Medical Eye Care

Policy

2010-2012

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Vision 2020 Programmes

1. Present Situation

1.1 There are an estimated 45 million blind people (<3/60 in the better eye) and 269 million people with low vision (<6/18 in the better eye) in the world. The risk of blindness increases greatly in people over 40 years of age. The world's population is both enlarging and ageing, so the number of blind people is increasing by 1-2 million per year.

1.2 1.2 Of the blind people, 21 million live in Asia, 7 million in Africa, 4 million in the Middle East, 3 million in Europe, and 2 million in Latin America. Of the people with low vision, 21 million live in Africa, 9 million in Latin America and 67 million in Asia.

1.3 60% of blindness is treatable. (i.e. cataract and uncorrected refractiveerror).

1.4 20-30% of blindness is preventable. (i.e. trachoma, vitamin Adeficiency, onchocerciasis, diabetic retinopathy and glaucoma.).

1.5 The global Vision 2020 Programme was launched by the World Health Organisation (WHO) and the International Agency for the Prevention of Blindness (IAPB) in 1999, with the aim of working towards the elimination of all avoidable blindness by the year 2020. CBM, as a member of IAPB, supports the Vision 2020 programme in its work.

2. Present Activities

2.1 CBM provides approximately 30 million Euro per year for eye care services.

2.2 CBM supports expatriate ophthalmologists, ophthalmic nurses, optometrist, and orthoptists (approximately 40 in total) as full-time co-workers.

2.3 CBM provides a medical consultancy to advise on eye care programmes in the different regions.

2.4 CBM supports approximately 650,000 cataract operations and a further 100,000 eye operations as well as the provision of 400,000 pairs of spectacles per year.

2.5 CBM works in collaboration with the WHO programme for prevention of blindness:

2.5.1 Generally to implement the "Global Initiative to Eliminate Avoidable Blindness" (Vision 2020) through national programmes and regional coalitions for blindness prevention;

2.5.2 Specifically to:

a) develop and support training programmes for eye workers;
b) promote prevention of childhood blindness and low vision services for children;
c) distribute ivermectin for onchocerciasis;
d) develop programmes for trachoma control (SAFE strategy);
e) develop services to treat refractive errors;
f) develop appropriate technology.
g) develop strategies to prevent visual impairment due to diabetic retinopathy and glaucoma.

2.6 CBM is actively involved in integrating blindness prevention and other eye health programmes with other disability (prevention) programmes (community based rehabilitation, prevention of hearing impairment, prevention of physical impairment, prevention of mental impairment, education of hearing impaired, and education of visually impaired), and in creating cooperation with other relevant health and community programmes

3. Aims

3.1 To provide eye services for curable visual loss and blindness from cataract and refractive errors.
3.2 To provide promotive, preventive and therapeutic services against diseases which may result in blindness and low vision.
3.3 To promote and provide appropriate technology, for delivery of affordable eye care.
3.4 To incorporate 3.1, 3.2 and 3.3 with services for the incurably blind and low vision as part of a comprehensive eye service, particularly aimed at communities who would not normally have access to these services.
3.5 To develop community directed interventions to boost the utilisation of eye care services.

4. Strategy

Asia

4.1 To mobilise national manpower and resources to tackle the problems of cataract, refractive errors, low vision, vitamin A deficiency, trachoma, diabetic retinopathy and glaucoma. A target population for such a project is between 250,000 to 1,000,000.
4.2 These services should be aimed at communities, which are underserved with a significant prevalence of avoidable blindness.

Africa

4.3 Human resource development which involves training, equipping and supporting national doctors, medical assistants, nurses, and programme managers to provide eye care services against the common blinding diseases is the priority in Africa. The training and support of comprehensive Vision 2020 teams is emphasised.
4.4 At present there is on average 1 ophthalmologist/million population but they are unevenly distributed. By training and supporting non ophthalmologist eye surgeons, the aim is to have a minimum of 2 eye surgeon for every 1 million population.
4.5 To train and support mid level eye care workers so that there is 1 per 100,000-250,000 population.
4.6 To provide equipment and consumables to ensure that trained national workers have the resources to provide the services.

Latin America

4.7 To mobilise national ophthalmologists and resources to provide inexpensive eye care for patients with cataract, glaucoma and treatable retinal/corneal problems.

4.8 These specialist services should be targeted at:
a) poor people living in urban slums
b) rural populations.

4.9 To identify communities with specific eye problems, e.g. trachoma, vitamin A deficiency and onchocerciasis, and implement appropriate preventive measures.

4.10 To include retinopathy of prematurity (ROP), diabetic retinopathy and glaucoma as priority diseases in Vision 2020 in the region.

Overall

4.11 4.11 Prioritise communities which are underserved. A cataract surgical rate of less than 2000 in Asia and Latin America and less than 1000 in Africa is a useful indicator of an underserved community.

4.12 Concentrate on training and empowering national eye care personnel.

4.13 Seek to demonstrate and establish eye care services which are sustainable.

4.14 Promote increased use of eye health services by girls and women

4.15 Encourage making eye health services part of a network of comprehensive services.

The Role of Primary Health Care and Community Based Rehabilitation in Medical Eye Care

1. Present Situation

1.1 Primary health care (PHC) is a fundamental concept of the World Health Organisation

1.2 The principles of PHC are
a) Community participation
b) Use of appropriate technology
c) Equitable distribution
d) Inter-sectoral coordination

The main activities in PHC are:
a) Immunisation
b) Better nutrition
c) Water and sanitation programmes
d) Control of common diseases
e) Delivery of maternal and child health care.

1.3 By addressing the key components of wellbeing, community based rehabilitation (CBR) aims to assist and empower people with disabilities at the community level to be a part of all activities of the community including access to health, education and livelihood opportunities, and to

become fully recognised citizens of that community, benefiting and contributing to the community. CBR is a strategy for the rehabilitation, equalisation of opportunities, poverty reduction and social inclusion of people with disabilities.

1.4 The strategy of "CBR" is integrated in the health sector in the following ways :

a) Identification in the community and registration of people with disabilities at local health care centres so they can avail of existing services and benefits
b) Participatory needs assessment and referral for diagnostic services (in coordination with PHC system where PHC is strong)
c) Case management and community level rehabilitation (including referral and assistive devices)
d) Ongoing follow-up and evaluation in the community
e) Cooperation with local stakeholders including health workers and volunteers in all aspects of prevention, health promotion, early detection, early intervention activities. Through information dissemination, sensitization and development of alliances which create a comprehensive network CBR plays a role in ensuring that people with disabilities have access to local resources and in ensuring that the referral system functions in order to meet more specialized needs such as cataract surgery.
f) By facilitation as a means of working with community members as well as professionals, CBR contributes to the wellbeing of people with disabilities in the community, enables people with disabilities and community members to provide effective support and interventions. This process encourages professional medical staff to become enablers and frees them to focus on specialized cases while monitoring the ability of the community to manage its own CBR programme.
g) CBR is a catalyst in getting line agencies, including the health care system, civil society, including disabled people's organizations/parents organizations and the business sector to coordinate planning and implementation in order to work together for community development for all.
h) CBR can be instrumental in forming, finding, developing, and maintaining links and networks with other providers for sustainability.

2. Present Activities

2.1 CBM supports PHC activities including immunisation, nutrition programmes, control of common diseases mother/child health care and water and sanitation.

2.2 CBR programmes are increasingly being developed and supported by CBM as a means whereby more disabled people in poor areas of the world can be helped while continuing to live with their own families and in their own communities.

2.3 CBR is also a strategy being used by CBM partners to create awareness in the community about the rights of disabled people and other marginalised sectors to be full and equal members of society. CBR contributes to the health and wellbeing of people with disabilities by promoting inclusive and participative health programs that respect the opinion of the "patient", disabled or non-disabled, to have a say in their health care.

2.4 The exclusion of people with disabilities has led to poverty for disabled people and their families. Poverty is an important concern of health systems as it leads to many causes of illness and impairment. Because the majority of people with disabilities live in poverty they cannot afford the medical and rehabilitation care they need. By creating awareness, changing attitudes and building inclusive systems and communities, CBR helps to eliminate the root causes of illnesses, accidents and misconceptions that lead to unnecessary impairment and disability. CBM recognises disability is a development issue in its Vision2015 and sees CBR as a strategy for poverty alleviation for people with disabilities

3. Aims of eye medical work in order to include/ cooperate closely with CBR programmes/strategies

3.1 To work with the PHC system and support PHC activities to prevent diseases which may lead to blindness and disability (i.e. primary prevention) and to identify people with visual problems and other disabilities and refer those who may be helped medically to overcome their disability.

3.2 To actively link up and work with CBR programs to educate and create awareness in the community on the prevention of diseases leading to blindness and disability; to identify people with visual problems and other disabilities who may be helped medically to overcome their disability or be cured of their impairment; and to ensure that people with disabilities who cannot be helped by medical interventions to overcome their disability are provided with appropriate rehabilitation services.

3.3 To provide training and information to PHC and CBR programmes in easy-to-use formats so that people with disabilities are referred for correct diagnosis and treatment and to ensure that diagnosis is provided in a timely manner in order that supportive interventions are provided as early as possible.

3.4 In order to ensure that persons with disabilities, their families and the appropriate PHC and CBR services are aware, understand and comply with the medical treatment provided or planned for, and come for follow-up services as indicated:

a) To provide diagnostic information and information about treatment undertaken as well as ongoing treatment plans
b) To provide follow up recommendations to the patient and his or her family as well as to PHC and CBR programmes
c) To facilitate provision of support (e.g. transport) for poor families to access eye medical interventions and follow-up

3.5 To work with PHC and CBR programmes to develop, implement and monitor training programmes that link with existing trainings and modules developed and that will bring the 'eye component' into PHC and CBR trainings in order to promote wellbeing and enable healthy communities.

3.6 To contribute to the promotion of PHC's purpose of ensuring total development of each community member achieved through cooperation with other sectors including education, livelihood, social services, civil society including cultural and spiritual groups as well as organizations of people and parents of people with disabilities.

4. Strategy

Role of PHC in Prevention of Disability

4.1 Immunisation: The expanded programme of immunisation (EPI) can result in prevention of blindness and deafness from measles, and prevention of physical disability from poliomyelitis and tuberculosis.

4.2 Nutrition: Better nutrition particularly with vitamin A can lead to prevention of blindness, and with iodine to the prevention of mental handicap.

4.3 Control of common diseases: The treatment of malaria and meningitis can prevent deafness and blindness, and the control of tuberculosis and leprosy can reduce physical disability from these diseases. The treatment of trachoma in endemic areas can reduce the prevalence of this eye disease in children.

4.4 Maternal/Child health care: Better care of the pregnant woman and young child can lead to the occurrence of fewer disabling conditions during pregnancy and child birth.

Role of the CBR strategy together with eye medical work in prevention of blindness, low vision and disability

4.5 Health education: To use health education methods to educate / create awareness in the community on the prevention of causes leading to blindness, low vision and disability, and on the need for early intervention, and develop community volunteers if possible (to promote community participation) who will help the CBR worker.

4.6 Identification: CBR workers and community volunteers (especially satisfied clients) are ideally placed to identify children and adults with blindness, low vision and other special needs in their own homes and communities.

4.7 Assessment and diagnosis: CBR workers can be taught appropriate methods to assess those individuals who could be helped by the services of a specialist, e.g. ophthalmologist for cataract.

4.8 Referral for management and treatment: CBR workers can encourage / motivate individuals / communities to go to the first level specialist / referral unit for specialist treatment, and can provide necessary information to the referral system that will improve the utilisation of the specialist services provided. Where there is under-utilisation of services,

the development of a good CBR programme should lead to an increased demand for services provided there is a good liaison between the first level specialist / referral unit and the CBR worker).

4.9 Follow-up and evaluation:

a) Counter referral information to the CBR programme provided by the medical service enables the CBR worker to provide after treatment support to the patient at home to help with visual rehabilitation, give advice on any treatment and make sure that the spectacles are available when needed.
b) CBR can play a key role in ensuring people come for scheduled follow-ups to eye medical services, e.g. after paediatric cataract surgery.

4.10 Peer support (satisfied clients) can play a key role in motivating people in need of services to make use of the services, and to attend for follow-up. Peer support needs to be promoted as an integral part of service delivery.

Conclusion

4.11 PHC, in collaboration with (community) eye care services if present, provides the structure for supporting activities which will prevent diseases which may lead to blindness and disability. It also plays a vital role in identifying, referring, and following up disabled people who can be helped by specialist services.

4.12 CBR provides the structure for complementing PHC in identifying, referring, and following up disabled people who can be helped by specialist services and provides a range of complementary services directly or through cooperation with other sectors.

4.13 In situations where PHC (with or without a community based eye care component) and CBR programmes exist, co-ordination is required to maximally utilise the activities of both programmes for prevention and treatment of avoidable blindness.

4.14 Both PHC and CBR workers have important roles to play in developing eye care, and preventing blindness at the community level of care.

4.15 If no well established PHC service or CBR service is available that facilitates access to basic eye care, a community awareness programme should be encouraged as an integral part of eye care.

4.16 In all activities, capacity building of the community and dissemination of appropriate information is vital to ensure services are accepted and owned by the community

Eye Diseases

Cataract

1 Present Situation

1.1 Cataract (opacification of the lens) is the major cause of blindness in the world, with an estimated prevalence of 18 million people bilaterally blind from cataract. The number is increasing by more than 1 million people per year.

1.2 It is estimated that in Africa and Asia at least 1 person per 1000 population goes blind from cataract every year i.e. 600,000 per year in Africa, 1,000,000 per year in India. This is the incidence of cataract blind. These are minimum estimates.

1.2 The causes of cataract are not clearly understood. Cataract is more common with increasing age. Sometimes it occurs in newborn children.

1.3 There is no known means of preventing cataract due to ageing. Treatment involves removal of the lens and then correction of the optical error known as aphakia.
There are two ways in which the cataract can be removed:

a) Intracapsular (ICCE) - remove the whole lens intact.
b) Extracapsular (ECCE) - open the lens, remove the contents, but leave parts of the shell (capsule) in place.
Extracapsular extraction maybe:
- standard ECCE ("ECCE")
- scleral tunnel ECCE ("SICS")
- phaco-emulsification ECCE ("phaco").

There are three ways of correcting aphakia:

a) Spectacles (see aphakic spectacles)
b) Contact lens
c) Intra-ocular lens (see IOLs)

The insertion of an intra-ocular lens at the time of cataract extraction is the recommended procedure.

1.4 The majority of cataract operations are performed on people before they become blind.

1.5 The cataract surgical rate (CSR) is a measure of the availability of cataract services. It is the number of cataract operations per year per million population. In Western Europe and North America the CSR is 5-10,000, in India it is over 4000, in Latin America and Eastern Europe it is 1500 (wide variety), and in China, Indonesia and most of Africa it is less than 1000. In order to eliminate cataract blindness, the minimum aim is a CSR of 2000 operations per million population per year in Africa, and 3000-4000 elsewhere in the world.

1.6 The cataract surgical coverage (CSC) is a measure of the uptake of cataract services by the community. It is the proportion of people in the community in need of cataract surgery who have actually had cataract surgery. In Western Europe and North America the CSC is about 100%, and in most of Africa it is less than 30%.

2 Present Activities

2.1 CBM supports co-workers, national ophthalmologists and cataract surgeons to provide cataract surgical services.

2.2 CBM supports surgical training programmes for ophthalmologists and non ophthalmologists. A particular emphasis at present is on the provision of conversion training to scleral tunnel ECCE.

2.3 At present CBM supports more than 650,000 cataract operations per year.

2.4 CBM provides essential materials required for cataract surgery, including IOLs.

2.5 CBM supports research relevant to the prevention of cataract blindness. This is done preferably in collaboration with other stakeholders.

3 Aims

3.1 To reach more people, with equitable and good quality services.

3.2 To provide cataract surgical services which:

a) have a high success rate*

b) are affordable to poor people

c) are accessible for all people

d) cater for the number of new cases (incidence) as well as gradually reducing the backlog of cases (prevalence).

* WHO guidelines for cataract surgery success -

Visual acuity (at last visit)	Functioning vision	Best corrected vision
6/6 - 6/18	80%	90%+
<6/6 - 6/60	<15%	< 5%
<6/60	< 5%	< 5%

3.3 In Africa aim initially for one cataract surgeon and one ophthalmologist for every 500,000 population, and a cataract surgical rate of 1500 operations per year per million population.

3.4 In Asia and Latin America mobilise ophthalmologists so that every 250,000 population has the services of one full-time ophthalmologist and the cataract surgical rate is raised to 3000 operations per year per million population.

4 Strategy

Case finding and overcoming the barriers to cataract surgery

4.1 We should aim to overcome the major barriers to uptake of cataract services, which are – lack of **a**wareness, **b**ad treatment including poor outcome due to lost aphakic glasses, **c**ost, **d**istance, lack of **e**xpectation, **f**ear, and female **g**ender.

4.2 We should aim to develop and mobilise national and expatriate manpower and resources to provide quality cataract services.

4.3 We should enlist the help of CBR and PHC workers to identify blind cataract patients and to provide follow-up and rehabilitation for post-cataract operation patients.

4.4 The cataract surgical services should be available close to where people live or transport to the centre made available, so that distance is not an obstacle to obtaining the operation.

4.5 In the provision of surgery, priority should be given to bilaterally blind patients with cataract.

Surgery

4.6 We should promote the use of scleral tunnel extracapsular surgical techniques by the following means :

a) Development of a protocol for training eye surgeons in scleral tunnel extracapsular surgery
b) Establishment of training centres for cataract surgeons
c) Provision of on-going supervision and support for cataract surgeons in order to maintain a high quality of surgery
d) Provision of appropriate equipment and consumables for cataract surgery
e) Provision of post-operative refraction and spectacles.

4.7 The transition to phacoemulsification cataract surgery is a logical transition that is taking place within CBM supported programmes. CBM does not seek to promote, hinder, or control this transition. To assist with managing the transition, it is recommended that phacoemulsification cataract surgery could be considered in projects where :

a) The ophthalmologist is keen to do phacoemulsification surgery; and
b) the cataract surgery numbers justify the added capital expense (as a guide - 800 or more surgeries per year in Latin America and Africa, 1500 or more surgeries per year in Asia); and
c) a proportion of the eyes are suitable for phacoemulsification. Whilst this depends primarily on the hardness of the lens nucleus and can only be decided on clinical examination, a guideline could be a visual acuity of 6/36 or better; and
d) any additional costs for instruments and consumables can be accommodated in the project budget.

Projects where there is training of ophthalmologists could be prioritised for transition to phacoemulsification surgery.

4.8 Surgical units where there is training of cataract surgeons and surgical units doing more than 800 cataract surgeries per year should be equipped for automated anterior vitrectomy.

4.9 We should promote the use of prospective evaluation of cataract outcomes, either manually or using a computerised database, in order to ensure the highest possible standards of care.

4.10 The cataract surgical services should be at a cost which most patients can afford so that cost is not an obstacle to obtaining the operation. This may involve different tiers of payment.

Refractive Errors

1 Present Situation

1.1 Refractive errors include:
a) Myopia (short-sightedness)
b) Hypermetropia (long-sightedness)
c) Astigmatism
d) Aphakia (no lens)
e) Presbyopia (difficulty with near vision after age 40 years).

1.2 Uncorrected refractive errors are an important cause of avoidable vision loss. 145 million (of the total of 269 million with low vision) people's low vision is due to uncorrected refractive errors (near-sightedness, far-sightedness or astigmatism). In most cases, normal vision could be restored with eyeglasses.

1.3 Presbyopia affects most people as they get older. It is corrected with reading glasses, usually between +1.00 and +3.00.

1.4 The next commonest refractive error is myopia. This causes difficulty with distance vision, usually starting in childhood and increasing up to the 20's. It may also occur in later life. The frequency of myopia varies by ethnic group and age. Uncorrected myopia interferes with education.

1.5 Provision of glasses is a profitable activity usually carried out by the private sector.

2 Present Activities

2.1 CBM supported eye clinics provide refractive services, diagnosing refractive error and prescribing spectacles.

2.2 CBM has been active in developing low-cost optical workshops. Providing these workshops are well-managed, with tight control of staffing and inventories, they can provide a high quality and cost-effective solution to the shortage of spectacles in poor countries. However, management of workshops is difficult and time-consuming.

2.3 CBM supports school screening programmes, to identify children with uncorrected refractive errors.

2.4 CBM supplies ready made spherical spectacles to some clinics. Ready-made glasses are suitable when the difference between the two eyes is no more than 0.5D, and there is less than 0.75D astigmatism. They are

adequate for most presbyopic patients and for many young people with myopia. They are rarely ideal for post-operative cataract patients.

2.5 CBM is active in training ophthalmologists, ophthalmic assistants, and optometrists, all of whom may prescribe glasses.

3 Aim

3.1 Ensure people with uncorrected refractive errors of all ages (including those with presbyopia) receive services that are easily accessible, in order to decrease uncorrected refractive errors as a cause of avoidable vision loss.

3.2 Ensure that all children with significant refractive error have regular refraction and provision of glasses.

3.3 Ensure that glasses are accessible and affordable for all.

3.4 Provide appropriate refractive correction for all post-operative cataract patients.

4 Strategy

4.1 Include refractive error services in eye care services at community level where possible.

4.2 School screening: Where assessment indicates that at least 5% of children have an uncorrected vision of less than 6/12, CBM should encourage school screening programmes for children aged 11-15. Community workers (teachers, parents, etc) can test vision and refer any child with a vision of less than 6/12 in either eye. CBM supported clinics should examine children detected by screening and provide refractive correction when appropriate.

4.3 Refraction following cataract surgery: The provision of glasses should be regarded as an integral part of cataract surgery. Patients should be encouraged to return for refraction. If this is not possible, post-operative refraction, and prescription of glasses can be carried out at a satellite clinic nearer the patient's home.

4.4 Training: In many situations, lack of personnel trained in refraction is a barrier to the provision of refractive error services and glasses. CBM should continue to support the training of ophthalmologists, optometrists and ophthalmic assistants. Where necessary, existing eye workers can be given further training to qualify them as "refractionists".

4.5 Optical workshops: Where existing optical workshops are well-managed, CBM should look to make them self-sustainable.

4.6 Ready-made glasses: Ready-made glasses can be supplied to clinics that request them if there is no alternative. However, CBM alone cannot meet the needs of the growing number of people with refractive errors. New strategies, including alliances with private optical companies, will be required to supply adequate numbers of glasses at a high enough quality and low enough price.

4.7 Collaboration: CBM should establish linkages with other interested parties, including government (ministries of education and health), private industry (optical equipment, spectacle manufacturers), optometrists and opticians, ophthalmologists, and other NGDOs.

Low Vision

1 Present Situation

1.1 Low vision services have been identified as a Vision 2020 priority. There are an estimated 314 million people with visual impairment, of which about 50% would benefit from low vision services.

1.2 An estimated 5% to 10% of people with low vision access low vision services.

1.3 1.3 The changing patterns of global low vision, such as the increase of glaucoma, diabetic retinopathy and age-related macular degeneration in adults and ROP in children require updated skills and more services.

1.4 1.4 Lack of human resources and limited availability of good quality low cost low vision devices are important barriers.

1.5 1.5. A low vision service requires a multidisciplinary approach, incorporating the fields of health, education and livelihood, and therefore requires good networking. The eye medical projects have an important role to play in the clinical assessment and medical / optical interventions relating to low vision and in giving appropriate advice on interventions needed in education and livelihood.

1.6 1.6. Many of our eye medical projects do not incorporate low vision components. As part of our strategy to ensure that our eye medical projects are Vision 2020 compliant, it is necessary to actively encourage the inclusion of a low vision component in each of our projects at tertiary, secondary and primary service delivery levels, wherever this is feasible.

2 Present Activities

2.1 Low vision services are increasingly included as a component of our eye medical projects, currently mainly at secondary and tertiary levels, as an outpatient service, and often as part of the paediatric department. This entails –

a) Clinical and functional low vision assessment. The availability of a good refractive error assessment and spectacle provision is an important prerequisite and can be part of the clinical low vision assessment.
b) Recommendations for appropriate low vision management. This may include the provision of low vision devices (optical and/or non-optical), with careful explanation and supervision of their use, and advice on the main learning medium for children.
c) Referral to other service providers e.g. CBR, education, and livelihood programmes.
d) Follow up.

2.2 The low vision services have a close link with schools for the visually impaired and other special schools, integrated and inclusive education programmes, and with CBR, in order to assess children and adults who can benefit from low vision care and to advise on their education and livelihood possibilities.

2.3 The identification of children with low vision through school screening and community awareness is an important part of the programme activities.
2.4 Informal training of clients, parents, teachers, and other professionals is part of the low vision care provided.
2.5 Formal training in low vision is being introduced, as well as the inclusion of modules on low vision in existing clinical training programmes.

3 Aims

3.1 To develop low vision services in our eye medical projects, as a component of Vision 2020 and as a part of comprehensive low vision care, using a network of eye health, educational, CBR , livelihood and community programmes, wherever this is feasible.
3.2 As far as this is possible, to ensure the inclusion of a low vision service in all eye medical projects by 2012.
3.3 To include basic low vision care at district level where feasible.
3.4 To ensure access to low vision services for all, but especially for all children with special needs.
3.5 To promote the inclusion of low vision services into existing programmes where possible.
3.6 To ensure regular follow-up to clinical low vision care, especially for children, through use of community level/primary health care services.

4 Strategy

4.1 Become part of a network of service providers, disabled people's and parents organisations; in order to ensure comprehensive services, including early identification, referral, clinical interventions, regular follow-up, inclusive education, livelihood training, counselling and access to devices, for all people with low vision; and in order to ensure collaboration and streamlining of services with other stakeholders and service providers.
4.2 Establish close links with CBR programmes to ensure early identification, early intervention and regular follow up for babies and young children with low vision and with other special needs, and to ensure regular access to low vision care for all other age groups.
4.3 Emphasise prompt referral from community level to secondary and tertiary eye care / clinical low vision services, linked to refractive error services where possible.
4.4 Set up close links with schools for the blind and all other special schools, in order to identify, assist, refer and follow-up children with special needs and with low vision.
4.5 Include updated low vision modules in existing ophthalmology, optometry, refraction and eye health training that focus on services for children with low vision and those with additional special needs, and on services for adults and elderly. In addition, clinical low vision topics of importance for CBR, education and community development professionals will need to be added to their trainings.

4.6 Include basic low vision awareness and skills into generic health and education curricula.

4.7 Facilitate access to affordable interventions, such as glasses, optical low vision devices and non optical low vision devices, through the Hong Kong low vision resource centre, International Centre for Eye Care Education global resource centre, and the Vision2020 / CBM eye medical standard lists.

4.8 Use environmental modifications of eye clinics to make them 'low vision friendly'.

Childhood Blindness and Childhood Low Vision

1 Present Situation

1.1. There are 1.4 million blind children in the world. Approximately 700,000 live in Asia and 300,000 in Africa. The approximate rate is 1/1000-1500 children aged 0-15 years.

1.2. There are an estimated 500,000 children going blind each year approximately one per minute. The majority will die in childhood.

1.3. The causes of preventable and treatable childhood blindness vary from place to place, and change over time.

Africa -
Congenital cataract
Congenital glaucoma
Traditional medicines

Asia -
Congenital cataract
Retinopathy of prematurity
Congenital glaucoma
Vitamin A deficiency

Latin America -
Retinopathy of prematurity
Congenital cataract
Congenital glaucoma
Rubella

Refractive error is an important cause of visual impairment in children in all areas, particularly in Asia.

1.4. It is estimated that childhood blindness causes 70 million blind years (number blind x length of life), second only to cataract at 90 million blind years.

1.5. The prevalence of low vision in childhood is estimated to be 4 times the prevalence of blindness

2 Present Activities

2.1 CBM supports 10,000 children in blind schools throughout the world and provides low vision services for some of these children.

2.2 CBM supports the ICEH in London, which has a specific programme against childhood blindness.
2.3 CBM supports primary health care, health education, and vitamin A distribution programmes aimed at preventing childhood blindness.
2.4 CBM supports specialist child eye care centres for children who needeye surgery, and low vision support.
2.5 CBM supports the training in low vision of eye clinic staff, teachers, and CBR workers.

3 Aims

3.1 To encourage primary health care programmes and other community programmes to incorporate prevention of childhood blindness, low vision, and disability as an explicit aim, through strategies intended to prevent vitamin A deficiency, measles, the use of harmful traditional medicines, ophthalmia neonatorum, eye injuries and trachoma.
3.2 To incorporate primary eye care into primary health care, for early detection, treatment, referral, and follow-up of children with treatable causes of blindness and low vision.
3.3 To develop services for the medical, surgical, and optical management of children with cataract, glaucoma, corneal ulcers and scarring, retinoblastoma, retinopathy of prematurity, and low vision. These services should be concentrated in specialist child eye care units, which are appropriately equipped and staffed. Each unit should have at least one ophthalmologist with a particular interest in childhood eye diseases, the necessary equipment to treat congenital cataracts and the equivalent of an orthoptic department to ensure optimal development of visual acuity and appropriate care of those with low vision.Vision 2020 targets for these centres are 1 per 20 million population by 2010 and 1 per 10 million population by 2020.
3.4 To develop programmes for screening and treatment of premature babies at risk of retinopathy of prematurity in locations where this is a major cause of avoidable blindness.
3.5 To develop and teach the optimal use of vision, use of optical/low vision devices, and non optical interventions for children with refractive errors or low vision, who have useful residual vision, in order to improve living skills such as orientation, social interaction and reading.

4 Strategy

4.1 To ensure that all children in CBM supported blind and other special schools and inclusive education programmes are examined by an ophthalmologist and receive medical, surgical, optical or low vision service to maximise any residual vision potential, preferably before admittance to any form of education.
4.2 To establish close links with CBR programmes to ensure early identification, early intervention and regular follow up for babies and young children with preventable eye diseases, and to ensure regular

access to eye care (medical, surgical, low vision care) for all other age groups.

4.3 To identify areas where childhood blindness from preventable disease is common and encourage preventive measures e.g. health education.

4.4 To provide specialist training/services for the management of surgical remediable visual loss in children.

4.5 To develop low vision services.

4.6 To develop early intervention and rehabilitation services for the blind.

4.7 To promote school eye health programmes for the diagnosis and management of common, treatable, specific problems, and for prevention of eye diseases through health education.

Congenital Cataract

1 Present Situation

1.1 There are about 170,000 people blinded worldwide either by congenital cataract, or following surgery for congenital cataract. This represents about 12% of all childhood blindness.

1.2 The incidence is thought to be about 3-4/10,000 live births per year. If untreated, or inadequately treated, children with congenital cataract are likely to be permanently blind and to require special education. With good and prompt treatment, the majority will achieve satisfactory vision, and should be able to lead normal lives.

1.3 The management is very different from adult cataract for the following reasons:

a) Surgery must be performed early or else irreversible amblyopia develops
b) Surgery is technically more difficult than adults and requires specialist training and equipment
c) Surgery in young children will always require general anaesthesia.
d) Multidisciplinary teams are required to manage congenital cataract including surgeon, anaesthetist, nurse, low vision therapist, optometrist, and counsellor
e) Correction of aphakia after surgery should be performed as soon as possible. A young child's eye is constantly changing as it grows and develops. This means that correcting the aphakia is difficult, that postoperative refraction will change regularly, and careful follow up is required with prescription of accurate glasses, including the appropriate size frame, to prevent amblyopia.
f) Cataract may be associated with other congenital anomalies, which may affect the eye and general health.
g) Patients who receive surgery for paediatric cataracts are at very high risk of developing glaucoma. Regular follow-up is required.

1.4 Treatment of unilateral cataract requires careful consideration.Unilateral congenital cataract usually has a poor outcome, and prolonged and

aggressive amblyopia therapy is required for any chance of good vision in the operated eye.

1.5 If the surgery is carried out with inadequate training or equipment, this may lead to permanent loss of sight.

1.6 Treatment is expensive. However, because of the life expectancy of these children, high quality care is very cost-effective.

2 Present Activities

2.1 CBM supports congenital cataract surgery in approved specialist centres by providing equipment and consumables.

2.2 CBM supports low vision services that are integrated into the paediatric centres, which can help with the management of these children following surgery.

2.3 CBM supports CBR/PHC services that can identify and refer these children at an early stage.

2.4 CBM supports referral of a child to tertiary centres in order toreceive treatment.

2.5 CBM is currently supporting a 6 month subspecialist training fellowship (based at CCBRT Hospital in Tanzania) for African ophthalmologists to learn the specialist medical and surgical skills required.

3 Aim

3.1 To minimise loss of sight caused by either congenital cataract or its treatment.

4 Strategy

4.1 To discourage projects from carrying out congenital cataract surgery unless they have the following minimum facilities:

a) An anaesthetist with suitable equipment and skills to treat infants and small children

b) Nursing staff to support the child in the immediate post operative period

c) A vitrectomy unit to deal with the posterior capsule and/or anterior vitreous

d) An ophthalmologist with experience in examining and treating these children

e) Access to paediatric care for children with associated problems

f) Regular access to low vision services to ensure that the child’s vision develops as well as possible

g) A system in place to trace and follow up the children who have had surgery.

4.2 4.2 To support the development of centres with these skills and equipment. The recommendation is that there should be one such centre for every 10 million population.

4.3 To support the referral of children to specialist centres, where no local centre exists.

Retinopathy of Prematurity (ROP)

1 Present situation

1.1 Approximately 58,000 children are blind from ROP worldwide. This represents about 4% of all childhood blindness. ROP is the leading cause of childhood blindness in Latin America and former socialist economies.

1.2 ROP is likely to be a cause of blindness in countries with infant mortality rates in the range of 10-70/1,000. As infant mortality rates improve, the incidence of ROP will increase. This will lead to a growing problem in India and countries in Asia. Blindness from ROP in the established market economies is declining, due to excellent neonatal care and effective programmes for screening and treatment.

1.3 Timely treatment with cryo or laser can dramatically reduce visual loss from ROP, and earlier treatment gives better outcomes.

1.4 Treatment can be done at the neonatal intensive care unit under localanaesthesia, sedation and analgesia, or general anaesthesia according to local guidelines.

1.5 Screening should be carried out in the neonatal intensive care unit, according to locally agreed and evidence-based guidelines.

1.6 Both screening and treatment require skilled ophthalmologists, trained in indirect ophthalmoscopy and indirect laser techniques in infants.

1.7 Successful management of ROP requires a team approach involving parents, neonatologists, nurses, and ophthalmologists.

1.8 High refractive errors, strabismus, and cortical visual impairment are common in premature babies. These all require ongoing management, and this may include low vision care.

1.9 If the surgery is carried out with inadequate training or equipment, this may lead to permanent loss of sight, or even death.

1.10 Treatment is expensive. However, because of the life expectancy of these children, high quality care is very cost-effective.

2 Present Activities

2.1 CBM supports screening and treatment ROP programmes in neonatal intensive care centres by providing equipment and consumables.

2.2 CBM supports the training of ophthalmologists to diagnose and treat premature babies.

2.3 CBM supports the training of nurses for the improvement of neonatal care.

2.4 CBM supports low vision services, which can help with the management of these premature children.

3 Aim

3.1 To minimise loss of sight caused by retinopathy of prematurity or its treatment.

4 Strategy

4.1 To support the implementation of screening and treatment programmes in urban areas where the infant mortality rate is between 10-70/1,000, where preterm babies have access to neonatal intensive care units, and where there are the following minimum facilities:
   a) An anaesthetist or paediatrician with suitable equipment and skills to deal with anaesthetic techniques in preterm babies
   b) An ophthalmologist with experience in screening and treating these babies
   c) A nurse or paediatrician responsible for selection of preterm babies to be examined
   d) d) Access to a paediatric (oriented) ophthalmologist and low vision services, to ensure that the child's vision develops as well as possible
   e) e)Access to the equipment needed for screening and for treatment (binocular indirect ophthalmoscope, diode laser or cryo unit).

4.2 4.2 To support the development of centres with these skills and equipment in urban areas with neonatal intensive care units, and transfer of skills in screening and treatment.

4.3 To support the referral of babies from centres with no access to treatment to those able to provide laser or cryo therapy.

4.4 To support basic training courses for neonatal unit health care personnel.

Trachoma

1 Present Situation

1.1 40.6 million children have active infection with the micro-organism *Chlamydia trachomatis*, for which antibiotic treatment is indicated.

1.2 At least 8.2 million adults have inturned eyelashes (trichiasis/entropion) for which eyelid surgery is needed to prevent blindness.

1.3 2 million adults are blind from corneal scarring due to trachoma.

1.4 Trachoma is common in poor areas of the world characterised by:
   a) lack of water
   b) lack of sanitation
   c) excess of flies
   d) lack of health/eye care service
   e) poverty and isolation

2 Present Activities

2.1 CBM supports the purchase and distribution of tetracycline 1% eye ointment and the distribution of azithromycin tablets for treatment of active disease in children.

2.2 CBM trains nurses/assistants in eyelid surgery for trichiasis and provides them with the necessary instrumentation and consumables.

2.3 CBM supports water/sanitation and health education programmes to try and overcome the adverse living conditions which encourage the spread of trachoma.

2.4 CBM encourages and supports long-term monitoring regarding the impact of SAFE strategy or single components of SAFE.

2.5 CBM supports research relevant to the prevention of blindness from trachoma. This is done preferably in collaboration with other stakeholders.

3 Aims

3.1 To prevent unnecessary blindness from trachoma through the "SAFE" strategy:

S = Surgery for trichiasis

A = Antibiotics for active disease

F = Facial cleanliness

E = Environmental improvement

4 Strategy

4.1 To identify districts and communities in which blindness from trachoma is common. These areas are often remote and very needy.

4.2 To provide eyelid surgery for all patients with trichiasis in these communities.

a) This may involve in some countries training and equipping paramedicals, nurses, eye assistants or doctors to perform good trichiasis surgery in the villages.
b) To introduce a certification procedure for trichiasis surgeons to improve the quality of eyelid surgery.
c) To encourage early uptake of surgery (before the trichiasis/entropion becomes severe) to reduce recurrence.

4.3 To treat children (and adults) with active trachoma infection using azithromycin (when indicated and available) or tetracycline 1% eye ointment. A single oral dose of azithromycin, a long-acting antibiotic tablet, is at least as effective as treatment with tetracycline eye ointment twice per day for 6 weeks. A donation programme from Pfizer through the International Trachoma Initiative (ITI) exists in some countries.

4.4 To encourage regular daily face washing of all children.

4.5 To improve village water supply and sanitation.

4.6 To develop model programmes to implement the SAFE strategy and use these models to try out innovative community approaches to control of trachoma.

Onchocerciasis

1 Present Situation

1.1 An estimated 100 million people are at risk of the disease and about half have the infection.

1.2 An estimated 0.5 million are blind from the disease (usually after the age of 25 years). Many more are affected by the disease physically and socially.

1.3 The disease is most common in Africa with a few foci in 6 Latin American countries and in Yemen.

2 Present Activities

2.1 The WHO/APOC programme works in 19 African countries.

2.2 Various NGDOs (CBM, SSI, HKI, IMA, OPC, Carter Centre) are involved in ivermectin distribution programmes with APOC and also in other countries in West Africa (in the former WHO/OCP programme). The drug is donated by Merck and Co through the mectizan donation programme.

2.3 CBM works with other NGDOs to support the ivermectin co-ordinating post within the WHO/PBL programme.

2.4 CBM also works with the WHO/OEPA programme in Latin America, which is distributing ivermectin in 6 countries.

2.5 CBM supports community based programmes for ivermectin distribution in:

a) Angola
b) Burundi
c) Central African Republic
d) Democratic Republic of Congo
e) Nigeria
f) Southern Sudan
g) Ecuador

2.6 CBM supports research relevant to the prevention of blindness from onchocerciasis. This is done preferably in collaboration with other stakeholders.

3 Aims

1.1 To ensure that all eligible persons living in meso- or hyper-endemic areas, where CBM supported partner projects are active, are able to receive regular treatment with ivermectin, for as long as it is needed.

1.2 To support community directed ivermectin treatment programmes in areas with blinding onchocerciasis when requested to do so by a partner or national blindness prevention programme.

1.3 To integrate the distribution of ivermectin into PHC programmes to achieve sustainable control and reduction in transmission.

1.4 To ensure all patients from hypo-endemic areas of onchocerciasis who suffer from the disease receive annual treatment through CBM partner eye clinics.

4 Strategy

4.1 To develop community directed ivermectin distribution (CDTI) programmes in areas with severe onchocerciasis in combination with CBR or primary eye care services, and to cover areas so far neglected by other organisations.

4.2 To co-ordinate these activities together with Ministries of Health, WHO, APOC, OEPA and NGDOs involved in ivermectin distribution.

4.3 To coordinate these activities with other distribution programmes for other tropical diseases and diseases of poverty (e.g. NTD, Malaria, TB, HIV/AIDs).

Glaucoma

1 Present Situation

1.1 Glaucoma is defined as an optic neuropathy with characteristic changes to the optic nerve head and visual field. Raised intraocular pressure may be a risk factor.

1.2 It is responsible for 10 - 15% of blindness worldwide, i.e. 6-7 million people.

1.3 There are different types of glaucoma.

1.4 Angle closure glaucoma is more common in Asia than in Africa. The recommended treatment is usually surgical (laser iridotomy, surgical iridectomy, or lens extraction).

1.5 Open angle glaucoma is more common in Africa than in Asia. The only treatment available at present is lowering of intra-ocular pressure (IOP). The recommended treatment for most patients is surgery trabeculectomy, usually with an anti-metabolite adjunct). Medical and laser treatment may be indicated in some patients.

1.6 The diagnosis of early glaucoma is difficult, and there is not one simple test.

1.7 The aim of treatment is to lower the pressure and stop further loss of vision. Treatment cannot restore vision that has already been lost.

1.8 Glaucoma may occur secondary to certain preventable complications of other diseases, e.g. uveitis, cataract.

2 Present Activities

2.1 Glaucoma is diagnosed and treated as part of the eye care services provided by CBM supported clinics and hospitals.

3 Aims

3.1 To train eye workers in the diagnosis of glaucoma.

3.2 To provide treatment and follow-up for patients with glaucoma in order to avoid further loss of vision and blindness.

4 Strategy

4.1 The diagnosis is best made by performing a comprehensive ophthalmic examination on every patient seen. In addition to vision, this includes a slit lamp examination, IOP measurement (preferably applanation), gonioscopy where indicated, and examination of the optic disc (preferably stereoscopic).

4.2 In most parts of the world, surgery is likely to be the primary intervention. Surgical intervention has serious implications and confirmation of functional loss by visual field testing is preferable before the use of such incisional surgery. Laser surgery may also be useful in certain circumstances. The use of a combination of surrogate signs suggesting such functional loss (raised IOP on repeated measurements and classic glaucomatous disc changes) are acceptable when functional measurements are not possible.

Asia

4.3 Diagnosis and treatment require the services of ophthalmologists. Ophthalmic technicians may be useful in assisting the ophthalmologist.

Africa

4.4 Glaucoma needs to be systematically integrated into comprehensive eye care at all levels. Ophthalmic assistants / nurses should be taught how to diagnose glaucoma by a combination of visual acuity, ophthalmoscopy, and IOP measurement. Patients with glaucoma need referral to an eye surgeon for surgery. They should then be followed up by an ophthalmic assistant / nurse, using IOP measurement as an indicator of successful control and using a glaucoma register to trace defaulters.

Latin America

4.5 Diagnosis and treatment require the services of an ophthalmologist.

Summary

4.6 The glaucomas are a group of complex diseases for which the diagnosis is not easy. Treatment is aimed at stopping further loss of vision; it will not restore lost vision. Because of poor follow-up, poor compliance with regular medication, and cost/availability of eye medicines, surgery is the best treatment option for most patients with glaucoma but is not without its complications.

Diabetic Retinopathy

1 Present Situation

1.1 Approximately 3-5% of the global population have diabetes. This can be as high as 10% in some countries. This number will more than double by 2030. Most of this increase will occur in developing countries.

1.2 An estimated 2.5 million people are blind from diabetic retinopathy. This is 5-10% of causes of blindness.
1.3 Timely screening of diabetic patients is important in diagnosing diabetics who require treatment. In most cases this can be done by ophthalmoscopic examination of the fundus.
1.4 Regular (at least annual) follow-up of diabetic patients required.
1.5 Good systemic control of diabetes and associated hypertension significantly reduces the risk of developing diabetic retinopathy.
1.6 Early treatment is effective in preventing visual loss. Treatment is effective in more than 50% of patients if given in time.
1.7 Treatment involves laser applications to the retina. Patients with diabetic retinopathy may require multiple treatments.
1.8 Some complicated / advanced cases of retinopathy may require vitreo-retinal surgery at specialised centres.

2 Present Activities

2.1 An increasing number of CBM partners are providing services to treat patients with diabetic retinopathy.
2.2 CBM has provided funds to purchase appropriate lasers.
2.3 CBM has provided funds to develop vitreo-retinal units at selected centres.
2.4 It should be noted that the cost involved in the medical treatment of diabetic retinopathy includes:
   a) the cost and maintenance of a laser
   b) the time of the ophthalmologist and other eye health workers.

3 Aim

3.1 Prevent blindness and low vision from diabetic retinopathy.

4 Strategies

4.1 Screen all diabetic patients for diabetic retinopathy. Dilated fundal examination is recommended.
4.2 Work closely with the diabetic service to improve patient education and control.
4.3 In selected centres, provide the means (laser and surgery) to treat diabetic retinopathy. Laser should be available in all CBM supported university / training programmes.
4.4 Support the development of national policies when retinopathy contributes at least 5% of blindness.

HIV Infection and Blindness

1 Present Situation

1.1 Over 30 million people have HIV /AIDS.

1.2 The main cause of visual loss is cytomegalovirus (CMV) retinitis. Between 10 and 20% of HIV-infected patients worldwide can be expected to lose vision in one or both eyes as a result of ocular cytomegalovirus infection.

1.3 CMV retinitis affects between 5 and 25% of people with AIDS, depending on the immune status. It is becoming less common where highly active antiretroviral therapy (HAART) has been introduced successfully.

1.4 Anti-HIV treatment is routinely used in developed countries. It is used increasingly in developing countries.

1.5 The use of anti-HIV treatment makes HIV / AIDS increasingly a chronic disease instead of a terminal disease.

1.6 CMV infection occurs late in the disease (CD4 cell count < 100). With appropriate anti-HIV treatment, patients with CMV retinitis are now surviving for years, making the problem of blindness from CMV retinitis a significant cause of reduced quality of life.

1.7 Ganciclovir is effective in treating CMV infection and preventing blindness, provided the condition is diagnosed early before there is loss of central vision.

1.8 Other important HIV / AIDS related causes of ocular morbidity and blindness are squamous cell carcinoma, ocular herpes zoster, toxoplasmosis, ocular syphilis, herpes simplex and varicella retinitis, and kaposi sarcoma.

2 Present Activities

2.1 Health promotion about HIV transmission.

2.2 Some centres provide specialised treatment (e.g. intravitreal ganciclovir for CMV retinitis, vitrectomy for retinal detachment in CMV retinitis, surgery with or without antimetabolites for squamous cell carcioma).

3 Aim

3.1 To reduce visual loss and blindness from HIV infection.

4 Strategy

4.1 Promote health education to prevent spread of HIV. Promote HIV / AIDS affected people's clubs or self help groups.

4.2 Integrate eye care with HIV / AIDS activities where appropriate.

4.3 Encourage community care for those with HIV / AIDS.

4.4 Advocate, through WHO, less expensive or donated drugs for HIV and CMV.

4.5 Implement and monitor safe and effective treatment protocols.

4.6 Provide treatment for CMV retinitis (ganciclovir) where indicated. Affordable treatment should be made available in all suitable eye care centres, preferably at institutions with an active HIV / AIDS programme.

4.7 Manage needle stick injuries according to the relevant national protocol.
4.8 Sterilise all surgical instruments, probes, tonometer heads, ultrasound heads and contact lenses in the usual way.
4.9 Screen patients with squamous cell carcinoma for HIV status and treat appropriately (early surgery +/- antimetabolites).
4.10 Be aware of and treat patients with immune recovery uveitis during HAART treatment.
4.11 Provide regular continuing medical education on HIV / AIDS and the diagnosis and management of related eye conditions to all medical personnel involved.

Other Causes of Blindness and Low Vision

1 Present Situation

1.1 There are a number of other causes of blindness and low vision. The prevalence patterns differ in different regions.

2 Present Activities

2.1 CBM supports the management of other eye diseases which may lead to blindness and low vision, as part of the general eye services in Vision 2020 programmes.

3 Aim

3.1 To provide services for these eye diseases as part of comprehensive eye care services.

4 Strategy

4.1 Identification of the important diseases which cause blindness and low vision in any area.
4.2 Development of a preventive/curative strategy to control these diseases.
4.3 Exchanging best clinical practises in treating different types of diseases.

Cataract Surgery

Scleral Tunnel Extracapsular Cataract Surgery

1 Present Situation

1.1 Scleral tunnel extracapsular cataract extraction is cataract surgery in which the nucleus and cortex of the lens are removed through a self-sealing sclero-corneal tunnel. The nucleus is removed either by hydroexpression or by extraction, followed by implantation of a posterior chamber IOL. No sutures are normally required.
1.2 In the hands of experienced surgeons it is a safe, fast and cost-effective procedure, which provides immediate visual rehabilitation and good visual outcome. Nearly all operated patients can be discharged soon after surgery.

1.3 CBM partners are increasingly performing scleral tunnel extracapsular cataract surgery.

1.4 There are a number of training centres where ophthalmologists and other cataract surgeons can be trained in this procedure.

2 Aim

2.1 To provide good unaided vision and rapid visual recovery after cataract surgery.

3 Strategy

3.1 CBM should encourage training in scleral tunnel extracapsular cataract extraction for ophthalmologists and other cataract surgeons working with CBM partners.

3.2 CBM should actively promote this technique as it provides many of the benefits of phaco-emulsification at much lower cost.

Phaco-Emulsification Cataract Surgery

1 Present situation

1.1 Phacoemulsification is an operation in which a needle is passed into the cataract nucleus, and vibrated at a very high frequency by ultra-sound. This fragments the cataract and allows it to be removed through a small incision.

1.2 Phacoemulsification is now the standard operation for cataract in developed countries, as it offers faster visual rehabilitation than standard extracapsular cataract surgery. It has been shown that patients who have phacoemulsification and a foldable IOL are more likely to have good vision without glasses than those who have standard extracapsular cataract surgery with a rigid IOL.

1.3 Like other forms of cataract surgery, training in phakoemulsification requires a stepwise training. Phacoemulsification is more difficult to learn and to perform than standard extracapsular cataract surgery and scleral tunnel extracapsular cataract surgery. There are a number of training centres where ophthalmologists can be trained in this procedure.

1.4 Phacoemulsification instrumentation is expensive. The cost of surgery is usually greater than the cost of extracapsular cataract surgery.

1.5 An increasing number of CBM partners perform phacoemulsification cataract surgery on an increasing number of patients.

2 Aim

2.1 To provide good unaided vision and rapid visual recovery after cataract surgery.

3 Strategy

3.1 The transition to phacoemulsification cataract surgery is a logical transition that is taking place within CBM supported programmes. CBM

does not seek to promote, hinder, or control this transition. To assist with managing the transition, it is recommended that phacoemulsification cataract surgery could be considered in projects where :

a) The ophthalmologist is keen to do phacoemulsification surgery; and
b) the cataract surgery numbers justify the added capital expense (as a guide - 800 or more surgeries per year in Latin America and Africa, 1500 or more surgeries per year in Asia); and
c) a proportion of the eyes are suitable for phacoemulsification. Whilst this depends primarily on the hardness of the lens nucleus and can only be decided on clinical examination, a guideline could be a visual acuity of 6/36 or better; and
d) any additional costs for instruments and consumables can be accommodated in the project budget.

Projects where there is training of ophthalmologists could be prioritised for transition to phacoemulsification surgery.

Technology

Sterilisation and Infection Control

1 Present Situation

1.1 Cataract and other eye surgeries (local and general anaesthesia) are carried out in a wide variety of locations and circumstances.

2 2 Aims

2.1 To provide, through the VISION 2020 Standard List, the necessary high quality equipment, consumables and pharmaceutical products that will ensure effective and safe out-patient and in-patient care.

2.2 To promote, through training and mentoring, safe, appropriate and evidence-based clinical practice among all eye care workers.

2.3 To monitor the degree of infection through the cataract audit form, and/or to encourage units to develop their own database for the collation of post-operative infection records.

2.4 To offer supervision and advice to units where infection is a known problem.

3 3 Strategies

3.1 Encourage the development or use of existing policies and procedures on sterilisation and infection control methods for each eye unit in accordance with the health professional regulations of each country. Best practice methods in infection and control should be shared with the wider eye care family.

3.2 Encourage each eye unit to have a defined protocol for endophthalmitis prophylaxis (pre-operative and post-operative Povidone Iodine wash,intracameral cefuroxime, other).

3.3 Encourage the use of sterilisation indicators for vacuum autoclaves, hot air ovens or gas sterilisation of instruments. CBM supports these methods of sterilisation for instruments and linen at all times. Alternative methods can be used only if the above methods are not available e.g. on outreach.

3.4 Medical advisors and an ophthalmic or infection control nurse to be part of a Team of Competence when undertaking project visits

Biometry

1 Present Situation

1.1 Biometry is the practice of measuring the corneal curvature (which requires a keratometer) and the length of the eye (which requires an "A-Scan" ultrasound machine). These values are then used in a formula to predict the refraction that would result from implanting a particular power of IOL. This approach can reduce the minimum spherical error following cataract surgery. However, it can neither predict nor reduce, the degree of post-operative astigmatism. 20 - 30% of patients still require glasses to achieve a good vision of 6/18 or better.

1.2 The cost of biometry equipment is currently approx. Euro 2,500-5,000. A much larger inventory of IOLs is required.

1.3 In some situations, the patients expect biometry as routine and there is a market-led demand for this technique.

2 Aim

2.1 To provide projects doing more than 200 cataract surgeries per year with the equipment for biometry.

3 Strategy

3.1 Provide keratometers and A-Scan ultrasound equipment to projects doing more than 200 cataracts per year.

3.2 Along with biometry, we can increase the number of patients with a good outcome (6/18 or better) following cataract surgery by providing accurate refraction and affordable spectacle correction of any residual refractive error 1-2 months after surgery.

Intra-ocular Lenses

1 Present Situation

1.1 There are two types of IOL which have been shown to be safe:

a) Anterior chamber open loop (AC-IOL)

b) Posterior chamber (PC-IOL). PC-IOL may be rigid or foldable. Foldable lenses are used after phacoemulsification and are more expensive.

1.2 High quality IOLs of modern design, are now being produced in developing countries. These IOLs are now available for less than 2 Euro.
1.3 A good quality rigid PC-IOL has the following characteristics:
a) Single-piece PMMA construction
b) Biconvex optic
c) Modified C-loop haptics
d) Good manufacturing process and quality control.
1.4 A good quality AC-IOL has the following characteristics:
a) Single piece PMMA construction
b) Flexible open loop design
c) 3 or 4 solid footplates
d) Good manufacturing process and quality control.
1.5 CBM is purchasing inexpensive high quality AC and PC IOLs for all projects.

2 Aims

2.1 To provide the best vision for the greatest number patients at a reasonable cost.
2.2 To make high quality IOLs widely available at low cost.

3 3 Strategy

3.1 High quality IOLs are included in the CBM Standard List.
3.2 IOL surgery is the routine cataract procedure for CBM projects.

Aphakic Glasses

1 Present Situation

1.1 Following the removal of a cataract (lens), the patient's eye is aphakic (without a lens), unless an IOL has been inserted. The vision will be poor until the aphakia is corrected.
1.2 It is occasionally necessary to perform cataract surgery with an intracapsular technique (ICCE) and to leave the eye aphakic.
1.3 CBM provides aphakic glasses if secondary IOL implantation is not possible.
1.4 Within 1 year of surgery up to one third of glasses may be lost or broken, resulting in severe loss of vision for the patient.

2 Aims

2.1 If needed, provide good quality aphakic glasses at a cost which all patients can afford.
2.2 Replace lost or broken aphakic glasses, so ensuring that patients who have received cataract surgery are able to see well.

3 Strategy

3.1 When an IOL has not been inserted provision of aphakic glasses is essential. These glasses should be given to the patient before discharge from hospital, providing the spectacles improve the vision.

3.2 The patient should receive an explanation about the use and care of the glasses.

3.3 Aphakic glasses should be readily available, and their cost should not discourage the patient from obtaining a pair.

3.4 Aphakic glasses should be made with good quality robust frames in appropriate sizes, and glass lenses.

3.5 If aphakic glasses are lost or broken, the resulting uncorrected aphakia results in blindness. Replacement glasses should be readily available.

Lasers

1 Present Situation

1.1 Laser treatment is an integral component of the management of a variety of potentially blinding diseases, some of which are relevant for VISION 2020. These are:

a) Cataract: Laser capsulotomy for posterior capsule opacification
b) Glaucomas: Laser peripheral iridotomy, cyclophotocoagulation, and laser trabeculoplasty
c) Retinopathy of prematurity : Retinal laser coagulation
d) Diabetic retinopathy : Central and panretinal laser coagulation

1.2 The following types of lasers are used:

a) Neodymium–yag laser.
b) Argon laser.
c) Diode laser.

1.3 There is need for appropriate training for the user and supporting staff in the use, care and safety aspects of using lasers.

1.4 Problems can arise from the lack of maintenance and repair facilities. This must be taken into consideration when deciding on laser equipment.

1.5 Laser services are expensive. Costs include purchase, maintenance and repair, consumables, training and time spent treating patients.

2 Aim

2.1 To prevent blindness through appropriate laser services.

3 Strategy

3.1 CBM should encourage the development of low cost but good quality laser systems for the indicated major applications.

3.2 CBM should support teaching institutions and suitable high volume institutions with the necessary laser equipment.

3.3 CBM should support the training of technical staff in equipment maintenance for lasers and other equipment commonly used throughout the eye unit.

Corneal Grafting and Eye Banks

1 Present Situation

1.1 Most of the causes of corneal blindness, such as vitamin A deficiency, trachoma, and measles, can be prevented effectively and inexpensively by primary health care measures, and corneal grafting is inappropriate. However, some corneal conditions, such as keratoconus, and corneal dystrophies, cannot be prevented, and corneal transplantation is the only way of restoring their sight.

1.2 As foreign tissue is implanted into the patient's eye, there is a risk that this tissue may be rejected by the patient's own immune system. This means that the patient must continue to attend the eye clinic for frequent follow-up examinations, particularly during the first two years after surgery.

1.3 A major limitation to corneal grafting in many countries is the lack of suitable donor material. Corneas can now be preserved in eye banks for up to 1 year following the death of the donor. This permits a single eye bank to provide corneas to many different eye hospitals, some of which may be thousands of kilometres from the eye bank.

1.4 Corneal transplantation is carried out in some CBM projects in Asia, Latin America and Africa.

2 Aims

2.1 To deliver a high quality corneal grafting service in a few specialised centres in order to restore sight to people who have been blinded by corneal disease.

3 Strategy

3.1. Where appropriate, CBM should support partners in developing local successful and sustainable eye banks. Where this is not feasible, CBM should continue to assist with sourcing donated corneal material.

3.2. CBM should support corneal grafting in specialised centres which have the staff and the expertise to carry out the surgery and post-operative follow-up.

3.3. CBM support should include the provision of the necessary instruments and consumable supplies.

3.4. Any support given to corneal grafting should be in addition to, and not a substitute for, support for primary prevention of corneal scarring, e.g. measles immunisation, vitamin A supplementation and trichiasis surgery.

Optical Services

1 Present Situation

1.1 Glasses are an essential part of the treatment of many eye patients. Their provision should, therefore, be seen not merely as a means of income generation, or considered solely on the basis of cost-effectiveness, but rather as an integral part of CBM's eye care services.

1.2 Many people attend eye clinics because they think their poor vision indicates a need for glasses, when in fact it is due to ocular pathology. Therefore the comprehensive care provided by a CBM eye care project should include medical and surgical treatment, refraction and the availability of low cost glasses.

1.3 Refraction services may be provided by an ophthalmologist, optometrist or paramedical worker who has received training and/or experience recognised as appropriate by the project.

1.4 The steps in the provision of a pair of glasses for a patient are as follows:

a) Refraction: Evaluation of the patient to determine what power of glasses may be required.

b) Manufacture: Manufacture of the glasses from a frame and lenses of an appropriate power, both of which may be manufactured locally or purchased overseas.

c) Dispensing: Issuing of glasses, ensuring a good fit of the correct prescription.

d) Follow-up: Repair of glasses or repeat dispensing of new spectacles.

1.5 The different types of optical workshop which have been supported by CBM are:

- Edging
- Surfacing
- Frame manufacture

Surfacing and frame manufacture have been found to be not cost effective.

1.6 The need for optical services may be summarised as – For every million people:

a) At least 2,000 people will require cataract surgery each year, and therefore post-cataract spectacles if IOLs are not used.

b) Approximately 20,000 - 50,000 (2-5%) suffer from significant myopia, and would benefit from distance glasses.

c) Nearly the entire population over 45 years (100,000) would benefit from reading/near glasses.

The total need is therefore over 60,000 pairs of glasses per million population per year (assuming that glasses spectacles last 2 years on average).

1.7 CBM supports optical workshops producing glasses and where appropriate optical low vision devices.

1.8 CBM provides ready-made glasses.

2 Aims

2.1 To ensure that post-operative cataract patients are provided with the glasses they need in order to achieve good vision.
2.2 To provide inexpensive glasses for infants, children, and adults with significant refractive error.

3 Strategy

3.1 Every eye department should have refraction services.
3.2 Ready-made glasses should be available in all projects.
3.3 Optical workshops may be supported in selected projects. Well managed optical workshops may be an important source of income generation.
3.4 Centralised workshops for networked partners could be supported.
3.5 There should be ready access to good quality toric / cylindrical prescriptions.

Local Preparation of Eye Drops

1 Present Situation

1.1 There is still a need for CBM support of LPED units.
1.2 A local preparation of eye drop unit is worthwhile considering if the below criteria can be justified:
   a) make eye drops more easily available in areas where there may not be an established commercial enterprise
   b) be able to manufacture specialised eye drops
   c) Using the guidelines from IAPB that continued support should focus on a range of drops limited to:
      1. Prednisolone
      2. Chloramphenicol
      3. Gentamicin
      4. Povidone iodine
      5. Timolol
      6. Sodium chromogylcate
      7. Methylcellulose
1.3 Procurement must ensure ongoing access to powders, bottles and hardware supplies. Where possible local procurement in encouraged.
1.4 The list of equipment and powders required is included in the VISION 2020 Standard List.

2 Aims

2.1 To ensure good quality eye drops are available for patients.
2.2 To reduce the cost of eye medicines.
2.3 To ensure that a high standard of manufacture and sterilisation is maintained. The WHO manual on the "Local preparation of eye drops Update 2002" is used as the formulary for all preparations.

3 Strategy

3.1 The criteria for maintaining or establishing a LPED are:

a) The unit should produce more than 20,000 bottles per annum. Producing less is likely to be associated with poor quality production facilities.
b) The production should be monitored by a pharmacist on a regular basis.
c) There should be a system in place for batch quality control.
d) The unit should be recognised / certified by the national health authority.

Wet Labs

1 Present Situation

1.1 Wet labs are recognised as being the entry point for learners to develop skills and competency in surgical procedures prior to doing surgery on patients.

2 Aims

2.1 To provide facilities for surgical training and practice.
2.2 To ensure good quality surgery in all CBM supported eye medical projects.

3 Strategy

3.1 To provide wet lab facilities in all surgical eye units.

Standard Lists

1 Present Situation

1.1 The VISION 2020 and CBM Standard List have been merged, giving a wider information base for procurement and incorporating equipment and consumables for new areas in eye care.
1.2 CBM encourages partners to develop their own 'local procurement' systems. The standard list can be used as a resource.
1.3 The CBM central procurement unit (CPU) is willing to support the regional offices, advisors, and partners in any procurement procedure or process.

2 Present Activities

2.1 The standard list is circulated to partners to enable them to prepare their budget requests to CBM.
2.2 Advisors and regional directors use the standard list in making the budget recommendations.

3 Aims

3.1 To ensure that the Standard List meets the challenges of VISION 2020 in respect to the equipment and consumables being offered.

3.2 To obtain the best prices without compromising quality for equipment and consumables which are essential to CBM's medical eye work, so ensuring the most cost-effective use of CBM's resources.
3.3 To assist the partner in knowing the most useful consumables and equipment available and the cost of the supplies, so that budget requests are accurately priced and include the essential needs.
3.4 To assist the procurement agencies to efficiently execute orders and rapidly dispatch consignments, hence giving CBM partners an efficient, quick and financially effective service for their orders.
3.5 To allow analysis of how, and on what, CBM's medical budget is spent, which can be used for future planning.
3.6 To improve the quality of equipment and consumables being supplied.

4 Strategy

4.1 The standard list is revised as and when new prices and / or field tested quality products are available.
4.2 The list is available on the VISION 2020/IAPB website and the CBM Intranet.
4.3 The standard list and quotations is circulated to regional offices with the budget applications.
4.4 Reputable manufacturers are used, and, where possible, the number of manufacturers kept to a minimum.
4.5 A print catalogue of items on the list is available at the regional offices and updated each year.

Human Resources

Short Term Locum Ophthalmologists

1 Present Situation

1.1 CBM receives regular requests from partners for locum ophthalmologists, to fill in when CBM ophthalmologists are away on leave. This is a particular need in projects where there is only one ophthalmologist.
1.2 Many of the ophthalmologists who make themselves available to do locums for CBM are interested in and support the work of CBM, but have not previously worked outside of their own countries, have not previously worked in a CBM supported project, and have no experience of ophthalmology in a developing country.
1.3 We are only able to meet about 30% of the locum requests we receive.

2 Aim

2.1 As far as possible, ensure the provision of suitable locum ophthalmologists as and when these are required.

3 Strategies

3.1 From the partners and projects:

a) The locum request from the partner should be submitted in good time (at least 6 months before the locum is needed).
b) The project ophthalmologist should endeavour to find a suitable local locum.
c) The project should continue to plan as though there will be no locum available.

3.2 From CBM:

a) At present, most offers for locums come from ophthalmologists in Germany. The other CBM member associations should be informed of the need for locums, and should be asked to advertise the need amongst ophthalmologists who may be interested in those countries.
b) Interested ophthalmologists should submit their details to human resources on a standard form. This includes details of numbers and types of cataract surgery done in the preceding year.
c) On the basis of this, a recommendation can be made as to whether
    - The ophthalmologist is unsuitable to do a locum for CBM.
    - The ophthalmologist might be suitable to do a locum in a project where there would be at least one other ophthalmologist or cataract surgeon.
    - The ophthalmologist might be suitable to do a locum in a project where they would be working alone.

Continuing Education for People Working In CBM

Supported Eye Medical Projects

1 Present Situation

1.1 The continuing education of people working in CBM supported eye medical programmes may be of importance for various reasons:

a) It should lead to an improvement in the quality of CBM'S eye medical work
b) It helps to maintain the motivation of workers
c) It may be necessary for maintaining medical registration for all the professional cadres of eye care coworkers that CBM supports

1.2 1.2 The Community Eye Health Journal is sent to all CBM supported eye medical programmes.

1.3 1.3 From time to time CBM supports workshops for eye medical coworkers.

2 Aims

2.1 To provide adequate continuing education for people working in CBM supported eye medical programmes.

2.2 To ensure CBM co-workers are able to maintain their medical registration.

3 Strategy

3.1 The Community Eye Health Journal is sent to all eye medical projects and all CBM eye medical co-workers.

3.2 Eye medical co-workers are encouraged to attend and present papers in their local national ophthalmology or other professional body congresses.

3.3 All eye care staff are encouraged to undertake an annual appraisal with a suitable mentor.

3.4 All eye care staff who require certified teaching in order to maintain medical registration are requested:

a) to send a copy of the requirements to the Human Resource Department at the International Office.

b) to send a proposal on how they wish to obtain the certification to the Human Resource Department.
Requests should be dealt with and decided upon an individual basis.

Training and education of eye care workers

1 Present Situation:

1.1 CBM currently supports the training of ophthalmologists and other eye care workers.

2 Present Activities:

2.1 CBM supports programmes that work towards developing eye care training as a comprehensive team approach.

3 Aims

3.1 To work towards supporting and making available training opportunities that provide well trained eye care personnel for all levels of eye care.

4 Strategy:

4.1 Recommend the use of the district VISION 2020 model in the development of service units that incorporate both community-based activities and hospital-based activities and that are integrated into existing health care structures and network with community structures.

4.2 Seek to ensure minimum suggested staffing levels as defined in the VISION 2020 technical guidelines.

4.3 Support the training and education all cadres of workers within the district Vision 2020 team. This includes community health workers, primary level workers, secondary level workers, tertiary level workers, and managers and support cadres. In Africa, the particular importance of mid level workers, including cataract surgeons, is recognised.