



NATIONAL GUIDELINE  
**PREVENTION OF  
BLINDNESS IN  
SOUTH AFRICA**

DEPARTMENT OF HEALTH  
DIRECTORATE: CHRONIC DISEASES,  
DISABILITIES AND GERIATRICS

December 2002



DEPARTMENT OF HEALTH  
*Republic of South Africa*

## FOREWORD

It is with appreciation and pride that I write this foreword for the South African Prevention of Blindness Guideline.

Appreciation to all the role players who have given many hours of their valuable time to the development of this Guideline, and pride because the implementation of the management principles will decrease the numbers of avoidable blindness.

The burden of blindness far outweighs the cost of prevention, therefore the opportunity to prevent blindness is a scientifically sound route to follow. Many activities within various programmes in the Department of Health such as the Nutrition Programme, Genetics and Birth Defects Programme, Child Health Programme and Maternal Health Programme amongst others, will contribute to the success of this programme.

Let us be pro-active and build solid partnerships between ourselves and other role players.

MINISTER OF HEALTH



AIDS HELPLINE  
0800-012-322

## CONTENTS

INTRODUCTION	1
DEFINITION OF VISUAL IMPAIRMENT AND BLINDNESS	1
THE FOUR LEVELS OF PREVENTION	2
OBJECTIVES OF THE NATIONAL AND PROVINCIAL PREVENTION OF BLINDNESS PROGRAMMES	3
RECOMMENDATIONS FOR THE PLANNING AND MANAGEMENT OF PREVENTION OF BLINDNESS PROGRAMMES	3
CAUSES OF BLINDNESS	
CATARACT - see separate guideline	4
GLAUCOMA	4
CHILDHOOD BLINDNESS	8
DIABETIC RETINOPATHY	12
REFRACTIVE ERRORS - see separate guideline	15
LOW VISION	15
TRACHOMA	18

## GLOSSARY

ADL - Activities of daily living
C/D - Cup to disc ratio
IMCI - Integrated Management of Childhood Illnesses
IRMA - Intraretinal microvascular abnormalities
NGO - Non-governmental organisation
PDR - Proliferative diabetic retinopathy
ROP - Retinopathy of prematurity
SA - South Africa
SADC - Southern African Development Community
U5MR - Under 5 mortality rate
UNICEF - United Nations Children's Fund
WHO - World Health Organisation

## INTRODUCTION

The current magnitude of visual disability in South Africa and its projected exponential increase over the coming decades has potentially far-reaching social, economic and quality-of-life implications for the affected individuals, their families and communities. Visual disability, together with other disabling conditions, is a barrier to development. The knowledge and technology to make a difference in the lives of the affected thousands is available. The elimination of avoidable blindness is thus both a social, as well as a moral imperative.

In 1999, the WHO launched a global plan for the elimination of avoidable blindness by the year 2020. The South African National Prevention of Blindness Programme is a component of this global initiative, and is committed to the elimination of avoidable blindness in South Africa by the year 2020.

Recommendations that are made are based on those of the WHO Prevention of Blindness Programme, as appropriate for South Africa.

## DEFINITION OF VISUAL IMPAIRMENT AND BLINDNESS

Visual acuity in better eye with best correction

6/6 - 6/18 : "Normal"

6/18 - 6/60 : "Visual impairment"

<6/60 - 3/60 : "Severe visual impairment"

<3/60 : "Blind".

## PREVALENCE OF BLINDNESS IN SOUTH AFRICA

The prevalence of blindness in South Africa is 0,75%.

80% of blindness is avoidable (i.e. either preventable or treatable) by simple and inexpensive means.

80% of blind people live in rural areas.

The prevalence of childhood blindness correlates with the under five mortality rate, and is estimated to be 0,47 per 1 000 children.

## THE FOUR LEVELS OF PREVENTION

There are essentially four levels of prevention, namely primary prevention, secondary prevention, tertiary prevention and quaternary prevention.

- a) Primary prevention consists of measures to prevent diseases, injuries or conditions that can result in complications, impairments or disabilities. Such measures include health education, immunisation, maternal and child health services, and safety promotion. Together, these measures comprise a major component of primary health care.

Prevention of corneal scarring resulting from malnutrition, infection and trauma is an important primary prevention activity in blindness prevention in South Africa.

- b) Secondary prevention consists of early identification and intervention in the treatment of diseases, injuries or conditions to prevent the development of complications or impairments.

Early detection and treatment of diseases/conditions and injuries may prevent complications, impairments and blindness. Glaucoma is a good example of such a condition.

- c) Tertiary prevention consists of measures to limit or reduce impairments or disabilities.

Cataract surgery is an important tertiary prevention activity in blindness prevention in South Africa.

- d) Quaternary prevention consists of measures to reduce the effect of untreatable disease or disability.

Blindness rehabilitation is an important quaternary prevention activity in blindness prevention in South Africa.

## OBJECTIVES OF THE NATIONAL PREVENTION OF BLINDNESS PROGRAMME

## OBJECTIVES OF THE NATIONAL PREVENTION OF BLINDNESS PROGRAMME

1. To provide support to the Prevention of Blindness Programmes in provinces and SADC countries.
2. To coordinate the Prevention of Blindness Programmes in South Africa.
3. To protect and promote the rights of blind persons.
4. To reduce the prevalence of blindness in the country from 0,75% to 0,50% by the year 2005.

## MINIMUM OBJECTIVES OF THE PROVINCIAL PREVENTION OF BLINDNESS PROGRAMMES

In conformity with the objectives of the National Prevention of Blindness Programme, the minimum objectives of the Provincial Prevention of Blindness Programmes should be:

1. The provision of immediate access to primary eye care in the primary health care clinics and community health centres.
2. The provision of referral access to secondary and tertiary eye care.
3. A reduction in the prevalence of blindness from 0,75% to 0,50% by the year 2005.

Provinces may add to these objectives as resources allow.

## RECOMMENDATIONS FOR THE PLANNING AND MANAGEMENT OF PREVENTION OF BLINDNESS PROGRAMMES

### THE FOLLOWING STATISTICAL DATA MAY BE USED FOR PLANNING PURPOSES:

Prevalence of blindness 0,75%

For a population of 1 million:

Number of blind people = 7 500

Causes of blindness:      Cataract 66% = 5 000 people  
   Glaucoma 14% = 1 000 people  
   All other 20% = 1 500 people

Incidence of blindness due to cataract = 1 000 people per year

Use 80% of total population for number of indigent population.

### PROPOSED RESOURCES

## PROPOSED RESOURCES

### Human resources -

- Primary - At least one (1) clinic nurse at each clinic or community health centre trained in primary eye care.
- Secondary - one (1) ophthalmic nurse per 100 000 population  
one (1) optometrist per 250 000 population
- Tertiary - one (1) ophthalmologist/ophthalmic medical officer per one million population.

### Facilities for surgery

Vision 2020 centres should be identified, staffed and equipped. Ideally, there should be one per 250 000 population. The centres should be established at primary or secondary levels. It may only be feasible to start off with one centre for every 500 000 population and then to improve on this.

Each centre should be staffed by either an ophthalmologist or an ophthalmic medical officer, an optometrist, and an ophthalmic nurse.

## CAUSES OF BLINDNESS

CATARACT: (See separate cataract surgery guideline)

## GLAUCOMA

### Introduction

Chronic glaucoma is the second leading cause of blindness in South Africa.

### Definition

Chronic glaucoma is a disorder in which there is loss of visual field combined with an excavated appearance of the optic disc. The level of eye pressure is not used in defining glaucoma.

### For planning purposes -

Prevalence of chronic glaucoma = 5,00%.

Prevalence of blindness due to glaucoma = 0,10% (14% of blindness)

### For one (1) million people -

Prevalence of chronic glaucoma = 50 000.

### This comprises

- Early disease - 10 000

- Intermediate disease - 30 000
- Late disease - 10 000 - 9 000 advanced  
1 000 end stage/blind.

Many factors, including earlier age of onset in Africans, problems in case identification, late presentation, irreversibility of visual loss, non-compliance and failure of medical management, and failure of filtering surgery make chronic glaucoma difficult to manage successfully.

### Objectives of glaucoma management services

1. To provide a glaucoma management service in all health regions in South Africa.
2. To establish an effective case-finding and follow-up system.
3. To provide safe and effective surgery.

### Risk factors

Increased intra-ocular pressure >28 mmHg

Ethnicity - Glaucoma is more prevalent in Africans than in other ethnic groups

Ageing - age >35 years in Africans and >40 years in others

Family history of glaucoma

### Primary prevention

No effective options.

### Secondary prevention

Case detection at clinic level.

1. Identify and refer all cases with visual acuity of less than 6/12 in one or both eyes to hospital.  
In some of these cases, the diagnosis will be chronic glaucoma.
2. Identify and refer cases with a visual acuity in one or both eyes < 6/60 + black pupil ("black blindness") to an ophthalmic nurse.  
Some of these cases of "black blindness" will be due to intermediate or late chronic glaucoma.
3. Refer patients of >40 years with presbyopia to an ophthalmic nurse or optometrist.

Case detection at hospital level.

Ophthalmic nurses and optometrists at hospital level should identify cases of chronic glaucoma by doing optic disc examination and intraocular pressure (IOP) measurement on:

- intraocular pressure (IOP) measurement on:
  - – Patients referred to them with suspected glaucoma.
  - – Adult patients with a family history of glaucoma.
  - – Patients with diabetes.

● IOP < 25mmHg + optic disc "normal" = no chronic glaucoma. No treatment required. Advise patient to attend health facility for a check-up every two (2) years after the age of 40.

● IOP ≥ 25mmHg + optic disc "normal" = suspect case of chronic glaucoma. Refer to ophthalmologist/ophthalmic medical officer for confirmation and further management.

● IOP < 25mmHg + optic disc "cupped" (vertical C/D ratio > 0.7) = suspect case of chronic glaucoma. Refer to ophthalmologist/ophthalmic medical officer for confirmation and further management.

● IOP ≥ 25mmHg + optic disc "cupped" = case of chronic glaucoma. Refer to ophthalmologist/ophthalmic medical officer for confirmation and further management.

### ● Tertiary prevention

● *Surgical management is the recommended first line of treatment.* Trabeculectomy with cytotoxic adjunct (peroperative 5-fluorouracil or mitomycin-C) is recommended as the first line of treatment for chronic glaucoma. If bleb failure occurs with resulting inadequate control of intraocular pressure, surgery should be repeated.

● Ideally, the eye surgeon at each Vision 2020 centre should be trained in performing trabeculectomy. Failing this, patients requiring trabeculectomy should be referred to a facility where this is available. The postoperative follow-up at two weeks, six weeks and three months should take place under the supervision of the surgeon.

### ● Follow-up

● Once adequate control of intraocular pressure has been achieved, the follow-up should be:

- • three-monthly by the ophthalmic nurse or optometrist (IOP measurement and disc examination)
- • 12-monthly by the ophthalmologist or ophthalmic medical officer (visual field examination).

*Drug treatment of chronic glaucoma is not recommended for a number of reasons:*

- • It is expensive
- • the treatment needs to be life-long
- • the treatment regimens may be confusing
- • the treatment may cause unpleasant local and systemic side effects whilst the disease itself is painless and asymptomatic in the early stages, and
- • compliance with medical treatment is often poor.

● Drug treatment should be reserved for use in those eyes in which there is inadequate intraocular pressure control following successful trabeculectomy.

● If drug treatment is to be used, it is recommended that:

● First line treatment = topical beta blocker

● Second line treatment = topical parasympathomimetic

● Third line treatment = oral carbonic anhydrase inhibitor

### ● Evaluation of glaucoma management

- 1. Glaucoma register: Each ophthalmic nurse/optometrist/eye clinic in the region should keep a register of the patients in the district who have been diagnosed with chronic glaucoma and who are required to return for follow-up. Patients who default on follow-up should be contacted and reminded to attend the eye clinic.
- 2. Number of trabeculectomies performed per year.
- 3. Trabeculectomy surgery rate (TSR): The number of trabeculectomies per one (1) million population per year.

$$\text{TSR} = \frac{\text{Number of trabeculectomies per year} \times 1 \text{ million}}{\text{Area population}}$$

● The minimum target should be 500 per million population per year.

## CHILDHOOD BLINDNESS

### Introduction

Childhood is defined by UNICEF as 0 - 15years.

South Africa has a mixture of rural and urban populations. In rural areas relevant primary preventative strategies, such as nutrition education, vitamin A supplementation and measles immunisation can be provided through Integrated Management of Childhood Illnesses (IMCI). In urban areas, close co-operation and communication between caregivers and health professionals, including obstetricians, neonatologists, paediatricians, ophthalmologists and medical geneticists, is also required.

The causes of childhood blindness in South Africa are changing. Corneal disease is gradually reducing whilst cataract and glaucoma are on the increase.

Retinopathy of Prematurity (ROP) is emerging as a significant preventable cause of childhood blindness in the country's urban areas.

It is necessary to monitor the changing patterns of childhood blindness closely so that, in future, appropriate preventive and therapeutic measures can be initiated to reduce the number of "blind years" resulting from avoidable causes of blindness in children.

The prevalence of childhood blindness correlates with the level of socio-economic development, and infant and under five mortality rates. Countries with a high U5MR (in excess of 170 per 1 000) are likely to have a prevalence of childhood blindness in excess of 1 per 1 000, whilst those countries with a low U5MR (below 30 per 1 000) probably have a prevalence of 0,2 to 0,5 per 1 000 children.

For planning purposes, the prevalence of childhood blindness (0-15 years) in South Africa is:

- 0,5 per 1 000 African children
- 0,4 per 1 000 Coloured children
- 0,3 per 1 000 Indian children
- 0,3 per 1 000 White children
- Overall: 0,47 per 1 000 children

The prevalence will vary in the different regions, depending on the proportions of children of different ethnic and socio-economic groups.

The prevalence will vary in the different regions, depending on the proportions of children of different ethnic and socio-economic groups.

### AVOIDABLE CAUSES OF CHILDHOOD BLINDNESS IN SOUTH AFRICA

A survey undertaken in 1996 into the causes of blindness amongst children attending schools for the blind in South Africa confirmed that:

1. Corneal scarring is a significant cause of blindness amongst rural African children.  
Corneal scarring may result from:
  - a. A combination of vitamin A deficiency, measles, secondary bacterial infection, and the use of harmful traditional eye medicines.
  - b. Ophthalmia neonatorum.
2. Retinopathy of prematurity (ROP) is a significant cause of blindness amongst Indian and white children.
3. Cataract and glaucoma are significant causes of blindness in all children.

### PREVENTION OF CHILDHOOD BLINDNESS

#### 1. CORNEAL SCARRING

Primary prevention -

Expanded programme of immunisation (EPI)

Education on nutrition to promote breast-feeding and to increase dietary intake of vitamin A.

Vitamin A supplementation to:

- all children with measles, diarrhoea, respiratory tract infections, HIV/AIDS and babies <6 months that are not breast-fed
- lactating mothers
- all children (aged six months to six years) from communities where vitamin A deficiency is a public health problem
- malnourished children who show signs of marasmus, kwashiorkor and growth faltering
- infants with birth weight < 2 500g.

Health education to reduce the use of harmful traditional eye medicines.

Good antenatal care, including appropriate treatment for diagnosed sexually transmitted diseases.

Prophylaxis for ophthalmia neonatorum.

Secondary prevention -

Vitamin A treatment for all children with xerophthalmia, marasmus and kwashiorkor.

Prompt diagnosis and treatment of ophthalmia neonatorum.



- Secondary prevention -
- Vitamin A treatment for all children with xerophthalmia, marasmus and kwashiorkor.
- Prompt diagnosis and treatment of ophthalmia neonatorum.

- Tertiary prevention -
- Surgery for children with central corneal scarring who may benefit. Refer children to specialised ophthalmology unit.

## ● 2. CATARACT AND GLAUCOMA

- Primary prevention -
- Rubella accounts for 10 to 15% of congenital cataract.
- The scientific appropriateness of rubella immunisation of all young women is under discussion.

- Secondary and tertiary prevention -
- Cataract and glaucoma in children are difficult to manage. Refer to a 'paediatric' ophthalmologist in a tertiary hospital for surgical management and follow-up.

## ● 3. RETINOPATHY OF PREMATURITY (ROP)

- Introduction
- Retinopathy of Prematurity (ROP) is a proliferative retinopathy that affects pre-term infants of low birth weight who may have been exposed to high ambient oxygen concentrations.

- The retina is unique amongst tissues in that it has no blood vessels until the fourth month of gestation, at which time vascular complexes emanating from the hyaloid vessels at the optic disc grow towards the periphery. These vessels reach the nasal periphery after about 8 months of gestation, although they do not reach the temporal periphery until about 1 month after delivery. This incompletely vascularised temporal retina is particularly susceptible to oxygen damage, especially in the pre-term infant.

- Stages:
- Stage I: White line visible demarcating the edge between vascularised and non-vascularised retina.
- Stage II: Pink line visible indicating the onset of neovascularisation.
- Stage III: Pink ridge visible indicating the onset of potential for

- Stage III: Pink ridge visible indicating the onset of potential for neovascular traction. If "Plus" disease (dilated tortuous vessels) develops with Stage III ROP, most cases will need treatment.
- Stage IV: Neovascular ridge contracts to cause a partial retinal detachment that is likely to cause blindness, but may be treatable.
- Stage V: Total retinal detachment that will definitely cause blindness.

These stages are all diagnosed when an experienced ophthalmologist uses an indirect ophthalmoscope to examine the dilated pupils of the infant.

- Primary prevention
- Quality antenatal care to prevent premature birth
- Quality neonatal care
- Well-maintained and working incubators
- Maintenance of oxygen saturations between 86% and 92% in premature babies.

- Secondary prevention
- All babies less than or equal to 33 weeks post-conceptual age by Ballard Score, or weighing less than 1 250gms at birth, should be screened by an ophthalmologist. The first examination should take place between 5 and 7 weeks after birth. Screening should continue every two weeks, at the discretion of the ophthalmologist or neonatologist, until the baby reaches term.

- Tertiary prevention
- Prompt and appropriate cryotherapy or laser therapy will prevent Stage III Plus disease from progressing to blinding disease, Stages IV and V, in approximately 50% of cases.

## ● Evaluation of childhood blindness

- \* Number of children that have undergone ophthalmic examination
- \* Number of children diagnosed as blind
- \* Causes of blindness.

## ● DIABETIC RETINOPATHY

## DIABETIC RETINOPATHY

### Introduction

The prevalence of diabetes in South Africa amongst Indians is 11% – 13%, and amongst Africans is 5% (diabetes and impaired glucose tolerance) and increasing. 90% of diabetes is type 2, in which retinopathy may be established before the diabetes is diagnosed.

For planning purposes in South Africa, diabetic retinopathy accounts for 8% of blindness ( $\pm$  20 000 people) - a figure which is on the increase. The prevalence of blindness due to diabetic retinopathy in any particular health region would depend on the demography of the region and the level of medical care in the region.

## DIABETIC RETINOPATHY

clinical features, natural history and management

Level of Retinopathy	Clinical Features	Natural History Rate of progression to PDR at 1 year	Management
Mild non-proliferative	More than 1 microaneurysm	5%	Review 12 months
Moderate non-proliferative	Haemorrhage and microaneurysm in 1-3 quadrants; Cotton wool spots, venous beading and IRMAs	25%	Review 6 months
Severe non-proliferative	Haemorrhage, microaneurysms in all quadrants; Or venous beading in more than 2 quadrants; Or IRMA in 1 quadrant	50%	Pan-retinal photo-coagulation
Proliferative	Neovascularisation		
Clinically significant	Maculopathy with visual acuity deterioration		

Ref: *Journal of Community Eye Health, Volume 9, Issue No 20, 1996, Page 59*

### Risk factors

Undiagnosed and uncontrolled diabetes  
People with diabetes type 2  
Pregnant women with pre-existing diabetes

### Primary prevention

Prevention of diabetes type 2 through lifestyle modification such as weight reduction, regular exercise, smoking cessation and very limited alcohol use.

Early diagnosis and control of people with diabetes.

### Secondary prevention

All diabetic patients should have a fundal examination by a trained ophthalmic nurse, optometrist, or ophthalmic medical officer once a year. Any patient in whom diabetic retinopathy is diagnosed or suspected should be referred for confirmation of diagnosis at a competent level.

### Tertiary prevention

Ophthalmic medical officers should be trained to recognise and classify diabetic retinopathy, and should be trained to treat proliferative retinopathy with argon laser panretinal photocoagulation.

Best practice is the aim.

1. Vision 2020 centres should be equipped with an argon laser for panretinal photocoagulation treatment.
2. Structured training courses should be implemented at appropriate teaching institutions.
3. Tertiary hospitals should have facilities for fluorescein angiography, laser treatment and vitreoretinal surgery.
4. Tertiary hospitals should have an eye department staffed by at least one ophthalmologist and other eye care specialists and registrars, depending on the need.

5. All specialised service centres should have a vitreoretinal surgeon.

### INDICATIONS FOR REFERRAL

## INDICATIONS FOR REFERRAL

### Primary level to secondary level

#### 1. If able to visualise fundus:

##### *Urgent referral:*

All patients with

- new vessels at disc (NVD) or elsewhere (NVE)
- decrease in visual acuity, moderate to severe

##### *Routine referral:*

- preproliferative retinopathy
- macular oedema

##### *Refer for screening:*

- no retinopathy screen in one (1) year
- low risk screen in two (2) years  
e.g. >70 years at diagnosis; children <12 years
- high risk screen in three (3) months  
e.g. pregnancy

#### 2. If unable to visualise fundus:

##### *Urgent referral:*

- all diabetics with a decrease in visual acuity

##### *Routine referral:*

- all new diabetics

### Secondary level to tertiary level

- 1) Signs of severe preproliferative changes or new vessels when no laser or trained Medical Officer is available
- 2) Signs of clinically significant macular oedema (CSMO)
- 3) The fundus cannot be visualised due to:  
e.g. vitreous haemorrhage
- 4) Severe gliosis or traction retinal detachment

### Tertiary level (if vitrectomy service not available) to specialised unit.

- 1) Vitreous haemorrhage
  - immediate in diabetes type 1
  - after three months in diabetes type 2
  - recurrent haemorrhage
- 2) Severe gliosis or traction retinal detachment (TRD), especially where macular is affected.

## Evaluation of diabetic retinopathy

- Number of appropriate referrals
- Number of false positives
- Number of patients with advanced disease

## REFRACTIVE ERRORS (See separate guideline)

## LOW VISION

### Introduction

Low vision is a relatively new field. The smaller number of patients and the prohibitively expensive nature of low vision aids have limited the financial viability of low vision services. As a result, very few optometrists venture into this field despite their often extensive training. Consequently, much of the burden for low vision services is carried by the NGO, the National Council for the Blind. Many activities of daily living (ADL) such as preparing food/cooking/sewing/ reading, require good near vision.

### Definition:

Low vision corresponds to visual acuity of less than 6/18 but equal to, or better than 3/60 in the better eye with the best possible correction (WHO 1997).

### Objective of the low vision programme

To provide appropriate low vision management to reduce the burden of visual impairment.

### Priority groups for this service

- Children
- Older persons >60 years of age
- People with low vision whose lifestyle demands management

### Awareness

- Eye care workers, rehabilitation workers, educators in special education need to know that people with useful residual vision can be helped by non-optical intervention, and may be helped by low vision devices
- Parents need to know that non-optical and optical interventions are available
- Employers and educators should be aware of limiting factors in the environment and should modify these factors (e.g. office/classroom

- Employers and educators should be aware of limiting factors in the environment and should modify these factors (e.g. office/classroom seating; lighting; tilted reading and/or writing surface)
- Refractionists can be trained to give higher plus reading glasses, which will help a lot of people with low vision
- Access to print (rather than Braille) increases opportunities for education and employment

#### Causes

Adults - Corneal scarring; macular degeneration; diabetic retinopathy; optic atrophy; retinal dystrophies; end stage glaucoma etc.

Children - Amblyopia; retinal dystrophies; aphakia; optic atrophy; albinism; macular dystrophies etc.

#### Management

Perform clinical examination to confirm preliminary diagnosis

Discuss prognosis with patient or parent/care-giver

Ask low vision person whether

- near and working distance is more important than distance? (i.e. focus on ADL; reading)
- his/her hands should be free?
- vision should be binocular?

Test functional vision as well as visual acuity to determine nature of impairment (colour; contrast; visual fields) and prescribe appropriate correction.

Measure near and distance vision with full correction

#### Interventions

1. Non-optical
2. Optical
3. High tech electronic

#### 1. Non-Optical Interventions

Enlarge print:

- Write with felt pens, charcoal
- Use large font on computer or use an enlarging photocopier
- Provide large print books

Lighting:

Lighting:

- Increase available light - sit near the window; higher watt bulb; light over the shoulder onto the page
- Decrease excessive light - dark glasses; hat with brim

Use lines:

- To find end/beginning of row of text;
  - To mark edge of steps/pathway
- Bring objects closer to eyes:
- Holding things close makes them bigger (and does not damage the sight);
  - Tilt reading/writing surface for convenience

Use colour:

- colour coding;
- contrasting colours

Use contrast:

- Adjust brightness of TV
- Adjust colour of TV
- Reduce glare in rooms
- White writing against black
- Black writing against white
- Other colours

#### 2. Optical Interventions

- Very good refraction
- If corrected distance acuity is 1/60 or more, low vision devices may help
- May need more than one device

#### 3. High tech electronic

These products are very costly.

Low vision devices

Definition:

- Any device more than 4D for near vision (bar prism; hand held magnifier; stand magnifier; high plus reading glasses)
- Any magnification for distance (telescopes)

- Low cost magnifiers
  - • Plastic drain-pipe, with high plus D lens inserted at correct working distance
  - • Magnifiers up to 28D can be made easily and very cheaply by optical workshops.

#### ● LOW VISION CLINICS

● A low vision clinic should be established at primary and/or secondary level, as part of the optometric service provided by the optometrist.

● Patients with low vision should be referred to a low vision clinic for appropriate assessment and effective management.

#### ● TRACHOMA

● The Department of Health applied to the WHO in 2000 to have South Africa declared "trachoma free".