJ (see **Annex 10**) explains how to make an eye clinic more accessible for people with low vision. Basically one needs to consider:

- **size** of letters on signs

Notices and signs should be close to eye level, and the use of a simple font is recommended.

- **contrast** and **colour** of signs, contrasting strips on steps, contrast between door and walls, lines to guide clients to the right examination room or department
- **illumination** (enough light to move around easily) and **glare** (shiny white tiles make seeing very difficult)
- **position** of furniture and obstacles so people who do not see well do not fall over them or bump into them

The same principles can be used to improve a schoolground and classrooms, and to make a leaflet to advertise the low vision service.

The advice form with results and advice in **Annex 3** needs to be printed in a simple font (Arial, another good font is Verdana) and a larger size. If needed, the form can be further enlarged. The results should be discussed and read out to the client.

Guidelines to teach the use of a magnifying device should of course be in a very large size (and a simple-to-read font) so a majority of clients can read it without magnification! Size 20 would be good.



.....

The doors and their frames contrast well with the walls, but the steps contrast poorly with the ground. Contrasting lines on the edges of the steps would greatly increase visibility.

LOW VISION CARE AT DIFFERENT LEVELS OF EYE CARE SERVICE DELIVERY

It is sometimes believed that low vision care can only be provided at a special low vision clinic at a tertiary level hospital. However, low vision services can also be provided at the district level. Programmes at different levels of service delivery provide different aspects of low vision care (**Box 11**).

For example, a secondary level eye unit can ensure a thorough refraction is done for a school-age child with pseudophakia and provide basic magnification for reading textbooks at school. The eye care staff can then explain the results to the child and the family can help them to get spectacles and magnifying devices for near vision. They can send a letter to the district education authority, who can, in turn, then encourage the local school to enrol the child and support transport for annual follow-up to the eye care centre. In some areas vision centres have a similar function.

The family and the classroom teacher can help by ensuring the child uses spectacles and devices at home and in the classroom, sits near the blackboard, window and teacher as needed, and learns together with the classroom peers.

A basic low vision service at district level does need to refer clients needing more complex interventions to a higher level low vision service, and should link with primary health care to promote identification and referral of people who (may) have low vision to the low vision service at the district level.



One year follow-up at secondary level eye care services: Can the child still read their current schoolbooks comfortably with their current spectacles? Are the spectacles still in good condition and not scratched?

A district-level service can be effective in facilitating these referrals and in ensuring regular follow-ups as needed

Ideally, people working in eye care, education, and community services at district level should be trained to give basic low vision services, appropriate to their skills and experience. But at the very least, they should be aware of low vision and the needs of people with low vision. They can then refer people with low vision to the services that do exist and provide information to people with low vision and their families.

Box 11: Low vision care at different service delivery levels

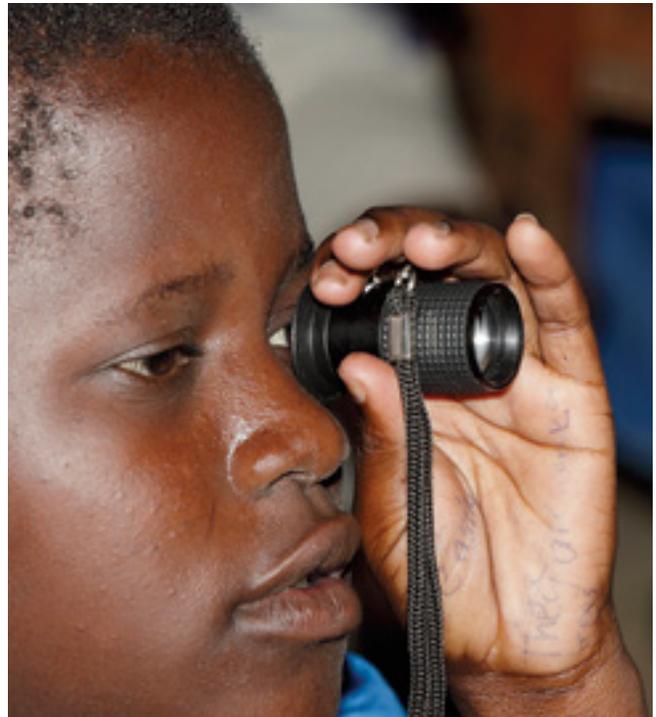
Service level	Who can be helped at this level	What can be provided	Who can provide services
Primary health/eye care	People with any eye or vision problems	Identification of people with visual problems (who might have low vision) Referral for diagnosis, surgery, prognosis, good refraction.	Mid-level personnel, including (ophthalmic) nurses
	People who already have received low vision care at secondary or tertiary level	Reminders to attend follow-up visits Advice how to replace broken spectacles and devices	
Secondary/district	Adults and school-age children with low vision	VA assessment; Good refraction; Essential low-medium magnification devices for near and-or distance with training in their use. Advise on non-optical interventions and environmental modification. Links to education and rehabilitation services.	Ophthalmologists, optometrists, refractionists or other mid-level eye care workers who have received additional training
	Babies, young children and those with complex needs	Referral to tertiary level	
	All clients	Follow-up after low vision care: <ul style="list-style-type: none"> reminders to attend tertiary level if needed assistance to replace broken spectacles, devices assessment for new spectacles, devices based on information from tertiary level 	
Tertiary	Adults with low vision with complex needs Babies and young children with low vision	Complex assessment of all visual functions; Refraction of complex cases; Wide range of devices, including electronic devices; Training in low vision devices; Good links to education and rehabilitation services	Dedicated staff with high level of training in low vision

EYE CARE RELATED RESOURCES: TESTS, DEVICES AND EQUIPMENT

Some people believe one cannot start low vision services without a large variety of tests, devices, professionals and skills. However basic low vision care can be started without too many new resources and funds. A minimum list of resources, tests and devices is suggested in **Box 7**. A greater diversity of tests and devices can be added later, once the demand for the low vision services grows.

One consideration for starting district level low vision care should be the ability of the eye care service to stock the limited range of devices they would like to prescribe and the ability and willingness of clients to pay for the devices. It is better to start a service where clients can obtain what they have been prescribed on the spot, rather than to only provide a written prescription for a device that is not affordable, not easily available, and/or needs intensive training in its use.

A reason not to include telescopes at the start is that the improvement of near vision for reading, sewing, signing bills, using a mobile phone and the like is seen as a first priority. When more resources are available, and there is capacity in eye care, education and/or community programmes to train people in several sessions in the use of telescopes, these devices should be added.



If the eye care service has the resources, trained staff, time and access to a sufficient number of clients with low vision, a greater variety of tests, equipment and devices will benefit the client and most of his or her needs can then be met at the district level (see **Box 11**). In many developing country settings, however, these requirements (time, staff, enough clients, resources) are not easily met.

TRAINING

In this section we address the specific skills and expertise needed by the key people involved with a child with low vision: eye care staff, teachers and parents.

Eye care staff

An ophthalmologist should first determine that everything medical or surgical has been done for a child, including optimal refraction; then, any one of several eye care workers who can refract children (optometrists, refractionists or ophthalmic nurses) can learn to provide low vision services. Ideally they should already be able to perform retinoscopy and subjective refraction. Specific low vision skills needed by different cadres of eye care are listed in **Box 12**.

At this time there is no regular training in low vision in Africa, but the following websites should be checked regularly for training opportunities:

- KCCO: www.kcco.net
- IAPB/Vision 2020: www.iapb.org/vision-2020
- CEHJ: www.cehjournal.org

Another possibility for training is to spend time in a placement at a hospital with a good quality low vision service.

General classroom teachers

Children with low vision who attend local, mainstream schools might not receive optimal support if the general classroom teachers are not aware of what low vision is, how important it is to refer children to eye care services and



Children with low vision should sit next to sighted peers, and generally in the front of the classroom to help them read the blackboard.

.....
what educational support children with low vision may need.

For example, teachers need to learn that it is good and not harmful to use any remaining vision for learning. They will benefit from learning some basic teaching strategies to assist children to develop vision-related skills optimally, after children have been assessed by the eye care and their low vision service. Topics that should be included in the training of classroom teachers are listed in **Box 13**.

The advice form in **Annex 3** is a good tool to assist the teacher in helping an individual child. The eye care staff who provided low vision assessments should help both the teacher and the parents understand practically how much vision has improved, how spectacles and devices help, and what activities the child can

Box 12: Specific low vision skills needed by eye care staff

The ophthalmologist will need to learn:

- what the benefits of low vision care are to patients and to the eye care system
- what must be added to include low vision care into the existing eye care services:
 - accessibility of the clinic and of information;
 - material and financial resources needed (including stock of devices);
 - stages of a comprehensive service and the need for networking;
 - new skills needed by the eye care staff;
 - time needed to provide a good low vision service.
- ways to increase the number of people receiving low vision care, including referrals from within the eye care service
- how to supervise a clinical low vision service, including monitoring of progress

The optometrist, refractionists or ophthalmic nurse/assistant (that is, the person with good refraction skills) will need to learn:

- what is “low vision” and who are their low vision clients; for example, who should be referred from the OPD or other departments for low vision care
 - what kind of low vision care do children and adults need in relation to the different causes of low vision
 - clinical low vision assessment with emphasis on a thorough refraction and assessment for magnification
 - how to train clients in the use of optical and non-optical devices,
 - networking with district education personnel, schools, CBR, DPOs (Disabled People’s Organisations) and other programs to ensure that:
 - all clients needing low vision care are referred
 - all children obtain all interventions needed
 - all children use the spectacles and devices as advised
 - regular follow-up is done
 - how to keep good records and to provide basic reports on achievements
 - how to provide clients, parents, teachers and other professionals with the results of the low vision assessment in accessible formats
-

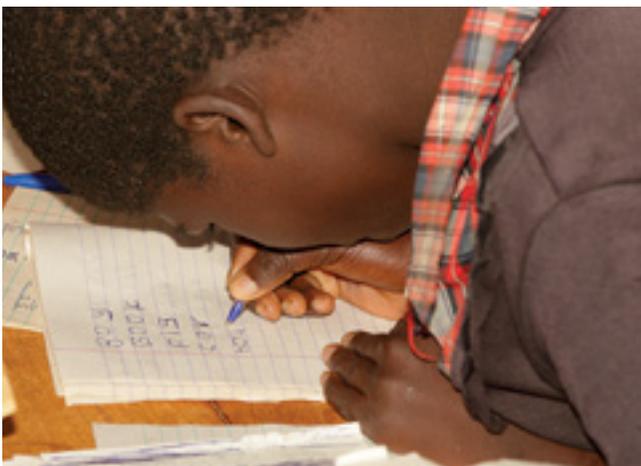
Box 13: Basic low vision training and roles of classroom teachers

The training should involve both general and specialist teachers and should at least include the following:

- Myths and facts about use of vision
- The importance of early referral to eye care to find out if a child needs treatment, surgery or spectacles and if the child has normal or low vision
- The differences between blindness, low vision and normal levels of vision
- The need for annual clinical assessment of children with low vision to determine if the remaining vision might be improved with spectacles and low vision devices, or to assess if any of these need changing
- The importance of obtaining and using the prescribed distance spectacles, optical and non-optical devices listed by the eye care providers, as well as how to take care of these devices
- The help and advice children with low vision need to use their 'best' vision in the best possible way in and outside the classroom
- The learning media, print, Braille or both, a child needs for learning. The teaching of print reading and writing skills needs special emphasis

Roles of the teacher:

- Encourage the use of spectacles for distance and/or near vision
 - Encourage the use of a reading/writing stand, a reading slit, a cap, and other non-optical devices
 - Demonstrate (together with the child with low vision) to classmates why spectacles and devices need to be used in the classroom and in the school ground.
 - Assist with the (correct) use of magnifying devices for reading and other near tasks
 - Encourage children to ask for what they need and promote systematic cooperation between the child with low vision and the classroom peers
 - Organise seating nearer or further from window light and/or near the blackboard
 - Take time to teach print for reading and writing
 - Encourage children with albinism to properly cover their skin (wear a cap, long sleeves, skirt and trousers)
 - Remind parents and child that regular follow-up to eye care is needed and assist in making it happen
-



Box 14: Mentoring and teaching strategies

Ideally teachers need to be visited at their schools and be observed while teaching the children with low vision in their classes. This can be combined with follow up visits to the schools whereby the person who trained the teachers in low vision, spends some time with individual teachers sharing knowledge and skills, discuss challenges they face, and what could be done to address these challenges. It is advisable to visit teachers at least 2 times a year. The first visit after training should ideally take place within 3 months of the training. Any queries that come up between follow-up visits can be discussed by email or phone.

In addition to reviewing the information on advice forms and ways to motivate a child to use spectacles and low vision devices, teaching strategies should be emphasized during mentoring, for example:

- Say what you are writing on the blackboard while you are writing it
- Write large size letters on the blackboard
- Encourage cooperation between the child with low vision and sighted peers, for example by letting a sighted peer tell the child with low vision what is written on the blackboard, by sharing lesson notes, by asking the child with low vision to assist a sighted child with arithmetic, by asking a sighted child to read a long piece of text to the child with low vision
- Use dustless chalk
- Allow a child to write larger, for example across 2 lines in the notebook
- Allow more time for reading and writing tasks
- Allow extra time to do tests and exams

now do more easily using vision. If the eye care staff was only able to communicate with either teacher or parent, the one who was present at the eye care assessment needs to share the advice form, as well as the guidelines for use and care of spectacles and magnifying devices, with the other party,

The simplest way to train teachers is a one-day awareness training within a school setting so that the teachers can be trained while working with their own children with low vision. This training should only take place shortly **after the children obtained distance spectacles and devices as prescribed by eye care.**

Ideally a maximum of fifteen teachers per school or centre can be involved in the training at one time. Thereafter, the trained teachers need to share the new knowledge with the rest of the teachers at their centres, as well as with the community at large.

One-day training alone is not enough for the teachers to bring the desired change, and trainers (together with eye care staff trained in low vision) need to make regular follow-up visits to help teachers develop good teaching strategies (**Box 14**). Parents should be invited to come to the school during these mentoring visits.



Special teachers – visual impairment

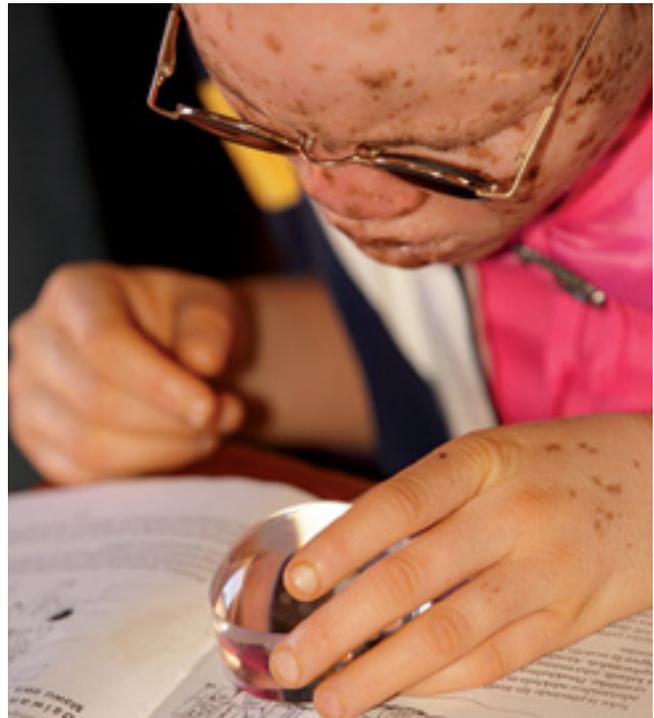
Children with low vision may be deprived of the right to use their sight if special teachers do not have appropriate skills to work with these children. In some educational settings children with low vision are still being treated as if they are blind and are not encouraged to use their residual vision. They might be taught to use Braille unnecessarily.

Teachers in special schools or in resource centres need to gain the same skills and knowledge as general classroom teachers but can acquire more in-depth knowledge and skills since they work especially with children with visual impairment.

They may learn to assess the use of ‘best’ vision of a child in and outside the classroom in more detail, add and adapt non-optical interventions listed on the advice form and monitor the progress in use of vision.

Annex 6 shows an example of a educational monitoring form, and includes areas such as learning media used, spectacles and devices, reading and writing speed and interaction with sighted peers.

Most importantly they can learn to explain the vision-related needs of the child to general classroom teachers and parents, and provide detailed advice on support needed. Ongoing mentoring by the trainer (**Box 14**) is needed to strengthen all new skills.



Parents

Parents need to be aware that the educational needs of children with low vision and those with normal vision are generally the same. Children with low vision have a right to be provided with the same opportunities for acquiring knowledge and skills as any other children.

Parents need to be able to interpret the results of the eye care and low vision examinations practically (using the advice form in **Annex 3**), and need to assist their children at home in the use of spectacles or a magnifier (**Box 15**). Especially use of a magnifying device needs



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Box 15: How parents can help their child use vision

- Accept and understand the difficulties their child with low vision may encounter, but never over-protect or under-estimate the child
 - Encourage their child to know and accept himself/herself, build up confidence and express his/her feelings and needs so that optimal support can be given
 - Make sure he or she receives regular eye care services; arrange with teachers annual visits to eye clinics for low vision assessment to ensure new spectacles and devices are prescribed when needed
 - Make sure the child obtains the prescribed spectacles and devices
 - Encourage the use of the remaining vision
 - Help the child to use spectacles and magnifying devices for the appropriate tasks and teach to take good care of all devices
 - Assist the child to complete school assignments in good time, for example by organising joint exercises with their siblings, to increase reading speed and comprehension
-

training and practice, else a child may assume that the given device doesn't work or is too cumbersome to use. Written guidelines for use of magnifying devices can help both parents and child.

Children can be self-conscious and uncomfortable about using something that makes them look different from their friends. Enough practice and support from both teachers and parents may help them realize how using spectacles and/or a low vision device can make them more independent in daily life. In addition parents can teach the child to demonstrate the usefulness of devices to siblings and friends.

Children who are boarding, and thus not living with their parents, require different approaches. Ask the resource centre or special school staff to demonstrate to the parents, when they come to visit their child, the improvements in vision with spectacles, non-optical interventions and/or magnifier. Teachers need to explain that these devices need to be changed regularly (once every one or two years). The costs of the devices and how these were paid for, need to be discussed. The parents should be asked to pay for future devices or at least be asked for a contribution toward the cost for the new school year.

TYPES OF EDUCATION AND LEARNING MEDIA

Inclusive education

Inclusive education is where children with low vision attend their local school together with other children in the neighbourhood and where every child receives support as needed.

Inclusive education can help to:

- Give children with low vision, and those with other special needs, the opportunity to attend school in their own home environment
- Promote use of print as much as possible as print schoolbooks will be the main learning medium used in the school
- Make the local school accessible for those with visual problems (and also for those other special needs)
- Ensure some specialist support is available when needed for example to train a child in use of devices and improvement of reading skills (ideally this support should also include access to Braille if needed but this is still rare)
- Teach each child that their peers might have different abilities and needs

Eye care personnel providing low vision services for children should investigate if there are inclusive education initiatives, liaise with the district education officer to assess children's vision and use any financial or other forms of support available.

For example, in areas in India, Indonesia, and Nepal, children with low vision in inclusive education receive annual support from the district education office to attend eye care



examinations and to obtain spectacles and magnifying devices if prescribed as these enable the majority of children to use local print schoolbooks. The education authorities label both spectacles and magnifying devices as assistive devices and budget for it under the heading of inclusive education for children with special needs.

Special schools and resource centres

In special schools and resource centres or annexes for children with visual impairment or other special needs, it is still not uncommon to see most or all children using Braille, regardless of the level of their remaining vision. The positive side is that children who do need Braille because of their poor vision (or because they are blind) have access to this learning medium and to teachers with Braille skills.

Unnecessary use of Braille by children with low vision can occur if children do not receive a thorough eye examination and low vision

Box 16: Education options for children with low vision

- Education at the local school with occasional specialist support by a visiting teacher. Children can continue to live at home and stay in their own environment.
 - Education at a resource centre or annex where a number of children with special needs are boarding and where they can join the regular classroom. They have access to daily, special support in the resource room by a specially trained teacher (often after regular school hours).
 - Education at a special school where only children with visual impairment (and sometimes other special needs) attend. All children are boarding.
-



assessment before starting school, and when special teachers are only taught about blindness and Braille during their teacher training. Fortunately this situation is changing as more and more eye care and education programmes are learning about low vision.

Need for admission policy

Every child should have a comprehensive eye care and, if needed, low vision assessment before starting any type of school (**Box 16**) so that a child obtains the best possible distance and near visual acuity. Only if children have early access to quality eye and low vision care, can a good decision be made if a child should learn print, Braille, or even both.

The choice of school and learning media should ideally be facilitated through a joint admission policy of the Ministry of Education and the Ministry of Health (Annex 6 shows an example). Currently many children who obtain enough vision to easily read and write print as a result of eye care interventions (some even obtain normal vision levels), but who were already at a special resource centre receiving daily specialist support, sometimes continue using Braille. This should not happen and can be prevented by implementing a clear admission policy so children are not attending special schools or resource centres unnecessarily.



A child who can read Braille visually can probably learn to read print!



A child who uses vision for tasks meant to be done using touch (such as arithmetic using cubes with tactile dots) has probably not received an eye examination before entering special education.

Challenges relating to print use

Children with low vision who do use print still face challenges and often do need extra support.

In some countries, there are not enough schoolbooks for each child, which means children have to share books. This is not possible for a child with low vision who often needs to read at a closer distance, might need more time to read a paragraph than sighted peers, or might need to use magnification to read.

Some children with low vision require large print schoolbooks, either because the devices do not make the text large enough to read comfortably and with reasonable speed, or because devices do not improve a child's near vision at all.

Most children with low vision read more slowly than their classmates. They may need extra support to develop good reading and writing strategies. For tests and exams, they might need additional time and/or tests in a larger print size.

Some parents might be afraid their children will lose their vision if they use their vision for print reading all the time and may not encourage them to read.

All these situations require timely cooperation between the national (special) education department, district education and eye care services, school, and parents. This cooperation can ensure a child with low vision gets his or her own schoolbooks, in large print size if required, is allowed more time for exams, receives extra support if needed, and is encouraged by parents to use their vision as much as possible for literacy-related tasks.

LINKING AND COORDINATING WITH EYE CARE SERVICES

A link between eye care and district education needs to be established to ensure each school-age child firstly obtains their best possible vision and secondly is enrolled into the nearest appropriate school. This link has proven to be essential, especially in receiving cataract surgery, assessment by eye care professionals, long-term follow-up after surgery, and low vision care **(Box 17)**. Coordination and facilitation of all these services by a coordinator (often based at eye care programmes) might be necessary.

For example, both parents and teachers need to understand that post-operative care of children after surgery is very important and that surgery alone is insufficient. Adherence to follow-up visits after surgery to eye care and low vision services is vital to ensure a child has and can use the best possible vision throughout the school years. Parents and teachers need to be aware of the print size the child can and needs to be able to see and what spectacles and/or devices need to be used to facilitate this. Proactive approaches like utilizing a tracking system, mobile phones, and counseling promote consistent follow-up **(Box 18)**.

Eye care personnel need to take the lead in establishing the link with education services by giving the teachers follow-up schedules for



There is a need for follow-up assessments by eye care personnel.

all children. With this schedule, the schools can budget for transport and devices and ask for transport from their district officials. Furthermore, it is the eye care personnel's job to help the teachers and the children understand what interventions help the child see better (see Advice form in **Annex 3**). Teachers and/or parents should ideally be present during the low vision assessment for better understanding.

Box 17: Linking eye care and education

Case study: an eye hospital and district education authority in Nepal

In a district in Nepal there are 2 resource centres with around 20 children with low vision. The optometrist of the nearby eye hospital, trained in low vision, visits both schools once a year to make follow-up assessments and screen new children that want to be admitted. The eyes and vision of new children are then thoroughly assessed at the eye hospital. The district education organizes their transport and visit. On the basis of the results of the eye care and in discussion with parents, a decision is made about the education the child needs - whether to attend the local school or board at the resource centre. Parents, teacher and the district education officer receive a written advice form (example in **Annex 3**) from the optometrist that lists the vision levels, learning media and interventions needed.

Every year the District Education Office in cooperation with the 2 schools with resource centres makes a budget. On average each child with low vision will be sponsored for one eye care visit, one pair of distance spectacles and 1 magnifier once a year. They also include children with low vision that attend other local schools.

They can do this because:

- An admittance policy (example in **Annex 6**) has been endorsed at the National level, and
- Nepal is stationing special education officers in each district/region to support inclusive education of children with special needs.

Parents contribute according to their ability to pay, with a minimum of 5% of the cost. The district education office organizes the contribution from the parents.

The teacher who has a child with low vision in the classroom and the parents use the information on the advice form, so they can ensure the child uses the spectacles and devices as needed, uses print if possible, and has a good seating position in the classroom, adequate lighting and can access information on the blackboard.

The optometrist contacts the schools once every 3-6 months by phone and asks questions about the use of spectacles and devices (and reason for non-use), about the reading of print (size, distance, ease, speed) and if there are any vision-related questions or new problems.

Box 18: Ways to promote regular follow-up

• **Tracking systems**

For proper follow-up to eye care and low vision services, a tracking form should be created for each child as the primary tool to assist all involved in clinical and educational management of the child. It includes expected dates of follow-up visits, contact information, particularly a (cell) phone number. A tracking system facilitates follow-up at the eye care services for refraction, re-assessment of magnification, and optimal use of residual vision.

• **Counseling of parents**

Counseling at the time of discharge after surgery, and during follow-up visits is essential for ensuring that parents and/or guardians have a clear understanding of their role in organising necessary follow-up services for their child. Without proper counseling parents may think for example that surgery is the final component of services and that a school for the blind is the only option for their child.

• **Mobile phones**

Mobile phones are an effective means for reminding parents and teachers of follow-up visits. They can also be used for regular communication between coordinators, low vision specialists, and teachers to discuss any queries and to plan visits to schools and resource rooms as necessary.

PLANNING FROM A POPULATION PERSPECTIVE

Planning to start or improve your low vision service entails making an explicit statement of wanting to make a change, for example in the number of people to receive a low vision service and the type of service to be provided.

The magnitude of the need and the current capacity

Planning for low vision services in a particular catchment area starts with understanding the catchment area and existing services. It involves the following steps.

1. For children, determine the catchment population. This is not as easy as it sounds, as it depends upon the type of programme. A Child Eye Health Tertiary Facility (CEHTF) with a catchment population of 8 million is quite different from a VISION 2020 programme with a population of 1 million. Ideally low vision service provision areas are demarcated at a national level. However this is not common and can change as new service providers are trained and placed.
2. While most low vision programmes in Africa focus on childhood low vision, demand for adult low vision services will likely grow as literacy increases in adult populations and the visual demands of the elderly change. Estimate the number of adults who attended the outpatient department at your facility in the last calendar year.
3. Estimate (from available census data) the proportion of children (age less than 16) and adults in the population in the catchment area.
4. Since the prevalence of low vision in children and in adults will not have been adequately studied in most settings, it is necessary to make an estimate: Use the information above and the methods described in **Box 19** to estimate your likely low vision needs.
5. Assess the current eye health care situation in your catchment area. (See **Annex 7**)
6. Assess the educational system in the catchment area, in particular determine how children with low vision are managed.
7. Have this information prior to starting planning so that your planning is based on the current situation.

Throughout the planning process, keep in mind that, where possible, you should use available evidence for actions. There are no “magic bullets” to plan for low vision services, there are some lessons learned, some of which have been detailed previously in this manual.

After compiling the relevant information for planning, you can start the process of setting targets, determining activities needed to reach the targets, determining the relationships you need to build, figure out sourcing and maintaining your stocks of low vision devices, and putting in place a plan for monitoring and reporting progress.



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Planning of services requires the mapping of refraction skills of local eye care staff.

Setting targets

A target is the number of children and/or adults to receive a low vision service in a year. It is not easy to set targets but these targets are necessary in order to determine the activities needed as well as their scale up. To set targets you should consider:

- The magnitude (number of children and adults with functional low vision in your catchment area - see above for estimating)
- The current low vision service delivery (number of children and adults, ideally by sex, currently receiving low vision services)
- The capacity for expansion (available personnel, equipment, etc.)
- The following estimates: At least 50% of children with low vision will need spectacles; approximately 35-45% of children will need low vision devices for near work; a smaller number (10% or less) will need telescopes for distance vision. Thus, it is advisable to create targets separately for spectacles and low vision devices (near devices and telescopes).

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Box 19: Estimating low vision needs in Africa

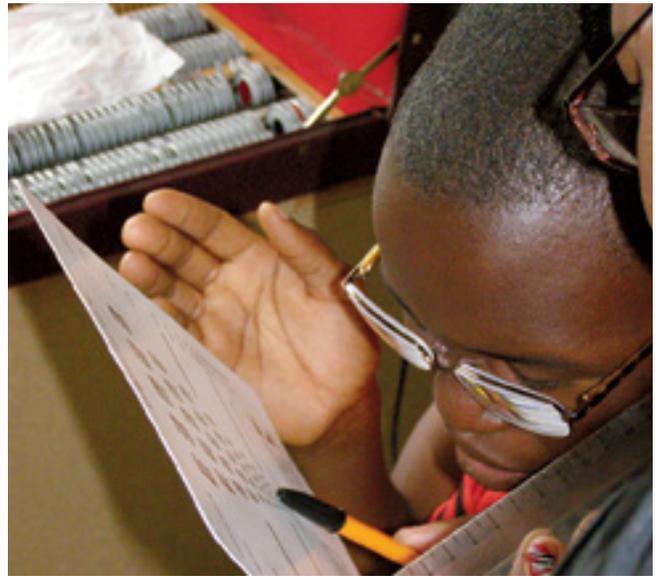
- **Children:** Estimate that 1 in 1,000 children in the population have functional low vision and may need some form of intervention. This estimate includes children with other special needs who also might need low vision services.
 - **Adults:** It may be more practical to plan for services based upon the number of people attending eye out-patient departments. The goal is not to measure the burden within the population but to measure the likely number of adults with functional low vision attending routine out-patients. Roughly, it is likely that there are at least 5 per 1,000 people attending eye out-patient departments who could benefit from low vision services.
-



Setting targets: How many children with low vision will need assessment? How many of these children might need spectacles and magnifying devices?

A plan means change. Change never happens overnight; planning for change should be within the capacity of the programme. That means that your target setting should include consideration of the following:

- The target for the first year should be modest, particularly if there are training activities that will be undertaken. It is better to start slowly in order to ensure that you have carefully put all activities in place in the correct order. You will likely encounter some challenges that you need to figure out in the first year.
- The targets for the succeeding years can reflect a more rapid scale up, particularly if you have included your preparatory (training, obtaining devices, etc.) activities in the first year.



Training of eye care staff in clinical low vision assessment

Activities needed to reach the targets

Although not listed as a specific activity, any initiative to establish a low vision service needs to have full endorsement and engagement of key clinical and financial and administrative leaders at the hospital. There remains considerable misunderstanding about low vision and it will be important to “sell” the plan to the relevant individuals in the hospital (key clinical staff as well as key financial and administrative staff). For example staff will need to be allowed sufficient time to perform the different elements of a low vision assessment and give advice and training. This extra time may hinder their other routine tasks if management does not support and plan for the extra time needed.

A target is a person receiving a service. An activity is something done to reach that target. Activities need to be concrete and specific; they should lend themselves to regular monitoring. You need to consider the following activities:

TRAINING OF HEALTH STAFF

It is likely that in most eye clinics adults with low vision are not currently identified as potential clients for low vision care; staff will not realize who can benefit and how they can benefit from low vision care. Eye clinic (out-patient) staff, including ophthalmologists and nurses, need to learn that there are options for these clients, and who to refer to the low vision service.

If there is only one person trained in refraction and low vision, it would be advisable to include training for a second person for the unit.

In settings where a CEHTF is covering a large area, there is generally a need for providing some upgrade training of the eye care staff in the districts which feed into the CEHTF. These personnel have a very important role in ensuring that children from their district are adequately followed up (after the first comprehensive assessment at the CEHTF) and receive the necessary spectacles and devices and the training in how to use them.

Another consideration in settings with a CEHTF is the training of the optometrists or refractionists who are working within the catchment area but external to the CEHTF. They have a key role in providing services for children living in their area, and can provide basic low vision services and can refer clients with complex needs to the CEHTF.



Teachers may benefit from training in classroom management (for example in ensuring that all children can easily read the information on the blackboard).

TRAINING OF TEACHERS

Experience in many settings suggests that the teachers in schools for the blind or annexes often need upgrade training. This is particularly true if their training was conducted long ago, when most schools for the blind only taught and used Braille. It is often necessary to provide additional training to teachers in inclusive schools who are working with children with low vision (**Box 13**).

TRAINING OF COMMUNITY BASED REHABILITATION (CBR) PERSONNEL, SOCIAL WORKERS AND OCCUPATIONAL THERAPISTS

If existing CBR personnel or other community staff working with people with special needs are not currently linked into the CEHTF and low vision service, it will be necessary to include some training of these staff on referral and on provision of support and training at home or school.



MENTORING

Providing training, by itself, rarely leads to change. Accordingly, plans need to include mentoring of the people trained to ensure that the skills acquired are used. **(Box 14)** Mentoring can be done in many different ways but always needs to take the following into account:

- A visit within 2-3 months of training is extremely useful in building confidence and strengthening skills. This can be best done by assessing, training and advising a few clients together, as well as by discussing some records of patients assessed previously.
- Trainees often encounter challenges that they had not expected at the time of their training. They might feel for example they do not have sufficient time to work with a client with low vision. Mentorship should focus on problem solving activities with the trainee.
- Trainees need advocates. A visiting mentor can meet with the relevant hospital/clinic authorities and staff and impress upon them the importance of the low vision work and the need for their support of the work of the trainee.



OBTAINING TESTS, SPECTACLES AND DEVICES & ESTABLISHING A SUPPLY SYSTEM

Obtaining the necessary testing materials, spectacles, hard cases for storage of spectacles, optical low vision devices, reading stands and the like, needs to be planned for. This often requires hard currency as these items generally have to be obtained from outside of the country. See **Annex 10** for the major procurement centres. Sufficient time needs to be set aside for ordering, shipping, and clearance. Tests and devices should be available just before training of staff starts.

Separately, it will be important to establish a system for managing the supplies. Where will they be kept? What will the price be for each? How will you manage clients unable to pay? How will funds collected be recorded and reported and new devices ordered? These are many important questions and it will require time with hospital and eye clinic directors to sort these out.



ESTABLISHING A PATIENT MANAGEMENT SYSTEM

Establishing a patient or client management system should have been covered in low vision training; however, it is often necessary to review the management system with the key eye clinic staff to ensure that everyone understands the roles and responsibilities. This should be organized as soon as possible within a plan. If changes are needed, which will affect the rest of the plan, these should be done as soon as possible.

SCREENING IN SCHOOLS FOR THE BLIND AND ANNEXES

In most settings the first group that is targeted for low vision assessment and service are children enrolled in schools for the blind, annexes, itinerant and inclusive education programmes. Evidence from many countries shows that there are often children enrolled in these programmes who could benefit from low vision services (and some may, in fact, first be in need of surgical services). Thus, this group is often the first priority for assessment.

Children with other special needs are more likely to have visual problems or even low vision than their sighted peers and many children with multiple disabilities have low vision; centres catering to these children should also be included in plans for low vision assessment.



All these schools are generally under the authority of the Ministry of Education and it will be necessary to establish a relationship with the relevant personnel in the Ministry of Education in order to visit the schools and assess these children. Adequate time should be set aside for getting approval.

PROVIDING ADVICE AND COUNSELING TO PARENTS

Implementing low vision care requires a long term commitment by teachers and parents. Eye care services need to plan for regular and long term engagement with all people involved in the daily care of the child with low vision to provide information on any (new) interventions and ensure that they understand their role in assisting their children.

PROMOTION WITHIN THE WIDER COMMUNITY

When establishing a new low vision service it is essential to inform the wider community of the availability of the service. Settings and groups to focus on include: Organizations of people with disabilities (DPO), eye clinics, paediatric clinics, schools, local health authorities, and rehabilitation programmes (including CBR). It may be helpful to also provide some information through the local media.

Box 20: Building and maintaining partnerships

Partnerships can be promoted by the following:

- Provide partners with frequent reports
- Compile and share case studies (children who benefitted from a low vision service) with photographs

These first 2 activities can be easily done by using data from the routine clinical record form (Annex 9)

- Admit it when activities do not work out as planned and discuss with partners what you have done to rectify the situation
 - Initiate frequent communication with all partners
 - Ensure that all partners understand what activities they are supporting and what activities other partners are supporting. Do not hide this information from your partners.
-



Partnerships can promote timely referral.

Developing partnerships

Successful low vision programmes involve strong partnerships. Partnerships are needed to:

- Financially support programme activities
- Provide referral pathways for clinical services
- Provide appropriate educational placement of children with low vision
- Improve the technical and management capacity of the low vision personnel
- Coordinate the trainings of all different professionals
- Organise timely access to affordable spectacles and low vision devices

Because comprehensive low vision programmes can be complex in nature, multiple partnerships are needed. It is a rare situation in which only one partnership (e.g., one DPO or one NGO supporter) is engaged. Developing and sustaining partnerships requires time and energy and should be viewed as a wise investment (**Box 20**).

Monitoring service delivery

A monitoring programme should focus on the processes (activities) undertaken more than on the specific vision and educational goals of an individual child.

The most straight-forward way to decide what (and how) to monitor is to review each one of the activities you have listed in your plan. For each activity it would be helpful to identify what is the indicator that would most effectively reflect the activity. For example, if one of your activities is to train 6 district optometrists and

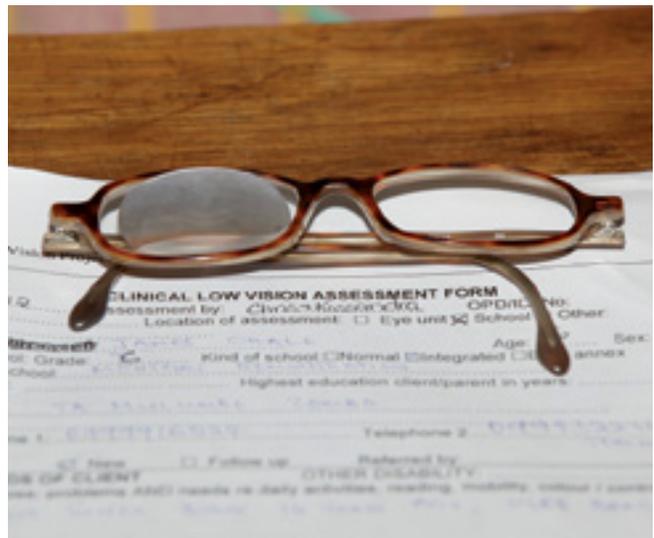
refractionists in low vision skills, your monitoring plan could include checking that the 6 district optometrists and refractionists have gained the skills. Pre-test and post-test at the time of training, and follow-up monitoring visits by the trainer can help measure this; be sure to spell out exactly what skills they will be expected to demonstrate.

For the overall goals of the programme your targets would probably include, for example, the number of children receiving spectacles after cataract surgery or the number of children now using low vision devices. You will need to develop a routine system for keeping track of individual children/clients.

Data collected on the clinical low vision assessment form (Example in **Annex 9**) can be entered in a simple spreadsheet. Depending on the targets set, the low vision programme might, for example, monitor the following:

- ages of clients (ideally by sex) presenting for low vision care, to learn if an expected percentage of children as compared to adults has presented for low vision services
- percentage of children from local schools compared to those from special schools or annexes
- percentage of children assessed by the low vision service who are prescribed distance spectacles and magnifying devices and percentage that obtained them

Actual use of devices cannot be monitored by eye care personnel but can be monitored by teachers. One example for use by (special) teachers is given in **Annex 4**: this form helps to monitor vision-related progress and should be filled in at least twice in a school year.



INCLUDING LOW VISION CARE IN VISION 2020 PROGRAMMES



This manual emphasises practical approaches to including low vision care in existing eye care services and into mainstream and special education, highlighting the need for educational engagement, and pragmatic planning of comprehensive low vision services,

Children with low vision deserve our support and assistance to achieve the best possible quality of life. Including low vision care into eye care services and in mainstream and special education services gives children their best possible vision and the opportunity to use this vision in the best possible way.

Simple interventions, such as spectacles, a magnifier and optimal seating in the classroom may help many children with low vision to attend their local school and to follow the school lessons more easily, providing they receive

the relevant support from parents, peers and teachers. This support, the interventions and the close cooperation between eye care, education, the child/client and family may also facilitate the use of print by the majority of school age children with low vision, regardless of the type of school they are attending.

Most importantly a child with low vision who has succeeded in accessing eye care, low vision related interventions and a good education in the local school or nearby resource centre is a good role model for other children with low vision, and possibly also for those with other special needs.

Last but not least, this successful child can be one of the most convincing advocates for inclusion of low vision care in a Vision2020 programme.

ANNEX 1: OBSERVATION LIST

Detecting eye problems in young children and school children

- **Refer if eyes do not look normal:**

- Red eyes
- Cornea (clear covering over centre part of eye) not clear/hazy
- Pupil not black (lens white)
- Eyes painful and watering

- **Refer if you notice the following:**

- The eyes look in different directions (squint)
- Eyes flicker/make fast movements constantly
- One eye is regularly shut or covered
- Eyeballs are pushed with fingers and knuckles

- **Refer if you observe/hear about the following behaviour:**

- Clumsiness and trouble walking in a new environment/Stumbling over objects
 - Complaining of not seeing clearly at night
 - Screwing up face/eyes and frowning when trying to see something
 - Holding one's head in an awkward position/tilting to one side
 - Holding book very close to face ; colouring / writing with face close to the page
 - Not recognising people's faces
 - Reading blackboard/watching TV only possible from a close distance
 - Not able at all to read the blackboard or watch TV
 - Not able to read the most of the text in the schoolbook because of its size
-

ANNEX 2: QUESTIONS ABOUT VISION

Questions for use by CBR or other community based workers

These questions can be asked of family members of young children with possible visual problems.

1. **Does your child have any problems recognising faces from a far distance (6 metres or more)?**

If yes, refer

.....

2. **Have you noticed any unusual signs in your child's eyes compared to other children?**

For example: Do her eyes seem to flicker constantly (nystagmus)/are her eyes not moving together (squint)/the dark part of the eye looks white?

If yes, refer

.....

3. **Has your child had any eye operation in the past? If yes, can she see small objects (seeds, beans) easily or recognise faces from a distance?**

If not, refer

.....

4. **Has your child been prescribed any spectacles in the past years? If yes, is she still using the spectacles?**

If not, please refer

.....

5. **Does she seem to have a lot of problems moving around/seeing people or objects at night when comparing her to other children?**

If yes, refer

.....

ANNEX 3: LOW VISION SERVICE - ADVICE FORM

Name client: _____ Client no.: _____

Age: _____ Sex: _____ Disability(if any): _____

School/workplace: _____ Date: _____

Contact person at eye hospital: _____ Tel: _____

Phone number of parents/guardian: _____ Tel: _____

Cause(s) of Low vision

Distance Vision: _____ **circle the correct answer*

Distance vision without spectacles: VA both eyes: _____

Spectacles give better vision:* Yes / No _____

Need to wear spectacles:

* Most of the time but not for reading/near tasks

* All the time (outside and inside; for all activities)

Prescription Right eye: _____ D _____ Cyl _____ Degr VA: _____ VA both eyes:

Spectacles Left eye: _____ D _____ Cyl _____ Degr VA: _____

Telescope: Kind _____ Power: _____ VA: _____

Near Vision: *Please fill in all relevant information*

Without distance spectacles: _____ M at _____ cm

With distance spectacles only: _____ M at _____ cm

With magnifier/magnifying or high + glasses: _____ M at _____ cm

– Wear distance spectacles when using magnifier: Yes / No

Magnifying device prescribed (kind): _____ of _____ D

LOW VISION SERVICE - ADVICE FORM cont'd

Summary: Best Size:	*Normal (up to 1.5M)	Large size (>1.5M- 2.5M)	Very large (>3M)
Size in M:	Working distance	cm	

Read a. without distance spectacles OR b. with distance spectacles OR
c. with magnification OR d. with distance spectacles AND magnifier

Write: a. or b. or c. Other advice:

Learning medium:	Recommended:*	Print	Braille	Both
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Non-optical interventions and advice

*circle the correct answer

- Sit near window light: Yes / No
- Sit close to blackboard: Yes / No
- Ask classmate to read from blackboard: Yes / No
- Ask a friend to read long texts to you: Yes / No
- Use audio for long texts: Yes / No
- Use reading/writing stand: Yes / No
- Use reading slit (typoscope): Yes / No
- Use bold lines for writing: Yes / No
- Use black pen: Yes / No
- Wear sunglasses: Yes / No
- Wear cap: Yes / No
- Wear long sleeves/trousers/skirt: Yes / No
- Other:

Additional recommendations: (Vision training activities; Use of distance LVD if prescribed)

Other eye medical/optical recommendations: (Need for surgery/eye treatment/new glasses)

Referral to other medical specialist:

Name hospital/doctor:

Reason of referral:

Next date for follow-up: Month: Year:

Contact person: Department: Tel:

ANNEX 4: EDUCATIONAL ASSESSMENT

TEACHER'S LOW VISION PROGRESS REPORT

First check the most recent eye record and advice form for interventions prescribed/advised!

Name of teacher who filled in this report:

Date:

School:

Name client:

Age:

Grade:

Eye problem:

Date of last eye check:

1. Learning media

Child uses: Print (size as in school book)

Large print

Braille

Print and Braille

Cannot read print or Braille

If using Print AND Braille: Braille is used in:

– *Resource room*

most of the time

rarely

only for writing

– *Regular classroom*

most of the time

rarely

only for writing

Comments:

2. Distance spectacles (if prescribed):

Has spectacles: Yes

No

Uses spectacles
If not, why not:

Yes

No

If yes, location of use:

– *Resource room* all the time

distance tasks only

reading/near only

– *Regular classroom* all the time

distance tasks only

reading/near only

– *At home* all the time

distance tasks only

reading/near only

Comments:

3. Non optical devices Child uses:

- | | | | |
|-------------------------------|-------------------------------------|---------------------------------------|---------------------------------------|
| - <i>In resource room</i> | <input type="checkbox"/> Stand | <input type="checkbox"/> Reading slit | <input type="checkbox"/> Cap |
| | <input type="checkbox"/> Sunglasses | <input type="checkbox"/> Lamp | <input type="checkbox"/> Other: _____ |
| - <i>In regular classroom</i> | <input type="checkbox"/> Stand | <input type="checkbox"/> Reading slit | <input type="checkbox"/> Cap |
| | <input type="checkbox"/> Sunglasses | <input type="checkbox"/> Lamp | <input type="checkbox"/> Other: _____ |
| - <i>At home</i> | <input type="checkbox"/> Stand | <input type="checkbox"/> Reading slit | <input type="checkbox"/> Cap |
| | <input type="checkbox"/> Sunglasses | <input type="checkbox"/> Lamp | <input type="checkbox"/> Other: _____ |

Comments: _____

4. Near Vision: magnifier/magnifying (high +) glasses (if prescribed):

Has magnifying device: Yes No If not, why not? _____

Uses device for relevant near tasks:

- | | | | |
|---------------------|---|--|--------------------------------|
| - In resource room: | <input type="checkbox"/> most of the time | <input type="checkbox"/> not regularly | <input type="checkbox"/> never |
| - In classroom: | <input type="checkbox"/> most of the time | <input type="checkbox"/> not regularly | <input type="checkbox"/> never |
| - At home: | <input type="checkbox"/> most of the time | <input type="checkbox"/> not regularly | <input type="checkbox"/> never |

Comments: _____

5. Reading print

Child reads: First language: _____ Second language: _____

- | | | |
|---|------------------------------|-----------------------------|
| - All text in schoolbook: | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| - Headlines in schoolbook <i>only</i> : | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

Print reading speed (including comprehension): _____ words/min

OR: same as sighted peers very slow

Braille reading speed (if relevant): _____ words/min

Comments: _____

6. Writing (please attach a paper with child's writing)

- | | | |
|---------------------------------------|--|---|
| <input type="checkbox"/> Writes print | <input type="checkbox"/> Cannot write at all | <input type="checkbox"/> Writes mainly <i>Braille</i> |
|---------------------------------------|--|---|

Comments _____

Writes *print* with: normal colour pencil extra dark pencil black pen

Can child easily read own writing?: Yes No

Speed of writing: _____ letters/min OR very slow same as sighted peers

Size of writing: _____ M OR same as other sighted children large

Comments: _____

7. Blackboard reading in regular classroom: *Tick ALL that are true*

- Can read BB her/him self
- With help from teacher
- With help from sighted child
- Copies from notebook from sighted child
- Other: _____

Comments: _____

8. Seating position in class

9. Orientation & Mobility

10. Performance in special subjects such as science, sports

11. Plays/talks together with sighted classmates during breaks:

- every day only now and then (once a week) never

Comments: _____

12. Academic performance

Number of children in classroom: _____ Rank LV child: _____

Estimate of classroom teacher: excellent average poor

Comments: _____

Main problems, concerns

Recommendations (e.g. eye check, training)

ANNEX 5: STANDARD LIST OF EQUIPMENT AND DEVICES FOR LOW VISION SERVICES

Recommendations from the VISION 2020 Low Vision Group				Lessons from practice
Standard list for low vision services - 2004				Including basic low vision care
Ophthalmic Equipment	Tertiary Level Low Vision Clinic	Secondary Level Low Vision Clinic	Primary level low vision care	Minimum for district level
Streak retinoscope	Yes	Yes		Yes
Direct ophthalmoscope	Yes	Yes		Yes
Lensmeter (Focimeter)	Yes			
Trial lens set (full aperture)	Yes	Yes		Preferably, but can start with ordinary trial set
Universal trial frames	Yes (2 sets)	Yes		Yes
Paediatric trial frames (2 pairs of different sizes)	Yes	Yes		Minimum 1 pair
Trial lens holder	Yes			
Halberg clip	Yes			
Long handle occluder with pinholes	Yes	Yes		
Cross cylinders (+/-0.5D,+/-1D)	Yes			
Pen torch and measuring tape	Yes	Yes	Yes	Yes

STANDARD LISTS OF EQUIPMENT AND DEVICES cont'd

Vision Assessment Equipment	Tertiary Level Low Vision Clinic	Secondary Level Low Vision Clinic	Primary level low vision care	Minimum for district level
Light box for visual acuity test	Yes			
Distant LogMAR test charts - letter, number, tumbling Es, Landolt Cs (one of each type)	Yes	Yes		Tumbling Es essential
Near vision tests (same as distant but calibrated for 40 cm)	Yes	Yes		Tumbling Es essential
Reading acuity test (continuous text in English and local language)	Yes	Yes		Yes, can be 'home made' on computer using M sizes
Symbol paediatric tests for matching and pointing (with and without crowding)	Yes	Yes		
Preferential looking system	Yes			
Contrast sensitivity test charts	Yes	Yes		
PV-16 Colour Vision Test (double set)	Yes			
'Amsler' grids	Yes			
Hand disc perimeter	Yes			
Tangent screen	Yes			
WHO low vision kit			Yes	

STANDARD LISTS OF EQUIPMENT AND DEVICES cont'd

Optical Low Vision Devices	Tertiary Level Low Vision Clinic	Secondary Level Low Vision Clinic	Primary level low vision care	Minimum for district level
Spectacle magnifiers (half eyes)	6D to 12D in 2D steps with base in prisms	6D to 12D in 2D steps		Locally made high + glasses from 4D to 12D in steps of 2D
	10 to 40D in 4D steps as half eye; total 9 pieces	16D to 20D in 4D steps; total 6 pieces		
	10 to 40D in 4D steps as full aperture R+L; total 18 pieces			
Foldable and hand-held magnifiers with and without built-in light source	5D to 42D, total 15 pieces	5D to 17D; total 5 pieces	4 hand held magnifiers from 5D to 14D; total 4 pieces	Handheld magnifiers (non-illuminated) between 5 and 20 D (e.g. 1 of 6D, 1 of 10D and 1 of 15D, 1 of 20D)
Stand magnifiers	with and without built-in light source, from 13.5D to 40D; total 9 pieces	with no built-in light source, from 13.5D to 56D; total 6 pieces	4 stand magnifiers from 13.5D to 40D; total 4 pieces	Non illuminated stand magnifiers from 10D to 25D, e.g. 1 of 12D, 1 of 16D, 1 of 24D)
Dome and bar magnifiers	total 4 pieces	total 2 pieces		
Hand-held monocular telescopes	2.5X, 3X, 4X, 6X, 8X and 10X with micro-lens for 8X and 10X telescopes; total 5 pieces	4X to 8X with micro-lens for 8X telescopes; total 4 pieces	2 telescopes, 4x and 6x	
Filters	of 5 different shades with UV protection and luminous transmission of 40%, 18%, 10%, 2% and 1%	of 4 different shades with UV protection and luminous transmission of 40%, 18%, 10% and 2%		Variety of locally available sunglasses in different shades

STANDARD LISTS OF EQUIPMENT AND DEVICES cont'd

Optical Low Vision Devices	Tertiary Level Low Vision Clinic	Secondary Level Low Vision Clinic	Primary level low vision care	Minimum for district level
Non-optical devices				Good example of a reading lamp to be tried out with or without use of magnifying devices
				Reading/writing stand - locally made
				Reading slit ; signature guide ; writing guide (all locally made)
CCTV Devices	Yes, assorted			
Computer Devices	Computer with laser printer and scanner; Computer software with text enlargement and voice output			

ANNEX 6: SUGGESTED ADMISSION GUIDELINES

GUIDELINES FOR ADMISSION OF CHILDREN WITH LOW VISION TO INCLUSIVE EDUCATION, SPECIAL EDUCATION CENTRES AND SCHOOLS FOR THE BLIND

A child with low vision is:

Formal definition

- A child with a best corrected visual acuity of less than 6/18 in the better eye up to light perception
- And/or an extremely small field of vision, less than 20 degrees (less than 10 degrees from the point of fixation). A reduced field of vision causes considerable problems in reading and/or mobility.

Functional definition

- A child who still has vision related problems (even after a complete eye examination, after surgery and with spectacles) in performing daily activities such as reading print, walking to school or reading the blackboard

Before admittance to any school

Before admittance to any school providing special educational support (blind schools, other special schools, resource centres, annexes, itinerant and inclusive education programmes) any child suspected of being low vision ideally needs:

- Examination and diagnosis by an ophthalmologist
- Implementation of surgery and/or treatment if advised
- Clinical assessment, including refraction,
(see notes at the bottom of this document)

Only then a decision can be made if the child needs the care of a specialist teacher. If surgery is needed to improve vision (e.g. cataract surgery) this needs to be organised as a priority before all other interventions.

This admittance policy:

- Is always valid for the schools for the blind and resource centres/annexes.
- Should be flexible for inclusive education as there might be a few months between identification/screening of a child with visual problems and assessment by an eye care professional. A child with presenting VA below 6/18 (before eye care interventions) can be assisted by a special teacher or CBR worker until assessment by the eye care personnel has taken place.

Admittance after eye care interventions

If, as the result of the eye care interventions, a child achieves a best corrected VA of 6/18 or more in the better eye **and** can comfortably read normal size print (N8 -N20 or 1 - 2M or better), the child is not on the case load of the specialist teacher (any more), as he/she has normal vision.

- This means that all children with one eye with normal vision and one eye with low vision or blindness have *normal vision* and do not require any special educational assistance.

If a child still has a best corrected VA < 6/18 in the better eye after the eye care interventions, this child with low vision should have access to support by a special teacher and will fall under possibility 1 or 2, as follows:

1. A child has severe low vision (best corrected VA < 6/60 and/or best near vision > 3M) and needs help from a specialist teacher at a resource centre or special school, either for a short time or for longer
 - a. Short time: for most children who can use print. After one year of working with a specialist teacher to learn to read, write and learn in an appropriate way, the child be transferred back to a school at home. Advice to the classroom teachers needs to be given and occasional (yearly/quarterly/monthly) follow up visits are needed.
 - b. Long time: for children requiring Braille, continued education at the special school/resource centre might be required if regular support by a special teacher and access to Braille materials cannot be organised at the local school.
2. A child is low vision (all distance VA levels and best near vision of 3M or better at a comfortable distance) and can be educated from the start at the local school, occasionally supported by an itinerant teacher

No children with a best corrected visual acuity of 6/18 or more in the better eye, with a good visual field, and who can read print comfortably, should be admitted to a school for the blind or resource centre or stay under the regular care of a specialist teacher, unless there are other learning problems not related to level of vision but possibly to visual perception or other learning difficulties.

Guidelines for school examinations for children with low vision

- All children with low vision using print should be allowed the same extra time and help of readers/writers, as children with low vision and blindness using Braille, since their reading and writing speed is often considerably lower than that of children with normal vision.
- For those children benefiting from large print exams, the Ministry of Education should provide enlarged copies in the required size.

Guidelines for children with albinism and others sensitive to light

- Children with albinism and children with low vision who are sensitive to light, should be allowed to wear at school any or all of the following at all times, both inside and outside if needed:
 - long sleeves, long trousers
 - a cap
 - sunglasses

Note: Clinical assessment should minimally consist of 2 steps with the following activities (after surgery or treatment):

1. For all children with visual complaints
 - Diagnosis of the cause of the vision problem
 - Near and distance visual acuity
 - Retinoscopy + subjective refraction
 - Facilitating access to affordable spectacles (cooperation between local education authorities and eye care services needed to ensure all children obtain the spectacles needed)
 - Referral to a paediatrician or other specialist if use of vision for certain tasks remains a problem even with good visual acuity
2. For children with low vision
 - Diagnosis of the cause of the vision problem
 - Testing of near and distance visual acuity
 - Retinoscopy + subjective refraction
 - Facilitating access to affordable spectacles
 - Assessment of need for magnification and non-optical interventions
 - Facilitating access to magnifying and non-optical devices

Note: Facilitating transport to the nearest eye care service and, if required, nearest clinical low vision service, might be needed for children from poor families and may be supported by district education

ANNEX 7: SITUATIONAL ANALYSIS OF EYE CARE RELATED TO LOW VISION SERVICES

A situational analysis of low vision services should entail determining the following:

- What is the current complement of eye care personnel in your catchment area? In particular, include in your assessment the number (and cadre) of people with good skills in retinoscopy and refraction. Also find out if people with skills in retinoscopy and refraction are only at the base hospital or whether there are others external to the base hospital with these skills. If your programme is centred on a CEHTF, your assessment will need to include all of the individuals in the catchment area of the CEHTF.
- What is the infrastructure and equipment available in your catchment area? Do all of the people who are likely to be a position to provide low vision services have the equipment needed? Do you have a separate paediatric outpatient section?
- It is always easiest if you can prepare a map of your catchment area; include on the map where the relevant eye care personnel and facilities are located, the main roads, and the relative distances (time needed) to reach the low vision service.
- How do children and adults with low vision, and those with other disabilities, currently access low vision services? Is there good physical access to the eye care/low vision service? How many have used the service in the past calendar year? This will give you an idea of the baseline of low vision service, from which targets can be set. If you have no low vision service at present, it might be helpful to use information from outpatient services. For example, how many out-patient visits were made in the past calendar year? If possible, divide this into child outpatient and adult outpatient visits.
- Use routine records to collect data that give evidence for planning, stocks of devices, etc.

ANNEX 8: SITUATIONAL ANALYSIS OF EDUCATIONAL SERVICES FOR CHILDREN WITH LOW VISION

A situational analysis of educational services of children with low vision should include:

- Schools for the blind, other special schools, resource centres or annexes
 - Who runs them (Ministry of Education, private non-profit groups, missions, etc.)
 - How are children admitted to the schools (Are all children assessed by an ophthalmologist in advance? Can children be admitted on the recommendation of a teacher or parent?)
 - What is the background and training of the teachers (Did they have training in low vision or only in educating Braille users and children with blindness? Did they have any upgrade training and what were the topics covered? What is their understanding of “low vision”?)
 - How many and what kind of children are enrolled in these schools (age groups, sex, disabilities, where they come from, previous eye examinations and the like)? A baseline survey of children in these schools can be a very useful tool for understanding the current needs.
- Integrated and inclusive educational programmes
 - Who runs them (Ministry of Education, private non-profit groups, missions, etc.)
 - How are children admitted to the schools (Are all children assessed by an ophthalmologist in advance? Can children be admitted on the recommendation of a teacher or parent or are they admitted through the District education office)
 - What is the background and training of the teachers (Did they have any upgrade training for example in general inclusive education principles? What is their understanding of “low vision”?)
 - How many and what kind of children are enrolled in these schools (age groups, sex, disability)? Again a baseline survey of children in these programmes can be a very useful tool for understanding the current needs.

- Organisations and programmes of people with disabilities
 - What kind of activities do they undertake for children?
 - How many and what kind of children are enrolled in these programmes/ activities? (age groups, sex, disability)
 - What is the background and training of the people working with these children?
 - How are these activities financed? Are they supported by the government (and if yes, by which department)?
 - How are these programmes linked to formal educational programmes?

ANNEX 9: LOW VISION CLINICAL ASSESSMENT FORM

LOW VISION CLINICAL ASSESSMENT FORM

DATE:	File no.:
Name:	Date of Birth:
Referred by:	Disability:
Residence/Address:	School grade:
Telephone home/work:	Mobile contact no:
Profession:	
School:	<input type="checkbox"/> local <input type="checkbox"/> special/Annex
Name teacher:	Tel no:

Brief history; Main problems/needs:

Literacy: Print Braille Print+ Braille Not literate

Ocular exam/Cause of low vision

VISUAL ACUITY	Distance	Near: Size + distance in cm
Without correction:	RE: LE: BE:	RE: LE: BE:
With present correction:		
Current prescription:	RE: LE:	
Retinoscopy:	RE: LE:	
New prescription:	RE: LE: Add: VA: VA BE:	
Telescope:	X VA: Eye used: RE LE	
Visual field:	Contrast:	Colour:
Near vision:	With new prescription: M at distance cm	
Magnification	Near vision: M at distance cm	
Power + type: _____ D	<input type="checkbox"/> High+ spectacles	<input type="checkbox"/> Hand magnifier <input type="checkbox"/> Stand magnifier
To be used with distance spectacles:	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Non-optical devices needed

<input type="checkbox"/> Stand	<input type="checkbox"/> Typoscope	<input type="checkbox"/> Cap/hat
<input type="checkbox"/> Window light	<input type="checkbox"/> Lamp	<input type="checkbox"/> Sunglasses
<input type="checkbox"/> Black pen	<input type="checkbox"/> Seating position in class:	
<input type="checkbox"/> Blackboard advice:	<input type="checkbox"/> Other:	

Action/Recommendations:

Date for follow-up:

Client <u>obtained</u>:	Spectacles glasses	<input type="checkbox"/> Free	<input type="checkbox"/> Subsidy	<input type="checkbox"/> Full price
	High+ glasses/Magnifier	<input type="checkbox"/> Free	<input type="checkbox"/> Subsidy	<input type="checkbox"/> Full price

Name of assessor: **Date first assessment:**

ANNEX 10: REFERENCES

The 2012 low vision issue of the Community Eye Health Journal (CEHJ), issue 77. Major procurement centres for devices are listed in this issue.

- www.cehjournal.org/low-vision-we-can-all-do-more/

CEHJ issue 72 (pages 4-6) gives ideas on assessing the vision level of a baby or young child.

- www.cehjournal.org/article/managing-eye-health-in-young-children/

Key informants

- <http://www.kcco.net/manuals--reports.html>

References and websites in CEHJ issue 77

- www.cehjournal.org/news/useful-resources-for-low-vision/

Useful resources: equipment for eye care

- www.cehjournal.org/news/useful-resources-equipment-for-eye-care/

