child eye health in africa

The status and way forward
CONTENTS

About the Partners ........................................................................................................................................... i
Acknowledgements ............................................................................................................................................. ii
Abbreviations & Acronyms .......................................................................................................................... iii
Foreword ............................................................................................................................................................ iv
Executive Summary ........................................................................................................................................... v

CHAPTER 1: WHY CHILD EYE HEALTH MATTERS? ...................................................................................... 1

1.1 Introduction ................................................................................................................................................. 1

1.2 Developmental, economic and social costs of child blindness ................................................................. 2

1.2.1 Economic costs of blindness ................................................................................................................. 2

1.2.2 Social and developmental costs of blindness ..................................................................................... 3

CHAPTER 2: CHILD EYE HEALTH IN AFRICA – THE STATUS ................................................................ 6

2.1 Prevalence of child blindness in Africa .................................................................................................... 6

2.2 Causes of Blindness .................................................................................................................................. 7

2.2.1 Scarring of the cornea due to measles and vitamin A deficiency ......................................................... 7

2.2.2 Trachoma .................................................................................................................................................. 9

2.2.3 Glaucoma ............................................................................................................................................... 10

2.2.4 Cataracts ............................................................................................................................................... 10

2.2.5 Other causes ......................................................................................................................................... 12

2.3 Availability of health services for eye diseases ....................................................................................... 12

2.4 Barriers and risks to the uptake of services for eye-health ...................................................................... 15

CHAPTER 3: CHILD EYE HEALTH – THE POLICY LANDSCAPE ............................................................ 16

3.1 Child eye health and public health policy .............................................................................................. 16

3.2 The broader global policy environment impacting on child eye health ............................................... 16

3.3 Health policies directly impacting on child eye health ......................................................................... 17

3.4 Investment in early childhood development ......................................................................................... 20

3.5 National budgets; health expenditure and health outcomes ...................................................................... 21

CHAPTER 4: GOOD PRACTICES IN PREVENTION OF CHILDHOOD BLINDNESS AND PROVISION OF CARE SERVICES ................................................................. 24

4.1 Investing in human resources ................................................................................................................... 24

4.2 Establishment of comprehensive health system .................................................................................... 25

4.3 Broader frameworks and learning that inform good practice in child eye health ................................ 26

4.4 Elements of a successful Child Eye Health Programme ........................................................................ 27

CHAPTER 5: CONCLUSION AND PRIORITY AREAS FOR ACTION .......................................................... 29

5.1 Conclusions ................................................................................................................................................ 29

5.2 Priority areas for action ........................................................................................................................... 30
5.3 Specific recommendations and actions .................................................................................. 31

References .................................................................................................................................. 33

Definitions ..................................................................................................................................... 37

List of Tables

Table 1.1: Summary of the estimated cost of blindness to countries globally .......................... 2
Table 1.2: Regional cost of blindness and low vision as a percentage of regional GDP (%) ... 3
Table 2.1: Estimates of the number of blind children worldwide in 2010 .................................. 6
Table 2.2: Under-five mortality rates and blindness prevalence estimates in children .......... 7
Table 2.3: Child Eye Health Treatment Facilities (CEHTF) in various sub-regions of Africa by population size ................................................................. 13
Table 2.4: Summary table on the number and type of tertiary child eye health facilities by child population in selected countries ........................................ 13

List of Charts

Chart 3.1: Under-five mortality percentage decline in selected countries 1990 - 2010 .......... 16
Chart 3.2: Percentage of the national budget spent on health related areas ......................... 21
Chart 3.3: Measles immunisation coverage for selected countries (2010) ......................... 22
Chart 3.4: Vitamin A supplementation coverage 6-59 months Africa selected countries, 2010 23

List of Figures

Figure 2.1: Geographical distribution of childhood blindness in Africa .................................. 8
Figure 2.2: Number of Ophthalmologists in Africa by country ............................................. 14
Figure 3.1: Rate of return to investment in early childhood higher than any other subsequent intervention ........................................................................................................... 20
Figure 4.1: Pyramid of service provision to child eye care and treatment ........................... 25
Figure 4.2: Graphical illustration of activities to enhance child eye care and other complementary programmes ........................................................................................................... 27

List of Boxes

Box 2.1: Rapid progress against Trachoma: The Moroccan experience ................................. 9
Box 2.2: Prevention and treatment of refractive errors ......................................................... 12
Box 3.1: The 2009-2013 Action Plan ..................................................................................... 18
Box 3.2: Excerpt from the Hyderabad Declaration on the Right to Eye Health .................. 20
Box 4.1: Addressing the human resource crisis: The Tanzanian experience ....................... 24
Box 4.2 ORBIS’s experience in capacity building in KwaZulu Natal, South Africa ............ 25
Box 4.3 Early intervention key to successful treatment of a child eye problem in Zambia .... 26
Box 4.4: What has worked well in improving child eye health? .......................................... 28
THE AFRICAN CHILD POLICY FORUM (ACPF)

ACPF was established with the conviction that putting children first on the public agenda is fundamental to the realisation of their rights and wellbeing and for bringing about lasting social and economic progress in Africa.

ACPF’s work is rights based, inspired by universal values and informed by global experiences and knowledge and is committed to internationalism. Its work is based on the UN Convention on the Rights of the Child, the African Charter on the Rights and Welfare of the Child, and other relevant international human rights instruments. ACPF aims to specifically contribute to improved knowledge on children in Africa; monitor and report progress; identify policy options; provide a platform for dialogue; collaborate with governments, inter-governmental organisations and civil society in the development and implementation of effective pro-child policies and programmes.

The African Child Policy Forum (ACPF) is a leading, independent, not-for-profit, pan-African centre of policy research and dialogue on the African child.

P.O. Box 1179, Addis Ababa, Ethiopia
Telephone: +251 116 62 81 92/96
Fax: +251 116 62 82 00
E-mail: info@africanchildforum.org
Website: www.africanchildforum.org
www.africanchild.info

ORBIS AFRICA

By building their long-term capabilities, ORBIS helps its partners to take action to provide quality eye care services that are affordable, accessible and sustainable.

ORBIS uses flagship tools such as the ORBIS Flying Eye Hospital (an innovative mobile ophthalmic training hospital on board a DC-10 airplane), Cyber-Sight (an online telemedicine mentoring and learning resource), and over 450 expert medical volunteers, to bring the highest standard of eye care and training to our partners in developing countries. By integrating these within our long-term country programmes we are working towards a world where no one goes blind unnecessarily.

Since 1982, ORBIS has worked in 90 countries, enhanced the skills of over 305,000 health care professionals and helped establish services that have provided quality eye care to more than 18.9 million people, 5.7 of which were children. ORBIS launched the Africa Initiative in 2009; it focuses on developing a comprehensive model for managing avoidable childhood blindness in Sub-Saharan Africa. The model builds capacity within primary and secondary levels of local healthcare systems to identify children with complex sight problems and then refer them to specialised child-friendly tertiary facilities. This ensures that these children’s long-term follow up and care can then be monitored throughout their lifetime.

Division of Ophthalmology,
Section H53 Room 48, Old Main Building,
Groote Schuur Hospital, Observatory 7925
Cape Town, South Africa,
Telephone: +27 214477135
Email: info@orbis.org.za
Website: www.orbis.org.za
ORBIS Africa acknowledges and thanks The African Child Policy Forum (ACPF) for placing importance to Child Eye Health and initiating the production of this important report.

Our acknowledgement and thanks also goes to Dr Patricia Henderson, Social Anthropologist from Stellenbosch University for the excellent literature review and background paper that informed this report.

A number of staff of ORBIS Africa have contributed to the production of this report. We would especially like to thank Ms Reshma Dabideen for her excellent technical and administrative support in leading this project and serving as one of the authors of the report. Our special thanks also goes to Ms Lene Øverland for her leadership and multifaceted contribution to the report.

Special thanks also go to Mr Yehualashet Mekonen, Head, African Child Observatory at ACPF, for his guidance and critical contribution in drafting the report. We are also very grateful to the management of ACPF and especially to Mrs Annalies Borrel, Director of Programme and Mrs Sarah Guebreyes, Director of Operations and Business Development for their support at all levels of the production of the report. Last, but not least, we would like to thank Ms Dorothy Rozga for her review and valuable feedback, Mr David Mugawe for his support and guidance and Dr. Rumishael Shoo for his contribution towards the technical editing of this report.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACPF</td>
<td>The African Child Policy Forum</td>
</tr>
<tr>
<td>AHSS</td>
<td>Allied Health Sciences School</td>
</tr>
<tr>
<td>AIDS</td>
<td>Acquired Immunodeficiency Syndrome</td>
</tr>
<tr>
<td>AMO’O</td>
<td>Assistant Medical Officer – Ophthalmology</td>
</tr>
<tr>
<td>ANC</td>
<td>Antenatal care</td>
</tr>
<tr>
<td>CEHTF</td>
<td>Child Eye Health Tertiary Facility</td>
</tr>
<tr>
<td>CRC</td>
<td>Convention on the Rights of the Child</td>
</tr>
<tr>
<td>CS</td>
<td>Cataract Surgery</td>
</tr>
<tr>
<td>CSR</td>
<td>Cataract Surgical Rate</td>
</tr>
<tr>
<td>DALY</td>
<td>Disability-Adjusted-Life-Years</td>
</tr>
<tr>
<td>DHS</td>
<td>Demographic Health Survey</td>
</tr>
<tr>
<td>DRC</td>
<td>Democratic Republic of Congo</td>
</tr>
<tr>
<td>ECD</td>
<td>Early Childhood Development</td>
</tr>
<tr>
<td>EPI</td>
<td>Expanded Programme on Immunisation</td>
</tr>
<tr>
<td>GAVI</td>
<td>Global Alliance on Vaccines Initiative</td>
</tr>
<tr>
<td>GFATM</td>
<td>Global Fund on Aids Tuberculosis and Malaria</td>
</tr>
<tr>
<td>GSF</td>
<td>Good Samaritan Foundation</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>IAPB</td>
<td>International Agency for Prevention of Blindness</td>
</tr>
<tr>
<td>MDGs</td>
<td>Millennium Development Goals</td>
</tr>
<tr>
<td>MoHSW</td>
<td>Ministry of Health and Social Welfare</td>
</tr>
<tr>
<td>MoU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>NGOs</td>
<td>Non-governmental organisations</td>
</tr>
<tr>
<td>ROP</td>
<td>Retinopathy of Prematurity</td>
</tr>
<tr>
<td>SAFE</td>
<td>Surgery Antibiotic Face washing, Environment sanitation</td>
</tr>
<tr>
<td>SSI</td>
<td>Sight Savers International</td>
</tr>
<tr>
<td>STDs</td>
<td>Sexually Transmitted Diseases</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
</tr>
<tr>
<td>UNESCO</td>
<td>United Nations Education Scientific and Cultural Organisation</td>
</tr>
<tr>
<td>UNCRPD</td>
<td>United Nations Convention on the Rights of Persons with Disabilities</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organisation</td>
</tr>
</tbody>
</table>
This report is a product of the partnership between our two organisations, a partnership that aims to advocate for better access to quality eye health and treatment for Africa’s children.

It is unacceptable that most blind children in Africa have lost their sight due to preventable causes. Many of the visually impaired children that live in Africa today need not have lost their sight if they had been diagnosed early and had access to quality treatment and follow-up.

Children’s vision is a major component of their cognitive development and overall wellbeing and when impaired has far reaching implications for their life situation, their immediate family and their communities. Preventing and treating children’s blindness and visual impairment is rooted in the realisation of children’s rights, specifically to the right to the highest attainable health and ensuring their protection against preventable infections.

While we commend collaborative efforts by African governments, development partners and the civil society organisations on the successes - particularly on the achievements in expanding immunisation against measles and vitamin A supplementation - which have impacted positively on child eye health, there are many remaining challenges - such as poor sanitation, inadequate services for eye care, inadequate referral systems - that negatively affect and compromise children’s vision in Africa.

We hope this report will stimulate debate and contribute to national and continental efforts to promote action to enhance child eye health and prevent further blindness and vision impairment among children.

Annalies Borrel, Director of Programmes, The African Child Policy Forum (ACPF)

Lene Øverland, Chief Executive Officer, ORBIS Africa
More than ever, children’s health and wellbeing are gaining recognition at regional, national and international levels.

This is particularly so following the adoption of child rights instruments such as the Convention on the Rights of the Child and the African Charter on the Rights and Welfare of the Child. Significant strides have also been made, especially in child health where commendable achievements have been made in terms of enhancing child survival.

However, the health situation for children in many African countries remains a major concern. Child eye health is not a priority on the public health agenda. Many children lose their sight and experience visual impairment as a result of preventable causes. WHO estimates that 80% of blindness is preventable but there are more than 400,000 blind children in Africa and many more with visual impairments, most of which could have been prevented.

Blindness affects children’s physical and cognitive development. Most of a child’s early learning comes through vision, making eye health an important aspect of children’s development and overall wellbeing. The major causes of blindness and visual impairment among children are diverse and context-specific. The most common causes include corneal scarring from measles, vitamin A deficiency, the use of harmful traditional eye remedies, and swelling of the child’s eyelids due to infection.

Child blindness has huge social and economic costs at individual, family and societal levels. The impact is much greater in resource poor environments where the family faces constraints to provide adequate care for blind children. It is estimated that blind children globally make up 7.5 million blind-years and without major intervention to prevent avoidable child blindness, the cost of failure to do so could be more than US$110 billion by 2020. The cost in terms of Gross Domestic Product was found to be around 0.42 per cent for sub-Saharan Africa, the highest of all World Bank regions of the world.

The social cost is also overwhelming both for the child and the family. Children with visual disability, for example, face social isolation, poorer education opportunities and a greater risk of being abandoned. Furthermore, blind children, especially girls have higher risk of sexual abuse, as they are unable to identify their attackers or seek assistance. Siblings and carers may also be affected.

Loss of sight is linked to poverty where children with limited access to adequate nutrition, clean drinking water, sanitation facilities and essential drugs have higher likelihood of experiencing child eye health problems and visual impairment.

Studies have demonstrated that there are effective strategies for addressing and preventing child blindness including vitamin A supplementation and immunisation against measles, community based referral systems for early treatment and adequately resourced tertiary treatment facilities.

Health services for the provision of eye health care in Africa are inadequate, in terms of facilities, equipment, resources and skilled professionals. The limited number of specialised ophthalmologists operating in Africa mostly work in urban centres and rural areas are grossly underserved. Sub-Saharan Africa is grossly under-catered for with just 26 child eye care centres located in 11 countries for specialised treatment and care. The numbers of facilities are much lower than WHO’s recommendation of at least one paediatric ophthalmic centre per ten million population. Educational possibilities for training eye care specialists in Africa are limited.

Co-ordination mechanisms including non-clinical personnel who coordinate the link between child eye health facilities and communities are not commonly established.
Successful treatment of child eye diseases such as cataract and glaucoma requires a variety of interventions including training of health personnel, referral mechanisms, training of eye specialists and support services including low vision specialists and counsellors. Effective child eye health care and treatment require coordinated efforts in the areas of early detection of child eye problems and visual impairment, establishment of functional referral system for treatment, training of adequate human resources to address shortage of skilled paediatric ophthalmologists. Integrating child eye health into national health sector development programmes is important to ensure resource prioritisation and sustainability of interventions. Furthermore, setting up specialised centres for child eye treatment in accordance with WHO recommendations is important for supporting those who need such services and avoiding preventable loss of sight.

Early detection of eye problems is critical and early childhood development programmes and services are ideal for screening and early diagnosis. However, these programmes are not common in Africa and where they exist are predominantly in urban areas. There are initiatives such as VISION 2020 and the work of ORBIS Africa that aim to promote action for improving access to eye health care.

Where eye health care services exist, these are often under-utilised. The reasons for under-utilisation include socio-economic factors, distrust and fear of hospitals, preference for traditional practices and unawareness of symptoms of poor eye health. These misconceptions potentially negatively affect eye health service utilisation. Families, as the main providers of care for children, play a key role in improving children’s eye health through taking measures to reduce risk factors and practices that have adverse consequences on child eye health. Community- and family-based interventions aimed at addressing misconceptions and eliminating harmful practices and enhancing treatment-seeking behaviour will contribute towards improvements in child eye health.

A number of recommendations are proposed as a way forward.

**At global level**

1. As stated in the Hyderabad Declaration, “Eye Health is Everybody’s business”. All countries need to adopt and adapt Vision 2020 and promote the right to health care for all children. The Declaration on the Right to Eye Health urges all countries and stakeholders to work together in addressing avoidable blindness and preventing visual impairment through:
   - targeted investment in eye health structures and human resource development;
   - mainstreaming eye health in national health systems;
   - undertaking research to identify emerging eye health priorities and effective approaches;
   - building and broadening alliances; and

**At regional and country level**

2. As children under-five are most at risk of losing sight due to health problems, countries are urged to have early eye detection and intervention programmes through antenatal care services and early childhood development programmes.

3. Vitamin A supplementation and measles immunisation initiatives have contributed significantly to the reduction of child blindness. There is need to allocate more resources to these cost effective interventions.

4. A broader approach beyond Vitamin A supplementation needs to be adopted by countries to effectively control Vitamin A deficiency. These include improving ecological factors that impede the growth of Vitamin A rich foods, poor infrastructure, transportation and food preservation methods as well as addressing national and international policies that promote cash crop farming rather than food crops.

5. There is need for countries to increase financial resources to the training of professionals in paediatric eye health; including multi skilled attendants to improve quality of services. Innovative training programmes including task shifting need to be adopted by countries which have severe shortages of Paediatric Ophthalmologists.

6. There are only 12 countries out of 54 that have undertaken national Avoidable Blindness surveys in Africa or maintain some/or any data on blindness. All Counties need to undertake such surveys and generate data through special surveys of Health Management Information
Systems to assist in planning blindness prevention programmes.

7. Cataract surgery has been evaluated as one of the most cost effective surgical interventions. Successful treatment though requires a variety of interventions, including training of personnel to undertake cataract surgery and other related services. Countries should institute training programmes to meet this need.

8. Refractive errors represent a significant proportion of visual impairment and significantly contribute to learning difficulties. Countries should integrate refractive errors correction services including affordable spectacles provision in Primary Health Care services.

9. Paediatric Ophthalmic services are grossly inadequate in Africa with just 26 Child Eye Health Tertiary Facilities located in just 11 countries. Countries should adopt the WHO recommendation of having one Paediatric Ophthalmic centre for every 10 million population, at least two ophthalmologists per million population and about four midlevel workers per million population.

Research

10. There is limited research globally on the effects of HIV on the eye – especially for children. As HIV remains a major public health problem in Africa especially for children, there is need to undertake studies that will contribute to better design of programmes for the diagnosis and management of eye problems in HIV positive children.

11. Few studies exist that examine the disparity between large numbers of people who suffer from cataract and trichiasis and the low uptake for surgery. Qualitative studies need to be undertaken on barriers and social cultural attitudes and beliefs held on service utilization by various communities.

12. There is limited research on the prevalence and impact of childhood blindness in Africa and globally. There needs to be more research done in this area to gain a better understanding of the problem and develop viable strategies to address it.

Civil society and private sector

13. Governments in collaboration with civil society organisations need to strengthen rehabilitation as an important component of child eye care through provision of affordable and good quality spectacles as well as services that enable children to make the best possible use of their vision.

Communities

14. Community education needs to include signs and symptoms of eye conditions to recognize danger signs and seeks care. These awareness creation programmes should be informed by context-specific and culturally sensitive messages that counter misconceptions and myths to improve health seeking behaviour.

15. A checklist in line with WHO recommendations has been developed on standards of community services action in relation to eye health. All countries are encouraged to adopt these recommendations relating to:
   • specific eye-hygiene for newly born babies;
   • the dosing of both mother and child with appropriate units of vitamin A at various intervals;
   • immunisation of children against measles;
   • keeping the faces of children clean; and
   • the referral of children with eye discolouration or injury to appropriate health care practitioners and refraining from dosing eyes with traditional medicines.
However, blindness in children as a result of these causes has generally shown a declining trend due to relative improvement in access to clean water and sanitation facilities as well as an increase in vitamin A supplementation and immunisation against major childhood illnesses including measles.

Children under-five have the highest risk of blindness. Most blind children are either born blind or become blind before their fifth birthday. Early detection and intervention are critical as it may not be possible to restore full sight after the first 5-6 years of life. Childhood blindness is also strongly associated with poverty and child morbidity.

- In low-income countries with high under-5 morbidity and mortality rates, the prevalence of child blindness may be as high as 1.5 per 1000 children; while in high-income countries with low under-5 mortality rates, the prevalence of child blindness is around 0.3 per 1000 children (Gilbert and Foster 2001).

- In developing countries, up to 60 per cent of children die within a year of going blind – usually due to underlying conditions such as measles, meningitis, rubella, prematurity, genetic diseases and head injuries (Bronsard et al. 2008; Lewallen and Courtright 2001).

Researchers have identified a number of variables that are closely associated with poor child eye health and visual impairment, which include low socioeconomic status, inadequate access to adequate nutrition, limited access to clean drinking water and adequate sanitation facilities (WHO 2012b). In the African context, a lack of information and resources as well as recourse to traditional healing methods which are harmful to eye health, exacerbate the problem. According to the United Nations Development Programme, although Africa has shown significant economic improvements over the last three decades, most countries in the region still have low levels of human development where access to quality healthcare is limited.

There are a number of proven and feasible responses to child blindness in Africa. The World Bank concluded that cataract surgery is one of the
1.2 DEVELOPMENTAL, ECONOMIC AND SOCIAL COSTS OF CHILD BLINDNESS

1.2.1 Economic costs of blindness

The cost of blindness to an individual child, their community and a country is significant. In an effort to project the financial cost of blindness across the globe, Foster and Frick created a model which aims to capture the concept of blind years (Foster and Frick 2003). According to an estimation made in 2000 using this model, blind children were said to make up 7.5 million blind-years globally (ibid).

As shown in Table 1.1, the projected financial cost of being blind in terms of treatment, care and lack of employment was calculated to be US$42 billion globally, and it was argued that without major intervention the cost of global blindness would increase to US$110 billion by 2020 (Foster and Frick 2003).

Table 1.1: Summary of the estimated cost of blindness to countries globally

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>YEAR 2000</th>
<th>YEAR 2020 WITHOUT V2020</th>
<th>YEAR 2020 WITH V2020</th>
<th>DIFFERENCE OVER 20 YEARS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>6.1 billion</td>
<td>7.5 billion</td>
<td>7.5 billion</td>
<td>Nil</td>
</tr>
<tr>
<td>Percentage of population 65 years and above</td>
<td>7%</td>
<td>9%</td>
<td>9%</td>
<td>Nil</td>
</tr>
<tr>
<td>Prevalence of Blindness</td>
<td>0.72%</td>
<td>1.01%</td>
<td>0.33%</td>
<td>70% reduction in prevalence</td>
</tr>
<tr>
<td>Number blind</td>
<td>44 million</td>
<td>76 million</td>
<td>24 million</td>
<td>100 million blind people 429 million blind years</td>
</tr>
<tr>
<td>Conservative Estimate of Economic Loss in Productivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blind</td>
<td>$19 billion</td>
<td>$50 billion</td>
<td>$26 billion</td>
<td>$102 billion</td>
</tr>
<tr>
<td>Low vision</td>
<td>$23 billion</td>
<td>$60 billion</td>
<td>$32 billion</td>
<td>$121 billion</td>
</tr>
<tr>
<td>Total</td>
<td>$42 billion</td>
<td>$110 billion</td>
<td>$58 billion</td>
<td>$223 billion</td>
</tr>
</tbody>
</table>

Source: Foster and Frick 2003

By effectively treating blindness in children through interventions targeting prevention, global economic productivity would be significantly improved.

Total number of blind-years is calculated by multiplying the number of blind people with the average length of life lived into adulthood.
increased (Frick and Foster 2003). By eradicating blindness and low vision as much as possible, the world would save US$102 billion annually. Although children who were blind were fewer in number than adults, the study showed that children accounted for a third of global economic costs associated with blindness.

Until recently, child blindness has been given relatively less importance compared with blindness in general. However, because children, who are congenitally blind or who develop blindness in their childhood years have to live many more blind-years than adults, the urgency of tackling child blindness and visual impairment has therefore increasingly been recognised because of the cumulative social and economic costs.

The percentage of GDP loss in 2000 for sub-Saharan Africa was the highest of all regions of the world at 0.42 per cent and it was estimated that this would increase to 0.50 per cent if the goals of VISION 2020 were not reached (Frick and Gooding 2004). This was significantly higher than the global estimates of 0.13 per cent in 2000 and a projected 0.17 per cent loss in 2020 without VISION 2020 (see Table 1.2).

<table>
<thead>
<tr>
<th>COUNTRY/REGION</th>
<th>GDP LOSS IN 2000</th>
<th>GDP LOSS IN 2020 WITHOUT VISION 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>0.29</td>
<td>0.44</td>
</tr>
<tr>
<td>Established Market Economies</td>
<td>0.09</td>
<td>0.11</td>
</tr>
<tr>
<td>Former Socialist Economies of Europe</td>
<td>0.10</td>
<td>0.12</td>
</tr>
<tr>
<td>India</td>
<td>0.37</td>
<td>0.50</td>
</tr>
<tr>
<td>Latin American and Caribbean</td>
<td>0.16</td>
<td>0.23</td>
</tr>
<tr>
<td>Other Asia and Islands</td>
<td>0.21</td>
<td>0.49</td>
</tr>
<tr>
<td>Sub Saharan Africa</td>
<td>0.46</td>
<td>0.50</td>
</tr>
<tr>
<td>Global</td>
<td>0.13</td>
<td>0.17</td>
</tr>
</tbody>
</table>

Source: Gooding 2006

1.2.2 Social and developmental costs of blindness

As noted earlier, blindness affects children’s physical and cognitive development. Crawling and walking is often delayed as a result of visual impairment. If eye impairments in children are not corrected in time, children will not develop certain visual capacities which are dependent on light stimuli to anterior parts of the eye in early childhood, resulting in long-term consequences.

As noted by Chandra and Gilbert (2010):

“Children are not smaller versions of adults. Their eyes are different and assessing the acuity of young children is difficult and time consuming. This presents particular problems in busy yet scarce rural hospitals. The effect of childhood blindness is extremely detrimental for a child’s development.”

These facts indicate that vision is not only very important for early development in infancy, but also that visual information is used and processed by many different parts of the brain. “(Chandra and Gilbert 2010: 1).

Loss of vision in early childhood also has a major impact on family life. Both parents and siblings are affected by the presence of a visually disabled child, often in negative ways. In resource poor environments, greater strain may be experienced by the family in relation to care and the amount of time required to monitor and look after a blind child. Yet careful ethnographic studies of family practice and the child’s experience of disability in relation to blindness are extremely rare. Such studies may reveal ways in which families and indeed communities creatively incorporate children with particular difficulties, including blind children.

Blind children’s restricted mobility often leads to isolation and exclusion from social interaction. In situations where schools for the blind are situated at considerable distances from home, and where educational services (including those that provide supportive integrated opportunities) for the blind are generally poor, their education is profoundly affected. The education of those who look after them – particularly if they themselves are children - is likewise affected. Research suggests that the effects of visual impairment
are exacerbated by gender; boys with sight impairments have relatively higher likelihood of accessing education than girls. Furthermore, the ability of children to participate in household and agricultural tasks may be limited. Perspectives of community and family members on “incapacities of blind children” may exacerbate lack of inclusion. A review of studies on the inter-linkage between poverty and disability including blindness shows that blind children are often subjected to social stereotyping or stigma. In Uganda, for example, a study showed that there is a common fear that blindness could be contagious (Lwanga-Ntale 2003). Children with a disability such as blindness have less influence in decisions taken within households and in the wider community. This is especially so for adults. In one study, over half the adults in an eye hospital who had recently lost their sight and who had been the primary decision-makers in their family prior to their affliction, experienced a sudden loss of authority (Javitt et al. 1983). Many heads of household who developed blindness in later life lost participation in political and economic decisions (Loeb and Eide 2004, 2003a, 2003b; Lwanga-Ntale 2003; Evans 1995; Beall and Goldstein 1985).

Children with disability experience social isolation often reinforced through institutional segregation, for example, within special schools for the blind, as well as due to community attitudes and their own physical limitations. As they grow older, children with disabilities have reduced marriage prospects. Their siblings may also be affected in the same way due to the social stigma being relevant to their families.

Blind adults and children are often victims of violent assault and are unable sometimes to identify their attackers or to seek assistance or redress. A study in Rwanda found that sexual violence and abuse, particularly of women and girls with disabilities including blindness, occurred both within communities and in their schools (Thomas 2005b). Those who were most vulnerable had sight, hearing or mental difficulties and little access to legal or police assistance, psychological counselling or prophylactic care (Groce 2004).

However, just as there are local views that undermine the capabilities of blind children, the values and culture of many African societies uphold the importance of caring for the old and those with disabilities (Chandra and Gilbert 2010).

A study conducted in Guinea indicated that the society’s social values created strong capacities and networks within the communities to support both the old and the blind irrespective of age. This study highlights that interdependency is understood differently in different societies and is often an integral part of the social fabric. Strong social networks, even during periods of adversity, are an important ‘capacity’ that is often under-estimated (Henderson 2011). Interventions which aim at addressing attitudinal barriers need to reinforce these positive social values within communities as an opportunity for those living with visual impairments.

Children with disabilities including visual impairment, face barriers to education facilitates at all levels. When these children do attend school, they are more likely to drop-out and often fail to complete primary education, let alone secondary education. Furthermore, it is not only themselves who are likely to drop-out but often their carers, such as siblings. Disability is a greater predictor of failure to participate in school than is gender, rural residence, or household economic status (Gooding 2006:21). Many schools do not have the appropriate facilities and resources for blind children, including the materials required for teaching and training for teachers.

The positive inclusion of blind children in schools is also affected by attitudes of both teachers and parents. Research also suggests that both in formal and informal contexts, children with disabilities, including those who are blind, learn less because of lower demands and expectations placed on them (Gooding 2006: 21). A study conducted in Uganda, identified the following barriers to education for children with disabilities (Gooding 2006: 24; Lwanga-Ntale 2003):

- parents’ perception of their child with a disability and their sense of shame;
- limited number of trained teachers, particularly for visually and hearing disabled children;
- bad reception by peers who in most cases tease, bully and beat them;
- higher fees for special needs schools;
- lack of schools and equipped facilities for blind children at close proximity; and
- stereotyping children with disabilities into particular kinds of vocations or vocational skills.
Childhood blindness contributes to one third of the global economic costs associated with blindness. Furthermore, the social development costs for these children are immense. Children who are visually impaired or blind will experience limited education opportunities. Integration into schooling remains a challenge. They often suffer low confidence levels, face social exclusion and grow up facing limited job opportunities and limited potential to contribute to future household incomes. Families that have to take care of visually impaired children face financial and social strain.

In Malawi, 35 per cent of children above five years of age who had a disability had never attended school compared with 18 per cent of children without disabilities. In this study, in contrast to other situations, the proportion of children in school with and without disabilities achieved a similar standard or level of education. Likewise the proportion of acquired skills among able and disabled people was similar. However, only 5 per cent of people with disabilities who had expressed a need for vocational training had received such training (Loeb and Eide 2004). In Zimbabwe educational levels were higher for people with physical disabilities compared with those who had sight, hearing, communication or intellectual disabilities. Thirty-three per cent of those with sight, hearing and communication disabilities had never attended school compared to 23 per cent of those with physical difficulties (Loeb and Eide 2003b). Despite all the barriers to education some blind people manage to achieve tertiary qualifications (Macha 2002). Higher employment opportunities are associated with those attain vocational skills.

In conclusion, it is evident that child eye health is an important component of children’s overall wellbeing. While children do not have an explicit right to sight, however the rights enshrined in international and regional instruments provide a legal framework for ensuring children’s enjoyment of the highest attainable standards of health, including eye health. While the prevalence of childhood blindness is lower compared to adults, the social and economic costs are high.
2.1 PREVALENCE OF CHILD BLINDNESS IN AFRICA

In 2010, it was estimated that there were about 1.26 million blind children globally and a vast majority of them lived in most poor countries of Asia and Africa (Gilbert and Quinn 2011). An earlier global estimate made in the 1990s, estimated the number of blind children to be 1.4 million, showing a 10 per cent decrease over the last 10 years (Gilbert and Foster 2001; Gilbert and Quinn 2011).

The same declining trend of child blindness globally is not applicable to Africa. In fact there is a relative increase in the number of blind children in Africa (see Table 2.1). While the percentage of blind children in many parts of the world indicated a decreasing trend, this was not the case for children in sub-Saharan Africa, where a 40 per cent increase in the number of blind children living was reported over the last twelve years; from 300,000 in 1999 to 419,000 in 2010 (Chandna and Gilbert 2010: 3; Gilbert and Foster 2001). High fertility rates and the consequent growth of child population and an already overburdened service provision partly explain this increase in the number of blind children in the continent. It should also be emphasised that the prevalence of overall visual impairment in Africa is much greater, since for every blind child there are also many more who suffer impaired vision (see Definitions).

Accurate estimations for the prevalence rates of child blindness in Africa are difficult to obtain. This is mainly because of the larger population samples required for estimating blindness and low vision in children at national or sub-national levels. These large-scale prevalence surveys are also extremely expensive. As a result, prevalence surveys are therefore most frequently designed using smaller sample sizes and are consequently, less accurate (Bowman 2005: 1037). Furthermore, the surveys that are undertaken in many African countries do not include all children, particularly those who live in residential care or are separated from their families (Chandna and Gilbert 2010). Many children with blindness and impaired vision remain ‘hidden’ in communities for a range of complex reasons. Under-five mortality rates for

### TABLE 2.1: ESTIMATES OF THE NUMBER OF BLIND CHILDREN WORLDWIDE IN 2010

<table>
<thead>
<tr>
<th>REGION/COUNTRY</th>
<th>2010 ESTIMATE</th>
<th>PERCENTAGE OF CHANGE BETWEEN 1999 AND 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Child population (millions)</td>
<td>Number of blind children</td>
</tr>
<tr>
<td>Lower in 2010 than in 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>340</td>
<td>116,000</td>
</tr>
<tr>
<td>Other Asia and Islands</td>
<td>266</td>
<td>136,000</td>
</tr>
<tr>
<td>EME* + FSE*</td>
<td>244</td>
<td>70,000</td>
</tr>
<tr>
<td>Latin America and Caribbean</td>
<td>170</td>
<td>71,000</td>
</tr>
<tr>
<td>Not much change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle East Crescent</td>
<td>241</td>
<td>168,000</td>
</tr>
<tr>
<td>India</td>
<td>345</td>
<td>280,000</td>
</tr>
<tr>
<td>Higher in 2010 than in 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>274</td>
<td>419,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1,880</td>
<td>1,260,000</td>
</tr>
</tbody>
</table>

Source: Chandna and Gilbert 2010

---

*EME = established market economies; FSE = former socialist economies. These regions have been combined, as some countries were re-designated between 1999 and 2010.
2.2 CAUSES OF BLINDNESS

There are several factors, many of them avoidable, that cause childhood blindness. The main causes of childhood blindness include (Gilbert and Muhit 2008):

- Scarring of the cornea associated with neonatal eye infections, Vitamin A deficiency and measles
- Trachoma caused by repeated infections in areas with poor access to water, sanitation and health care services
- Cataracts, which may be congenital or acquired later in life through infection, trauma or metabolic disease.
- Retinopathy of prematurity - damage to the retina in premature babies
- Glaucoma - cloudiness, sensitivity and loss of sight caused by pressure on the optic nerve.

2.2.1 Scarring of the cornea due to measles and vitamin A deficiency

Measles and vitamin-A deficiency are significant causes of child blindness in Africa. Within the continent as a whole, clinical and sub-clinical deficiency in vitamin A is ubiquitous in parts of nearly every country, except in Mauritius and the Seychelles (Lewallen and Courtright 2001; McLaren and Frigg 2001). The underlying cause of the deficiency are diverse and include ecological and economic factors that make production and access to vitamin A rich foods difficult; poor coverage of vitamin A supplementation; poor infrastructure for transporting and preserving food; national and international policies that promote cash cropping, with the consequence that food is grown for sale rather than for consumption; poor land rights or lack of access to land and political instability and civil-war which limits social mobility. Other social and cultural reasons relate to poor dietary habits, poor breastfeeding practices, and large family sizes (Gilbert 2007: 1340). As a result of diarrhoea and febrile illnesses, including measles, individual children can quickly develop acute, blinding xerophthalmia (ibid).

In a study carried out in Democratic Republic of the Congo, 81 children less than 16 years of age (from schools for the blind in Kinshasa) were examined and two-thirds of them were blind, 13 per cent visually impaired while 25 per cent were not impaired (Knapp et al 2007). Most suffered from corneal opacity (20 per cent) and others from phthisis bulbi (15 per cent), refractive anomalies (11 per cent), optic nerve damage (9 per cent),
FIGURE 2.1: GEOGRAPHICAL DISTRIBUTION OF CHILDHOOD BLINDNESS IN AFRICA

GAMBIA
Prevalence of Blindness
Cataract 0.6%
Uncorrected refractive error 0.7%
Onchocerciasis 1.5%
Trachoma 5.2%

CAMEROON
Prevalence of Blindness
Cataract 1.2%
Glucoma 49.9%
Uncorrected refractive error 5.2%
Trachoma 7.8%
ARMD 11.5%

ETHIOPIA
Prevalence of Blindness
Cataract 1.6%
Glucoma 49.9%
Uncorrected refractive error 5.2%
Trachoma 7.8%
ARMD 4.8%

SOUTH SUDAN
Prevalence of Blindness
Cataract 1.6%
Trachoma 30%

TANZANIA
Prevalence of Blindness
Cataract 1.0%
Uncorrected refractive error 20 – 63.6%
Trachoma Average 25.4%
Advanced Trachoma average 2.7%

SENEGAL
Prevalence of Blindness
Cataract 6.8%
Glucoma 54.7%
Uncorrected refractive error 7.3%
Onchocerciasis 1.0%
Trachoma 9.4%
Diabetic retinopathy 0%
ARMD 0%

MALI
Prevalence of Blindness
Cataract 6.3%
Glucoma 56.8%
Uncorrected refractive error 11.3%
Onchocerciasis 4.7%
Trachoma 2.8%
Diabetic retinopathy 0%
ARMD 0%

GHANA
Prevalence of Blindness
Cataract 3.6%
Glucoma 20.6%
Uncorrected refractive error 4.7%
Onchocerciasis 0%
Trachoma 0.14 – 2.8%
Diabetic retinopathy 0.9%
ARMD 0.9%

SOUTH AFRICA
Prevalence of Blindness
Cataract 0.75%
Glucoma 14%

Botswana
Prevalence of Blindness
Cataract 3.6%
Glucoma 50%
Uncorrected refractive error 15%
Trachoma 15%
Diabetic retinopathy 8%

GHANA
Unofficial
Prevalence of Blindness
Cataract 3.6%
Glucoma 20.6%
Uncorrected refractive error 4.7%
Onchocerciasis 0%
Trachoma 0.14 – 2.8%
Diabetic retinopathy 0.9%
ARMD 0.9%

ZAMBIA
Prevalence of Blindness
Cataract 3.6%
Glucoma 50%
Uncorrected refractive error 15%
Trachoma 15%
Diabetic retinopathy 8%

BOTSWANA
Prevalence of Blindness
Cataract 3.69%
Glucoma 46%
Uncorrected refractive error 6.2%
Trachoma 20%
Diabetic retinopathy 0%
retinal disorders (8 per cent), glaucoma/buphthalmos (8 per cent), cataract (7 per cent), microphthalmos (4 per cent), vitreous opacity (3 per cent) and aphakia (2 per cent). Trauma, measles, vitamin A deficiency and the use of traditional medicines were presumed to be the causes of corneal scarring and of resultant phthisis bulbi. Of the above cases of childhood blindness, 60 per cent could have been prevented (53 per cent) or treated with surgery (6.9 per cent).

Child blindness as a result of measles and Vitamin A deficiency can be prevented. It is estimated that Vitamin A supplementation programmes have prevented over one million child deaths since 1998, and the number of children with clinical and sub-clinical vitamin A deficiency has declined dramatically over the past decade. Measles deaths have also declined as a result of increased coverage with measles immunisation as part of the expanded programme of immunisation, with an estimated 1.47 million deaths prevented since 1997 in Africa (Gilbert and Foster: 2001). Other effective public health interventions include community-based screening and referral systems in place with treatment and rehabilitation services available for these children.

A study in Tanzania showed that vitamin A supplementation and immunisation against measles had a positive effect on the status of child eye health. The details of the case study indicate that among 95,040 children surveyed in 72 villages in Kilimanjaro, 13 children were blind and three out of the 13 children were found in schools for the blind, suggesting that the rate of blindness for the survey area to be around 0.17 per 1000 children (Shirima, Lewallen and Kabona 2009). Furthermore, no vitamin A or measles related corneal blindness was identified. These results demonstrate the effectiveness of vitamin A supplements and immunisation against measles. The study further showed the importance of community-based approaches in identifying children with sight difficulties and establishing comprehensive programmes on vitamin A supplementation and immunisation.

**2.2.2 Trachoma**

Trachoma is a chronic disease of the eye caused by ocular strains of the bacterium Chlamydia trachomatis. Trachoma commonly occurs in poor, overcrowded communities with poor access to safe water and adequate sanitation facilities. Trachoma is still a major cause of children’s vision impairment in many parts of Africa. Evidence reported from Nigeria and Ethiopia provides information of the extent and severity of the problem.

A study in Nigeria found a trachoma prevalence rate of 43 per cent among children with an infection rate of 21 per cent (Abdou et al 2006). Children between the ages of 3-5 were strongly associated with infection in contrast to younger children between 1 and 2 years old. Children with unclean faces were three times more likely to have trachoma. The prevalence of trachoma in some rural communities can be even higher. Seventy two per cent of children between 3-9 years in another study in Ethiopia had active trachoma and 20 per cent of the children aged under-nine had corneal scarring (Cumberland, Hailu and Todd 2005).

WHO recommends the SAFE strategy which requires four strategies to be implemented to effectively eliminate Trachoma. These include: *surgery* to treat inward growing of eye lashes (trichiasis); *antibiotics* to treat the infection; *face washing* and, *environment* in terms of enhancing access to clean water and adequate sanitation facilities. This approach reinforces inter sectoral collaboration where different sectors including health, water and sanitation and the environment must all work together to achieve the elimination of Trachoma.

The studies conducted in Ethiopia and Nigeria showed that healthcare education programmes, washing, clean environment and hygienic disposal of excrement were identified as important factors in minimizing risk of infection.

**BOX 2.1: RAPID PROGRESS AGAINST TRACHOMA: THE MOROCCAN EXPERIENCE**

Morocco set up the National Blindness Control Programme in partnership with a number of international and local non-governmental organisations (NGOs) and bilateral and multilateral agencies. The programme involved five government divisions responsible for health, education, employment, equipment, and water.

Between 1997 and 1999, the government incorporated the SAFE strategy into the National Blindness Control Program. Mobile teams performed simple, inexpensive surgeries, some 3 million doses of the antibiotic azithromycin were distributed, and health education efforts promoting safe washing and hygiene were conducted, latrines constructed and safe drinking water supplied. Access to potable water increased from 13 per cent of all rural communities in 1992 to 60 per cent in 2000.

(Continued overleaf)
2.2.3 Glaucoma

Glaucoma is the general term used for a group of similar eye diseases. In primary open angle glaucoma, the channels that drain fluid within the eye become blocked, causing the pressure within the eye to rise. It causes gradual loss of vision. The prevalence of glaucoma in East, Central, and Southern Africa can be conservatively estimated to be 10,000 people for every 1 million population. This prevalence may be higher in West Africa. The annual incidence of glaucoma can be conservatively estimated to be 400 new cases for every 1 million population. Glaucoma is the second leading cause of blindness after cataracts, responsible for up to 30% of blindness (Cook 2009).

There are significant challenges to treating glaucoma. There are inadequate effective screening tests for community workers to identify glaucoma in children’s eyes (Bowman and Kirupananthan 2006). Community outreach workers can however be trained to measure intraocular pressure and to do risk assessments. The suggested approach is that once refractive errors have been corrected through spectacles, and cataracts have been surgically dealt with, all remaining patients with poor vision could be thoroughly assessed for other disorders, including glaucoma which is difficult to detect. This approach is the most practical way of treating the condition in Africa. Furthermore, experts believe that surgery is more effective in dealing with glaucoma in Africa than prolonged drug treatment because of poor compliance (Bowman and Kirupananthan 2006). Treatment can also include Goniotomy which is a relatively common surgical operation conducted in East Africa. The operation is critical to enhance visual acuity. For example, the outcome of Goniotomy performed on 80 children across all ages and there was an 88 per cent improvement in their visual acuity.

Early detection of glaucoma therefore is an important component of sight preservation. Successful techniques and mass screening attempts for glaucoma are areas that require significant investment in research into which method will work most effectively for sub-Saharan Africa. Health personnel also require training and patients need to be made aware of the symptoms.

2.2.4 Cataracts

Cataracts have been identified as the leading cause of blindness in Africa. Although corneal blindness was the most common cause of childhood blindness in sub-Saharan Africa due to vitamin A deficiencies and measles, there is recent evidence that shows cataract are now increasingly becoming the leading cause of childhood blindness in the same region (Bowman 2005; Ezefwui et al 2003).

For example, of the hundreds of eye operations undertaken for children over a two-year period in Dar es Salaam, Tanzania, very few patients had corneal scarring due to vitamin A deficiency (Bowman 2005: 1037). This most likely attributed to the implementation of immunisation and vitamin A supplement programmes being carried out in Tanzania. Furthermore, it is estimated that in Tanzania about 1500 children are born every year with congenital cataract (Bronsard et al 2008) and only 20 per cent of children were operated upon. This small percentage however marked a three-fold increase in previous percentages of surgery for children and was made possible through interventions to help increase earlier presentation and uptake of surgery. In one study involving 178 children with cataract, the average delay between recognition of the problem and presentation was almost three years (Bronsard et al., 2008:384, Muhit and Gilbert 2003). This evidence highlights that managing childhood blindness in Africa requires both clinical treatment interventions as well public health and nutrition (Bowman 2005: 1037).

‘Congenital cataract’ is the development of lens opacity from birth, or soon afterwards. To develop...
normal full optic function, the eye requires visual stimulation in the infant and young child. It is therefore imperative that young children with cataract are treated early with surgery. When young children have congenital cataracts and delay surgery, they characteristically develop a ‘lazy eye’ (amblyopia) and vision development is permanently impaired. Congenitally acquired rubella is a potentially preventable cause of cataracts. ‘Developmental cataract’ occurs when lens opacity develops in a child after the age of two years. Here the child’s eyes and their visual capacities have had a chance to develop. There has been little research on the reasons for low coverage of operations and for the characteristic delay in presentation to health personnel (Brossard et al., 2008: 383).

Successful treatment of cataract requires multi-faceted interventions including: training of health personnel caring for new-born infants to recognise these eye diseases; easy and quick referral mechanisms to specialists; training of eye specialists in the assessment, surgery, and long term management of these children; support services including paediatric anaesthesia, orthotics, optometry, low vision specialists, and counsellors. For example, ORBIS partners with the provincial government in KwaZulu Natal, South Africa, at the Inkosi Albert Luthuli Hospital and has strengthened the paediatric service with the supply of equipment, establishing a child-friendly environment and training the ophthalmic team. Staff include a paediatric specialist Ophthalmologist, an optometrist and a Child Blindness Coordinator. This has led to not only an increase in the number of children treated but there has been a 100 per cent improvement in follow-up with patients. A similar programme has also been initiated in Zambia’s copper belt region at Kitwe Central hospital which has also showed a success.

Sustainable and effective treatment for cataracts is early detection and early removal. In order to achieve this, it is critical to have programmes that address community awareness and education that promote health service seeking behaviours. Caregivers should know the referral mechanisms and the available services - the referral pathway within the health system. Generally, there is limited public awareness on symptoms of cataract. In a study conducted on 117 caregivers (mostly mothers of children with cataract) at the Kilimanjaro Christian Medical College Hospital in Moshi, Tanzania, only five of them (about four per cent) were able to identify cataract in the child under their care when they first noticed the condition. Most caregivers were surprised when they discovered that their child had cataract, as it was a condition they mainly associated with old age.

Socio-cultural barriers to timely presentation of a child’s cataract condition on the part of the family and community, as well as socio-organisational barriers at the level of health institutions have been investigated. First, it was noted that exposure to light was generally thought to be detrimental to young infants and this could be a contributing cause of temporary blindness in young children. Second, many caregivers expressed fears around surgery and hospitals and worry about the time required in accompanying a child to a hospital. Even when parents received diagnoses from a health professional and advised that a surgery is a necessity for their children, many sought other treatment modalities including harmful traditional practices. Third, there are also several service delivery related problems that prohibit treatment seeking behaviour. Extremely busy health professionals at overcrowded and overburdened rural health facilities often misdiagnose children’s sight problems or do not see their urgency. For example, among children who had developed cataract in Tanzania, 13 per cent of them were sent home with drops, vitamins, or nothing at all during their first visits. Failing to provide a correct diagnosis sometimes delayed surgery for some years, in a few cases.

Follow-up treatment is the other major challenge in the context of many African countries. Mothers and caregivers find it difficult to make appropriate arrangements for child care of other children at home while she accompanies her child to a hospital. Even in cases where the hospital provided funding to cover the costs of surgery and transport, other hidden costs to families are difficult to overcome, limiting access.

‘It is very hard to come to [the hospital]... We have to walk a very long distance, and with young children, it’s hard. I have a problem with financing that: We looked for people to help us but we could not get help. My daughter looked miserable, she was not happy. Then we decided to sell our cow so as to get money. ...It was hard to find someone to take care of the other child. Despite the fact that there is my mother in law, I don't think she can take care of him the way I do. I am worried.’
Detailed ethnographic studies have provided an understanding of the ways in which poor people often make decisions on using health services, influenced by competing priorities and limited resources (Bronsard et al., 2008:386-387).

2.2.5 Other causes

Other causes of blindness include ‘river blindness’ or onchocerciasis which is prevalent in a number of countries across Africa, stretching from Senegal in western Africa to Ethiopia in eastern Africa, and southwards to Malawi. Blinding onchocerciasis is mainly limited to West Africa. Almost all people who are blind as a result of onchocerciasis are living in Africa.

Furthermore, between 20 and 50 per cent of monocular blindness is caused through trauma. Children and young adults, the majority of whom are male, suffer injuries that lead to blindness in one eye. These injuries are sometimes inflicted through stones, sticks or metal objects (Abraham, Vitale and West et al 1999). Trauma in a small percentage of cases leads to blindness in both eyes.

A high proportion of people in Africa also suffer from eye problems caused due to use of traditional eye medicine, some of which may lead to the delay of appropriate medical treatment and may worsen the condition of the eyes (Lewallen and Courtright 2001; Mselle 1998).

BOX 2.2: PREVENTION AND TREATMENT OF REFRACTIVE ERRORS

Blindness represents the extreme end of visual impairment. About 20% of the population in general require refractive error services which can be integrated into blindness control programmes. With large number of people in rural Africa living without any form of health care, minor refractive errors can become major learning impediment for children. This calls for provision of comprehensive PHC services to provide:

- Screening for near sightedness and distorted vision among children.
- Primary prevention through education, face washing and hygiene education.
- Affordable spectacle provision services.

The services above can be provided by frontline health workers and non-health staff including teachers and other Community Resource persons. Experiences from Western Cape South Africa and India Show that these services can successfully be integrated into PHC services.

This approach was discussed and endorsed by the 8th Congress of the International Association for the Prevention of Blindness (IAPB).

2.3 AVAILABILITY OF HEALTH SERVICES FOR EYE DISEASES

WHO recommends one paediatric ophthalmic centre/child eye health tertiary facility (CEHTF) per ten million population as a minimum level of service to address children’s needs. Sub-Saharan Africa is grossly under-serviced with just 26 centres located across 11 of the 48 countries (see Table 2.3). An ORBIS report on Planning for Comprehensive Child Eye Health Care in sub-Saharan Africa (2011) provides an overview of current services available in the region as well as implications and need to upscale services in the region and to consolidate existing ophthalmologic centres. National strategies for eye services are influenced by a number of country-specific factors and the challenges and benchmarks for each differ. For example, in the Democratic Republic of Congo (DRC), which covers a landmass the size of Western Europe, the costs of establishing adequate eye services are immense. The number of health services will also be determined by the population sizes of countries which vary considerably. Population sizes of African countries range from 86,000 in Seychelles to an estimated 145 million in Nigeria (PRB 2010).6

Table 2.3 shows the number of Child Eye Health Treatment Facilities (CEHTF) available by sub-regions of Africa in comparison with the population sizes and the required number of such facilities in

Sources: Naidoo and Ravila 2007; Auckland 2009

1The 11 countries hosting the 24 CEHTFs are Nigeria (with 7 centres), Kenya (4), Tanzania (2), Uganda (3), South Africa (2), Malawi (1), Ghana (1), Sudan (1), DRC (1), Mali (1) and Ethiopia (1).

6From WHO 2009; accessed on the WHO website on 2.05.2011
of skilled professionals (see Figure 2.2 on page 14). It is also closely associated with the fact that the health care system does not place eye health as a high priority.

Another factor that further exacerbates the longer-term capacity constraints for health services for eye diseases in Africa has been the development of parallel structures and services provided by NGOs and the demands by donors for quick-impact responses.

The inequitable distribution of specialists, largely skewed to urban areas is also a factor. For example, in Cameroon 80 per cent of the ophthalmologists are located in 2 out of the 10 Provinces. In Ethiopia the majority of the ophthalmologists are in Addis Ababa and has led to the development of new cadres of specialist cataract surgeons. The limited outreach of these surgeons is being questioned from a public health perspective. South Africa has 270 ophthalmologists, of which only 54 are in the public sector that serves 80 per cent of the population (ORBIS 2011). In most countries in Africa, there is a growing discrepancy between limited capacity to address the larger public health needs in rural areas and addressing those in urban centres (Lewallen and Courtright 2001). Generally the problems of eye health are far greater in remote communities but the problem is exacerbated by a lack of access to care due to inadequate infrastructure and human resource capacity (ibid).

There are shortfalls in all cadres required to support surgical eye care for children. Based on the indicators, existence of a paediatric ophthalmologist shows that in fact, that there are many countries, which have no capacity to deliver specialist surgical services to children. In several countries child eye care services are delivered at primary and secondary levels, but where these are provided, these are generally under-resourced and limited by inadequate human resource capacity, equipment and referral opportunities to tertiary level services.

### TABLE 2.3: CHILD EYE HEALTH TREATMENT FACILITIES (CEHTF) IN VARIOUS SUB-REGIONS OF AFRICA BY POPULATION SIZE

<table>
<thead>
<tr>
<th>Population/Child Eye Health Treatment Facilities (CEHTF)</th>
<th>Sub-Saharan Africa</th>
<th>Southern Africa</th>
<th>East Africa</th>
<th>West Africa</th>
<th>Central Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population in millions</td>
<td>787</td>
<td>151</td>
<td>257</td>
<td>279</td>
<td>99</td>
</tr>
<tr>
<td>Number of countries within region</td>
<td>48</td>
<td>13</td>
<td>11</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Number of CEHTFs in place</td>
<td>26</td>
<td>4</td>
<td>12</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Projected number of CEHTFs needed by 2020 based on country population numbers</td>
<td>79</td>
<td>15</td>
<td>26</td>
<td>28</td>
<td>10</td>
</tr>
<tr>
<td>Number of countries which do not qualify for CEHTF</td>
<td>21</td>
<td>6</td>
<td>3</td>
<td>7</td>
<td>5</td>
</tr>
</tbody>
</table>

Sources: WHO 2009; ORBIS 2011

### TABLE 2.4: SUMMARY TABLE ON THE NUMBER AND TYPE OF TERTIARY CHILD EYE HEALTH FACILITIES BY CHILD POPULATION IN SELECTED COUNTRIES

<table>
<thead>
<tr>
<th>Country</th>
<th>No of Child Eye Health Tertiary Facilities (CEHTF)</th>
<th>Child population (in millions) 2010</th>
<th>No of Government Facilities</th>
<th>No of facilities with a Paediatric Ophthalmologist</th>
<th>Facilities run by non-government agencies (NGO, CSO, Private etc)</th>
<th>Ratio of Public Child Eye Health facilities per child population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethiopia</td>
<td>3</td>
<td>40.4</td>
<td>3</td>
<td>1</td>
<td>Few private eye clinics in the capital city that provide the service</td>
<td>1 per 13.5 million children</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>11</td>
<td>55.9</td>
<td>2</td>
<td>11</td>
<td>9</td>
<td>1 per 5 million children</td>
</tr>
<tr>
<td>Nepal</td>
<td>8</td>
<td>12.9</td>
<td>0</td>
<td>5</td>
<td>8</td>
<td>1 per 1.6 million children</td>
</tr>
<tr>
<td>India</td>
<td>33</td>
<td>447.3</td>
<td>2</td>
<td>32</td>
<td>31 private and NGO eye clinics in the capital city</td>
<td>1 per 13.6 million children</td>
</tr>
</tbody>
</table>

Source: ORBIS 2011
### FIGURE 2.2: NUMBER OF OPHTHALMOLOGISTS IN AFRICA BY COUNTRY

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Ophthalmologists</th>
<th>Total Non-Ophthalmologists</th>
<th>Total Population (WHO 2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERITREA</td>
<td>6</td>
<td>66460</td>
<td>4692000</td>
</tr>
<tr>
<td>DJIBOUTI</td>
<td>1</td>
<td>84100</td>
<td>819000</td>
</tr>
<tr>
<td>SOMALIA</td>
<td>1</td>
<td>62900</td>
<td>81021000</td>
</tr>
<tr>
<td>ETHIOPIA</td>
<td>12</td>
<td>31500</td>
<td>7015000</td>
</tr>
<tr>
<td>SUDAN</td>
<td>12</td>
<td>44500</td>
<td>37707000</td>
</tr>
<tr>
<td>South Sudan</td>
<td>12</td>
<td>132440</td>
<td>37707000</td>
</tr>
<tr>
<td>EQUATORIAL GUINEA</td>
<td>1</td>
<td>87600</td>
<td>181000</td>
</tr>
<tr>
<td>CONGO</td>
<td>1</td>
<td>49600</td>
<td>1891000</td>
</tr>
<tr>
<td>CAMEROON</td>
<td>1</td>
<td>27800</td>
<td>1817500</td>
</tr>
<tr>
<td>Gabon</td>
<td>1</td>
<td>48700</td>
<td>1311000</td>
</tr>
<tr>
<td>Central African Republic</td>
<td>1</td>
<td>14800</td>
<td>1311000</td>
</tr>
<tr>
<td>Democratic Republic of Congo</td>
<td>1</td>
<td>48700</td>
<td>60644000</td>
</tr>
<tr>
<td>TANZANIA</td>
<td>1</td>
<td>42300</td>
<td>7015000</td>
</tr>
<tr>
<td>Kenya</td>
<td>1</td>
<td>81600</td>
<td>86000</td>
</tr>
<tr>
<td>Uganda</td>
<td>1</td>
<td>60900</td>
<td>86000</td>
</tr>
<tr>
<td>Rwanda</td>
<td>1</td>
<td>129700</td>
<td>86000</td>
</tr>
<tr>
<td>Burundi</td>
<td>1</td>
<td>129700</td>
<td>86000</td>
</tr>
<tr>
<td>Cabinda (Province of Angola)</td>
<td>1</td>
<td>64200</td>
<td>3689000</td>
</tr>
<tr>
<td>Democratic Republic of Congo</td>
<td>1</td>
<td>27300</td>
<td>1311000</td>
</tr>
<tr>
<td>Tanzania</td>
<td>1</td>
<td>48200</td>
<td>7015000</td>
</tr>
<tr>
<td>Rwanda</td>
<td>1</td>
<td>129700</td>
<td>86000</td>
</tr>
<tr>
<td>Burundi</td>
<td>1</td>
<td>129700</td>
<td>86000</td>
</tr>
<tr>
<td>Cabinda (Province of Angola)</td>
<td>1</td>
<td>64200</td>
<td>3689000</td>
</tr>
<tr>
<td>Democratic Republic of Congo</td>
<td>1</td>
<td>27300</td>
<td>1311000</td>
</tr>
<tr>
<td>Tanzania</td>
<td>1</td>
<td>48200</td>
<td>7015000</td>
</tr>
<tr>
<td>Rwanda</td>
<td>1</td>
<td>129700</td>
<td>86000</td>
</tr>
<tr>
<td>Burundi</td>
<td>1</td>
<td>129700</td>
<td>86000</td>
</tr>
<tr>
<td>Cabinda (Province of Angola)</td>
<td>1</td>
<td>64200</td>
<td>3689000</td>
</tr>
<tr>
<td>Democratic Republic of Congo</td>
<td>1</td>
<td>27300</td>
<td>1311000</td>
</tr>
<tr>
<td>Tanzania</td>
<td>1</td>
<td>48200</td>
<td>7015000</td>
</tr>
<tr>
<td>Rwanda</td>
<td>1</td>
<td>129700</td>
<td>86000</td>
</tr>
<tr>
<td>Burundi</td>
<td>1</td>
<td>129700</td>
<td>86000</td>
</tr>
<tr>
<td>Cabinda (Province of Angola)</td>
<td>1</td>
<td>64200</td>
<td>3689000</td>
</tr>
<tr>
<td>Democratic Republic of Congo</td>
<td>1</td>
<td>27300</td>
<td>1311000</td>
</tr>
<tr>
<td>Tanzania</td>
<td>1</td>
<td>48200</td>
<td>7015000</td>
</tr>
<tr>
<td>Rwanda</td>
<td>1</td>
<td>129700</td>
<td>86000</td>
</tr>
<tr>
<td>Burundi</td>
<td>1</td>
<td>129700</td>
<td>86000</td>
</tr>
<tr>
<td>Cabinda (Province of Angola)</td>
<td>1</td>
<td>64200</td>
<td>3689000</td>
</tr>
<tr>
<td>Democratic Republic of Congo</td>
<td>1</td>
<td>27300</td>
<td>1311000</td>
</tr>
<tr>
<td>Tanzania</td>
<td>1</td>
<td>48200</td>
<td>7015000</td>
</tr>
<tr>
<td>Rwanda</td>
<td>1</td>
<td>129700</td>
<td>86000</td>
</tr>
<tr>
<td>Burundi</td>
<td>1</td>
<td>129700</td>
<td>86000</td>
</tr>
</tbody>
</table>

**KEY**
- Countries with data
- Countries with no data
- 00 Total Ophthalmologists
- 00 Total Non-Ophthalmologists
- 00 Total Population (WHO 2009)
Human resource capacity for eye health is a significant constraint. Educational possibilities for training eye care specialists are limited in Africa; only 12 countries in Africa have training facilities for ophthalmologists (ORBIS Africa, 2011). This significant gap that exists has triggered the need for innovative human resources training and re-distribution of eye-health care knowledge and tasks among health service staff. There is therefore the need for training paediatric ophthalmologists not just in diagnosis, treatment and surgical interventions for eye disease in children, but also in other public health approaches including survey methods, needs assessments, data analysis, communication and social mobilisation and programmes designed to enable them to work with communities. Knowledge on eye health can be strengthened through studies from non-ophthalmologists - from the fields of epidemiology, anthropology, social work, health economics and management (Lewallen and Courtright 2008: 902). Comprehensive infrastructure development must be planned from primary to tertiary levels by government in collaboration with development partners. Planning for adequate services in eye health services must be informed by the geographic size of countries, the population size and distribution. Planning also needs to redress the emerging inequities in rural and urban areas and ensure that these are not further exacerbated.

2.4 BARRIERS AND RISKS TO THE UPTAKE OF SERVICES FOR EYE-HEALTH

There are very few studies which examine and explain the disparity between the large numbers of people who suffer from cataract and trichiasis and the low up-take for surgery for these conditions. Qualitative studies potentially could explain the nature and type of barriers, yet these studies are rare (Bowman 2005). The social studies that exist indicate the following as common barriers to the uptake of eye services: the cost of surgery, transport and living costs for children and their guardians while away from home; the long distances to travel to appropriate facilities; a lack of knowledge of possible services, and a lack of trust and understanding in the outcome of surgery. In one example from Malawi, parents who were illiterate were least likely to give permission for eye surgery for their children (Van Dijk and Courtright 2001). For many, hospitals are perceived as alienating places. The widespread availability of traditional health care can also undermine health service utilisation.

Other cultural and social factors may also affect parents’ health seeking behaviour. Parents may be unaware of the problem if children do not complain. There is also a widespread perception that congenital blindness cannot be cured, a belief that many people associate the affliction is a result of bewitchment by the ancestors. In many parts of Africa an illness, or afflictions such as blindness, are not attributed solely to a physical cause but are often interpreted as indicating social disharmony (Henderson 2011; Geschiere 1997). Local perceptions and understanding of causation generally include the following:

- blindness was sometimes caused by supernatural means or bewitchment, because a malevolent person had ‘pointed a finger at someone’s eye’;
- river blindness (onchocerciasis), which is locally called narun, was said to enter the body through wading in water or through dust particles disturbed while sweeping;
- excessive sweat in the eyes of farmers from working on agricultural lands could cause blindness and germs or kokoro, said to live naturally in the body were prone to travelling about, eventually settling in the eyes and
- Violation of pregnancy taboos on the part of a mother could also lead to eye diseases in an unborn child.

Therefore, knowledge and an understanding of local contexts, perceptions and beliefs would assist public health specialists in overcoming some of these barriers in the design of public health interventions for eye-care and treatment, particularly for children. People’s distrust of services also underscores the need for improving and building trust with the people whom practitioners serve.

Community education not only needs to include general awareness and education on the risks, signs and symptoms of eye-disease, and health services available, it also needs to consider the cultural beliefs and societal myths that underpin eye conditions and treatments. Holistic community awareness and education could result in increased health seeking behaviours.

In conclusion, one in five blind children of the world live in sub-Saharan Africa. Most of the causes of child blindness in African are preventable and treatable. Child eye health related problems can be addressed through greater commitment and investment in the development of sustainable and accessible child eye care programmes by focusing on three broad areas: investment in human resource including the training of cadres of paediatric ophthalmologists and support personnel; infrastructure development to expand the service and enhance access; and public health research, including qualitative research to strengthen the effectiveness of the programmes in improving children’s eye health.
3.1 CHILD EYE HEALTH AND PUBLIC HEALTH POLICY

Over the last two decades, encouraging developments have occurred with respect to putting children’s rights on international, regional and national agenda (ACPF 2011). In particular, the adoption of the Convention on the Rights of the Child (CRC) in 1989, was a critical milestone in the promotion of child rights and wellbeing. The CRC has been instrumental in informing socio-economic policies to uphold the best interests of children, including in health. Article 24(1) of the Convention entitles children to the enjoyment of the highest attainable standard of health and access to facilities for the treatment of illness and rehabilitation of health. Governments are also obliged to strive to ensure that all children have access to such health care services. These provisions are relevant to justifying greater provision of child eye health services including health services for relating diseases that impact on childhood vision, such as measles. The CRC does not make adequate provisions for some issues pertinent to children in Africa which, among other things, include harmful practices and prevalence of traditional health practices which can potentially impact on child eye health. This necessitated the adoption of the African Charter on the Rights and Welfare of the Child in Nov 1999. The Charter basically adds some specific provisions relating to cultural issues that are distinctly different from the rest of the world that have a bearing on the wellbeing of children. For instance, the inclusion of a provision for protection against harmful practices (Art 21) is a good example in this regard.

These two child rights treaties are the main instruments for promoting children’s rights to health and particularly to child eye health which is an integral part of their growth, development and wellbeing. The major achievements following the adoption of these international and regional instruments were the significant increase in access to health and education services which have contributed to a considerable reduction in child morbidity and mortality as well as in remarkable enrolment to primary and secondary education in most African countries (ACPF 2011; 2008). Even countries with extremely high child mortality like Sierra Leone, Niger and Liberia have made remarkable progress in this respect (see Chart 3.1).

However, there are many remaining challenges that impede further improvement of the health situation of children in Africa. Millions of children still die of preventable causes and many encounter disabilities including visual impairment and blindness due to preventable causes. Marginalised groups are especially at a higher risk of experiencing health problems including eye health problems, particularly among children.

### CHART 3.1: UNDER-FIVE MORTALITY PERCENTAGE DECLINE IN SELECTED COUNTRIES 1990 - 2010

Source: Based on data from UNICEF’s the State of the World’s Children Report 2012

3.2 THE BROADER GLOBAL POLICY ENVIRONMENT IMPACTING ON CHILD EYE HEALTH

In addition to the child rights instruments that legally bind governments to realise the rights enshrined in the treaties, there are several other Declarations, Plans of Action and agreements that shape policies relating to health and particularly child health. Historically, some of these international agreements and Declarations include: Alma Ata Declaration of 1978; the Structural
• Reduction in the proportion of households without access to hygienic sanitation facilities and affordable and safe drinking water by at least one third;
• Ensure full immunization of children under-one year of age at 90 per cent nationally and reduce deaths due to measles;
• Development and implementation of national early childhood development policies and programmes;
• Placing a special emphasis on prenatal and post-natal care, essential obstetric care and care for new-borns;
• Achieve sustainable elimination of iodine deficiency disorders and vitamin A deficiency;
• Accelerate progress towards reduction of other micronutrient deficiencies, through dietary diversification, food fortification and supplementation.

Other recent initiatives that have impacted on shaping present health policy include:
• establishment of global funds (GFATM, GAVI, etc.) that make huge resources available for key childhood killers (like malaria);
• UN Secretary General’s Global Strategy for Women’s and Children’s Health;
• increased emphasis on recognising people with disabilities as enshrined in the UN Convention on the rights of persons with disabilities (UNCRPD) article 25.

Specific health policies for Africa include the development of the Africa Health Strategy, a Nutrition Strategy, a Framework for child survival and a continent-wide Maternal, New-born and Child Health Roadmap. However, a common feature that characterises all of these global and regional policy instruments, especially in the African context, is limited implementation, mainly due to failure to allocate adequate human and financial resources in order to translate the policies into practice. Subsequent evaluations have proved that some of these policies did not get sufficient in resource prioritisation and were not effective in achieving the envisaged objectives.

3.3 HEALTH POLICIES DIRECTLY IMPACTING ON CHILD EYE HEALTH

Within the aforementioned broader policy frameworks, there are a number of health policies that directly impact on child eye health. These include the VISION 2020 – The Right to Sight,

VISION 2020 – The Right to Sight

In an effort to eliminate avoidable blindness and visual impairment by the year 2020, the World Health Organization (WHO) and the International Agency for the Prevention of Blindness (IAPB) launched a global initiative in 1999 – VISION 2020: The Right to Sight. The main objective of the initiative is to prevent avoidable blindness by integrating comprehensive and high-quality eye care services into national health-care systems. It aims to achieve its objective through integrated interventions that include technical support and advocacy worldwide using the vast networks of WHO and IAPB and several other member NGOs, professional associations, eye care institutions and corporations (Rao and Raman 2005; VISION 2020 website).

The VISION 2020 initiative also aims at increasing awareness among key actors who could help in eliminating the causes of avoidable blindness, identify and secure resources around the world in order to provide an increased level of activity in prevention, treatment and rehabilitation programmes and facilitate the planning, development, and implementation of the VISION 2020 strategic plan by national programmes. The initiative has been instrumental in leveraging global and national efforts to prevent avoidable blindness and visual impairment. The advocacy effort by international partners has also resulted in establishment of national prevention of blindness and eye health committees in more than a hundred WHO Member States and led to the development of national plans for prevention of blindness and improving eye health.

The 2009–2013 Action Plan

Following the request made by WHO Member States in 2008 for the development of an Action Plan to address the eye health agenda, the WHO Secretariat prepared a draft Action Plan for review and comments by all stakeholders. The draft benefited from the reflections and feedback of wide ranging players in the field including WHO Members States, the Executive Board of WHO, international partners, civil society and the general public through an open consultative process. The amended 2009–2013 Action Plan was endorsed by the 62nd World Health Assembly (WHA) as WHA Resolution 62.1 - Prevention of avoidable blindness and visual impairment.

The Action Plan was an important tool in promoting collective action as well as in providing a set of measures that need to be taken to enhance eye health including child eye health and prevent avoidable blindness especially among children who experience blindness and visual impairments due to preventable infections such as measles. It was a result of a global advocacy and builds on previous WHA Resolutions which focus on elimination of blinding trachoma and prevention of avoidable blindness and visual impairment. It is intended to complement the global strategy for the prevention and control of non-communicable diseases (see Box 3.1).

Development of the Global Action Plan 2014 - 2019 – Universal Access to Eye Health – is currently underway and it is expected to be adopted at the

BOX 3.1: THE 2009 – 2013 ACTION PLAN

**THE 2009 – 2013 ACTION PLAN FOR THE PREVENTION OF AVOIDABLE BLINDNESS AND VISUAL IMPAIRMENT**

The Action Plan for the prevention of avoidable blindness and visual impairment was developed to provide guidance for Member States, the Secretariat and International partners in order to scale up efforts for strengthening eye health in populations by developing comprehensive eye health programmes at national and sub-national levels. The Action Plan supports the implementation of WHO’s Eleventh General Programme of work 2008-2013 and the Medium-term Strategic Plan 2008-2013.

**Purpose of the Action Plan**

The Action Plan for the prevention of avoidable blindness and visual impairment is designed to:

- increase political and financial commitment to eliminating avoidable blindness:
- review international experience and share lessons learnt and best practices in implementing policies,

*Source: IAPB 2012b*
66th World Health Assembly in May 2013 (IAPB 2012b). The 2014–2019 Action Plan builds on the strengths of the 2009–2013 Action Plan and, as its predecessor, provides a global framework for action that contributes to the efforts to eliminate avoidable blindness and visual impairment as a major public health problem. It intends to do so by promoting integration of comprehensive and quality eye care services in the health system. The 2014–2019 Action Plan aims to sustain and expand efforts by Member States, the WHO’s Secretariat and international partners in further improving eye health at community and national levels.

According to the draft Action Plan, the objectives focus on three core areas: evidence-based advocacy for increased political and financial commitment of Member States and international financing agencies; development and implementation of integrated national eye health policies, plans and programmes, and multi-sectoral engagement and partnerships for eye health to share experiences and enhance implementation of the goals (WHO 2012).

The Hyderabad Declaration - The Right to Eye Health

A recent policy instrument for promoting eye health including paediatric eye care which potentially influences action and commitments for eye health is the Hyderabad Declaration - The Right to Eye Health. In September 2012, delegates and representatives of governments, international organisations, eye care professionals, researchers and the civil society from all over the world gathered in Hyderabad, India, to attend the 9th General Assembly of the International Agency for the Prevention of Blindness with a theme “Eye Health: Everyone’s Business”. The outcome of the Assembly, the Hyderabad Declaration on the Right to Eye Health urges all stakeholders, particularly governments, international organisations, regional entities, the civil society and the private sector to work together in addressing avoidable blindness and preventing visual impairment through:

- Targeted investment in eye health structures and human resource development.
- Mainstreaming eye health in national health systems
- Undertaking research to identify emerging eye health priorities and effective approaches
- Building and broadening alliances
- Implementing the WHO Global Action Plan 2014-2019 (See Box 3.2 overleaf)

The Millennium Development Goals

The other important development framework that impact on the health of children is the MDGs. As part of their development efforts, UN member states have pledged their support for the Millennium Declaration and to meet the MDGs by the year 2015. Six of these goals are directly related to children. The MDGs are closely linked to the major commitments made at the UN Special Session on Children and have been embraced by most African countries. The MDGs are serving as a reference framework in drafting national development plans and policies and setting national targets. They are also useful instruments for maintaining both focus and social pressure in implementing them through effective interventions. Child eye health is funda-
mentally linked to the achievement of the Millennium Development Goals, especially to the goals relating to universal primary education and reduction of child mortality (MDGs 2 and 4).

The experience over the last years have shown that when national effort to accelerate and scale up preventive and treatment procedures for eye health fall short, it has negative impact on the achievement of many, but specifically these two goals in education and child health. For example, approximately 90 per cent of visually impaired children in low-income countries are deprived of schooling, compromising the goal for universal access to primary education. Among many factors, lack of infrastructure, affordable health care, production of accessible and suitable school materials and qualified teachers prevent visually impaired children from attending school in many low income countries.

3.4 INVESTMENT IN EARLY CHILDHOOD DEVELOPMENT

Early childhood is the period when the foundations for health, development, cognitive skills and behaviour are laid. Deprivation during this period will have lasting and irreversible consequences on children. The early childhood years offer an unparalleled window of opportunity to exercise a positive and lasting influence on the health, intelligence, and future development of the individual child. Furthermore, evidence indicates that early childhood experiences shape brain architecture and affect physical and mental health and wellbeing later in life (Mustard, 2006).

In economic terms, early childhood development is the first step in the process of human capital development, with very high rates of economic return and significant social gains through its contribution to reducing poverty and inequality (UNESCO, 2000; Grantham-McGregor et al., 2007). No other health or education intervention has a higher rate of return in economic terms than early childhood programmes (see Figure 3.1).

We call on governments, professional bodies, civil society organisations and the private sector to:

- Strengthen cooperation, and align and harmonise the interventions in eye health with national prevention of blindness plans, embedded in national health strategies among children.
- Integrate eye health into primary health care by taking innovative approaches to strengthen local capacities and empowering communities to take ownership.
- Accelerate training of human resources for eye health with emphasis on training eye care teams focused on meeting community needs, and to establish systems to ensure their long-term engagement in the health workforce.
- Strengthen the existing public health infrastructure to provide eye health services in a sustainable manner including public-private partnerships.
- Join hands for completing the baseline mapping to understand the scope of the prevalence of Trachoma, and for scale-up of the full SAFE strategy in close coordination with the Neglected Tropical Diseases agenda.

Source: IAPB 2012b

Investment in child eye health is necessary to avoid the social and economic losses in terms of blind-years. Programmes on early childhood development should therefore be viewed not merely as vehicles for delivering badly needed social services, but as important elements of economic development strategy (Kilburn and Karoly, 2008). In view of its both short and long-term benefits, much more attention needs to be paid to early childhood development programmes, with a focus on infant and young child nutrition to encourage better feeding, along with the extension of proven methods of preventing and combating micronutrient deficiencies. In many cases, early childhood care and development (ECCD) services respond to young children's basic needs for

---

Box 3.2: Excerpt from the Hyderabad Declaration on the Right to Eye Health

We call on governments, professional bodies, civil society organisations and the private sector to:

- Strengthen cooperation, and align and harmonise the interventions in eye health with national prevention of blindness plans, embedded in national health strategies among children.
- Integrate eye health into primary health care by taking innovative approaches to strengthen local capacities and empowering communities to take ownership.
- Accelerate training of human resources for eye health with emphasis on training eye care teams focused on meeting community needs, and to establish systems to ensure their long-term engagement in the health workforce.
- Strengthen the existing public health infrastructure to provide eye health services in a sustainable manner including public-private partnerships.
- Join hands for completing the baseline mapping to understand the scope of the prevalence of Trachoma, and for scale-up of the full SAFE strategy in close coordination with the Neglected Tropical Diseases agenda.

Source: IAPB 2012b

Investment in child eye health is necessary to avoid the social and economic losses in terms of blind-years. Programmes on early childhood development should therefore be viewed not merely as vehicles for delivering badly needed social services, but as important elements of economic development strategy (Kilburn and Karoly, 2008). In view of its both short and long-term benefits, much more attention needs to be paid to early childhood development programmes, with a focus on infant and young child nutrition to encourage better feeding, along with the extension of proven methods of preventing and combating micronutrient deficiencies. In many cases, early childhood care and development (ECCD) services respond to young children’s basic needs for

---

Footnote:

7 Blind-years refers to the duration that a person will live with loss of sight and the total blind-years in a country is calculated by multiplying the number of blind persons by the average length of life lived into adulthood.
cognitive stimulation, early learning, nutrition, and basic health care.

Despite these compelling realities, most governments in Africa have not given due attention to ECCD and an overwhelming majority of children particularly those in rural areas and those living in poor households grow up without access to integrated ECCD programmes. Pre-school provides an opportune forum for the timely screening of visual impairments for referral and treatment. Most countries do not have any early childhood programmes and the budget for pre-primary education is less than one per cent of the total education budget (ACPF 2011). Government and non-government stakeholders in the realisation of the rights and wellbeing of children need to recognise the critical nature of early childhood, including the potential beneficial effects for preventing visual impairment and loss of sight, particularly for the poorest families.

3.5 NATIONAL BUDGETS, HEALTH EXPENDITURE AND HEALTH OUTCOMES

While laws, policies and institutions provide the overarching framework for action, the national budget is the concrete manifestation of commitment and the linchpin in the rhetoric-reality nexus. Without adequate resources, human rights conventions and national laws remain unfulfilled commitments. As noted earlier, the Abuja target of allocating 15 per cent of the national budget to the health sector is an important benchmark that has been established and that countries must strive towards.

In technical terms, a national budget is a document that shows government expenditure and revenue proposal, reflecting its policy priorities and fiscal targets (IBP, 2001). The budget is therefore at the heart of public policy and allows governments to implement their policy objectives in concrete terms (Ramkumar, 2008). It is ‘the financial mirror of society’s economic and social choices’ (Schiavo-Campo, 2007a). In the words of Trevor Manuel, former Minister of Finance of South Africa, “a budget is a synthesis of all government policies”. The budget is a barometer of commitment that objectively shows policy prioritisation (ACPF, 2009).

The share of the national budget that is allocated to health has important implications for the capacity of a country to address its health burden. There is a stark difference in commitment for health across countries in sub-Saharan Africa. While countries like Rwanda earmarked nearly a fifth of their national budget for health, Guinea allocated just less than two per cent for the sector (see Chart 3.2).

CHART 3.2: PERCENTAGE OF THE NATIONAL BUDGET SPENT ON HEALTH RELATED AREAS

<table>
<thead>
<tr>
<th>Country</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guinea</td>
<td>1.8</td>
</tr>
<tr>
<td>Nigeria</td>
<td>4.4</td>
</tr>
<tr>
<td>Egypt</td>
<td>5.7</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>6.4</td>
</tr>
<tr>
<td>Angola</td>
<td>7.2</td>
</tr>
<tr>
<td>Cameroon</td>
<td>8.5</td>
</tr>
<tr>
<td>Aimbabwe</td>
<td>8.9</td>
</tr>
<tr>
<td>Sudan</td>
<td>9.8</td>
</tr>
<tr>
<td>Swaziland</td>
<td>10</td>
</tr>
<tr>
<td>South Africa</td>
<td>11.9</td>
</tr>
<tr>
<td>Ghana</td>
<td>12.1</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>13.5</td>
</tr>
<tr>
<td>Zambia</td>
<td>15.6</td>
</tr>
<tr>
<td>Botswana</td>
<td>17</td>
</tr>
<tr>
<td>Rwanda</td>
<td>20.1</td>
</tr>
</tbody>
</table>

Source: WHO National Health Account 2012.
*Median value for Africa

As can be seen from the Table, Nigeria, a resource rich country spent only four per cent of its budget on health. But about 30 per cent of children in Nigeria do not have access to measles vaccine and have relatively higher risk to corneal scarring due to measles.

In general, the median expenditure on health out of the national budget for African countries was 10 per cent. This falls five points short of the 15 per cent allocation agreed by all African countries in 2001. Furthermore, the budget when expressed in percentage to the total national budget conceals some realities. For example it does not indicate in per capita expenditure terms. Per capita expenditure differed markedly. While countries like Equatorial Guinea spent USD 616, the Government of DRC spent just $1 per person per year. This analysis shows how the health sector is generally underfinanced across African countries and the challenges for ensuring children’s access to primary healthcare, let alone to tertiary and specialised services where treatment of children’s eye health is necessary to prevent or restore sight (WHO 2011).

*The most recent data from WHO’s National Health Accounts database for the year 2010 were used for the comparison.
It is well recognised that the analysis must go beyond budget expenditure and examine health services that have direct impact on child eye health such as immunisation against measles, antenatal care (ANC) and access to sanitation and potable water. While there is encouraging improvement in health outcomes over the last decades particularly since the introduction of the MDGs, analyses specifically on eye health outcomes have not been undertaken. This calls for greater commitment for research and data collection to analyse the impact of the various health policies with respect to eye health and its implication to the realisation of the rights and wellbeing of children.

Many of these programmes however continue to heavily depend on external funding. The experience from the recent economic crisis has shown the volatility of external funding and the importance of expanding domestic resource base to finance essential services such as immunisation. African governments need to see immunisation as an important economic investment and include these programmes in regular national budget.

The percentage of births attended by health workers is an indication of the level of access to health services. Delivery with the assistance of qualified health workers has several advantages both to the new-born and the mother and is an opportunity to detect eye health problem. In addition to facilitating referral process in cases of health risks and complications, easily treatable eye infections can be treated in time without causing long-term risks.

Notwithstanding the progress made to expand health services by African governments and its impact in reducing maternal and child health, four out of ten births are delivered without the assistance of qualified health workers in Africa (UNICEF 2012). There is also an enormous variation between countries with very low coverage (Ethiopia) to universal access (Mauritius). Furthermore, a significant difference was also noted by place of residence. For example, there is a ten-fold difference between rural and urban areas in Ethiopia. In Madagascar, Burkina Faso and many other African countries, there is a considerable inequality by place of residence, showing that children and mothers in rural areas are disadvantaged in this regard (UNICEF 2012; ACPF 2011).

Antenatal care (ANC) visits are also important in terms of early detection of complications, screening of infections and treatment. They have immense benefits in enhancing health status and survival of the child and the mother. Most countries in Africa have made impressive improvements in expanding ANC services.

Vitamin A deficiency has a direct impact on child eye health. Many African countries have achieved significant progress in Vitamin A supplementation (see Chart 3.4). Furthermore, access to clean water is essential for the prevention of eye diseases. Despite the overall effort to improve access to essential services, still three-fourths of the population in sub-Saharan Africa does not have access to adequate sanitation facilities and nearly 30 per cent of them do not use clean water for

**CHART 3.3: MEASLES IMMUNISATION COVERAGE FOR SELECTED COUNTRIES (2010)**

<table>
<thead>
<tr>
<th>Country</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seychelles</td>
<td>99</td>
</tr>
<tr>
<td>Eritrea</td>
<td>99</td>
</tr>
<tr>
<td>Morocco</td>
<td>98</td>
</tr>
<tr>
<td>Libya</td>
<td>98</td>
</tr>
<tr>
<td>Tunisia</td>
<td>97</td>
</tr>
<tr>
<td>Gambia</td>
<td>97</td>
</tr>
<tr>
<td>Egypt</td>
<td>97</td>
</tr>
<tr>
<td>Cape Verde</td>
<td>96</td>
</tr>
<tr>
<td>Algeria</td>
<td>96</td>
</tr>
<tr>
<td>Swaziland</td>
<td>95</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>94</td>
</tr>
<tr>
<td>Botswana</td>
<td>94</td>
</tr>
<tr>
<td>Malawi</td>
<td>94</td>
</tr>
<tr>
<td>Ghana</td>
<td>93</td>
</tr>
<tr>
<td>Tanzania</td>
<td>93</td>
</tr>
<tr>
<td>Sao Tome</td>
<td>92</td>
</tr>
<tr>
<td>Burundi</td>
<td>92</td>
</tr>
<tr>
<td>Angola</td>
<td>92</td>
</tr>
<tr>
<td>Zambia</td>
<td>91</td>
</tr>
<tr>
<td>Kenya</td>
<td>86</td>
</tr>
<tr>
<td>Lesotho</td>
<td>85</td>
</tr>
<tr>
<td>Djibouti</td>
<td>85</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>84</td>
</tr>
<tr>
<td>Togo</td>
<td>84</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>82</td>
</tr>
<tr>
<td>Rwanda</td>
<td>82</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>81</td>
</tr>
<tr>
<td>Cameroon</td>
<td>79</td>
</tr>
<tr>
<td>Congo</td>
<td>76</td>
</tr>
<tr>
<td>Namibia</td>
<td>75</td>
</tr>
<tr>
<td>Comoros</td>
<td>72</td>
</tr>
<tr>
<td>Nigeria</td>
<td>71</td>
</tr>
<tr>
<td>Niger</td>
<td>71</td>
</tr>
<tr>
<td>Mozambique</td>
<td>70</td>
</tr>
<tr>
<td>Cote d’Ivoire</td>
<td>70</td>
</tr>
<tr>
<td>Benin</td>
<td>69</td>
</tr>
<tr>
<td>DRC</td>
<td>68</td>
</tr>
<tr>
<td>Mauritania</td>
<td>67</td>
</tr>
<tr>
<td>Madagascar</td>
<td>67</td>
</tr>
<tr>
<td>South Africa</td>
<td>65</td>
</tr>
<tr>
<td>Liberia</td>
<td>64</td>
</tr>
<tr>
<td>Mali</td>
<td>63</td>
</tr>
<tr>
<td>G. Bissau</td>
<td>62</td>
</tr>
<tr>
<td>Senegal</td>
<td>61</td>
</tr>
<tr>
<td>Uganda</td>
<td>55</td>
</tr>
<tr>
<td>Gabon</td>
<td>55</td>
</tr>
<tr>
<td>Guinea</td>
<td>51</td>
</tr>
<tr>
<td>Eq. Guinea</td>
<td>51</td>
</tr>
<tr>
<td>Somalia</td>
<td>46</td>
</tr>
<tr>
<td>Chad</td>
<td>46</td>
</tr>
</tbody>
</table>

Source: Based on data from UNICEF’s the State of the World’s Children Report 2012
drinking. This has adverse health consequences including for child eye health.

In conclusion, these findings suggest that there are strong global and regional policy frameworks in place that promotes child health which has some relevance for child eye health. These strong policy frameworks however are not necessarily associated with adequate resources and capacity for responses and action at the national level, where significant gaps remain for implementation and achievement of the targeted objectives. The findings also indicate that there have been positive developments - specifically in improving access to measles immunisation, antenatal care services and Vitamin A supplementation - that have positively impacted on child eye health in Africa. However, there are many challenges that still remain as barriers to the promotion of child eye health. There are also several environmental factors that predispose children to higher risks for eye health such as inadequate access to clean water and sanitation and a lack of access or under-utilisation of services relating to eye care and treatment. There is a need for a concerted effort to put in place appropriate capacities and resources to enhance children’s access to integrated health services including to specialised treatment and rehabilitation for child eye care. Eye health care deserves explicit attention in health sector budgets to ensure that this is adequately resourced.

CHART 3.4: VITAMIN A SUPPLEMENTATION COVERAGE 6-59 MONTHS AFRICA SELECTED COUNTRIES, 2010

Source: Based on data from UNICEF’s the State of the World’s Children Report 2012
Effective child eye health care and treatment requires coordinated efforts in the areas of early detection of visual impairment, training of adequate human resources, establishment of a functional referral system for treatment, integration of child eye health as one component of the national programme for the management of childhood illnesses and the establishment of specialised centres in accordance with WHO recommendation to provide treatment to children who needed surgery to save sight. This is challenging to accomplish. This chapter aims to highlight some good practices from Africa in the area of child eye health. Given the limited case-studies available, this chapter also describes some theoretical frameworks useful for informing good practice.

4.1 INVESTING IN HUMAN RESOURCES

Human resource capacity is a critical component in child eye health care and treatment. This includes both clinical and non-clinical staff

BOX 4.1: ADDRESSING THE HUMAN RESOURCE CRISIS – THE TANZANIAN EXPERIENCE

The Kilimanjaro Christian Medical centre (KCMC) based Assistant Medical Officer – Ophthalmology (AMO’O) and Cataract Surgery (CS) School is part of the Allied Health Sciences School (AHSS) run by the Tanzanian Ministry of Health and Social Welfare (MoHSW). The AMO Ophthalmology School was inaugurated in 1976 and is the only institution in Tanzania providing this particular kind of eye care training. This school was established as part of a task-shifting approach to meet the human resource crisis in providing eye surgical care in the country.

The objectives of the AMO’O School are to enhance the competencies of the trainees in organising and running an ophthalmic unit at a district or region, organising and conducting outreach services and above all, performing cataract surgery. Out of the 132 districts in Tanzania, to date, 30 districts have capacities to ensure that early identification, prevention and treatment is achieved. The development of human resources capacity needs to address both the existing huge gap in skilled paediatric ophthalmology as well as the future demands by projecting potential service users based on child population. Coordinated efforts of government agencies responsible for health and higher education in collaboration with development partners and support from community-based organisations are required to develop effective strategies for human resource development (see the Case Study for Tanzania in Box 4.1).

Eye health care must be integrated into the health and other sectors. For example, Uganda has invested in the training of immunisation staff to examine, identify and refer eye problems during routine immunisation campaigns. Staff involved in the immunisation campaign engaged the mothers and guardians and raised awareness of children’s visual behaviour. This initiative has resulted in early detection of children who had sight problems and timely referral for appropriate treatment (Chandna and Gilbert 2010).

The government receives substantial support from the Sight Savers International (SSI) and the Good Samaritan Foundation (GSF). To date 132 students have been trained and are serving in various hospitals in Tanzania and neighbouring countries including Kenya, Uganda, Malawi, Zambia, Ethiopia and Eritrea. Currently there are 16 students training and there are plans to expand the school to meet a greater human resource demand by 2015.

AMO’O& CS training is carried out in the Department of Ophthalmology KCMC, supervised and supported by fully qualified ophthalmologists during the entire period of training, is now well-established and is contributing to Vision 2020 targets on development of midlevel eye personnel in the country.

Source: Assistant Medical Officer Ophthalmology and Cataract Surgery School (AMO School), Ministry of Health and Social Welfare, Tanzania
Non-clinical management or co-ordination staff are needed to strengthen treatment and follow-up. These centres need to be equipped with specialised equipment required for carrying out surgery in paediatric cataract, strabismus and glaucoma. Referral and follow up networks need to be established which link the tertiary centres to secondary level services (local hospitals and clinics) and with communities.

**4.2 ESTABLISHMENT OF COMPREHENSIVE HEALTH SYSTEM**

As illustrated in Figure 4.1, adequate services in eye health care imply a need to put in place services at primary, secondary and tertiary levels. Services at community and primary levels are critically important in the African context where majority of children live in rural communities where secondary and tertiary level health facilities are not accessible for many. Governments and other stakeholders need to invest to strengthen community and primary health care levels which address, among other things, effective educational outreach, preschool and general screening for sight impairment, the identification of refractive error in children, the recognition of vitamin A deficiency and the effective referral of difficult and complex paediatric cases to secondary level services.

Secondary level services, on the other hand, usually have the capacity to address simpler eye surgery needs and diagnose complex eye conditions and refer them to tertiary centres. Secondary level services should put in place mechanisms for long-term follow up of patients after tertiary treatment. At the level of tertiary, as defined in VISION 2020, there is a need to establish at least one CEHTF per 10 million inhabitants by 2020. Each centre requires a fully trained ophthalmic team such as a trained paediatric ophthalmologist and a support team comprising a paediatric anaesthetist, nurses, vision technologists and a manager/coordinator.

**FIGURE 4.1: PYRAMID OF SERVICE PROVISION TO CHILD EYE CARE AND TREATMENT**

In South Africa ORBIS together with the Provincial department of Health in KwaZulu Natal, is presently piloting the approach discussed above. In the province of KwaZulu the prevalence of childhood blindness is estimated at 0.47 per 1000 children. Almost a third of South Africa’s blind children reside in KZN, which has an estimated prevalence of blindness nearly twice that of the rest of the country. Phase 1 of the programme was the establishment of the tertiary facility (CEHTF) and training of the entire ophthalmic team, including the non-medical team. The training has been very well received and the addition of the Child eye health coordinator was most valuable, as he serves as the link between the community and the doctors.

The evaluation and monitoring of this has yielded positive results both from the patients and the doctors. Training was also provided at the Primary level to all Primary healthcare workers to ensure appropriate referrals are done. Therefore the sections of the pyramid shown in Figure 4.1 above are not exclusively separate to each other. Phase 2 and 3 of the programme will involve strengthening the referral system further and increasing awareness and education of care givers and other stakeholders at a community level. ORBIS together with relevant stakeholders carried out a midterm review of the programme and the results yielded that this approach is proving effective.

**BOX 4.2: ORBIS’s EXPERIENCE IN CAPACITY BUILDING IN KWAZULU NATAL, SOUTH AFRICA**

*Source: ORBIS Africa 2013*

- **COMMUNITY & PRIMARY SERVICES**
  - Outreach and community education
  - Pre-school and general screening
  - Refractive error
  - Recognition of Vitamin A deficiency
  - Swift referral of serious, complicated and unknown diseases

- **SECONDARY SERVICES**
  - Adult cataract surgery
  - Diagnosis of complex eye conditions
  - Efficient referral to tertiary
  - Long-term follow-up following tertiary treatment

- **TERTIARY SERVICES**
  Complex eye diseases such as retinoblastoma, glaucoma and paediatric cataract
Investing in adequate capacity at the community and primary level enables a much greater potential for prevention and for early diagnosis of child eye problems. For example, a checklist has been developed for healthcare workers at the level of community services (Chandna and Gilbert 2010; WHO 2002). The checklist is in line with WHO standards and recommendations and encourages interventions that include:

- specific eye-hygiene for newly born babies;
- the dosing of both mother and child with appropriate units of vitamin A at various intervals;
- immunisation of children against measles;
- the importance of keeping the faces of children clean; and
- the referral of children with eye discolouration or injury to appropriate health care practitioners and refraining from dosing eyes with traditional medicines.

Investing in early diagnosis and referral is critical to the effectiveness of eye health care system for children (see the Case Study from Zambia in Box 4.3).

**BOX 4.3: EARLY INTERVENTION KEY TO SUCCESSFUL TREATMENT OF A CHILD EYE PROBLEM IN ZAMBIA**

A paediatric service was set up in Kitwe Central hospital in the copper-belt region of Zambia in partnership with ORBIS. The Kitwe Paediatric Eye Care Centre, the only child focused eye care facility in Zambia where paediatric cataract, glaucoma, trachoma and conjunctivitis are all too prevalent opened on 12 September 2011. The programme included training of both the clinical and non-clinical staff and provision of appropriate equipment for diagnosis and treatment. The other important component of the programme relates to the creation of a child-friendly environment within the hospital and strong public education to improve awareness and enhance service seeking behaviour. These are supported by outreach activities that among other things focus on screening for any child eye health problem.

George Miti and his mother, Chalwe, met the Kitwe Paediatric Eye Care Centre’s outreach team when they were conducting screening near their village on the outskirts of Kitwe, Zambia. Chalwe explained to them that during previous weeks her son’s eyelids had suddenly swollen to such an extent that he could no longer open his eyes.

A paediatric service was set up in Kitwe Central. The outreach team, which focuses on educating communities on eye health, finding children with uncorrected eye conditions and referring cases to the hospital, sent him straight to the eye care unit.

Dr Chileshe Mboni assessed and diagnosed George’s problem and found that he had a major sinus infection on the eye socket that, if left untreated, could be life threatening. If eyelids continue to swell, pressure on the eye can lead to permanent vision loss. The infection can also spread to the brain and cause meningitis.

Dr Mboni explained that in George’s case the dusty environment of his village coupled with the lack of clean water to wash his face led to the infection and was given an antibiotic. With appropriate diagnosis and treatment, George was himself again in just a couple of days. This story has a happy ending, but without the early intervention of the Kitwe eye care team and proper treatment, the outcome could have been different.

**4.3 BROADER FRAMEWORKS AND LEARNING THAT INFORM GOOD PRACTICE IN CHILD EYE HEALTH**

Children’s right to quality eye health services must be supported by key community structures and referral systems that ensure their access to appropriate and timely care and treatment. This is best addressed by mainstreaming eye health in the overall health system and early childhood programmes which can be achieved through an integrated and multi-faceted approach. Such an approach should integrate related services such as antenatal care, neonatal care, immunisation, nutrition, early childhood development programme, school health schemes and other related programmes such as water and sanitation services for maximum impact on child eye health. Mainstreaming eye health could also be expanded across sectors through collaborative initiatives not only with ministries and relevant departments, but also with civil society organisations working in the area of eye health (see Figure 4.2).

Integrating child eye health with Early Childhood Development Programme is also an effective way
of addressing the problem of early diagnosis of blinding eye conditions in children. In view of this, ORBIS Africa is working very closely with early childhood development practitioners in South Africa to ensure that a module of child eye health is included in their training modules. There are also other sectors, where this training is relevant, such as Community health care workers.

FIGURE 4.2: GRAPHICAL ILLUSTRATION OF ACTIVITIES TO ENHANCE CHILD EYE CARE AND OTHER COMPLEMENTARY PROGRAMMES

Generally, coordination of eye-health care is a challenge, particularly given the multi-faceted interventions and different sectors that are engaged. Despite its significance in enhancing effectiveness of service delivery and maximising efficiency of resource utilisation, ministries and other sector agencies do not necessarily establish effective mechanisms for coordination. There are numerous legal, structural, capacity and operational barriers that hinder effective coordination of programmes and interventions targeting children. However, co-ordination mechanisms are an important component of good practice.

For example, according to the diagnostic review of the early childhood development programme of South Africa carried out in 2012, little has been done to screen and prevent childhood disability, despite the evidence to show that investment in health promotion in the early years will translate into improved education and socio-economical outcomes in later life (Department of Basic Education of South Africa 2009). This is a clear demonstration of the limited coordination that exists across the various sectors in terms of utilising the relevant services and resources effectively to diagnose, screen and refer to appropriate services to avoid preventable disabilities.

The National Early Learning and Development Standards for Children Birth to Four Years (NELDS) requires that, “adults caring for and educating children need to have an understanding of barriers to growth and development”, and that these may be physical, biological, environmental, social or mental. It also acknowledges that some biological and physical barriers are not easily identifiable, but that awareness and training will ensure that the child is referred and receives the necessary intervention on time, before it is too late for treatment and addressing the problem. The other main areas of interventions to improve child eye health in Africa are discussed in Box 4.4 (overleaf.)

The next section outlines the key elements that define an effective child eye health programme. It provides complementary information to what has been discussed in the previous section. It is largely based on practical experiences of organisations working on eye health such as ORBIS. It serves as a guideline for those who intend to develop or intend to strengthen child eye health interventions.

4.4 ELEMENTS OF A SUCCESSFUL CHILD EYE HEALTH PROGRAMME

The following are important components of an effective child eye health intervention drawn from lessons of countries and organisations (in Africa) which have done well in improving children’s access to adequate eye care and treatment. These elements will give insights for those who intend to initiate such programmes or strengthen the existing interventions.

1. Prevention that entails, among other things:
   • early diagnosis and treatment of sexual transmitted disease (STDS) in pregnant women;
   • improvement of nutritional status of girls, pregnant women and children;
   • expanding the coverage of immunisation and Vitamin A supplementation;
   • promotion of health and hygiene programmes;
   • increase in access to safe water and sanitation coverage, particularly among children under-five.

2. Early detection and diagnosis through screening initiatives to identify children
who show symptoms of eye health and vision related problems. This includes:

- vision screening being a core component of Integrated Management of Childhood Illnesses, preschool and school health programmes;
- training of midwives, community health workers and school nurses (and teachers) to enable early detection, referral and treatment.

3. Strengthening referral systems and follow-up between primary, secondary and tertiary level care centres. This entails:

- ensuring the correct cadre of professional is available at the different levels providing the different levels of service;
- ensuring that appropriate equipment are in place and consumables are available at each level;
- that patients are aware of what service is available at each level.

4. Treatment is the other important component in child eye care and saving sight. For this, it is necessary to:

- establish child eye-care centres with specialised staff and equipment at tertiary level to provide timely surgery and treatment;
- enhance outpatient services and properly manage follow-up treatment to improve the success of and for children.

5. Rehabilitation is as important as the other components in achieving the ultimate objectives. Rehabilitative interventions, among other things, include:

- services that enhance or retain the vision that children have through visual aids and therapy that enable them to make the best possible use of their vision; and,
- provision of affordable and good quality spectacles and optical devices.

**BOX 4.4: WHAT HAS WORKED WELL IN IMPROVING CHILD EYE HEALTH?**

1. **Developing a comprehensive child eye health programme**
   
   Not many countries have a comprehensive programme to improve child eye health. Some of them attempt to provide certain components of child eye health services within the existing health system. The experience of countries that have developed a comprehensive programme on child eye health shows that early detection and treatment of child eye problems is enhanced when there is such a programme specifically designed to cater for children and when there is better coordination of relevant stakeholders. The advantage of drawing the various components of child eye health together is that it enables governments to identify gaps in the system, devise strategies to address them, improve efficiency and maximise impact that is reflected in improved child eye health and reduction in the incidences of child blindness and visual impairment.

2. **Integrating child eye health in national development plans**
   
   Resource allocation in many cases is based on the priority areas identified in the national development plan. Programmes incorporated in national development plans are more likely to be financed. There is therefore the need to advocate for incorporation of child eye health into national health and education plans through linking its impact on development efforts and showing its socio-economic implications.

   Child eye health is also very much related to the other maternal and child health services including antenatal, neonatal, immunisation, nutrition, early childhood development, school services and water and sanitation programmes. Integrating it into national plan of action provides better opportunity for coordination and maximising the synergy of the various inter-related programmes.

3. **Training and building capacity to support health workers at all levels**
   
   Skilled human resource is a very crucial element not just for the health sector, but also in all other spheres of development and services. In the case of child eye health, it is even more important due to the nature of the problem and its utmost delicacy requiring extreme caution and specialised training. In view of this, it is important that training of qualified personnel both for clinical and support duties be given attention.

**Source: ORBIS 2011**
5.1 CONCLUSIONS

Many African Governments with the support of their development partners have made progress in investing in child health. Many countries have also successfully initiated and implemented expanded programmes for immunisation with vitamin A supplementation programmes. As a result, significant achievements have been made, especially in reducing child morbidity and reducing impairment of vision. Despite this progress, millions of children in the region still have no access to basic health services and their health situation remains a major concern. Access, especially to eye health and treatment, remains extremely limited.

Child eye health has not been given priority in health development plans of most African countries. The neglect has severe consequences for Africa as an estimated 400,000 children in Africa have lost sight and many more have visual impairments. Children under five years of age are the most at risk to losing their sight and experiencing visual impairment. This is largely because of lack of adequate early childhood interventions to detect child eye health problems and provide timely treatment.

Child blindness and visual impairment carry a huge cost on the individual child, the family and communities. At individual child level, loss of sight or severe visual impairment affects the child’s physical and cognitive development and also limits educational opportunities. Even those who manage to go to school often learn less because of limited demands placed by teachers and parents, inadequate training and services at school including a lack of appropriate teaching materials. Dropout rates are also higher among blind children due to several socioeconomic factors. Employment prospects later in life are limited for children in Africa. This has a long-term impact on their earning and capacity to fulfil basic needs, and ultimately, adversely affects their social status and overall wellbeing. Blind children are also at higher risks of physical, emotional and sexual abuses. Many of them experience bullying and blind girls especially are vulnerable to sexual assaults, as they are unable to identify their attackers or seek assistance. The impact is also felt by their siblings in the same way. In many cases, they are compelled to drop out from school to care and look after their blind siblings and experience social stigma attached to their families.

The high prevalence of child blindness and visual impairment carries huge economic costs for Africa. For sub-Saharan Africa, the cost of blindness in terms of gross domestic product (which is about 0.42 per cent of GDP) was the highest of all World Bank regions of the world. It is projected to increase if the goals of the VISION 2020 are not achieved.

There are many factors that contribute to child eye health problem in Africa. The major causes of severe vision related problems among children, such as blindness and visual impairment, vary from country to country. Corneal scarring from neo-natal infections, measles and vitamin A deficiency and Trachoma caused by repeated infections in areas with poor access to water, sanitation and health care services are among the main causes in most countries of Africa. Cataracts and retinopathy of prematurity (ROP), a damage to the retina in premature babies, are the other causes that need special treatment to save sight of those affected by these causes. There are also widespread misconceptions in many parts of Africa that associate child blindness and visual impairment with bewitchment and other supernatural causes. As a result, many tend to use harmful traditional medicines and ritual practices that exacerbate the problem.

Human resources and infrastructure are wholly inadequate. There is a severe shortage of both child eye health service facilities and skilled health professionals in Africa to adequately address the extent and severity of eye health problems. In some African countries child eye care services are delivered at primary and secondary levels, but these are generally under-resourced and limited with regards to human resources, equipment and have limited referral opportunities to tertiary level for specialised services. Most eye health care services are also located in urban centres and
majority of the rural communities are underserved. The limited number of ophthalmologists working in Africa, generally work in urban centers. The potential for higher education for training more eye care specialists are limited. This has further augmented reliance on local healers for treatment of eye conditions particularly in rural settings while facilities in cities remain underutilised. Sub-Saharan Africa is grossly under-catered for in relation to eye care services with just 26 specialised centres located in 11 countries. Children in the remaining majority of countries do not have access to specialised eye care facilities at all. The problem is further exacerbated by the lack of training institutes in the region.

There are a number of global and regional initiatives which have been established and which aim to enhance child eye health in Africa. These include VISION 2020 and other regional and national programmes both by government and non-government actors to improve access to eye care and treatment. While these initiatives have led to greater public attention to eye health, and have led to increased resources and higher coverage of programmes, significant gaps continue to exist in implementation. While services remain inadequate, the services that exist are often underutilised due to a number of factors. High treatment costs, indirect expenses for transportation and limited care for siblings at home prohibit families from accessing services. Attitudinal factors such as using hospitals as a last resort, distrust of services and choosing traditional treatment over medical care are evident. Awareness and education programmes reflect an analysis and understanding of local culture, beliefs and societal myths that impact on communities’ health seeking behaviour concerning eye conditions.

Within the health system eye health care must be prioritised and firmly established at primary, secondary and tertiary levels. Eye health care must also be integrated into a number of sectors, particularly early childhood programmes. In Africa, these programmes are rare. However, pre-school services are important components of early childhood programmes which serve a valuable forum for early screening and referral of impairments. Given the multi-sectoral nature of eye-health care, effective co-ordination is required. Effective child eye health care and treatment requires coordinated efforts in the areas of early detection of visual impairment, training of adequate human resources, establishment of functional referral system for treatment, integration of child eye health as one component of the national programme for the management of childhood illnesses and setting up of specialised centre in accordance with WHO recommendations.

5.2 PRIORITY AREAS FOR ACTION

Several important issues emerged from the analysis in this report. These issues have policy and programmatic implications. Implementation of eye health care programmes will be driven by progressive realisation of the right to health by increasing access to services by the blind and those with visual impairment in Africa. Specific actions need to be taken to address the acute human resource shortages, to support equitable universal coverage including in priority areas of intervention such as immunisation, Vitamin A supplementation, cataracts, tropical diseases and refractive errors. The following are the programmatic priority areas for action and strategies identified on the basis of these issues in order to improve child eye health and prevent avoidable blindness among children in Africa.

The following areas have been identified for priority action to improve child eye health in Africa:

1. Programmes targeting early detection and diagnosis of child eye health problems need to be integrated into maternal and child healthcare interventions and preschool and school health programmes. Where there are no organised school health programmes, teachers and other community based professionals could be selected and trained to provide simple eye care services and referral.

2. Efforts must be made to strengthen referral systems across the health sector, from the primary health care service facilities to secondary and tertiary level services.

3. Rehabilitation services for eye health must be strengthened through provision of affordable and good quality spectacles and/or optical devices as well as services that enable children to make the best possible use of their vision, once it is impaired.

4. Measles immunisation and vitamin A supplementation programmes need to be strengthened and sustained to prevent child eye problems.

5. Promotion of health and hygiene, increased access to clean water for drinking and washing and enhanced access to hygienic sanitation facilities and practices, will enhance and reduce the risk of contracting eye infections.
6. Negative attitudes and misconceptions about child eye problems are widespread and need to be addressed to encourage early diagnosis and enhance access to existing services. Parents and caregivers are key players in promoting better child eye health and potentially play crucial roles in preventing child eye infections through simple but important routine practices such as face washing, improving nutritional status, regular check-ups and early consultations when abnormalities are observed on the child’s eye.

5.3 SPECIFIC RECOMMENDATIONS AND ACTIONS

The following is a set of recommendations and actions suggested to improve child eye health in Africa:

At global level

1. As stated in the Hyderabad Declaration, “Eye Health is Everybody’s business”. All countries need to adopt and adapt Vision 2020 and promote the right to health care for all children. The Declaration on the Right to Eye Health urges all countries and stakeholders to work together in addressing avoidable blindness and preventing visual impairment through:
   • Targeted investment in eye health structures and human resource development.
   • Mainstreaming eye health in national health systems
   • Undertaking research to identify emerging eye health priorities and effective approaches
   • Building and broadening alliances

At regional and national levels

2. As children under five are most at risk of losing sight due to health problems, countries are urged to have early eye detection and intervention programmes through Antenatal Care services and Early Childhood Development programmes.

3. Vitamin A supplementation and measles immunisation initiatives have contributed significantly to the reduction of child blindness. There is need to allocate more resources to these cost effective interventions.

4. A broader approach beyond vitamin A supplementation needs to be adopted by countries to effectively control vitamin A deficiency. These include improving ecological factors that impede the growth of vitamin A rich foods, poor infrastructure, transportation and food preservation methods as well as addressing national and international policies that promote cash crop farming rather than food crops.

5. There is need for countries to increase financial resources to the training of professionals in Paediatric eye care; including multi skilled attendants to improve quality of services. Innovative training programmes including task shifting need to be adopted by countries which have severe shortages of Paediatric Ophthalmologists.

6. There are only 12 countries out of 54 that have undertaken national Avoidable Blindness surveys in Africa or maintain any data on blindness. All Counties need to undertake such surveys and generate data through special surveys of Health Management Information Systems to assist in planning blindness prevention programmes.

7. Cataract surgery has been evaluated as one of the most cost effective surgical interventions. Successful treatment though requires a variety of interventions, including training of personnel to undertake cataract surgery and other related services. Countries should institute training programmes to meet this need.

8. Refractive errors represent a significant proportion of visual impairment and significantly contribute to learning difficulties. Countries should integrate refractive errors correction services including affordable spectacles provision in Primary Health Care services.

9. Paediatric Ophthalmic services are grossly inadequate in Africa with just 26 Child Eye Health Tertiary Facilities located in only 11 countries. Countries should adopt the WHO recommendation of having one Paediatric Ophthalmic centre for every 10 million population, at least two ophthalmologists per million population and about four midlevel workers per million population.

The research community

10. There is limited research on the effects of HIV on the eye especially for children. As HIV remains a major public health problem in Africa especially for children, there
is need to undertake studies that will contribute to better design of programmes for the diagnosis and management of eye problems in HIV positive children.

11. Few studies exist that examine the disparity between large numbers of people who suffer from cataract and trichiasis and the low uptake for surgery. Qualitative studies need to be undertaken on barriers and social cultural attitudes and beliefs held on service utilization by various communities.

The civil society and private sectors

12. Governments in collaboration with civil society organisations need to strengthen rehabilitation as an important component of child eye care through provision of affordable and good quality spectacles as well as services that enable children to make the best possible use of their vision.

Communities

13. Community education needs to include signs and symptoms of eye conditions to recognise danger signs and seeks care. These should be rooted in cultural beliefs and address society myths for increased health seeking behaviours to be achieved.

14. A useful checklist in line with WHO recommendations has been developed on standards of community services action in relation to eye care. All countries are encouraged to adopt these recommendations relating to:

- specific eye-hygiene for newly born babies;
- the dosing of both mother and child with appropriate units of vitamin A at various intervals;
- immunisation of children against measles;
- keeping the faces of children clean, and
- referral of children with eye discolouration or injury to appropriate health care practitioners and refraining from dosing eyes with traditional medicines.


ORBIS (2011). Planning for comprehensive child eye health care in sub-Saharan Africa: Summary of the meeting hosted by ORBIS Europe, Middle East and Africa.


DEFINITIONS

**Blindness**

Visual activity less than 3/60 with best possible correction, or a corresponding visual field no greater than 10 degrees in the better eye.

**Cataract**

This is the opacity of the lens of the eye. It is more common with increasing age.

**Glaucoma**

Glaucoma is a disease of the eye in which fluid pressure within the eye rises - if left untreated the patient may lose vision, and even become blind. The disease generally affects both eyes, although one may have more severe signs and symptoms than the other.

**Low vision**

Visual activity less than 6/18, but equal to or better than 3/60, with best possible correction in the better eye. ‘Low vision’ is also defined as one who – after treatment and refractive correction – has impairment of visual function but who uses or is potentially able to use vision for planning and/or execution of a task.

**Onchocerciasis**

Onchocerciasis or river blindness is due to an infection from the nematode worm Onchocerca volvulus.

**Retinopathy of prematurity**

This occurs in premature babies with immature retinal blood vessels. Low birth weight and hyperoxia (due to use of inadequately-monitored supplemental oxygen in neonatal intensive-care units) are important risk factors.

**Trachoma**

Trachoma is a chronic disease of the eye caused by ocular strains of the bacterium Chlamydia trachomatis. Occurs in poor, overcrowded communities with poor access to water and sanitation.

**Visual impairment**

Visual impairment includes low vision and blindness.

---
