The world through the child’s eyes-the journey towards Elimination of childhood blindness- the Korle-Bu experience.

By
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At
GCPS Medical knowledge Fiesta 2012

8-8-2012
HEALTHY EYES IN A HEALTHY BABY
OUTLINE

- Magnitude of childhood blindness worldwide
- History of project
- Performances
- SWOTS analysis
- The future
- Conclusion
Introduction

Definition of childhood blindness

- Blindness in a child
- Child is < 16 years (UNICEF)
- Blindness = presenting visual acuity (VA) <3/60 in the better eye
  - = loss of walk-about vision or independent navigation
Incidence

• Worldwide
  – 500,000 every year (one every minute!)
  – 50%-60% die within 1-2 years (from systemic causes eg Vitamin A deficiency, measles)
  – Associated with > under-5 mortality rates(U5MRs)
  – 75 million blind person years globally (number blind × length of life)-2nd largest cause of blind-years(1st - Cataract).
Prevalence

- Worldwide – 0.3/1000 to 1.5/1000 children (1/10 whole population blindness)
- High income regions – 0.4/1000 children
- Middle income regions – 0.7/1000
- Low-income regions – 0.9/1000

Overall Prevalence of blindness in Children:
0.75/1000
Magnitude

- Worldwide
  - 1,400,000 blind children
  - 73% live in low income countries
  - 40-50% \(\rightarrow\) avoidable
<table>
<thead>
<tr>
<th></th>
<th>Affluent</th>
<th>Middle income</th>
<th>Poor</th>
<th>Very poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>% children in population</td>
<td>20%</td>
<td>30%</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>No. of children/10 million</td>
<td>2 million</td>
<td>3 million</td>
<td>4 million</td>
<td>5 million</td>
</tr>
<tr>
<td>Prevalence of blindness</td>
<td>0.3/1,000</td>
<td>0.6/1,000</td>
<td>0.9/1,000</td>
<td>1.2/1,000</td>
</tr>
<tr>
<td>Blind children/10 million</td>
<td>600</td>
<td>1,800</td>
<td>3,600</td>
<td>6,000</td>
</tr>
<tr>
<td>No. of children blind by</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corneal scar</td>
<td>0</td>
<td>0</td>
<td>720</td>
<td>2,000</td>
</tr>
<tr>
<td>Cataract or glaucoma</td>
<td>60</td>
<td>360</td>
<td>720</td>
<td>1,000</td>
</tr>
<tr>
<td>Retinopathy of prematurity</td>
<td>60</td>
<td>450</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Others (mainly unavoidable)</td>
<td>480</td>
<td>990</td>
<td>2,160</td>
<td>3,000</td>
</tr>
</tbody>
</table>

Table 1. Magnitude and causes of blindness in children per 10 million total population in different regions.
Common causes of Avoidable Blindness/Visual Impairment

1. Corneal scarring
   - Vitamin A deficiency
   - Measles
   - Ophthalmia neonatorum
   - Harmful eye practices
   - Infective corneal ulcer
     (in Africa and poorer countries in Asia)

2. Cataract (everywhere)

3. Glaucoma (everywhere)

Common causes of Avoidable Blindness/Visual Impairment

4. Retinopathy of prematurity (*in high- and middle-income countries and some cities in Asia*)

5. Uncorrected Refractive errors (*everywhere, but particularly in South-East Asia*)

6. Low vision (*in all regions*).

7. Others

   – Optic nerve disease

## Avoidable blindness

### Preventable Causes

- Corneal scarring
- Intrauterine factors: Rubella, Toxoplasmosis, teratogens (alcohol).
- Perinatal factors: ROP, Birth hypoxia.
- Hereditary diseases:
  - Risk counselling for dominant diseases

### Treatable Causes

- Cataract
- Glaucoma
- Retinopathy of prematurity
- Uveitis
- Corneal disease (corneal ulcers and opacity)
Major Causes of SVI/BL in Children in Nigeria

Anatomical Classification (n= 46, aged 15 years or less in Blind School)

- Lens (30.4%)
- Corneal lesions (21.7%)
- Whole globe (mainly phthisis bulbi) (17.4%)
- Glaucoma/buphthalmos (10.9%)
- Retina (10.9%)
- Optic nerve (8.7%)

I R Ezegwui, R E Umeh, U F Ezepue, Br J Ophthalmol 2003;87:20–23
Ghana

Major avoidable causes of blindness

– Corneal scar
– Globe abnormalities
– Cataract
– Glaucoma
– Retinal disease
– Optic atrophy
– Others

Causes of Childhood Blindness at Korle – Bu Teaching Hospital

Bilateral
- Cataract
- Glaucoma
- Cortical visual impairment
- Refractive error
- Cornea/Vernal keratoconjunctivitis
- Others

Unilateral
- Retinoblastoma
- Cataract
- Injuries- Broomstick
- Others

Major causes of Childhood Blindness at Korle-Bu

A - Bilateral Congenital Cataract – opacity of the lens
B - Congenital Glaucoma
C - Ophthalmia neonatorum
D - Bil. Cornea Opacification– Anterior segment dysgenesis
E- Globe- Bil. Anophthalmia
F- Globe – Anophthalmos / microphthalmos
G- Corneal infection with corneal melting
H- Retinoblastoma – Cancer of the retina
Strategies for control of childhood blindness

• Part of vision 2020 five priority areas.

• Vision 2020 activities
  – Specific disease control measures
  – Human resource development
  – Development of appropriate technology and infrastructure
BACKGROUND- Ghana Project Phase 1

- The elimination of blindness and visual impairment in childhood identified as priority area of work in the Prevention of Blindness Programme by WHO (Vision 2020).
- 30 developing countries worldwide (including Ghana) supported in a phase I pilot project.
- Funding: Lions Clubs International Foundation (LCIF) and its SightFirst Programme in partnership with WHO as the Executing Agent.
- Period: Year 2003-2007
ELIMINATION OF CHILDHOOD BLINDNESS IN GHANA—HISTORY

- **Goal**
  - Eliminate avoidable childhood blindness in Ghana

- **Specific objectives**
  - To provide Primary Eye Care (PEC) in PHC
  - To develop surgical/medical paediatric Eye Care Service (ECS)
  - To establish/strengthen Low Vision Service (LVS)
  - To develop & strengthen infrastructure & equipment
  - To conduct monitoring and evaluation of project
ELIMINATION OF CHILDHOOD BLINDNESS IN GHANA - HISTORY

Strategies

- Human Resource Development
  - Continuous Professional Development and surgical augmentation for ophthalmologists
  - Professional skill upgrading for other cadres of eyecare - optometrists, ophthalmic nurses

- Strengthening of infrastructure
  - For paediatric Eye care services & LV service
Profile - Project area: Eastern & Greater Accra Regions of Ghana

- Population
  - National 22 million
  - Project area 5.2 million
  - Children <15yrs. 2.2 million

- IMR 64/1000 LB
- U5M 111/1000LB
- Measles immunisation Coverage
  - 63% GAR
  - 86% ER
PERFORMANCES-TRAINING

Paediatric Medical & Surgical Service

- 2003/2004 - Paediatric ophthalmology team
- July 2004 - Paediatric ophthalmology unit established (Training centre) in Korle-Bu

Low vision (LV) care service 2005/2006

KBTH, Koforidua Regional Hospital
**PERFORMANCES-TRAINING**

Primary eye care services

- April 2005 - 20 trainers trained in PEC
- 1st QRT 2005 - Curriculum reviewed / existing training materials adapted
- PEC personnel trained: 1,154* -community-based health staff, teachers, volunteers.

*Training of trainers in PEC workshop*
PERFORMANCES

• Infrastructure & Equipment
  - LV clinic & equipment in place
  - Paediatric Out-Patient: A child-friendly OPD with a play area established in 2009-
## PERFORMANCES - SERVICE DELIVERY YEARLY
### SUMMARY OF TOP SEVEN NEW DISEASES (KORLE-BU)

<table>
<thead>
<tr>
<th>Disease</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cataract</td>
<td>12</td>
<td>41</td>
<td>101</td>
<td>56</td>
<td>31</td>
<td>48</td>
<td>289</td>
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<tr>
<td>Conjunctiva</td>
<td>30</td>
<td>108</td>
<td>37</td>
<td>18</td>
<td>8</td>
<td>5</td>
<td>206</td>
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<tr>
<td>Strabismus</td>
<td>14</td>
<td>19</td>
<td>16</td>
<td>39</td>
<td>36</td>
<td>40</td>
<td>164</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>6</td>
<td>7</td>
<td>24</td>
<td>33</td>
<td>6</td>
<td>30</td>
<td>106</td>
</tr>
<tr>
<td>Refractive error</td>
<td>12</td>
<td>24</td>
<td>8</td>
<td>19</td>
<td>6</td>
<td>*</td>
<td>69*</td>
</tr>
<tr>
<td>Retinoblastoma</td>
<td>8</td>
<td>15</td>
<td>5</td>
<td>10</td>
<td>9</td>
<td>13</td>
<td>60</td>
</tr>
<tr>
<td>Cornea /Ant. Seg.</td>
<td>8</td>
<td>14</td>
<td>2</td>
<td>5</td>
<td>11</td>
<td>6</td>
<td>46</td>
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<tr>
<td>Others</td>
<td>40</td>
<td>16</td>
<td>16</td>
<td>271</td>
<td>116</td>
<td>152*</td>
<td>611</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>130</strong></td>
<td><strong>244</strong></td>
<td><strong>209</strong></td>
<td><strong>451</strong></td>
<td><strong>223</strong></td>
<td><strong>294</strong></td>
<td><strong>1551</strong></td>
</tr>
</tbody>
</table>
PERFORMANCES- SERVICE DELIVERY
Out-patients Attendance

New
Old

2004: 130 (New) 83 (Old)
2005: 244 (New) 578 (Old)
2006: 209 (New) 397 (Old)
2007: 451 (New) 717 (Old)
2008: 223 (New) 613 (Old)
2009: 294 (New) 766 (Old)
Causes of Childhood Blindness at Korle – Bu Teaching Hospital

Bilateral
- Cataract
- Glaucoma
- Cortical visual impairment
- Refractive error
- Cornea/Vernal keratoconjunctivitis
- Others

Unilateral
- Retinoblastoma
- Cataract
- Injuries
- Others
Major causes of Childhood Blindness at Korle-Bu

A- Bilateral Congenital Cataract – opacity of the lens
B- Congenital Glaucoma
C- Ophthalmia neonatorium
D- Bil. Cornea Opacification– Anterior segment dysgenesis
E- Globe- Bil. Anophthalmia
F- Globe – Anophthalmos / microphthalmos
G- Corneal infection  with corneal melting
H- Retinoblastoma – Cancer of the retina
## PERFORMANCES - SERVICE DELIVERY
### SURGERIES 2004- 2009

<table>
<thead>
<tr>
<th>Surgeries</th>
<th>2004*</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>*2008</th>
<th>2009</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cataract</td>
<td>21</td>
<td>46</td>
<td>31</td>
<td>24</td>
<td>14</td>
<td>10</td>
<td>122</td>
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<tr>
<td>Glaucoma</td>
<td>7</td>
<td>11</td>
<td>16</td>
<td>12</td>
<td>9</td>
<td>20</td>
<td>46</td>
</tr>
<tr>
<td>Strabismus</td>
<td>3</td>
<td>7</td>
<td>16</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>29</td>
</tr>
<tr>
<td>Enucleation</td>
<td>2</td>
<td>8</td>
<td>6</td>
<td>2</td>
<td>11</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>Injuries</td>
<td>15</td>
<td>12</td>
<td>12</td>
<td>39</td>
<td>?</td>
<td>37</td>
<td>78</td>
</tr>
<tr>
<td>Others(EUA,Biopsies)</td>
<td>11</td>
<td>27</td>
<td>25</td>
<td>28</td>
<td>37</td>
<td>57</td>
<td>91</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>59</strong></td>
<td><strong>111</strong></td>
<td><strong>106</strong></td>
<td><strong>108</strong></td>
<td><strong>74</strong></td>
<td><strong>136</strong></td>
<td><strong>384</strong></td>
</tr>
</tbody>
</table>
PERFORMANCES - SERVICE DELIVERY
KORLE-BU TEACHING HOSPITAL TRAINING CENTRE

Surgeries Performed 2004-2009

No. Of surgeries

Year

2004 2005 2006 2007 2008 2009

Cataract
Glaucoma
Strabismus
Enucleation
Injuries
Others
Pre- & Post- Intervention Photos

Congenital Esotropia/ Converg. squint

Cong. glaucoma

Bilateral congenital cataract

Ophthalmia Neonatorium with Ectropion

Right retinoblastoma

Capillary Haemangioma

PERFORMANCES-RESEARCH & ADVOCACY

- Scientific presentations at both local & international fora
- Public lectures
- Radio & TV talks
- Scientific publications
- Ongoing research
STRENGTHS

- Recognition of the centre/project: Referrals from eye-workers in project area, all over the country & neighbouring countries (Togo, Ivory-coast & Sierra-Leone)

- Provision of specialised paediatric medical, surgical & Low vision services

- Incorporation of Child Eye Health into the curricula of residency programs in ophthalmology (WACS, GCPS) & Ophthalmic Nurses Training.
STRENGTHS

- Establishment of National Task Team for Elimination of Childhood Blindness
  
  Representatives from:

  Local Lions Club, National School Health Program, Ministry of Women & Children’s Affairs, Integrated Management of Childhood Illness[IMCI], WHO, Ghana Health Service, Society of Paediatricians, National Eye Care Program, & Paediatric Ophthalmologist

- Dedicated Eye Theatre
WEAKNESSES & SOLUTIONS

- Late presentation of children with blinding conditions

*(Health education of General public and health professionals, Early detection, Funding of treatment needed)*

WEAKNESSES & SOLUTIONS

- Inadequate anaesthesia coverage:
  - no dedicated anaesthetist & lack of ophthalmic day care anaesthesia.

(Cost estimates for establishing the latter ready; Funding needed.
Moorfields –WACS project to be ready in 2013)
Independent Evaluation Report

WEAKNESSES & SOLUTIONS

- Irregular supplies of Surgical instruments & consumables: intraocular lenses, vitrector probes, affordable spectacles
  
  *(A fund established, more donors needed)*

- Poor reporting system and data management *(structures in place but not used, need for a dedicated data management clerk, computerisation of KBTH hospital records)*
OPPORTUNITIES

- Moorfields Eye Hospital Foundation Surgical Training Centre for West Africa in KBTH
  
  *Includes a paediatric wing: Out-patient, play area & in-patient care; opportunity for subspecialty/fellowship training in paediatric ophthalmology.*

- Support for Low vision service
  
  - *Care provision & human resource development by Sight Savers International, SSI in the two regions for pilot project.*
  - *Supply of LV aids to universities, integrated schools & schools for the blind eg. CCTV, braille, vision assessment tools by Force Foundation.*

- Establishment of a 2nd Paediatric ophthalmology unit/ team at KATH
OPPORTUNITIES

- Establishment of integrated schools for the visually challenged children in Ghana

- Support for comprehensive primary eye care:
  - in the 2 pilot regions by SSI
  - in 2 Northern regions (Action Against Childhood Blindness, AACHIB) by Swiss Red Cross
THREATS

- Equipment Supply: Erratic supply by KBTH,
- Lack of incentive for personnel.
Ongoing Project

**Research**- epidemiological and clinical trials for major causes of childhood blindness

- Causes of paediatric cataract and outcome of treatment
- Outcome of surgical treatment of paediatric Glaucoma
- Retinoblastoma- why patients are presenting late
- Ocular manifestation of HIV/AIDS- onset and trends
FUTURE PLANS

- **Phase 2 of the WHO/Lions club international/ Govt. of Ghana approved- Expand paediatric eye services to Ga South Municipal Area**

- **Training** of Practising Ophthalmologists to augment skills in medical & surgical care in Paediatric eye health; fellowship in paediatric ophthalmology; Low vision teams for other regions

- **Establishment of a Counselling Unit at KBTH**
FUTURE PLANS

- **Strengthen linkages**: Referral systems & with other stakeholders in the Elimination of Childhood blindness locally especially with the new unit at KATH.

- **Collaboration**: External mentorship program & Research.

- **ROP screening and management**: as Ghana’s economy improves (middle-income or industrialised).
Signs of Poor Vision

- Objection to occlusion (of good eye)
- Wandering eye movements
- Lack of response to familiar faces & objects
- Nystagmus
- Staring at bright light
- Forceful rubbing of the eyes (oculo-digital reflex) in an otherwise visually disinterested child

*NB In ITALICS: suggest an ocular cause for the deficiency*
KEY MESSAGES

Send to an eye worker or hospital promptly any child with:

- Enlarged & / or cloudy cornea
- Red eye
- A white pupil
- A squint
- A serious eye injury
- who cannot see well
CONCLUSION

- Good programme
- Advocacy and Fundraising needed to ensure sustainability
- Need to build strong team & foster multi-sectoral & collaborative linkages
- Ghana chosen as one of 10 countries to benefit from the LICF/WHO Childhood Blindness Phase 2 project starting soon
LET’S KEEP OUR CHILDREN’S EYES HEALTHY FOR THEY ARE OUR FUTURE