Planning for Comprehensive Child Eye Health Care in sub-Saharan Africa

Summary Report of the Meeting Hosted by ORBIS Europe, Middle East and Africa

4 – 5 May 2011

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Contents

Executive Summary

On 4 and 5 May 2011, ORBIS Europe, Middle East and Africa, hosted a conference bringing together international experts in paediatric eye care to discuss priorities for child eye health in sub-Saharan Africa, and to decide the best way to plan, develop and implement services to tackle child eye health in a strategic way. Attending the meeting were 58 delegates from 13 countries in sub-Saharan Africa, as well as a further 11 not-for-profit organisations and five teaching and training institutions.

The Importance of Child Eye Health in sub-Saharan Africa

Sub-Saharan Africa has the largest burden of blindness globally with 23 percent of the world's blind (compared to India with 19 percent and China with 13 percent). There is a direct link between the incidence of blindness and poverty with 90 percent of the world's blind living in developing countries. Child eye health programmes have a direct impact on a country's achievement of the Millennium Development Goals, and in particular Goal 2 *Achieve Universal Primary Education*, Goal 4: *Reduce Child Mortality* and Goal 5: *Improve maternal health.*

Investment in child eye health has a significant return to society, as it is estimated to account for one third of the total cost of blindness and is equivalent to operating on 10 elderly patients with cataract in terms of blind years saved.

There are an estimated 1.4 million blind children worldwide, with many more visually impaired. Sub-Saharan Africa carries the greatest prevalence globally of childhood blindness at 1.24 blind children per 1,000 compared to 0.8 in India and 0.3 in Europe, but 50 percent of childhood blindness is avoidable which makes the region a priority for child eye health care programmes. Early intervention is essential at every level of the health care system, including community, primary, secondary, and tertiary level.

According to WHO recommendations, one paediatric ophthalmic centre is necessary per ten million population. Child eye health programmes in sub-Saharan Africa are scarce, often small scale, do not have a comprehensive approach, and are not part of larger national plans to develop child eye health services. A comprehensive approach and investment in child eye health is required if children are to receive appropriate care and support at the correct time.

Findings

1. Child eye health facilities are grossly inadequate throughout sub-Saharan Africa with only 26 centres located in 12 out of 48 countries; facilities are scarcer in French and Portuguese speaking countries.

2. A comprehensive model for child eye care that defines specific roles of health workers and resources through all levels of the health system should be introduced. This model needs to be culturally appropriate, evidence based and nested within well-developed adult eye care services.

3. The majority of child eye care services should be delivered at primary and secondary levels. Competencies at these levels should be clearly defined and linked to the minimum equipment, human resources and other resources needed to make them fully operational. Research at all stages of the process is needed to ensure that the model is evidence-based.

4. One Child Eye Health Tertiary Facility (CEHTF) per ten million population is the WHO's recommendation. Cross-border arrangements should be established to ensure services are available for children in countries with smaller populations with no access to tertiary level services.

5. There is a shortage of staff at all levels and across all cadres.

6. Training for each level needs to be planned to a minimum standard, which still needs to be established.

7. The "sandwich model[1] for paediatric ophthalmology fellowships and other training is recommended wherever possible due to a diversity of constraints during long-term fellowships for scarce and busy ophthalmologists and other cadre forming part of the child eye health team[2].

8. Collaboration in fundraising approaches is important whilst respecting the autonomous nature of individual stakeholders and commitment to work together at global, regional, national and local levels towards the provision of child eye health and the attainment of the MDGs linked to it.

Next Steps

1. A declaration based on the conference proceedings will be presented to WHO AFRO to make the case for the urgent need for planning, implementation and resourcing child eye health care in sub-Saharan Africa. This declaration should also be presented to the National Departments of Health in sub-Saharan African countries to inform their planning for child eye health services.

2. Eye care organisations should agree an implementation plan, inclusive of an advocacy plan for cross regional arrangements to resource the draft operational plan developed as a result of this meeting. Planning should take place at sub-regional level for cross-border arrangements to ensure tertiary level services for children in countries with small populations.

3. A series of sub-regional planning meetings should be held to prepare detailed plans for each region. These activities should take place in a coordinated manner.

4. Consortiums should be established within each sub-region to develop implementation plans detailing resource requirements, to include personnel, training, equipment, consumables etc specific to each sub-region. These plans should also act as discussion documents for governments and the not-for-profit sector to coordinate funding strategies.

5. Clear criteria should be developed and applied to the selection of candidates for paediatric fellowship training to guarantee long-term sustainability and staff retention. This should include a baseline skills assessment of individuals. It should also be used to establish institutional readiness to become a CEHTF.

[1] The sandwich model refers to a training model, typically consisting of two or more training modules of 1 – 6 months, where the fellows develop skills via sequential rotation in training institutions with provision for a practical application in the home institution, in between attending training modules. It also includes on-site visits such as Hospital Based Programmes by experienced practitioners who can provide on-the-job support and skills development that can further strengthen this approach.

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6. The paediatric ophthalmology fellowship curriculum currently being developed at Comprehensive Community Based Rehabilitation in Tanzania (CCBRT) should be used as a standard for other training centres venturing into this area.

7. A comprehensive list of all training opportunities across sub-Saharan Africa for all cadres should be developed and regularly updated.

8. The recommended model for CEHTFs should be shared and readily available to all on CyberSight, the ORBIS telemedicine website, as well as on any other appropriate website.

9. The IAPB Africa office and Regional IAPB representatives should act as a resource to accelerate the development of child eye health services across the regions.

10. Country based data recorded during the course of the conference will be handed over to the IAPB Africa office for IAPB sub-regional co-ordinators to fill information gaps (including a list of all training opportunities across sub-Saharan Africa for all cadres once it has been developed).

1. Introduction

On 4 and 5 May 2011, ORBIS Europe, Middle East and Africa, hosted a conference bringing together international experts in paediatric eye care to discuss priorities for child eye health in sub-Saharan Africa, and to decide the best way to plan, develop and implement services to tackle child eye health in a strategic way. Attending the meeting were 58 delegates from 13 countries[3] in sub-Saharan Africa, as well as a further 11 not-for-profit organisations[4] and five teaching and training institutions[5]. The meeting also drew delegates from the national and provincial departments of health within South Africa.

Utilising the wealth of experience amongst the participants, the two-day meeting set out to reach consensus on the best models and practices for managing avoidable childhood blindness. The premise for the meeting was that eye care services for children should be located within existing health care systems and nested within mature adult cataract services, national plans and priorities.

The meeting aimed to start the development of a 5-year plan in collaboration with key global and Africa-wide stakeholders to deliver comprehensive eye care services for children based on the strengths and interests of each stakeholder, and to assess how to secure the necessary funding. This included initiatives to train medical staff across the sub-continent, strengthen existing eye care services and establish new services in areas of need. The meeting also made an attempt to identify and map existing child eye care services (comprehensive as well as free standing ophthalmology or community focussed projects), and highlight where new eye care services in sub-Saharan Africa are required.

Recognising at the onset that insufficient data was available to ensure informed planning, the conference programme made provision for inputs and discussion around a number of themes, including:

- Presentations addressing the global and African context of child eye health.
- Stakeholder presentations mapping their existing support to child eye health projects.
- Approaches to, and models for, comprehensive child eye care, including the training of relevant health care practitioners essential to the child eye care team.
- Country-specific examples of operational child eye health programmes in action and country based situational analyses.
- Options for resourcing child eye health projects.

All presentations made at the conference are available on the following link: http://telemedicine.orbis.org//bins/content_page.asp?cid=1-12581-12583&pre=view

[3] Botswana, DRC, Ethiopia, Ghana, Kenya, Madagascar, Mozambique, Nigeria, South Africa, Sudan, Tanzania, Zambia, Zimbabwe.

[4] The International Agency for the Prevention of Blindness (IAPB), Sightsavers, CBM, Fred Hollows Foundation, Vision Aid Overseas, Operation Eyesight Universal, Initiative Zimbabwe, the Kilimanjaro Centre for Community Ophthalmology (KCCO), the Himalayan Cataract Project, International Centre for Eyecare Education (ICEE) and the Netherlands Leprosy Relief.

[5] Groote Schuur Hospital, the Community Eye Health Institute of the University of Cape Town, the International Centre for Eye Health, the Eye Foundation Hospital Group and the Deseret Community Vision Institute.

This report does not include extensive detail on activities per country, per organisation or stakeholder present at the conference, or the scope of work carried out by particular stakeholders working in the field of child eye health. Readers seeking this are referred to the conference presentations.

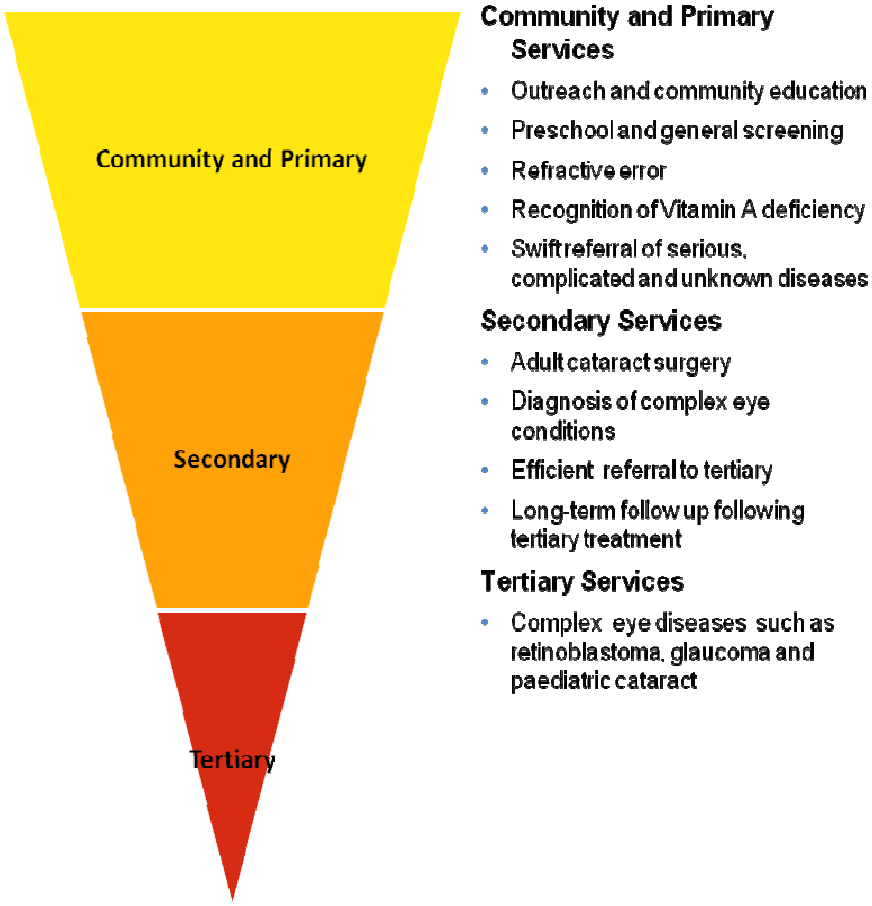
2. A situational analysis of child eye care services

The commonly accepted benchmark for child eye health has been set by the WHO, which has recommended that, by 2020, one paediatric ophthalmic centre, a Child Eye Health Tertiary Facility (CEHTF) per 10 million people, should be in place. There was general agreement at the conference that such a CEHTF should have, as a minimum:

- A fellowship trained paediatric ophthalmologist, which generally refers to an ophthalmologist who has delivered a minimum of 50 supervised paediatric cataract surgeries.
- A child eye health team supporting the ophthalmologist, including a paediatric anaesthetist, a paediatric-oriented optometrist (in countries where this cadre exist), a paediatric nurse trained in paediatric orthoptics, a vision technician and a non-clinical manager/coordinator.
- Capacity to perform surgery for a range of serious paediatric conditions, including paediatric cataract, strabismus and glaucoma.
- Minimum equipment for treatment of complex paediatric eye conditions.
- Theatre space.
- Capacity to manage an effective referral and follow-up service for children, preferably through the services of a dedicated non-clinical manger or coordinator.

Dr Daniel Etya'ale noted that a functional and responsive system, with clear roles assigned to each level, and a good and well-structured referral and counter referral system is needed. This tiered approach could be illustrated as a pyramid with the right person in the right place at the right time[6].

[6] See Appendix F for a draft of the roles of the different cadre involved in the management of childhood blindness



Taking this as a starting point, groups divided into geographical regions within sub-Saharan Africa to discuss the current situation across their regions.

2.1 Summary comments from group work

One CEHTF per 10 million people

Mapped against the WHO recommendation, sub-Saharan Africa is grossly under-developed:

- There are reportedly only 12 countries across sub-Saharan Africa with tertiary level paediatric ophthalmic facilities[7].
- A total of 26 tertiary level paediatric eye care services are reported to exist.
- Many ophthalmic units are doing their best to provide a service to children despite the absence of training, equipment and funding.
- A major consideration determining the pace and geographical focus of establishing and maintaining CEHTFs is the cost (estimated in the region of US$1 million per CEHTF over a 4 - 8 year period).
- Having trained support staff and essential basic equipment within each CEHTF is largely an aspiration rather than a common feature.
- Orthoptics has not been integrated into the formal health care system as a profession. There are almost no orthoptic services, with trained orthoptists, and there is no structured training programme for orthoptics within sub-Saharan Africa.

[7] See Appendix G

- Optometrists are formally recognised in less than 10 countries within sub-Saharan Africa.
- Many countries in sub-Saharan Africa do not have a single paediatric ophthalmologist.
- Despite their critical role in preventing long-term visual disability in children, low vision specialists are a rarity.
- Few ophthalmic services have equipment technicians who have been formally trained in managing paediatric ophthalmic equipment.

Geographical spread and population

The geographical size of countries within sub-Saharan varies widely.

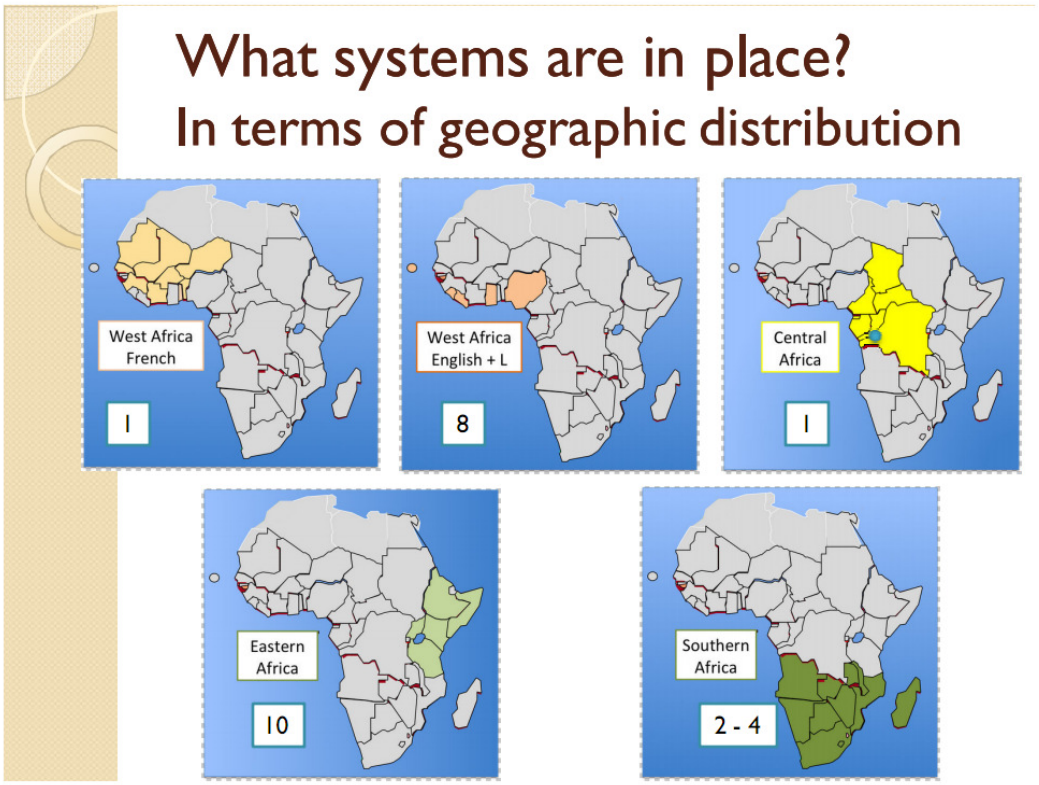
- The Democratic Republic of Congo (DRC) covers a landmass the size of Western Europe. This emphasises the critical issue of geographical scale (and associated costs) that strongly influence children's access to services.
- Population figures per country span a wide range: from 86,000 (Seychelles) to an estimated 145 million in Nigeria[8].

	Sub-Saharan Africa	Southern Africa	East Africa	West Africa	Central Africa
Population in millions[9]	786	151	257	279	99
Number of countries within region	48	13	11	16	8
Number of CEHTFs in place[10]	26	4	12	9	1
Projected number of CEHTFs needed by 2020 based on country population numbers	79	15	26	28	10
Number of countries which do not qualify for CEHTF in country	21	6	3	7	5

Table 1

The existing 26 CEHTFs are located in only 12 of the 48 sub-Saharan countries.[11] Of these only one is located in French-speaking West Africa, eight in English and Lusophone West Africa, one in Central Africa, 10 in East Africa and two to four depending on the definition in Southern Africa.

[8] From WHO 2009; accessed on the WHO website on 2.05.2011
[9] Ibid.
[10] Based on Dr Eta'yale's conference presentation on day 1 of the conference.
[11] The 11 countries hosting the 26 CEHTFs are Nigeria (7), Kenya (4), Tanzania (2), Uganda (3), South Africa (4), Malawi (1), Ghana (1), Sudan (1), DRC (1), Mali (1) and Ethiopia (1).



Slide 5 from Daniel Etya'ale's presentation

There is no agreed strategy in place to cater for any country with a population well under 10 million. Ad-hoc arrangements are sometimes available for children whose parents can access rare sponsorships or who are sufficiently wealthy to cover the costs of cross-border travel to access services in a neighbouring country[12]. The eye care community needs to work with regional bodies such as the Southern African Development Community (SADC) to ensure agreements between countries.

Dominant language of training

There are a number of well-established training institutions that offer child focussed eye health training in English. There is currently no comprehensive Africa based centre providing training for a full child eye care team in Francophone or Lusophone countries. Francophone countries, located across both Central and West Africa, have been sorely neglected with respect to eye health in general, including child eye health.

Current human resources for child eye care

There are shortfalls in all cadres/levels needed to support surgical eye care for children. Using the existence of a paediatric ophthalmologist as an indicator reveals 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 level but these are generally under-resourced and limited

[12] For example, Botswana refers children to Johannesburg in South Africa for treatment but has not yet been granted permission to use the public health services. Children are referred to a private clinic in Johannesburg and the services provided are extremely costly.

with regards to human resources, equipment and referral opportunities to tertiary level.

Models for a comprehensive child eye care service

While community, primary and tertiary models of prevention and care are reasonably clearly understood, the critical role of secondary level health institutions has not been fully considered and remains neglected in many countries. In part this arises from the difficulty of generalising the exact nature of child eye health services provided at secondary level facilities.

Government ownership and leadership of the child eye health strategy is essential for the success of children's services. The integration of child eye health into the standard work of primary health workers represents the key factor, which reinforces the success of child eye health services at secondary and tertiary levels. Primary level health worker referrals are only effective where there is a functioning referral system (to secondary level) in place and where it includes support for transport and communications, such as out-of-pocket expenses for accompanying family members, or guardians.

- Primary health care workers are overburdened with many areas of focus as front-line health workers. They are not always well trained and often do not have training in eye care.
- At the all Africa IAPB meeting in Durban, South Africa in February 2011, the need to generate evidence of the impact of primary eye care on eye care service delivery was identified, and it was later decided that a two or three-day meeting on research in primary eye care would be held in Dubai in September 2011[13].
- The impact of training primary health care workers has not always been as successful as hoped. In some countries, training of primary health care workers has been shown to have a higher impact when it is supported by a financial incentive.
- Training of key informants has shown relatively high levels of success in identifying children for referral. However, this approach does not necessarily address the critical role of follow-up of children treated at tertiary level.
- Traditional healers are by and large a group that has been neglected to date in community education strategies aiming to reach key stakeholders outside of the formal health system.

Existing training requirements and opportunities

Specialist fellowships for paediatric eye health – ophthalmology and other – are extremely rare. Most of these are supported through NGO-accessed funding and often structured outside the formal health care system.

Having to reside in another country for training requires sacrifice on three levels:

1. A gap in service delivery in the health institution of origin during the training period. For instance, ophthalmology residencies across sub-Saharan Africa take three to four years to complete, with a further one year required for specialisation in paediatrics.
2. Meeting the costs of course fees, travel, accommodation and subsistence.
3. Long periods of absence from one's family.

[13] The purpose of this meeting will be to decide upon the parameters of the impact of primary eye care on eye care services (expectations of primary eye care in terms of patients receiving appropriate eye care services, including referral and treatment of blinding conditions) and to determine the basic research protocol that can be adapted country to country to ensure that the findings will be comparable.

There is a severe shortage of low vision technicians across the sub-continent. Aravind Eye Hospital in India offers a training course in low vision over a six-month period but this has a requirement that entrants be optometrists.

By far the majority of sub-Saharan countries do not have an optometrist located at each and every secondary level centre. It is more practical to aim for refractionists/optometric technicians to continue to receive training at this level. The work is difficult and can be time-consuming with younger children. Optometry training (for refractionists and optometric technicians) has been relatively successful in a number of East and Southern African countries (including South Africa, Mozambique, Kenya, Tanzania, and Uganda).

A number of countries have also had success in developing mentoring relationships across the health system: tertiary to secondary and secondary to primary. These work best if supported by formal training and on-site visits by technical experts.

Data required to record, monitor and evaluate child eye health and care

Considerable strengthening is needed in the area of monitoring and data analysis. There is a severe shortage of detail per country on measurements of key indicators relating to child eye health[14]. Different information is available across sub-Saharan Africa, dependent largely on efforts made through data collation through national co-ordination of eye care or NGO-led research. Existing data provides useful baseline information but needs updating every few years to remain relevant. IAPB Africa's database project to map and update eye health services is welcomed[15].

Delegates at the meeting in Cape Town

[14] In preparing for the conference, ORBIS was only able to locate the following common data providing reliable information on child eye health across all SSA countries: country population (2009 figures, WHO); cataract surgical rate (2006 figures, WHO); and extrapolated prevalence of childhood blindness (2009 population figures, WHO; and using Clare Gilbert method).

[15] For details on this project, contact Dr Daniel Eta'yale of IAPB Africa. Contact details on conference attendance list.

3. Sub-Regional Plans 2011 - 2016

The draft plans outlined below are made on the assumption that all required funding is available to enable successful implementation. The implementation of these plans will only be possible if IAPB, not-for-profit organisations, governments and teaching and training organisations plan together both for how to improve existing services and where to establish new ones.

The proposed planning approach will include extensive focus on the development of existing human resources at all levels and cadres. In addition to investments will be made in equipment and infrastructure. The findings and the recommendations of this conference will be fed into the IAPB Africa working group on Human Resources Development as well as into existing and new consortiums on human resources development.

Further, the draft plans will stand a greater chance of implementation if the eye care sector is successful in placing eye care on the mainstream development agenda. This will ensure greater attention to eye care as a development issue and it will allow our sector to start accessing funds dedicated to poverty eradication and the achievement of the MDGs.

The draft plans will ensure that the 26 centres currently in existence will become fully operational and that four new CEHTFs will be established (in Ghana, Gambia, Tanzania and Cameroon).

The division of countries into East, West, Central and Southern Africa is based on the UN definition of sub-regions in Africa, and not on language, as was the case during the conference. Over a period of ten years, ORBIS aims to establish 10 paediatric eye care centres nested within high quality adult cataract services, with appropriate links and referral mechanisms to and from primary and secondary levels.

3.1 West Africa

West Africa is made up of 16 countries and includes: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, The Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo. In West Africa nine CEHTFs are reported to exist.

- In Nigeria seven CEHTFs are already established, and there is one each in Ghana and Mali. In Ghana one new CEHTF will be established and in the Gambia one CEHTF will be established.
- Fully trained paediatric ophthalmology teams will be available at each CEHTF.
- Training will be available for all cadres within Nigeria and Ghana (Korle Bu Teaching Hospital) and will become accessible to team members from other countries within West Africa.
- Five ophthalmologists will graduate each year across West Africa between 2011 and 2016, increasing the pool of ophthalmologists by 25.
- Korle Bu Teaching Hospital in Accra will be training 25 ophthalmic nurses each year.
- Attrition of nurses will have dropped significantly. Nurses will return to their countries of origin due to improved remuneration and resources, as well as recognition.

- Community health workers will be up skilled to identify cases and will be provided with non-financial incentives.
- Community health workers and teachers will all have access to traditional, as well as innovative modern tools, such as mobile phone technology, that will allow them to conduct basic vision screening.
- Cellular technology will be utilised to enhance the effectiveness of community health workers and other cadres involved in identification and follow up.
- Funding will be accessed from diverse sources, including cost recovery mechanisms, public-private partnerships, corporate, statutory and trust and foundation funding.

3.2 East Africa

East Africa is made up of 11 countries and includes: Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Somalia, Sudan, Tanzania and Uganda.

- In Uganda three CEHTFs are already established, in Kenya four CEHTFs are established, in Tanzania two CEHTFs are established and in Sudan one CEHTF is established. All 12 will be fully functional by 2016 alongside one new establishment in Tanzania.
- Fully trained paediatric ophthalmology teams will be available at each CEHTF.
- Two training centres will continue to function in East Africa and one of these centres will provide for orthoptist training.
- Fellowships for orthoptists and low vision technicians will be available.
- All CEHTFs will have low vision equipment.
- Biomedical engineer training for equipment technicians will be available.
- A paediatric cataract monitoring tool which tracks and reports on surgical outcomes will be in use.

3.3 Southern Africa

Southern Africa is made up 13 countries and includes: Angola, Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Zambia and Zimbabwe. In Southern Africa four CEHTFs are reported to exist.

- In South Africa one CEHTF is already fully functioning and two additional CEHTFs are at different stages of development, and the same applies to Zambia. In Malawi one CEHTF is in development. All five will be fully functioning by 2016. In Mozambique one CEHTF is at pre-planning stage and the same applies to Madagascar.
- Fully trained paediatric ophthalmology teams will be available at each CEHTF.
- A twinning relationship for CEHTFs and secondary level hospitals in small population countries such as Botswana, Lesotho, Swaziland and Namibia will be established. Secondary level centres, such as Kimberly, Gaborone and Lusaka, will employ paediatric-oriented ophthalmologists[16] and some support staff. These secondary level centres will have close links with established CEHTFs in other countries i.e. South Africa, Malawi and Zambia.

[16] A paediatrically oriented ophthalmologist works at secondary level providing ophthalmic services but has a special interest in children and is mentored by paediatric ophthalmologist at a CEHTF.

- Training for all team members will be available in Zambia and in South Africa and general ophthalmic nursing training will be easily accessible across the region.
- Trained ophthalmic nurses and medical officers will be in place at primary level to identify children who need to be referred.
- Secondary level services (at provincial and district hospitals) will be carrying out diagnosis and different degrees of treatment, referral and follow-up.
- A range of cadres will be in place focusing on child eye care, including optometrists and family practitioners.
- ICEE will be co-ordinating the supply chain of low vision devices and spectacles across Southern Africa.
- There will be less attrition in the public health sector and health workers will be more motivated.
- Funding will be accessed from health, education and social service sectors, through partnerships.

3.4 Central Africa, including Francophone countries

Central Africa is made up eight countries and includes: Cameroon, Central African Republic, Chad, Congo, Democratic Republic of Congo, Equatorial Guinea, Gabon and Sao Tome and Principe.

- One CEHTF is already established in the Democratic Republic of Congo (DRC) and will be fully functioning with four secondary level centres providing support. One CEHTF will be established in Cameroon.
- Fully trained paediatric ophthalmology teams will be available at each CEHTF.
- Training for a comprehensive eye care service in the DRC will be provided at the Eye Foundation Hospital Group, including the Deseret Community Vision Institute in Nigeria.
- A training centre will be established in Yaoundé, Cameroon and another one in the DRC.
- A programme for skill sharing to centres of excellence will be established, using CCBRT in Tanzania and the Eye Foundation in Nigeria as models.
- Where trachoma is still endemic, Zithromax will be distributed. Children with other eye diseases will be identified and referred to appropriate eye care services.
- Proper equipment and appropriate remuneration will be in place across the region.
- Funding will be accessed from diverse funding sources.

4. Recommendations and Actions

4.1 Findings

1. Child eye health facilities are grossly inadequate throughout sub-Saharan Africa with only 26 centres located in 11 out of 48 countries; facilities are scarcer in French and Portuguese speaking countries.

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introduced. This model needs to be culturally appropriate, evidence based and nested within well-developed adult eye care services.

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4.2 Next Steps

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Appendices

A. Conference Attendees
B. Conference Programme
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E. Prevalence of Blindness in sub-Saharan Africa
F. DRAFT Roles of Cadres in the Management Child Eye Health
G. DRAFT CEHTFs per Country
H. DRAFT Equipment List for a Child Eye Health Tertiary Facility
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J. Map Childhood Blindness in sub-Saharan Africa
K. Map CCR sub-Saharan Africa
L. Map Population sub-Saharan Africa