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Using World Health Organization (WHO) definitions, it is estimated that there are 1.4 million children worldwide who are blind and millions more who are visually impaired.

In the world today, a child goes blind every minute, and the children most at risk are those below five years old. Up to 60% die within one year of becoming blind, and those that survive can expect to spend on average 40 years without sight. Over 90% of blind children receive no schooling and the great majority will be unable to realize their full potential. Thus, blindness in children accounts for nearly one third of the economic cost of blindness, although it represents less than 4% to the overall magnitude of blindness.

Approximately three quarters of blindness in children occurs in low income countries, where due to the scarcity of resources, it presents an even more significant economic problem than in affluent societies. Visual impairment and blindness in children not only has a negative impact on the child’s life, but can also profoundly affect the lives of their families.

In 1999, VISION 2020, an initiative of WHO and the International Agency for the Prevention of Blindness (IAPB), highlighted blindness in children as one of its priority areas for control. About 50% of causes of blindness in children are avoidable, with a higher proportion being avoidable in low income countries. Avoidable blindness is blindness that can be effectively treated or prevented.

Furthermore, the main causes of blindness in children are also important causes of childhood mortality, particularly in low-income countries, and their control is therefore likely to have a positive impact on childhood survival. For example, vitamin A supplementation has been shown to reduce childhood mortality by 23% in vitamin A-deficient populations. Other important causes of avoidable blindness in children are measles, ophthalmia neonatorum, cataract, glaucoma and retinopathy of prematurity (ROP). Uncorrected refractive errors, which are easily diagnosed and can be inexpensively corrected with spectacles, are the most important cause of vision impairment in school-age children.

Many different approaches are needed to deal with the variety of causes responsible for blindness in children. Projects such as the Blindness Prevention Program in the slums of Mumbai address blindness prevention as part of a general primary health care approach.
while reducing nutritional blindness by improving the micronutrient status of vulnerable groups is a primary aim of SIGHT AND LIFE projects. Other primary eye care initiatives, such as school screening programs in Oman and Mexico, concentrate on diagnosis and treatment of specific eye disorders, in particular refractive errors in school students.

Provision and acceptability of good pediatric eye surgery, especially for congenital cataracts, in low and middle income countries, as well as provision of low vision care are important components of projects supported by ORBIS International. Retinopathy of prematurity has recently become a major cause of blindness in children in many middle-income countries. Half of the affected children live in Latin America where blindness prevention initiatives aim to strengthen tertiary care through concerted actions in all Latin American countries. A further important task of tertiary care is the training of pediatric eye care teams, of which important examples are Aravind Eye Care System in India, the Al Shifa Trust Eye Hospital in Pakistan and Comprehensive Community Based Rehabilitation in Tanzania (CCBRT).

Where prevention and treatment measures fail, providing education and occupational skills to blind children minimizes the detrimental impact of vision loss on the lives of affected children and their families. The International Council for Education of People with Vision Impairment (ICEVI) is dedicated to improving and expanding access to education for blind and low vision children.

An ever-growing number of projects have been set up to work towards the VISION 2020 objective of eliminating avoidable blindness in children by the year 2020. Although many excellent initiatives are already underway, more work is needed to reach this goal, especially in resource-poor countries. This report highlights a few selected programs, to illustrate just some of the ways in which prevention of blindness and visual impairment in children can be tackled in different cultural settings.
In India

India’s National Institute of Nutrition estimated that each year as many as 40,000 children below the age of five lost their eyesight permanently and 78,000 were left with severe visual impairment from vitamin A deficiency, which is associated with malnutrition, and severe gastroenteritis due to poor hygiene and sanitation.

In 1981 the United Nations classified the Dharavi slums surrounding Mumbai as the worst slum in the world. Dharavi then stretched over one square mile, housing approximately 600,000 slum dwellers, many of whom had come from poor rural areas, hoping for a better life.

In 1981 Dr Gopa Kothari, an Indian pediatrician and Managing Trustee of the Child Eye Care Charitable Trust, set up the Blindness Prevention Program together with Operation Eyesight Universal (OEU). OEU is a Canadian organization dedicated to the treatment and prevention of blindness in the developing world. Its program targeted the seven areas in Dharavi (out of 52) with the highest infant mortality and the highest prevalence of malnutrition and blindness. Baseline information was collected on the nutritional, vaccination and vitamin A status of children under five; environmental sanitation; parental education; and knowledge and attitude towards various health issues, as well as basic morbidity and mortality statistics. This led to a comprehensive package of interventions. Building up mutual understanding and trust between slum residents who came from different rural areas with their own customs and language has been an important aspect of the Trust’s work. Difficulties with recruitment, training and retention of staff as well as political hurdles and opposition have also been challenging.

Recognizing that, in a setting such as Dharavi, eye health

Vitamin A supplementation has been shown to reduce childhood mortality by 23%
cannot be promoted in isolation but needs to be part of a general primary health care approach, the Trust’s program provides preventative and curative eye and general medical care, improved sanitation and housing, child and adult education and occupational training programs aimed at generating income. Examples of the project’s interventions are:

Medical and Eye Care:
- Regular growth monitoring of all babies and full medical examinations, vaccinations against common childhood diseases, vitamin A supplementation and regular de-worming of all young children
- Parenting skills including education on the benefits of breast-feeding, recognition of common childhood diseases and treatment of gastroenteritis
- Awareness of eye diseases, their prevention and treatment in children and adults; periodic eye examinations for school-age children and provision of spectacles to children with refractive errors
- Establishment of a referral system to existing health facilities, to integrate slum residents into the existing health system and to increase the project’s sustainability

Nutrition:
- Medical follow-up for malnourished children and the set-up of supplementary feeding centers; seminars on nutrition for all slum residents; introduction of kitchen gardens and demonstrations of how to use vitamin A-rich foods

Education and income generating measures:
- Basic education for preschool children
- Reading, writing and basic math skills for young women
- Training in micro-industries for men and women

Achievements have been regularly measured and the results are encouraging. At the start of the project the under-five mortality rate was estimated at 60 per thousand in Mumbai’s Shantaramtalao district that houses the Dharavi slum. Over the 26 years of the Blindness Prevention Program this has been reduced substantially.

Achievements likely to contribute to this reduction, over the 26 year-period of the project until January 2007, were:
- Severe malnutrition was reduced from 8.1% in 2001 to 1.5%
- 94,000 children received vitamin A supplementation, protecting them against the complications of vitamin A deficiency, such as corneal blindness and higher morbidity and mortality from infectious diseases
- 85% of children were vaccinated against common childhood diseases, and subsequently the incidence of TB, pertussis, tetanus, polio and measles has been reduced by 94% in children under five
- 80% of mothers are now aware of the importance of breast-feeding and many have adopted better weaning practices (including vitamin A-rich food in their daily diet)
- 6,500 doctors and 8,900 paramedical professionals were trained in eye care
- 20,000 children received non-formal education and 6,000 women are now able to read and write
- 11,000 women and 6,000 men acquired an occupational skill

So far the program has involved 15 of the 52 slum areas, with a population of about 20,000 people per area. The program encourages all participating areas to sustain the program’s activities independently after a period of three to five years, which all but one have
achieved so far. Periodic follow-up in areas that are now run without the program’s support showed that improved healthcare and standards of living were sustained in all of them.

Recently, the program has expanded to other Indian cities including Pune and New Delhi and to some rural areas near Mumbai. Program leader Dr Kothari received the Stree Shakti Puraskar award in 2006, one of the highest awards established by the Government of India.

**SIGHT AND LIFE initiatives**

In many countries where vitamin A deficiency is a public health problem, governments are supporting vitamin A supplementation as part of child survival programs. SIGHT AND LIFE, a humanitarian initiative of DSM Nutrition, supports inter- and non-governmental projects that try to alleviate “hidden hunger” through micronutrient deficiencies in low-income settings. It also supports research and the production and dissemination of literature on micronutrient deficiencies. It has been estimated that more than three million children under the age of five are affected by xerophthalmia, a severe form of vitamin A deficiency, and are at high risk of going blind. Between 100 and 140 million children of this age group show no clinical symptoms of deficiency, but their bodies’ vitamin A stores are seriously depleted, making them more vulnerable to common childhood infections. On average nearly one quarter of child mortality from measles, diarrhea, and malaria can be attributed to vitamin A deficiency – amounting to more than one million deaths a year. Periodic vitamin A supplementation is a key intervention proven to increase child survival and reduce the number of cases of avoidable blindness.

Since its creation in 1986, SIGHT AND LIFE has supported almost 3000 projects in more than 80 countries, by providing more than 80 million vitamin A capsules, mainly for children aged between six months and five years. During this period, more than US$30 million were allocated to projects dealing with research, training, education and knowledge dissemination.
2. Control of refractive errors

In Oman

Oman has an active blindness prevention program funded by the Ministry of Health and has a low prevalence of blindness in children. Priority areas for blindness control among children are prevention of ROP, correction of refractive errors and provision of low vision devices. As more than 95% of children attend schools, which are free in Oman, and the most common refractive error – myopia – usually becomes manifest in adolescence, school-based screening is a convenient way of identifying children who need spectacles. Regular school screening was introduced in Oman in 1983, initially to detect trachoma and since 1992 also to detect refractive errors.

Screening is provided in government and in private schools. Children are screened annually when they enter school in first grade at the age of five to six years and in grades four, seven and ten. Children are screened for visual impairment and trachoma and receive education on ocular health. Children with low vision are referred to low vision care services. School eye teams receive specific training, school registers, forms and equipment, and supplies to perform the screening. Children are refracted at school and spectacles provided there if needed.

Easily diagnosed and inexpensively treated with spectacles, uncorrected refractive errors are the most important cause of vision impairment in school-age children.

The school screening is monitored by regional eye health care supervisors. Regions prepare annual reports of their activities, achievements, coverage, results, interpretation and recommendations for the next year’s program, a national report is also prepared and submitted to members of the National Eye Health Care Committee. The health information and management system of the Ministry of Health includes school screening data.

In 2005/2006 over 97% of school children (185,665) and over 81% of children in the community were
screened for visual impairment and trachoma. The prevalence of significant refractive errors among first grade students is low at 0.7%, but varies from 0 to 5% by region and increases with age to 7.7% among grade 10 students. 66% of students advised to wear spectacles in 2003/4 were found to wear them in 2005/6.

In Mexico

Oaxaca is one of the poorest states in Mexico, with an ethnically diverse, marginalized, indigenous population of over 3.5 million, for whom access to all basic healthcare services is severely restricted. Extreme poverty, mountainous terrain, inadequate transport, and the many autonomous tribes and dialects that exist within the region aggravate the population’s isolation. Before the project started, eye care services were not available to a vast majority of rural people. The few optometrists who practiced in Oaxaca were concentrated in Oaxaca City, as were the only two hospitals capable of addressing more complex pediatric ophthalmic needs beyond refractive error.

The USAID-funded Child Vision Refractive Error Program was implemented between October 2001 to November 2006 through Ver Bien para Aprender Mejor (See Well to Learn Better), an educational organization affiliated to the Mexican government with technical assistance provided by Helen Keller International (HKI). Its objectives were to:

1. Increase local commitment and capacity to address refractive error in children by forming a local coalition dedicated to addressing primary eye care and refractive error.
2. Increase capacity of HKI and partner staff to implement and conduct a sustainable refractive error-screening program by training local staff to implement, monitor and evaluate the program.
3. Implement a school-based refractive error screening program by conducting school-based screening campaigns and to assess these in terms of quality of spectacles and level of spectacle-wear and satisfaction with spectacles among students.
4. Improve eye health through increasing awareness of eye diseases in communities, using behavior change and communication strategies.

The school-based refractive error program addressed the primary eye care needs of primary and secondary school children throughout the state. Teachers in primary and secondary schools, who were provided with a visual acuity chart and a written protocol, generally conducted the initial visual acuity screening. Children with a visual acuity of 6/12 or less in either eye were referred for refraction and further examination by a Ver Bien/ HKI team comprising an optometrist and support staff. An optometrist refracted all referred children, and prescribed spectacles if required. Support staff immediately assembled and dispensed fashionable, good quality spectacles. Students in need of further care were referred to the ophthalmologist in the city of Oaxaca.

700,000 children were screened during the five-year program
Approximately 700,000 children were screened during the five-year project and over 60,000 received free spectacles. A further 1,700 children with suspected eye pathology were seen for further evaluation and treatment.

493 randomly selected students aged five to 18 years were followed up to determine whether they were still wearing their new glasses up to 18 months after provision, to assess their level of satisfaction and to explore reasons for non-use. Children not wearing their glasses during the visit were asked if they had brought them to school that day and why they weren’t wearing them. At the follow-up visit only 13% were wearing their spectacles and 34% had them at school.

Although this program was highly effective in screening and distributing high quality spectacles, low compliance demonstrates the importance of measuring the desired outcome directly; in this case spectacle-wear, whenever possible. Low compliance needs to be addressed as part of a screening program for refractive errors to maximize the program’s effectiveness.

In November 2006 the local program partners committed the necessary resources to sustain services fully, following the completion of the Child Vision program. As of 2005, Ver Bien was operating in 22 of Mexico’s 31 states.
3. Improving services for children

In Bangladesh

Bangladesh is one of the world’s poorest countries, with more than one-third of its 144 million-population living below the poverty line. About eight in 10,000 children are estimated to be blind (a total of 40,000 children), which has to be reduced by 50% to meet the VISION 2020 goal of four in 10,000 by the year 2020. Corneal scars, cataracts and ocular injury are the main avoidable causes, with cataract accounting for about one third of all causes of blindness.

VISION 2020 advocates a minimum of 13 pediatric eye care centers for a country such as Bangladesh, and ORBIS and Sightsavers International have supported the development of eight such centers up to March 2007. The Government-run National Institute of Ophthalmology (NIO) also provides pediatric eye care services. These centers have well-equipped pediatric ophthalmology units staffed by specialized pediatric eye care teams comprising pediatric ophthalmologists, pediatric nurses, an anesthetist, an optometrist/refractionist and a patient counselor. Across the country there are now nine fully-equipped Child Eye Care Centers, with one more planned. In all but two of these centers, children receive eye care from a modern, child-friendly outpatient department.

The Bangladesh Childhood Cataract Campaign (BCCC) is a national plan, jointly supported by Sightsavers and ORBIS, for detecting and operating on 10,000 of the estimated 12,000 children who are blind from cataract. An important element of the project, launched in November 2004, is finding the children who need cataract surgery, as children often do not present to facilities but remain in the community. This is being done in several ways; for example, by training community-based rehabilitation workers and grass roots NGO workers, by using key informants (a method pioneered by the International Centre for Eye Health, London) and through routine patient screening program of the
eye care NGOs. Since the project started, 10,298 blind children have been identified in the community and 10,472 surgeries have been performed for bilateral as well as unilateral childhood cataract.

Even with good pediatric eye care services available, lack of awareness, fear and logistical problems often prevent children from accessing these services. However, since cataract in early childhood interferes with the eyes’ ability to develop good vision, children with cataracts need to be operated as early as possible and followed up regularly to reach their full visual potential. The national childhood cataract campaign has been developed to address all these issues and to create awareness on child eye care, and also provides financial support for transporting children blind from cataract to the centers to receive services.

A database of blind children has been developed as part of BCCC and is expected to be completed by December 2009. This database will provide information on children who are irreversibly blind or have low vision. This will be a powerful tool in the development of a national program to ensure that all these children receive access to rehabilitation training, education and other services.

The Chittagong Eye Infirmary and Training Complex (CEITC), a major Bangladeshi non-governmental organization (NGO), provides ophthalmic sub-specialty training to staff from in and outside the project. Additional training in equipment maintenance, cost recovery, cost containment and cross subsidization of pediatric eye care through cataract surgery has been introduced to ensure the project’s sustainability.

Addressing low vision, five tertiary clinics have been developed with capacity to provide specialist low vision care for children, including functional needs assessment, prescription and dispensing of devices, follow up, re-evaluation and modification and counseling. Beside this, five primary low vision clinics have been developed.

### Lions- WHO Global Childhood Blindness Project – A Lions SightFirst Initiative

In the context of the VISION 2020 initiative’s focus on child eye health, WHO sought the support of the Lions Clubs International Foundation (LCIF) to develop and help implement a global program for the elimination of avoidable childhood blindness. This joint initiative is based on a memorandum of understanding, wherein WHO provides technical and administrative support, with financial support over a five-year period from LCIF. The program was formally launched in Geneva in June 2002.

Thirty Lions Child-friendly Eye Care Centers worldwide have been established, based on need, delivering promotive, preventive, therapeutic and rehabilitative eye care services for children. Recognizing the special knowledge and skills required in the treatment of pediatric eye conditions, the project addresses the training of pediatric eye care teams in appropriate child-friendly attitudes and related skills. The project ensures that the trained teams are given an enabling and supportive work climate by ensuring appropriate infrastructure as well as providing necessary equipment and supplies.

BCCC is a national plan, jointly supported by Sightsavers and ORBIS, to detect and operate on 10,000 of the estimated 12,000 children blind from cataract.
Within the overall project framework four basic components were identified, to be implemented with suitable adaptations to the local situation.

**The four components were:**

- Strengthening of Primary Care with special reference to preventing childhood blindness
- Developing the capacity of the selected Tertiary Centers for high quality pediatric ophthalmologic surgical services
- Provision of refractive services with the correction of uncorrected refractive errors in children – with the limited funding available, this would need to be funded from other sources
- Strengthening or developing low vision care services for children

LCIF provided US$3.75 million to be equally distributed through the six WHO Regions: Africa, Americas, Eastern Mediterranean, Europe, South-East Asia and Western Pacific.

In 2002/03, regional planning/training workshops were conducted in each of the six target regions to adapt the global framework to local needs, before finalizing proposals for each country. Five countries were identified in each region as locations for Lions Child-friendly Eye Care Centers, in collaboration with the respective Ministries of Health. Each country identified an area with a population of 5-10 million with an existing tertiary care centre (with potential to be developed into a Pediatric Ophthalmology Centre) for implementing the Project. The target population was children aged 0-15 years living in the catchment area.

Each country has established a monitoring framework and specific progress indicators, and quarterly technical reports are reviewed by WHO and the Lions SightFirst Advisory Committee (SAC). In 2006, a mid-term evaluation was conducted in all 30 projects, including field visits to five countries.

**The objectives and planned activities evaluated were largely based within the context of the above-mentioned four components, namely:**

- Strengthening, through training and provision of essential supplies, childhood blindness preventive elements in primary eye care
- Training pediatric medical/surgical teams and setting up infrastructure to enable high quality surgery to be provided
- Establishment of low vision services as an adjunct to the pediatric surgical departments, as necessary to provide low vision care/special education and rehabilitation
- Provision of technical assistance, and coordination, monitoring and evaluation of the project from WHO headquarters (PBD) and regional WHO offices, as needed

The involvement of local Lions Clubs has been encouraged (as appropriate) in the projects’ development and implementation. Contribution of the centers consists of the provision of required space, deployment of staff and operational expenses including salaries of personnel. Lions Clubs’ contributions to the centers include activities under the four components.

**General achievements:**

The main activities in the establishment of 30 Lions Child-friendly Eye Care Centres are as below:

- Revision of Primary Eye Care (PEC) teaching material
- Training in PEC for children – training in primary eye care with special emphasis on preventing childhood blindness, including training of trainers.

Participants: health workers such as: GPs, family doctors, schoolteachers, health educators, nurses,

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To date, LCIF-WHO primary eye care screening has reached a total of 9,362,507 children.

The project was launched in all 30 countries during 2004 and 2005.
pediatricians/neonatologists, ophthalmologists, optometrists and refractionists

- Specialized training in pediatric ophthalmology (medical/surgical) for teams (ophthalmologist, anesthetist and ophthalmic nurse), for example to deal with congenital cataract and glaucoma
- Training in the management of retinopathy of prematurity (ROP) for ophthalmologists, pediatricians/neonatologists and nurses
- Training in low vision (LV) care for ophthalmologists, optometrists/refractionists and nurses, to establish low vision services for children.
- Provision of essential ophthalmology equipment and LV devices, now in use in all 30 centers, enabling quality (medical-surgery) and LV rehabilitation

Specific achievements are included in table 1.

**Table 1: LCIF/WHO Global Childhood Blindness Project: Cumulative achievements across 30 countries (May 2007)**

<table>
<thead>
<tr>
<th>ACHIEVEMENTS</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCREENING</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary Eye Care</td>
<td>1,758,617</td>
<td>3,373,065</td>
<td>4,230,826</td>
<td>9,362,507</td>
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<tr>
<td>ROP</td>
<td>12,300</td>
<td>13,938</td>
<td>17,303</td>
<td>43,541</td>
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<tr>
<td>Outpatient</td>
<td>243,522</td>
<td>1,327,275</td>
<td>1,383,159</td>
<td>2,953,956</td>
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<tr>
<td>Low vision</td>
<td>1,014</td>
<td>2,563</td>
<td>4,583</td>
<td>8,160</td>
</tr>
<tr>
<td>TREATMENT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cataract Surgery</td>
<td>2,872</td>
<td>3,333</td>
<td>3,963</td>
<td>10,168</td>
</tr>
<tr>
<td>ROP Treatment</td>
<td>573</td>
<td>493</td>
<td>701</td>
<td>1,767</td>
</tr>
<tr>
<td>Low vision Care</td>
<td>284</td>
<td>1,563</td>
<td>1,951</td>
<td>3,798</td>
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<td>Vitamin A Distribution</td>
<td>27,128,285</td>
<td>27,530,192</td>
<td>29,912,346</td>
<td>84,570,823</td>
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<tr>
<td>TRAINING</td>
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<tr>
<td>Primary Eye Care</td>
<td>10,822</td>
<td>14,415</td>
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<tr>
<td>Secondary Eye Care</td>
<td>1,823</td>
<td>3,307</td>
<td>3,336</td>
<td>8,467</td>
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</table>

As the figures indicate, much has been achieved in the initial two years of implementation. For these figures to be meaningful, outcome studies will be needed and are part of the program’s plans for the future. In the interim, the following observations from beneficiaries and service providers from three WHO Regions speak for themselves.
Two stories from the project staff in Nigeria (University College Hospital, Ibadan) emphasize local Lions community involvement and support:

“A deaf, dumb and blind child was brought in to see me about a year ago; he had bilateral congenital cataracts, probably Rubella in origin. Lions Club, Hilltop chapter, paid for his surgery (both eyes) and now he is in school and can read and write. He was also seen in our ENT clinic where a hearing device was recommended… Another five-year-old boy was an orphan whose grandmother could not afford the fee for surgery. I informed the Lions club and they paid for his operation. He is sighted now and runs around the Pediatric Ophthalmology clinic, which he couldn’t before. When I see these children after their surgery for cataract they bring me joy, as I know we as a group (with WHO and Lions) have made a lifelong difference to these children.”

A report from Ghana (University of Ghana Medical School, Accra) states:

“an integrated approach has been adopted with the establishment of a task force including representatives from the Ministry of Health, Women and Children’s affairs, WHO, Lions Club, the School Health Program and the Integrated Management of Childhood Blindness (IMCI),”

Reporting from Romania (Institute for Mother and Child Care Alfred Rusecu, Bucharest), the Project Director had this to say about the multiplier effect of the project:

“Our experience gained, through training, in the diagnosis and management of retinopathy of prematurity (ROP) through this project enabled us to train nine more ophthalmologists from the big cities in Romania. For the first time, screening and treatment of ROP is performed in all the main cities of Romania.”

A report from Malaysia states:

“The location of the project at the Queen Elizabeth Hospital in East Malaysia, Kota Kinabalu has provided an opportunity to develop child eye care services in this region, far removed from the capital city. The hospital is now adequately equipped and various training activities, screening projects, surgical and rehabilitative care are being provided under the auspices of the project.”
Looking to the future, varying needs have been identified. Among them are the following:

- Additional training of all cadres;
- Development of referral and transport systems;
- Establishment of cost recovery systems;
- Expansion of eye care coverage;
- Upgrading of infrastructure;
- Support for refractive services;
- Development of mechanisms to ensure long-term sustainability.

Addressing these needs is critical for the wider coverage and sustainability of the global project.

Links to the wider VISION 2020: The Right to Sight Initiative and National Eye Care Plans

The control of blindness in children is a priority within the World Health Organization/International Agency for the Prevention of Blindness VISION 2020 Global Initiative. LCIF, through its SightFirst initiative, is now one of the major partners in addressing avoidable childhood blindness. The initiative was inspired by several pressing issues such as the social, developmental, economic and emotional implications pertaining to needless vision loss in children. It has provided the impetus to place elimination of avoidable blindness in children generally high on the agenda for countries, when developing a national VISION 2020 Action Plan.

The USAID Child Blindness Program (CBP)

The Child Blindness Program (CBP) was founded in 1991 when the Congress of the United States of America earmarked funds for the treatment of blind children in Africa. Since then CBP has been supporting countries through NGOs worldwide. The CBP is implemented through the A2Z Micronutrient and Child Blindness Project (2005 to 2010). A2Z implements and strengthens micronutrient programs to improve the nutrition and health of vulnerable populations; provides global technical leadership in micronutrients; and supports organizations working to prevent and treat blindness in children and improve eye health. CBP supports high impact, cost-effective interventions relevant to children’s eye health needs with a focus on public health approaches. Services with proven sustainability are preferred.

CBP has been supporting community-based programs, focusing on the diagnosis and treatment of common blinding eye disorders in children, such as Project Child Vision in Mexico, South Africa, Bangladesh, Morocco and Nigeria. It has been working together with NGOs such as Christian Blind Mission (CBM), to strengthen cataract and blindness prevention services in Haiti, and Sightsavers, to correct refractive errors and develop low vision services for children in rural Africa, or with the International Center for Eye Care Education (ICEE) which is expected to deliver spectacles to about 36,000 children with uncorrected refractive errors in South Africa. It also supports education and rehabilitation programmes for blind children, for example in Nepal (Seva Foundation) and in the Philippines (Perkins School for the Blind).
4. Reducing blindness in premature babies

In Latin America

Nearly half of the world's 50,000 children who are blind from ROP live in Latin America (LA). Increased survival of preterm neonates, coupled with inadequate knowledge of ROP as well as inadequate diagnostic and treatment skills and facilities, led to an explosive increase of blindness, with up to 60% of blindness in children in some countries in the region being due to ROP. An estimated 42,000 babies with birth weight of less than 1,500g need screening for ROP and 4,300 need treatment every year. Untreated, 50% of these babies will become blind. Until 2001, with the notable exception of Costa Rica and Chile, activities to prevent blindness from ROP have been fragmented and restricted to local organizations.

In 2001 the Latin American Regional Office of the International Agency for the Prevention of Blindness (VISION 2020 Latin America) formed a subcommittee dedicated to reducing blindness in children, and in particular blindness due to ROP. National subcommittees were established in the various countries over the next four years with the aim of estimating the magnitude of ROP in all countries, assessing existing neonatal and ophthalmic services, formulating local guidelines on prevention and treatment of ROP and creating a network of ophthalmologists and neonatologists to implement the program. Prevention of blindness due to ROP was planned at three levels:

1. Primary prevention: reduce the incidence of ROP through improved pre- and neonatal care
2. Secondary prevention: identify cases of ROP early by regular examination by an ophthalmologist of premature babies in neonatal care, with urgent treatment of those who develop severe disease
3. Tertiary prevention: restore useful vision in children with retinal complications through vitreoretinal surgery and/or offer rehabilitation

Countries are enrolled into and prepared for the program through workshops supported by Christian Blind Mission (CBM) and IAPB. By 2007 all but three countries had established or substantially improved their ROP programs.

From the onset, the program has been carefully monitored and evaluated in terms of activities and their impact on blindness in children. An increasing number of screened and treated children provide evidence of the program's success. In Ecuador an estimated
100 babies need treatment annually: in 2004 only 25 premature babies were treated, which increased to 44 in 2005 and 62 in 2006. In Brazil ROP screening and treatment has been introduced or, if already existent, strengthened in many government hospitals in major cities. So far 50% of neonatal units have screening programs and plans are underway to extend screening activities to the remaining units.

In Argentina, one of the largest countries in Latin America, approximately 1% of the 740,000 live births have a birth weight of less than 1500g, of whom approximately 400 would require treatment for severe ROP. In 2003 the Ministry of Health created a multicentric working group to combat blindness from ROP, the Grupo de Trabajo Colaborativo Multicéntrico Prevención de la ceguera en la infancia por Retinopatía del Prematuro. A national survey in 2003/4 revealed poor standards of ROP prevention at all levels. The working group responded by planning an intervention for the 14 main neonatal units in Argentina (which care for 10% of all births nationally) to reduce the incidence of ROP and blindness due to ROP. Interventions included: training neonatologists and ophthalmic staff in preventing, screening for and treating ROP; provision of equipment for oxygen monitoring; retinal screening and ROP treatment (lasers); as well as the provision of guidelines for screening and their reinforcement. The intervention was implemented in 2004 following a baseline assessment of existing infrastructure, equipment, supplies, human resources, guidelines and logistical procedures. The intervention is evaluated every six months.

In a national survey in December 2005, questionnaires were sent to 161 hospitals caring for 80% of the country’s live births, to explore levels of neonatal and whether there were ROP programs. The findings suggested that many neonatal units were providing suboptimal neonatal care. However, the 11 intervention units that replied to the survey had screened 1,494 babies and treated 58. The number of severe ROP cases had decreased from 74 in the first six months of 2004 to 34 in the last six months of 2005.

Until recently, laser treatment for severe ROP was only available in federal government hospital in the capital city, Buenos Aires. As the number of children screened exceeded its capacity, long waiting lists resulted. Peripheral units in Buenos Aires and provincial capitals are now being equipped with lasers, and ophthalmologists are being trained in their use. In 2006, more neonatal intensive care units were added to the intervention program and by the end of that year a total of 30 units from 20 different provinces were participating. Although UNICEF provides some funding for neonatal care, financial constraints are the main obstacle to implementing ROP programs in Argentina and ophthalmologists are not paid for the additional work. In spite of this, the initial results of the ROP program in Argentina are encouraging.
5. Training pediatric eye care teams

Managing children’s eye conditions well requires special diagnostic and treatment skills and experience, which can be acquired in designated tertiary eye care training centers. Training of specialized pediatric eye teams is an essential component of many ‘blindness in children’ programs. Many organizations now provide training for eye care professionals in line with VISION 2020, and some examples are included here.

Aravind Eye Hospital in Madurai, India is a leading center for blindness prevention worldwide. Since 1990 it has offered training programs in pediatric eye health for ophthalmologists and, since 2003, for non-ophthalmologists such as pediatric counselors, orthoptists and anesthetists. To date, 43 Indian and 15 international (from Guatemala, Bulgaria, Nigeria, Albania, Bangladesh, Indonesia and Bhutan) ophthalmologists have undergone the training, which ranges from 12-24 months for domestic and six months for international fellows. Hands on training and observerships are available in all fields for shorter durations of one to eight weeks. 12-month training programs were introduced by ORBIS for experienced ophthalmologists already working in institutes and willing to develop ophthalmology units in their own setup.

CCBRT Hospital in Dar es Salaam, Tanzania funds its pediatric training programs from course fees. Training is offered for qualified ophthalmologists who have performed at least 500 adult cataract operations. Assurance is required of the need for pediatric ophthalmology services at the trainees’ home station and sufficient resources to put the acquired skills into practice. Averaging six months, training programs vary in duration according to candidates’ experience levels. The training programs aim to enable candidates to perform modern surgical and medical management of pediatric cataract confidently, and to gain some experience and knowledge of other common pediatric ophthalmological problems such as glaucoma, retinoblastoma and strabismus. The training is primarily an apprenticeship with emphasis on practical clinical and surgical teaching, but also includes regular weekly small group seminars on pediatric ophthalmology topics. Candidates are also expected to help with the management of adult patients. Five fellows have been trained so far, from Tanzania, Uganda and Bangladesh.

Al-Shifa Trust Eye Hospital in Rawalpindi, Pakistan, supported by ORBIS International, offers training to ophthalmologists, optometrists, orthoptists,
nurses and anesthetists. Since October 2004, five ophthalmologists from Bangladesh and Sudan have undergone training of between six months’ and one year’s duration. The faculty at Al Shifa already includes two ophthalmologists trained for one year each at the Hospital for Sick Children, Toronto, plus one orthoptist, one ERG specialist and one anesthetist trained for one month each at Moorfields Eye Hospital, London in the first two cases, and University of Illinois, Chicago in the other. Two nurses and one optometrist were trained in pediatrics in-house for three months each. Al Shifa can accommodate two ophthalmologists, one orthoptist, one nurse and one anesthetist per year for training, from any country.
6. Education for visually impaired children

Less than 10% of children with visual impairments in developing countries have access to education. Lack of education perpetuates the cycle of illiteracy and poverty, and ensures that people who are blind or have low vision remain among the most marginalized groups in the world. This, combined with the high prevalence of vision impairment and blindness in children in developing countries, led to the foundation of the International Council for Education of People with Vision Impairment (ICEVI) in 1952.

ICEVI, a professional NGO, is supported by individuals and corporate members in over 80 countries of the world. It is dedicated to improving and expanding access to education for blind and low vision children and young people worldwide, including those with additional disabilities. ICEVI collaborates with all major international NGOs involved in the field of blindness as well as with local NGOs and governments.

ICEVI promotes equal access to appropriate education for all visually impaired children and young people so that they may achieve their full potential through five strategic goals:

1. To ensure access and full participation in education for all visually impaired children and young people by 2015.
2. To promote and assist in building of local capacity to develop curricula, to provide training and to identify and provide equipment and materials to children and young people with visual impairments and their parents, teachers and others in their communities.
3. To collaborate with and make use of networks to ensure that substantially more visually impaired children and young people receive quality and comprehensive education.
4. To ensure that ICEVI initiatives are based on current evidence of best practice.
5. To provide information on ICEVI and its services through all possible and appropriate media to all target groups.

In July 2006 ICEVI, in partnership with the World Blind Union (WBU), launched the Education for All Children with Vision Impairment (EFA-VI) global campaign. This campaign focuses on ICEVI’s vision and strategic goals, as well as three of the United Nations Millennium Development Goals: (2) Achieve universal
primary education, (3) Promote gender equality and empowerment of women and (4) Develop a global partnership for development.

Four guiding principles have been identified for the campaign. These are as follows:

1. Creation of a demand for educational services
2. Implementation of the campaign in select countries in each of the seven ICEVI regions. Delivery of the EFA-VI program will be within existing general and special education system frameworks
3. Placement of children with visual impairment within the general education system, with appropriate support
4. Consideration of alternative educational approaches for children who require highly specialized services, including those who are both deaf and blind or have multiple disabilities.

The campaign’s success will be measured against four performance indicators:

1. Have education enrolment rates of children with visual impairment increased?
2. Have drop-out rates among children with visual impairment decreased?
3. Do children with visual impairment have access to the support services and learning materials they need (in the
4. Is the performance of children with vision impairment on a par with those of non visually-impaired children?

This global campaign is dedicated to facilitating educational access for the estimated 4.4 million children with visual impairment in the developing world who currently are without access to education.
Conclusion

Blindness in childhood is a devastating, and largely needless injustice. Including blindness and visual impairment in children as a priority within VISION 2020 has brought new impetus for control, and many new initiatives worldwide. Nonetheless, much more remains to be done. VISION 2020 advocates one Child Eye Care Centre with a well trained and equipped team of professionals for every 10 million population, and current provision falls far short of this mark. District level services must also be strengthened substantially to ensure local needs are met.

In recognition of this, IAPB has recently convened a Childhood Blindness Program Committee whose role will include identifying information needs and recommending mechanisms for collecting and compiling information at global, national and regional levels; developing mechanisms for coordination and networking; addressing specific technical issues; identifying communication needs and strategies for effective advocacy; developing a framework for research and guidelines for monitoring, evaluation, and identifying resource opportunities.

Interventions are necessary at all levels of service delivery, to meet ever-growing needs. A comprehensive approach is needed, with referral and linkages to education and rehabilitation, to ensure sustainable success.

The abiding principle underlining the VISION 2020 initiative is partnership. By working together, and supporting the work of governments around the world, the members of VISION 2020: The Right to Sight hope to make needless childhood blindness a thing of the past.

An ever-growing number of projects are working towards the VISION 2020 objective of eliminating avoidable blindness in children.
VISION 2020 is the global initiative for the worldwide elimination of avoidable blindness, by the World Health Organization (WHO) and the International Agency for the Prevention of Blindness (IAPB), with an international coalition of NGOs, professional associations, institutions and corporations. These many partners are working together to give everyone in the world – particularly the millions of needlessly blind – The Right to Sight.
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2  Operation Eyesight Universal
4  Sightsavers/Zul Mukhida
6  Oman/Khandekar
7  Helen Keller International
8  Sightsavers/Zul Mukhida
11  Sightsavers/Zul Mukhida
12  Lions Clubs International
15  (left) Lions Clubs International
15  (bottom, right) Clare Gilbert, ICEH
17  Al Shifa Trust Eye Hospital
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VISION 2020 Partners

VISION 2020: The Right to Sight is a global initiative of the International Agency for the Prevention of Blindness (IAPB) and the World Health Organization (WHO), with a coalition of international Non-Governmental Organisations.

World Health Organization (WHO)
The WHO is the United Nations’ specialized agency for health. Its objective is the attainment by all peoples of the highest possible level of health, defined as a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity.

Prevention of Blindness Website:
http://www.who.int/blindness

International Agency for the Prevention of Blindness (IAPB)
A coordinating umbrella organization established to lead international efforts for the prevention of blindness; IAPB’s members include professional bodies, nongovernmental organizations (NGOs), institutions and corporations, with a common objective of eliminating avoidable blindness worldwide.

VISION 2020 website:
www.v2020.org

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For more information about World Sight Day, and a full list of IAPB members visit www.v2020.org