The main issues in relation to blindness in children relate to a better understanding of the epidemiology, which has led to improved priority setting. In this article the most recent epidemiological data will be presented, the consequences for the Vision 2020 programme will be discussed, and research priorities considered.

Definitions

A blind child is an individual aged less than 16 years, who has a visual acuity in the better eye of <3/60. However, many studies do not use this definition, which makes it difficult to compare the findings of different studies.

Prevalence and Incidence

The prevalence of blindness in children (i.e., the proportion of the child population who are blind), varies from approximately 0.3/1,000 children in wealthy regions of the world, to 1.2/1,000 in the poorer countries / regions. Blindness in children is more common in poor regions for two main reasons: firstly, there are diseases and risk factors which can lead to blindness from causes that do not now occur in industrialised countries (e.g., measles, vitamin A deficiency, ophthalmia neonatorum, malaria), and, secondly, there are fewer well equipped eye departments with ophthalmologists, nurses and ophthalmic paramedics trained in managing treatable causes of blindness (e.g., cataract and glaucoma). The incidence is therefore higher, and fewer blind children have their sight restored.

Incidence data are very difficult to obtain, but it has been estimated that there are 8 new blind children for every 100,000 children each year in industrialised countries. The figures are likely to be higher in developing countries.

Magnitude of Blindness

Globally there are estimated to be 1.4 million children who are blind, and around three quarters live in developing countries. Although the actual number of children who are blind is much smaller than the number of adults blind, e.g., from cataract, the number of years lived with blindness by blind children is almost the same as the total number of ‘blind years’ due to age-related cataract. The high number of blind years resulting from blindness during childhood is one of the reasons why the control of childhood blindness is a priority of the WHO/IAPB Vision 2020: The Right to Sight programme.

Causes of Blindness in Children

The available data suggest that there is wide regional variation in the major causes of blindness in children. Tables 1 and 2 show the causes of blindness obtained from examining over 10,000 blind children, with the causes classified using the World Health Organization’s classification system. These data do not take account of children who are ‘blind’ from refractive errors.

In wealthy parts of the world lesions of the central nervous system predominate, while in poorer countries corneal scarring as a result of acquired diseases are the most important causes. Table 3 shows estimates of the number of blind children by anatomical site, and by underlying cause.
Regional Variation in the Magnitude and Major Causes of Blindness in Children

It is possible to combine what we know about the prevalence of blindness in children with data on causes, and apply this to a total population of one million people (Table 4). This information is perhaps more useful for planning. Figure 1 shows these data.

Avoidable Causes

In all regions of the world there are causes which are amenable to primary, secondary and tertiary prevention, but the proportions vary from region to region (Table 5).

Vision 2020 Priorities

Given these findings, the following conditions are priorities for control:*

- Corneal scarring, due to measles, vitamin A deficiency, harmful traditional eye medicines, and ophthalmia neonatorum: priorities in poor and very poor regions
- Cataract and glaucoma: important treatable causes in all regions
- Retinopathy of prematurity, a condition which is preventable and treatable; important in middle income countries, and in urban centres in developing countries
- Refractive errors: treatable cause in all regions
- Low vision: services need to be expanded or developed in all regions.

Targets for disease control

The following targets have been agreed for disease control:

1. Reduce the global prevalence of childhood blindness from 0.75/1,000 children to 0.4/1,000 children.
2. Elimination of corneal scarring caused by vitamin A deficiency, measles, or ophthalmia neonatorum.
3. Elimination of new cases of congenital rubella syndrome.
4. All children with congenital cataract to receive appropriate surgery, with immediate and effective optical correction, in suitably equipped specialist centres.

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<tr>
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<th>2 Years</th>
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<td>£50</td>
</tr>
<tr>
<td>US$45</td>
<td>US$80</td>
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5. All babies at risk of retinopathy of prematurity to have fundus examination, by a trained observer, 6-7 weeks after birth. Cryotherapy or laser treatment to be provided for all those with treatable disease.

6. All school children to receive a simple vision screening examination, with glasses provided for all those with significant refractive error. This should be integrated into the school health programme.

Human resource development

The implications and recommendations for human resources development are as follows:

1. Ensure that prevention of childhood blindness is an explicit aim of all primary health care programmes.

2. Ensure that all secondary level eye clinics have facilities to provide appropriate spectacles for children with refractive errors.

3. Train one refractionist per 100,000 population by 2010.

4. Train at least one low vision worker for every 20 million children, by 2010, and for every 5 million by 2020.

5. Train one paediatric-orientated ophthalmologist for every 50 million population by 2010, and one per 10 million population by 2020.

Appropriate technology & infrastructure

There is the following need for appropriate technology and infrastructure development:

1. Development of low cost, high quality low vision devices, which should be widely available, even in low income countries.

2. Establish a network of specialist ‘childhood blindness’ tertiary centres.

In this edition of the Journal of Community Eye Health there are articles which address some of the priority causes of blindness in children. The article on cataract discusses the relative merits of intraocular lens implantation in children, as a means of correcting their aphakia. The article on retinopathy of prematurity from Brazil highlights how screening programmes need to be expanded in Latin America if blindness from ROP is to be brought under control.

Research Issues

Corneal scarring. The control of diseases that cause corneal scarring lies in primary healthcare, public health interventions and childsurvival programmes. However, there is still a need to develop cost effective, sustainable interventions at the community and household level for the control of...
vitamin A deficiency, interventions that do not depend on vitamin A supplementation. Cataract. Cataract surgery is much more difficult in children, and very few clinical trials have been undertaken to explore the optimum management. Further research is also needed into the aetiology of cataract in different parts of the world, as well as qualitative research to investigate barriers to the uptake of cataract surgery. Retinopathy of prematurity. The pattern of disease in middle income countries seems to be different from that currently seen in industrialised countries. There is a need for research into risk factors in different settings, and the validity of different methods of screening for threshold disease needs to be investigated. Low vision. There are very few studies of low vision in children. It is not really known how common it is, and what the major causes are at the population level. There are virtually no studies which have addressed the issue of best low vision devices for children. Diseases of unknown cause. There are many blinding eye diseases where the underlying cause is not known, e.g., congenital anomalies of the eye. Research is needed to try and clarify the relative contribution of genetic and environmental risk factors.

References

CNS = central nervous system  ROP = retinopathy of prematurity  Cat = cataract

Table 3: Estimates of Number of Blind Children by Anatomical Site, and Underlying Aetiology

<table>
<thead>
<tr>
<th>Anatomical site</th>
<th>Number affected</th>
<th>Examples</th>
<th>Aetiological category</th>
<th>Number affected</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retina</td>
<td>381,000</td>
<td>Dystrophies</td>
<td>Hereditary</td>
<td>423,000</td>
<td>Cataract</td>
</tr>
<tr>
<td>Cornea</td>
<td>231,000</td>
<td>Scarring</td>
<td>Childhood</td>
<td>260,000</td>
<td>Measles</td>
</tr>
<tr>
<td>White eye</td>
<td>230,000</td>
<td>Microphthalmia</td>
<td>Perinatal</td>
<td>222,000</td>
<td>Ophthalmia neonatorum</td>
</tr>
<tr>
<td>Lens</td>
<td>170,000</td>
<td>Cataract</td>
<td>Intrauterine</td>
<td>50,000</td>
<td>Rubella</td>
</tr>
<tr>
<td>Optic nerve</td>
<td>167,000</td>
<td>Optic atrophy</td>
<td>Unknown</td>
<td>516,000</td>
<td>Phthisis</td>
</tr>
<tr>
<td>Uvea</td>
<td>66,000</td>
<td>Glaucoma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>103,000</td>
<td>Cortical blindness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,400,000</td>
<td></td>
<td></td>
<td>1,400,000</td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Estimates of the Magnitude and Major Causes of Blindness in Children per Million Total Population

<table>
<thead>
<tr>
<th>% population children</th>
<th>High income</th>
<th>Middle income</th>
<th>Low income</th>
<th>Very low income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20%</td>
<td>30%</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>Number of children</td>
<td>200,000</td>
<td>300,000</td>
<td>400,000</td>
<td>500,000</td>
</tr>
<tr>
<td>Blindness prevalence</td>
<td>0.3/1000</td>
<td>0.6/1000</td>
<td>0.9/1000</td>
<td>1.2/1000</td>
</tr>
<tr>
<td>No. of blind children</td>
<td>60</td>
<td>180</td>
<td>360</td>
<td>600</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cause</th>
<th>%</th>
<th>Cause</th>
<th>%</th>
<th>Cause</th>
<th>%</th>
<th>Cause</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNS/Other</td>
<td>10</td>
<td>CNS/Other</td>
<td>55</td>
<td>CNS/Other</td>
<td>40</td>
<td>CNS/Other</td>
<td>35</td>
</tr>
<tr>
<td>ROP</td>
<td>10</td>
<td>ROP</td>
<td>25</td>
<td>ROP</td>
<td>0</td>
<td>ROP</td>
<td>0</td>
</tr>
<tr>
<td>Cataract</td>
<td>10</td>
<td>Cataract</td>
<td>20</td>
<td>Cataract</td>
<td>20</td>
<td>Cataract</td>
<td>15</td>
</tr>
<tr>
<td>Scarring</td>
<td>0</td>
<td>Scarring</td>
<td>0</td>
<td>Scarring</td>
<td>20</td>
<td>Scarring</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 5: Regional Variation in Avoidable Causes of Blindness

<table>
<thead>
<tr>
<th>High income Blind = 90,000</th>
<th>Middle income Blind = 290,000</th>
<th>Low income Blind = 1,020,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROP</td>
<td>9,000 (10%)</td>
<td>Cataract</td>
</tr>
<tr>
<td>Terratogens</td>
<td>5,400 (6%)</td>
<td>ROP</td>
</tr>
<tr>
<td>Cataract</td>
<td>5,400 (6%)</td>
<td>Terratogens</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>2,000 (2%)</td>
<td>Cataract</td>
</tr>
<tr>
<td>Total avoidable</td>
<td>21,800 (24%)</td>
<td>Low income Blind</td>
</tr>
</tbody>
</table>

* due to infections, trauma and tumours

References

Short Courses

Management Training for Eye Care Managers (2 weeks, March 2002)
Contact: Keerti Bhuyusan Pradhan, LAICO-Aravind Eye Care System
1-Anna Nagar, Madurai-625020, Tamilnadu, India
Phone: 0091 (0)452-537580; Fax: 0091 (0)452-530984; Email: keerti@aravind.org

Course for Cataract Surgical Rate Workers and Their Trainers (1 week, April 2002)
Contact: International Training and Consultancy Program
PO Box 23.310, Dar es Salaam, Tanzania
Tel. 00 255 (0)22 2601 544 or 00 255 (0)22 2601 543. E-mail: vanneste@intafrica.com
Intraocular Lens (IOL) Implants in Children

David Yorston
FRCS FRCCOphthalm
Specialist Registrar
Moorfields Eye Hospital
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Medical Advisor
Christian Blind Mission International

IOLs in Children
The insertion of an intraocular lens (IOL) is a routine part of cataract surgery in adults, even in many developing countries. It is now over fifty years since the first IOL was implanted. However, until recently, IOLs were not widely used in children.

As evidence for the long-term safety of IOLs in adults accumulates, there is a growing willingness to use IOLs in children. Provided the zonule is stable and the eye is not inflamed, IOL implantation is already routine in children over five years old, and increasingly in children between two and five years. The use of IOLs in children under two years remains very controversial. One reason for this is that the eye changes very rapidly in young children. In a three month old baby, an IOL power of 28-30D may be required for emmetropia. However, this will lead to significant myopia in later life. Unlike a spectacle lens or contact lens, it is not simple to change the power of an IOL.

Secondly, the diameter of the lens in an infant is 2mm less than an adult lens. This makes it difficult to implant a standard adult IOL into the capsular bag. The maximum diameter of the IOL should not exceed 12 mm. Smaller IOLs designed for use in children can be obtained. The lens should be placed in the capsular bag to reduce intraocular inflammation and the risk of complications such as aphakic glaucoma.

Possible Complications of IOLs in Children
Fibrinous uveitis. A major problem with implantation of IOLs in children is the increased inflammatory response, particularly in heavily pigmented eyes. A fibrinous uveitis is often seen about 3-7 days after surgery. This may be controlled by intensive topical steroids (hourly Gutt. prednisolone 1%), or by orbital floor, steroid depot injections. In a developing country, it is probably sensible to keep the child in hospital for a week after surgery to ensure early detection and treatment of uveitis. The risks of steroids should be considered. Despite steroid treatment, some children will develop a dense fibrous membrane, which may require surgical removal.

Astigmatism and residual refractive error. While an IOL corrects the aphakia, it does not correct astigmatism, and there will almost certainly be some residual spherical error. This means that spectacles will still be necessary to achieve the best possible vision. These spectacles will be lighter, and easier to wear than the thick lenses required for spectacle correction of aphakia. As they are relatively low powered lenses, there are fewer optical aberrations. It is important that the parents – and the medical and nursing staff – realise that insertion of an IOL does not mean that glasses will not be required.

We recommend that children should be refracted within a month of IOL implantation. Thereafter, children should be refracted every four months until they are two years old, and then every six months. If there is any amblyopia, it may be wise to refract even more often. Refraction must be carried out by someone who is skilled at accurate retinoscopy.

In young children, the glasses should leave the child slightly myopic (approx. –1.0D) as this will give them a good depth of field, and most things and people they want to look at will be within one or two metres. As the child gets older, and starts to read small print, an additional reading correction will be required.

Unsuitable eyes. Some eyes are unsuitable for IOL insertion. For example, microphthalmic eyes may be too small to receive an IOL. It is inadvisable to insert an IOL if the corneal diameter is less than 9mm. Eyes with chronic uveitis – associated with juvenile rheumatoid arthritis and rubella syndrome, for example – should never have an IOL, as the presence of an IOL may worsen the intraocular inflammation.

If the surgery is difficult, and it appears that it may be impossible to implant an IOL without damaging the corneal endothelium, it is better to leave the child aphakic with intact cornea rather than risk later corneal decompensation.

Advantages of IOLs in Children
The major advantage of an IOL is that it provides permanent continuous correction of the aphakia. This may be important in preventing amblyopia, and encouraging normal visual development. Although glasses are necessary to obtain the best vision, uncorrected pseudophakic vision is probably better than uncorrected aphakic vision.

Which Lens Should Be Used?
Many different materials and designs of intraocular lens (IOL) are available. Although anterior chamber lenses have been shown to be safe and effective in adults, there is no evidence confirming their safety in children. It is recommended that anterior chamber lenses should not be used in children at this time.

Poly(methyl methacrylate) (PMMA) has been the material of choice for all IOLs until recently. Coating the PMMA lens with heparin greatly reduces intraocular inflammation and fibrin formation. IOLs made from silicone lenses are not available, intra-operative addition of heparin to the infusion fluid may be beneficial. There are now silicon IOLs, hydrophilic acrylic IOLs, and hydrogel IOLs. Some of these new materials may have specific advantages in children, particularly increased bio-compatibility, and a reduced risk of uveitis. However, this has not yet been proven. Before inserting a silicon IOL made of a newer material, consider that it may need to last for 60 years, and we have barely ten years experience of most of the newer IOL materials compared to 50 years experience of PMMA.

Which Power of IOL?
The most difficult question is what power of IOL to use. In children over five years, where biometry is available, the IOL that will come closest to emmetropia should be used. If biometry is not available, and there is no information on the previous refractive state of the eye, then the standard power of IOls for the adult IOL (usually 21-22 dioptres) should be used.

In children two and five, it is...
usual to leave them with 1–2 D (dioptres) of hypermetropia, as this should come close to emmetropia later in life. If no biometry is available, a 23–24 D IOL is used. In children under two there is no clear consensus regarding appropriate IOL power. Correction of aphakia in an infant will usually to leave them with 1–2 D (dioptres) of accommodation, and it is important to provide reading correction, or bifocals, for older children. Although multi-focal IOLs are available, there are few reports of their effectiveness in children.

Conclusion

IOLs are increasingly regarded as the best treatment for aphakia in all age groups. However, insertion of an IOL into a child can be a difficult procedure, and, if there are serious complications, the vision may be permanently lost. It is possible that good pseudophakia may be better than good aphakia. However, it is absolutely certain that bad pseudophakia is much worse than good aphakia.

The Increasing Problem of Retinopathy of Prematurity

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Rio de Janeiro, Brazil

Background

Retinopathy of prematurity (ROP) is an important cause of avoidable childhood blindness in industrialised countries. It is also emerging as a problem in economically developing parts of the world because of the ever increasing survival of low, and very low birth weight infants, especially in urban settings.

Many studies have investigated risk factors for ROP, and the major parameters are birth weight and pre-term birth. In addition, the infant retina has been shown to be very susceptible to fluctuating oxygen levels. The development of ROP seems to be determined by the immaturity of the infantile retina and how early the damage to the tissues starts. Other factors related are hypoxia, sepsis, acidosis, vitamin E deficiency and intraventricular haemorrhage.

Retinopathy of prematurity has been reported to be responsible for 4.1–38% of severe visual impairment/blindness (SVI/BL) in Latin America. Countries with intermediate infant mortality rates (10–60 per 1000 live births) seem to have the highest proportion of childhood blindness due to ROP. These are middle-income countries that are introducing or expanding intensive neonatal care services in private and government sectors. Surviving neonates are generally not screened or treated for ROP, thus increasing the prevalence of blindness and severe visual impairment. Industrialised countries have infant mortality rates of less than 10 per 1000 and good neonatal intensive outcomes. In these settings ROP accounts for 6–18% of childhood blindness.7

There is little data on the proportion of premature, low birth weight babies who have the different stages of ROP, as well as little data on the proportion of childhood blindness due to ROP in Brazil. As ROP seems to be associated with infant survival, these rates may reflect overall mortality rates for each region (Table 1). There is neither a national programme for ROP screening nor available official childhood blindness registration data. As an isolated initiative, some public and private institutions perform screening for ROP using different guidelines.

The data presented in this paper come from examining babies in one neonatal unit in Rio de Janeiro, Brazil over a 3-year period (1998–2000). The data have been extrapolated to estimate the number of babies at risk of ROP in Rio, and in Brazil as a whole. The implications for screening programmes in Brazil are discussed.

Recent Data from One Neonatal Unit in Rio de Janeiro, Brazil

The Fernandes Figueira Institute /Oswaldo Cruz Foundation (IFF/FIOCRUZ), Rio de Janeiro, is one of the national reference centres for maternal and infant care. Screening for ROP has been undertaken since 1998. Criteria for screening are a birth weight of less than or equal to 1500 g and gestational age less than 33 weeks. The first exam was performed 4–6 weeks after birth, and follow-up depended on the retinal findings at the time of each examination. Treatment by cryotherapy to the avascular peripheral retina was indicated when threshold disease was diagnosed.

Data collected from all surviving premature infants born between January 1998 and December 2000 are shown in Table 2. Any stage of ROP was diagnosed in 62.4% of babies, which is a higher proportion than that reported in other studies. Mortality data are available for babies born between January 1998 and December 2000.
Retinopathy of Prematurity

Table 2: ROP Stages/Birthweight 1998-2000 (IFF)

<table>
<thead>
<tr>
<th>Birthweight Range</th>
<th>Number</th>
<th>%</th>
<th>Number</th>
<th>%</th>
<th>Total No. Screened</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1000 g</td>
<td>2</td>
<td>42.9%</td>
<td>4</td>
<td>71.4%</td>
<td>6</td>
</tr>
<tr>
<td>1000 - 1500 g</td>
<td>7</td>
<td>14.3%</td>
<td>22</td>
<td>37.0%</td>
<td>29</td>
</tr>
<tr>
<td>1500 - 2500 g</td>
<td>27</td>
<td>54.1%</td>
<td>22</td>
<td>44.9%</td>
<td>49</td>
</tr>
<tr>
<td>&gt; 2500 g</td>
<td>5</td>
<td>10.2%</td>
<td>10</td>
<td>21.7%</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100%</td>
<td>55</td>
<td>100%</td>
<td>95</td>
</tr>
</tbody>
</table>

*birthweight <1000g to 1210g

Table 3: Number of Live Births in Rio de Janeiro City Weighing between 1,500g from Jan-Dec 2000 and Survival Rates in the Different Public Neonatal Intensive Care Units

<table>
<thead>
<tr>
<th>Hospitals Type</th>
<th>No. of Live Births</th>
<th>Survivors</th>
<th>% Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 County Hospitals</td>
<td>925</td>
<td>604</td>
<td>65.3%</td>
</tr>
<tr>
<td>3 State Hospitals</td>
<td>185</td>
<td>101</td>
<td>54.6%</td>
</tr>
<tr>
<td>3 Federal Hospitals</td>
<td>301</td>
<td>177</td>
<td>58.8%</td>
</tr>
<tr>
<td>2 University Hospitals</td>
<td>74</td>
<td>49</td>
<td>66.2%</td>
</tr>
<tr>
<td>Total</td>
<td>1485</td>
<td>931</td>
<td>62.7%</td>
</tr>
</tbody>
</table>

Table: Number of Live Births in Rio de Janeiro City Weighing between 1,500g from Jan-Dec 2000 and Survival Rates in the Different Public Neonatal Intensive Care Units

In order to determine the present situation in Rio de Janeiro County, data on all live births were collected for the year 2000 with the cooperation of the Municipal Secretary of Health. Rio de Janeiro has a population of approximately 5.6 million people, with 103,000 live births/year. It is estimated that 931 neonates are known to have been screened and treated (Table 3). There are no data for the private units, but it is estimated that around 202 neonates under 1500g survived in 2000. In the whole county in the year 2000, therefore, there were approximately 1133 babies at risk of ROP; approximately 60 – 80 babies would have required treatment, and up to 40 may have become needlessly blind.

Extrapolation of Findings to Rio de Janeiro and Brazil

In order to determine the present situation in Rio de Janeiro County, data on all live births were collected for the year 2000 with the cooperation of the Municipal Secretary of Health. Rio de Janeiro has a population of approximately 5.6 million people, with 103,000 live births/year. It is estimated that 931 neonates are known to have been screened and treated (Table 3). There are no data for the private units, but it is estimated that around 202 neonates under 1500g survived in 2000. In the whole county in the year 2000, therefore, there were approximately 1133 babies at risk of ROP; approximately 60 – 80 babies would have required treatment, and up to 40 may have become needlessly blind.

Brazil is a large country with huge regional variation in levels of socio-economic development, and a population of approximately 160 million people. It is estimated that of the 3 million live births in 2000, 1% have a birth weight of less than 1500g. Based on an overall mortality rate of 40%, there are estimated to be 18,000 survivors at risk of ROP each year, all of whom require screening for ROP. There is some variation in the proportion of babies with threshold disease, but it is likely that 5-7% of those at risk will benefit from treatment, i.e., 900 – 1260 babies each year. If all these neonates were not screened or treated, 450 – 630 would become needlessly blind. Considered in terms of blind-years (i.e., number of individuals blind x estimated life expectancy), this translates to approximately 22,500 – 31,500 blind years annually.

An increased incidence of blindness from ROP can be expected in Brazil, as services for neonates are being introduced. To prevent this, there is a need to promote some specific disease control measures, development of human resources as well as appropriate technology and infrastructure according to the Vision 2020 programme. There is an evident need to start a screening programme. To assure better communication among the involved group as well as awareness of the importance of screening, workshops about retinopathy of prematurity for all health care professionals, including neonatologists, nurses and social workers should be organised. Provision of adequate equipment is recommended as none of the units have an indirect ophthalmoscope or 20 D lens for diagnostic purposes, nor do they have cryo or laser devices for treatment. In addition, well trained ophthalmologists are required to perform indirect ophthalmoscopy in pre-term babies as well as treat threshold disease. However, hindrances in implementing a programme in an integrated fashion, with adequate planning, are predictable in such a large country as Brazil. According to Ziakas et al., a co-ordinated regional strategy can improve the implementation of national guidelines for screening ROP, which in the UK resulted in a higher uptake for babies most at risk.

Screening guidelines pertaining to industrialised countries may prove inappropriate in middle-income economies, which may have lower standards of neonatal care and poorer neonatal outcomes. In these situations larger, less pre-term babies who might be at risk of ROP would not be included in a screening programme. Since 2001 a new protocol has been adopted, which was developed by the NO-ROP GROUP. The establishment of new programmes throughout Latin America provides an excellent opportunity to collect data from all the countries involved using standard screening criteria, examination methods and definitions of disease. The new screening criteria are both weight less than 1750g and all who have had 30 or more days of oxygen, regardless of birth weight or gestational age. The first examination should be at 6 – 7 weeks after birth. Blindness and visual impairment have important socio-economic implications. Blindness occurring in infancy is a long-lasting burden, both in terms of social dependence and lost productivity. Therefore, a public health intervention that saves the sight of even a relatively small number of infants and children provides significant savings, while ensuring a better quality of life for those affected.

Acknowledgments

The author would like to express her gratitude to Dr Clare Gilbert and Dr Allen Foster for their advice.

References

Review Article

Guidelines for Setting Up a Low Vision Programme for Children

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Introduction

Blindness and low vision are major causes of morbidity and have profound effects on the quality of life for many people. They inhibit mobility and economic well-being of the individuals affected as well as their families. Childhood blindness (CBL) is one of the challenges faced by the world generally and developing countries in particular. In industrialised countries, certain mechanisms for normal schooling and socio-economic rehabilitation of visually impaired children exist. However, in developing countries due to scarce resources and traditional taboos, these children are rarely able to attend the normal educational institutions. Vision 2020: The Right to Sight, has recognised CBL and low vision and refraction as important strategic themes for control of avoidable blindness.

This paper attempts to provide some guidelines on how a low vision programme for children could be set up in a developing country.

Clinical Definition

A person with low vision is one who has impairment of visual function even after treatment and/or standard refractive correction and has an acuity of less than 6/18 to light perception or a visual field less than ten degrees from the point of fixation, but who uses or is potentially able to use vision for the planning and execution of a task.

Functional Definition

Anne Corn, in 1989, defined Low Vision as ‘a level of vision that with standard correction hinders an individual in the planning and/or execution of a task, but which permits enhancement of the functional vision through the use of optical or non-optical devices, environmental modifications and/or techniques’. Natalie Barraga, in 1983, designated children with low vision as those who have limitations in distance, but are able to see objects and materials within a few inches or at a maximum of a few feet away.

Ten Steps in Developing a Low Vision Programme for Children

Step 1: Establish a Need

The need can be established using direct or anecdotal evidence. This may be in the form of census surveys that give the proportion of children under 16 years, national prevalence of blindness surveys, surveys of schools for the blind, blind registry’s, and regional estimates of prevalence of childhood blindness. The mean global prevalence of childhood blindness/severe visual impairment (BI/SVI) is 0.75/1000 and the prevalence of low vision is about twice that number. While establishing a need at national level, it is also helpful to determine the magnitude at the provincial and district levels where appropriate.

Step 2: Situation Analysis of Available Resources

As a precursor to a low vision programme, a concept will have to be developed that determines what is available and what needs to be achieved over a certain period of time, and the difference between these would be the gap analysis. This could be in the form of training that needs to be imparted to existing cadres to be able to perform a low vision assessment, prescribe low vision devices (LVDs) or manufacture low cost LVDs. It may also involve determining means and ways to make the best use of existing infrastructure, e.g., space in an eye department for a low vision clinic.

Step 3: Gap Analysis of Available Resources

The next step in the sequence of planning is to conduct a situation analysis of the available infrastructure (eye care services, education institutions, social welfare services, organisations of and for the blind). Human resources available for service delivery to the visually impaired at tertiary level (ophthalmologists, optometrists, special education/resource/itinerant teachers and orthoptists), at secondary level (ophthalmic medical assistants, nurses, refractionists, teachers, orientation and mobility instructors) and at primary level (community based rehabilitation workers, community health workers and social workers) are assessed. Appropriate technology opportunities available, i.e., current level of optical services and its capacity to produce assorted low vision devices, are noted. The situation analysis should also identify what current legislation/laws ensure the rights of disabled persons and how they can be utilised effectively.

The situation analysis will identify the most suitable cadres at the tertiary, secondary and primary levels on whom the service can be based. The review of the infrastructure will determine where the services will be based so as to ensure maximum utilisation. An analysis of the technology available will help in determining what can be produced/procured locally and what will be needed from external sources.
Low Vision in Children

Step 4: Develop a Plan for Low Vision with Short, Medium and Long Term Objectives

The situation analysis and the gap analysis together will form the basis for development of a plan for low vision services for children. Usually, this forms part of a more comprehensive low vision programme. It is useful to define short, medium and long term objectives. Examples of short term objectives could be training of core cadres in low vision, awareness workshops for eye care professionals and including a low vision component in existing training programmes, e.g., paramedics and teachers, and standardising curricula to incorporate low vision. Medium term objectives may include establishment of low vision clinics, networking of service providers, and development/enhancement of the local capacity to produce LVDs. In the long term, the low vision concept and component should be fully integrated into a national comprehensive eye care programme with a measured increase in the quality and coverage of service.

Step 5: Identify and Mobilise Resources

Even though the main emphasis on developing a low vision programme remains the best and effective utilisation of existing resources, nevertheless, some external support will still be required in the form of training of national focal/resource persons in low vision and setting up of low vision clinics (supply of equipment). The different components of the plan (short, medium and long term) should be costed and funding sought from the government, non-governmental organisations, community based and service organisations and commercial enterprises willing to support programmes for disabled persons.

Step 6: Pilot the Programme in a Defined Setting or Area

As in most new programmes, it is better to pilot the plan first in a defined setting or area to test the concepts proposed and identify deficiencies. The piloting phase could conceivably be done by identifying a district that has a secondary level eye unit, availability of optical services and an educational institution willing to participate in this programme. Access to a tertiary eye department and existence of an on-going community based rehabilitation programme in the area are definite added advantages.

Step 7: Develop Local Expertise for Production of Assessment Materials and LVDs

Simple optical and non-optical low vision devices and assessment materials can be produced in most countries where basic optical services exist. The assessment materials can be developed using a desktop computer and laser printer. A semi-skilled technician with basic optical knowledge can be trained in a short time to produce low vision devices. Most of the materials involved in the production of low vision devices are usually available locally and may include PVC pipes and optical lenses. The issue of non-availability of optical lenses in higher power and aberrations associated with these lenses can be overcome by combining 2 or 3 low power lenses to produce a higher power system.

Step 8: Network with Other Service Providers of the Visually Impaired

The role of low vision service as a bridge between medical, educational and rehabilitative services has been recognised. The low vision centre in the district can act as a referral point for the child to access other services that may be required, e.g., orientation and mobility training, early intervention, and peer support groups. One way in which this could be brought about is to hold networking meetings between the different service providers and develop a consensus on the methods for detection of the visually impaired child in the community, referral to a low vision clinic for assessment and prescription of LVDs, appropriate placement in school, access to statutory benefits and elimination of barriers to care.

Step 9: Replicate the Pilot Model by Integration into the National Vision 2020 Programme

The lessons learnt from the piloting phase can then be employed to develop a larger programme within the framework of a national Vision 2020 programme. This will ensure its lateral integration with other eye care related activities, removing the need to set up a vertical programme, and so promote its long term sustainability.

Step 10: Maintain the Dynamic Character of the Programme and Increase Coverage

The low vision programme thus developed as part of a national comprehensive eye care plan should be dynamic in character with an ability to absorb changes in technology, move towards sustainability and have within it a mechanism for reporting, monitoring and evaluation. The goal should be to increase the coverage of the service and continually improve its quality.

Conclusion

Most specialties in ophthalmology are costly to develop and require specially trained people and sophisticated equipment. Low vision as a specialty is one area that can easily be initiated in any ophthalmic, educational or optometric set-up with a minimum of investment and training. Most of the devices used for assessment can be produced locally using indigenously available materials and appropriate technology. The use of simple magnifiers can help children pursue education in normal stream schools and improve their quality.

Each country can identify its own relevant existing human resources and train them in a short period of time to provide low vision care in a school, hospital or clinic setting. Standard manuals on production of inexpensive low vision devices can provide instruction in making these devices. As experience is gained, and with some input from external sources, a cost effective and sustainable low vision service can be developed. It would be preferable to plan the development of any such service so that it is capable of fitting in the ongoing national health, educational and social welfare programmes. This will not only ensure its sustainability and cost containment but also its early acceptability and implementation.

References


Further Reading

An article which complements this report was written by Lynne Ager in a previous issue of the Journal. Ager L. Optical Services for Visually Impaired Children. J CommEyeHealth 1998; 11: 38-40.

Editor
Training Ophthalmologists for Children’s Eye Care Centres

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Childhood Blindness and Vision 2020

Since children constitute only 3% of the world’s blind population, childhood blindness has not been given its due importance during allocation of health resources. However, the control of blindness in children has been included as a priority within the World Health Organization’s (WHO) Vision 2020: The Right To Sight programme. Vision 2020 will be implemented through the following activities:

1. Specific disease control measures.
2. Human resource development.
3. Development of appropriate technology and infrastructure.

The main priorities for action are:

- Elimination of vitamin A deficiency
- Treatment of congenital cataract, glaucoma, retinopathy of prematurity
- Serious refractive errors.

This will be achieved through:

- Promotion of primary health care (PHC)
- Developing specialist children’s eye services, including surgery and low vision clinics
- School screening.

The Children’s Eye Care Centre at LVPEI

The Children’s Eye Care Centre at LVPEI has been selected by the WHO and Vision 2020: The Right to Sight programme to be the education centre for training ophthalmologists and paramedical professionals in paediatric eye care in South-East Asia. However, several other institutes in the government and the private sector offer training in paediatric ophthalmology in India. It is expected that other training centres will be able to offer comprehensive training such as has been designed at LVPEI.

Human Resource Development

Low-income countries, such as in the African region, suffer from a severe shortage of eye care personnel. This is most extreme in sub-Saharan Africa. Even in middle-income countries in which there are, in theory, sufficient human resources, there may be a shortage of the specialist skills needed to combat childhood blindness (for example screening for ROP). Unless this lack of human resource is addressed, it will be extremely difficult to eliminate the avoidable causes of childhood blindness.

There are four cadres of health workers who are of particular importance in reducing the prevalence of avoidable childhood blindness:

- Paediatric-orientated ophthalmologist
- Low vision professional
- Refractionist
- Primary health care worker.

Who is a paediatric-orientated ophthalmologist?

Paediatric-orientated ophthalmologists are qualified ophthalmologists with an interest in, and understanding of, children’s visual development. In most low-income countries, there are very few ophthalmologists with specific training in childhood eye disease. Paediatric-orientated ophthalmologists are defined on the basis of their skills and interests, rather than on the basis of having completed postgraduate subspecialty training in paediatric ophthalmology. They should have the required skills to deliver a high standard of children’s eye care. The minimum requirement is one per 10 million population. In low- and middle-income countries, most of their practice will be routine adult ophthalmology, however, they will also take a special interest in the prevention of childhood blindness and treatment of eye diseases in children.

Infrastructure and Appropriate Technology

Personnel and equipment have been grouped according to what is absolutely essential, the basic minimum for a specialist centre; what is useful, and what would be ideal. Moving from the basic minimum to an ideal unit should allow for an increase in the quantity of work done as well as an improvement in quality. Table 1 provides the list of human resources needed for 10 million population and Table 2 includes the equipment required.

Note:

1. This list assumes that the standard equipment of a district eye hospital will be available.
2. Some additional special instruments for paediatric cataract, glaucoma and other operations may be needed, depending on the type of surgery carried out at the Centre, for example, a goniotomy knife.
3. A- and B-scans are often sold as one combined instrument, which is less expensive than buying both machines separately.
4. All prices given are very approximate and usually represent the upper limit of

Table 1: Children’s Sight Centre - Resources Needed for 10 Million Population

<table>
<thead>
<tr>
<th>Human Resources</th>
<th>Essential</th>
<th>Useful</th>
<th>Ideal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paediatric-orientated ophthalmologist</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Refractionist</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Orthoptist</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Low vision specialist</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Paediatric/neurologist (part-time)</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Paediatric anaesthetian</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Paediatric nurse</td>
<td>1</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Operating room assistant</td>
<td>1</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

4. All prices given are very approximate and usually represent the upper limit of...
Training Fellowship Programme for Paediatric Ophthalmology

L V Prasad Eye Institute (LVPEI) is a premier eye care facility in South Asia, and is a non-profitable charitable institution which started in 1987. It has state-of-the-art facilities for providing high quality eye care to the community.

The Jasti V Ramanamma Children’s Eye Care Centre, was established in 1997, and is the first of its kind in India. The Centre has the infrastructure and facilities for integrated management of all eye diseases that afflict children. The Centre offers excellent diagnostic facilities, including examination of children under anaesthesia, and evaluation/management of children with visual impairment or blindness. It has active collaboration with other institutions in India and abroad for research and education. The Centre has established an interdisciplinary approach for the comprehensive management of paediatric eye diseases, and is engaged in training ophthalmologists.

1. Need for the course

It is estimated that there are 1.4 million blind children in the world and half a million children become blind every year. Childhood blindness accounts for 75 million blind years. Thus, childhood blindness is the second largest cause of blind-person years. Childhood blindness has also been estimated to cause one-third of the 75 million dollars total economic loss from blindness. Recent population-based studies in the State of Andhra Pradesh, India (APEDS) indicate that one out of every 1,000 children is blind, and at least half of this blindness is readily avoidable. Throughout the State it is estimated that 10,000 children are ‘blind’ due to uncorrected refractive errors which can be easily corrected by a pair of spectacles. Another 4,000 children are blind due to corneal scarring (vitamin A deficiency) and 2,700 are blind due to cataract. If these figures are extrapolated to the entire country, then there would be about 260,000 (0.26 million) children who are blind in India. Although there are no accurate data on the causes of childhood blindness in India, there could be about 28,600 (11%) children blind due to cataract/aphakia and another 7,800 (3%) paediatric cataract and other paediatric eye problems, and to provide equipment and supplies to selected institutions.

Training Fellowship Programme for Paediatric Ophthalmology

LV Prasad Eye Institute has started training fellowships in paediatric ophthalmology.

2. Objectives

The objective of the training programme is to train paediatric ophthalmic teams from large eye care centres in the Asian region and beyond in the management of congenital cataract and other paediatric eye problems, and to provide equipment and supplies to selected institutions.

3. Training format

Training is being conducted at two levels. Short term training for 3 months is provided for experienced ophthalmologists so they can acquire special skills in paediatric ophthalmology. In order to develop a team approach, anaesthetists and nurses from the same institutions will also be trained for the same 3 month period. The second level of training is for 12 months, and is intended for younger ophthalmologists as a fellowship in paediatric ophthalmology with a view to develop paediatric ophthalmology units in selected countries.

The short term training programme will have 10 candidates who are senior ophthalmologists from WHO/IAPB member countries – two each from Bangladesh, India and Indonesia and one each from Myanmar, Nepal, Sri Lanka and Thailand. For the long term programme, 10 young ophthalmologists from the same member countries will be identified and selected by the Regional Chairman, IAPB, South-East Asia and the Director of Education, L V Prasad Eye Institute.

(a) Three Month Training Programmes

Short term trainees will primarily focus on acquiring skills in the management of paediatric cataract, but they will also gain experience in corneal and glaucoma surgical procedures, by observation. Trainees will have their surgical skills assessed before they are allowed to perform independent surgery on paediatric eyes. It will generally not be possible to train candidates in pars plana vitrectomy since that would require proper vitreo-retinal surgical experience.

During the 3 months, trainees will spend 6 weeks with two consultants who specialise in paediatric cataract surgery. During the remaining 6 weeks trainees will spend the first 3 days of each week in the paediatric ophthalmology clinic observing the strabismology work, and the remaining 3 days of the week observing the management of glaucoma, screening for ROP, and paediatric ophthalmic plastic surgery.

Table 2: Children’s Sight Centre – Resources Needed for 10 Million Population

<table>
<thead>
<tr>
<th>2. Equipment</th>
<th>Approx. Unit Cost (US $)</th>
<th>Essential</th>
<th>Useful</th>
<th>Ideal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>For use in operating theatre:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating microscope (co-axial)</td>
<td>10,000</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Cryotherapy machine with paediatric probes</td>
<td>10,000</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Vitrectomy machine</td>
<td>20,000</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Paediatric anaesthesia equipment</td>
<td>10,000</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>CRM (access to)</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>For use in outpatients and/or theatre:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laser (solid-state)</td>
<td>30,000</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Tonometer: Perkins or Tonopen</td>
<td>3,000</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Indirect ophthalmoscope</td>
<td>7,000</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Slit-lamp portable</td>
<td>2,000</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>A-scan ultrasound</td>
<td>5,000</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>B-scan ultrasound</td>
<td>10,000</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Retinometer (hand held)</td>
<td>3,000</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>For use in outpatients:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tests of visual acuity for pre-verbal children</td>
<td>500</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Colour vision tests</td>
<td>200</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Automated visual fields</td>
<td>5,000</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Nerve fibre layer</td>
<td>15,000</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Reflectometer</td>
<td>3,000</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Low vision equipment</td>
<td>5,000</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Tonometer- Perkins or Tonopen</td>
<td>3,000</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>YAG laser</td>
<td>15,000</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Electrodiagnostic equipment</td>
<td>25,000</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

* children often need to be examined under anaesthesia.
Training for Children’s Eye Care Centres

(b) One Year Fellowship Programme

Training content
The areas where the trainees would be given exposure include:
- Adult and paediatric cataract surgery
- Paediatric glaucoma procedures
- Strabismus surgery
- Exposure to treating ROP
- Exposure to ophthalmic plastic surgery and tumours
- Management of low vision and visual rehabilitation in children
- Genetic counselling.

Training schedule
The training will start on 1st January and 1st July each year. The first candidates started their fellowship on 1st July 2001.

<table>
<thead>
<tr>
<th>Year/Month</th>
<th>No. of candidates</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 2001</td>
<td>2</td>
</tr>
<tr>
<td>Jan 2002</td>
<td>2</td>
</tr>
<tr>
<td>July 2002</td>
<td>2</td>
</tr>
<tr>
<td>Jan 2003</td>
<td>2</td>
</tr>
<tr>
<td>July 2003</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year/Month</th>
<th>No. of candidates</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 2001</td>
<td>2</td>
</tr>
<tr>
<td>Oct 2001</td>
<td>2</td>
</tr>
<tr>
<td>Jan 2002</td>
<td>2</td>
</tr>
<tr>
<td>April 2002</td>
<td>2</td>
</tr>
<tr>
<td>July 2002</td>
<td>2</td>
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</tbody>
</table>

Training rotation
During the first month trainees will spend time learning basic adult cataract surgery, and will also gain experience in cataract-related investigative procedures such as biometry. Also the trainees are expected to work in the wet lab during this period. The following is the schedule of the trainees during their one-year fellowship programme:
- Basic cataract surgical skills - 1 month
- Anterior segment including cornea and cataract surgery - 3 months
- Strabismus and paediatric ophthalmology - 3 months
- Paediatric glaucoma - 2 months
- Ophthalmoplastic and tumours - 1 month
- Retina - 1 month
- Repeat posting in cornea and anterior segment – 1 month

Evaluation
Each candidate will be asked to keep a record of all the cases which they performed on their own, or at which they assisted. At the end of each posting the fellow’s performance will be evaluated by the faculty at L V Prasad.

Post-Training Support
A maximum of US$20,000 has been allocated for the equipment at each centre from where the long term fellows will be trained. These long term trainees will be encouraged to visit LVPEI in future as part of our observer fellowship programme to keep their knowledge up-dated.

References

Table 3: Admission Year and Month / Number of Candidates

<table>
<thead>
<tr>
<th>Year/Month</th>
<th>Long Term (1 Year)</th>
<th>Short Term (3 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of candidates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July 2001</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Jan 2002</td>
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<tr>
<td>July 2002</td>
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<tr>
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<tr>
<td>Oct 2001</td>
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<td>Jan 2002</td>
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<td>2</td>
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<tr>
<td>April 2002</td>
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ROYAL COLLEGE OF OPHTHALMOLOGISTS
17 Cornwall Terrace, Regent’s Park, London NW1 4QW, UK

Diploma Examination in Ophthalmology
DRCOphth
ANNOUNCING A CHANGE TO THE STRUCTURE
From November 2001, there has been no Practical Refraction section in the Diploma Examination

The New Diploma Examination (DRCOphth) is a test of ophthalmic knowledge including relevant basic sciences and clinical skills for candidates who have worked in ophthalmology for one year (full-time or equivalent). This work experience need not have been gained in the UK.

Information, Exams syllabi, Applications from:
The Head of the Examinations Department at the above address
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Or E-mail: rco.exams@btinternet.com
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UK and Overseas Examination Calendar 2002

<table>
<thead>
<tr>
<th>Exam</th>
<th>Dates of Examination</th>
<th>Location</th>
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<td>Part 1</td>
<td>8-9 April</td>
<td>India</td>
<td>22 February</td>
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<td>22-23 April</td>
<td>UK, India</td>
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<td>Part 2</td>
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<td>India</td>
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<td>4-8 November</td>
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<td>21 January</td>
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<td>UK</td>
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<td>DRCOphth</td>
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<td></td>
<td>18-19 November</td>
<td>UK</td>
<td>7 October</td>
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Overseas Location:
- Aravind Eye Hospital, Madurai, Tamil Nadu, India
Evaluation of Training

Detlef Prozesky
MBChB MCommH PhD
Professor
Community Based Education
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'Quality assurance' and 'appraisal' are words we often see nowadays. Training institutions in many countries are trying to improve the quality of the training they provide. This is not new - good teachers have always looked critically at the way they teach, in order to do it better.

What is evaluation? Broadly, it means looking carefully at something that we are worried about, and then making a judgement about it. We usually do this because we want to improve the thing we are looking at. The following diagram shows this process more clearly:

- We identify a problem
- We check if our improvements are working
- We make a judgement about the problem
- We take action to improve the situation

We call this the 'evaluation cycle'. Once you have seen if your plan of improvement is working you identify a new problem in your teaching, and evaluate that again.

This is clearly a kind of research. Perhaps you feel: 'I'm not an evaluator! I can't do this kind of research!' Another way of looking at evaluation is that you use your common sense to judge what you (and other teachers) do in your work. If you think back you will see that you have often done it - but this article should help you to do it more systematically. Also, you don't have to evaluate everything at once. You can choose a small part of your work which seems to be giving particular trouble, and start by looking at that. What might this be?

Things Teachers Evaluate

The curriculum: what we teach
Curricula get out of date easily, and people just go on year after year teaching the same material.

Here are some areas you might want to look at:

- The overall curriculum: is it complete? Does it contain all the knowledge and skills that the students are going to need to perform their job?
- The overall curriculum: is it overloaded? Are you teaching a lot of 'nice to know' and 'nice to do' material, instead of concentrating on the 'must know' and 'must be able to do' material?
- The content of individual lessons: do they contain what the curriculum planners intended them to? Do they emphasise priorities, and leave out the rest? Does the teacher present the material in a sequence which helps students to understand it more easily?

The lesson process: how we teach
- The teaching methods: are they appropriate for the domain of the material you are teaching? Do students learn skills by seeing a demonstration, and then practising the skill personally?
- How well do teachers use these methods? Are lectures well prepared and skilfully delivered, and do they interest and involve the students? Are practicals well organised, with checklists, and do all students get feedback about their performance?
- About the teaching aids that are used in class: is their quality good? Are they well used - do they help the learning process?
- About the handouts and written documents that are used: do they focus on priorities? Are they clearly written, using simple language? Are they suitably illustrated?

The assessment: how we test our students

- Is the assessment valid? Is it suitable for the 'domain' of the subject matter (for example, do we assess skills by observing students perform them)? Does it mostly contain the 'must know' and 'must be able to do' material? Does it cover most of the important topics?
- Is the assessment reliable? Are there good marking schedules and checklists, to guide the examiners so that they give fair marks?
- What is the 'assessment curriculum'? In other words, does the assessment make students learn those things which we consider to be the priorities?

These are just some of the possibilities.

Of course, you will decide from your situation what you should be looking at.

Instruments to Collect Information for Evaluation

Once we have identified a problem we need to collect more information about it. How do we do this? There are a number of 'instruments' that we commonly use, to collect data for evaluation:

Document study
Here we examine written curricula, timetables, lesson plans, visual aids, handouts, exam papers and so on. We compare them to a standard that we have set beforehand. This can be done in an unstructured way (by reading them and gaining an overall impression), or more structured (by making a checklist beforehand, of things we are looking for in the document). One special kind of document study is the 'readability test', where we check how easily students are able to read and understand the handouts and textbooks we give them.

Observing practice
Here we sit in during classroom and practical teaching, and observe what is going on. Once again we can do this in an unstructured way (by writing down what happens, and analysing it afterwards) or a structured way (by having a checklist of things we would like to see, and checking if these happen). We can also ask colleagues or even students to observe us, as we teach.

Questionnaires
We use these when we want to know people's opinion about an aspect of a training course - practical arrangements, the relevance of the material that is taught, what happens in class and so on. Again, questionnaires can be unstructured (asking the respondents to write general comments on how they feel about the topic) or structured (giving questions with pre-prepared answers, from which they have to choose the one they prefer). There are some special kinds of questionnaires we use:

- The 'student happiness questionnaire' (see box on next page)
- Diaries: we ask teachers or students to keep diaries of their experiences on the course.

Interviews (with individuals) and discussions (with groups)
These are useful when we want information from people about aspects of our courses and teaching, but in more depth and detail. We carefully prepare some questions, and put them to the persons...
The Clinical Picture of Vernal Kerato- Conjunctivitis in Uganda

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PO Box 7072, Kampala
Uganda

Introduction

Vernal keratoconjunctivitis (VKC) is a recurrent, bilateral, interstitial inflammation of the conjunctiva, resolving spontaneously after a course of several years and characterised by giant papillae (with a cobblestone appearance) on the tarsal conjunctiva, a discrete or confluent gelatinous hypertrophy of the limbal conjunctiva, and a distinct type of keratitis. It is associated with intense itching, redness or brownness, lacrimation, photophobia and a mucinous, ropy discharge containing eosinophils. VKC is a type 1 hypersensitivity reaction but with additional immune mechanisms involved in its pathogenesis. VKC has a global distribution with a widely varying incidence. It is less common in northern Europe and North America, and more common in the African continent, the Mediterranean countries, in Central and South America, and the Indian subcontinent.

All patients in this study were indigenous Africans, and all had been exposed to similar environmental conditions.

Clinical Report

The high prevalence of VKC in Uganda, and the lack of data on the pattern and clinical picture of this medical condition provided the impetus for this study.

Subjects and Methods

This study was carried out in two places, at the eye clinic, Department of Ophthalmology, Makerere University and the Department of Community Eye Health, Makerere University. All patients in this study were indigenous Africans, and all had been exposed to similar environmental conditions.
Vernal Keratoconjunctivitis

Many of the patients had a history of allergic rhinitis, asthma, or hay fever. However, my own experience has been that atopic dermatitis and allergic rhinitis are not common in Africa. Instead, there was a red to pink uniform appearance of the cornea with the placido disk to determine the presence of keratocomas were carried out. Patients who had any other keratoconjunctival disease were excluded from the study. All male patients underwent a full systematic examination.

Patients were reviewed once a month, and the period of follow-up ranged from a minimum of three months to a maximum of six years.

Each patient received treatment to relieve symptoms, hydrocortisone eye drops or prednisone eye drops, whichever was available, one or the other was given, picked at random by the clinic dispensing nurse.

The incidence of VKC is associated with hypogonadism and hypoadrenalism in males. Clinical evidence for this is based on findings in a Japanese population. However, my own findings in this study do not support the stated association.

Since 80 of my patients were under 15 years of age, this disease in Uganda is one of young persons, resolution mostly occurring at puberty.

Over 70% of all patients noted significant seasonal variations of their symptoms; more than 85% reported accentuation of symptoms during the hotter, drier months. Seasonal variability was marked in all the three sub-types, but was most marked in the limbal sub-type.

Limbal or mixed VKC had proportionately more corneal complications than the palpebral type. This finding agrees with those of Easty and others working in Europe and the Middle East. The high incidence of corneal involvement in limbal VKC is most likely due to poor limbal nutrition, affecting the nutrition of the avascular cornea. Some of my patients had keratocomas, other studies have reported even higher incidences.

All the three sub-types of VKC, namely limbal, mixed, and palpebral were seen. The most dominant sub-type is limbal, which constituted 75% of all patients. This was followed by the mixed type which was 18% of the total. Palpebral sub-type VKC was diagnosed in only 7% of the patients.

No patient presented with either hypogonadism or hypoadrenalism (see below).

Discussion

Table 1 displays the age and sex distribution at the onset of VKC: the highest incidence of VKC occurred in the age group 5-9 years, and the lowest 20 years and above.

Table 1: Age and Sex Distribution of Patients

<table>
<thead>
<tr>
<th>Age Group in Years</th>
<th>Male (%)</th>
<th>Female (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>38 (9)</td>
<td>29 (7)</td>
<td>67 (16)</td>
</tr>
<tr>
<td>5-9</td>
<td>88 (21)</td>
<td>64 (15)</td>
<td>152 (36)</td>
</tr>
<tr>
<td>10-14</td>
<td>59 (14)</td>
<td>59 (14)</td>
<td>118 (26)</td>
</tr>
<tr>
<td>15-19</td>
<td>15 (3)</td>
<td>32 (8)</td>
<td>47 (11)</td>
</tr>
<tr>
<td>20 &amp; above</td>
<td>9 (2)</td>
<td>28 (7)</td>
<td>37 (9)</td>
</tr>
</tbody>
</table>

Palpebral VKC, that of cobblestone formation, was hardly seen. Only one patient out of the 29 with palpebral VKC presented with a mild form of cobblestone formation. Instead, there was a red to pink uniform colour, completely concealing all tarsal conjunctival vessels.

There is a well established association of atopic disease with VKC. Several authors who have investigated the exact nature of this relationship have come to varying conclusions. A low incidence of atopic disease in VKC in Uganda has been recorded. Relatively low incidences of atopic diseases in VKC have been recorded in other parts of the world. There are no previous studies in either Uganda or other East African countries to make comparisons.

References

A Clinic-based Survey of Blindness in Kenya

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N Dean Larson MD
Ophthalmologist
Esther Menza
Clinical Officer
Ammon Mboti
Clinical Assistant
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PO Box 81465, Mombasa
Kenya

Patients and Methods

During the course of a seven-month period in 1998 and 1999, 617 new patients with unilateral or bilateral blindness were evaluated as to the underlying cause. This was done at the Lighthouse for Christ Eye Centre in Mombasa, Kenya. These patients came not only from the Mombasa area, but from the entire coastal region – from the border with Tanzania in the south to the frontier with Somalia in the north to the highway to Nairobi. Many of these had unilateral or bilateral blindness were evaluated by one of the ophthalmologists at the Lighthouse. Patients with visual acuity of less than 3/60 in one eye, but 3/60 or better in the other eye were considered unilaterally blind. Those with less than 3/60 in both eyes were considered bilaterally blind. When compound causes for blindness were present in one eye, the most preventable or avoidable one was selected as the main cause of the blindness. This same principle was applied when different causes led to blindness in both eyes.

Results

During the study, 617 patients were found to be blind in one or both eyes. Of these, 374 (60.6%) were unilaterally blind and 243 (39.4%) were bilaterally blind. There were 365 male patients (59.2%) and 252 females (40.8%).

The age distribution of the patients is shown in Figure 1. The increase in the number of blind patients after the age of 50 is due to the greater prevalence of cataract and glaucoma in that segment of the population. Of the 153 bilaterally blind patients due to cataracts, 137 (89.5%) were age 51 or above. Likewise, of the 29 bilaterally blind patients due to glaucoma, 22 (75.9%) were 51 or older.

The causes of blindness by unilateral and bilateral cases are noted in Figures 2 and 3. Cataract (63.0%), trauma (25.1%) and optic atrophy (3.7%) were the most common causes of bilateral blindness (Table 1). Retinal disease (9.1%) and leukemia (7.8%) were the most frequent causes of unilateral blindness.

Table 1: Causes of Unilateral Blindness

<table>
<thead>
<tr>
<th>Condition</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Cataract</td>
<td>122</td>
<td>122</td>
<td>244</td>
<td>39.4</td>
</tr>
<tr>
<td>Trauma</td>
<td>164</td>
<td>144</td>
<td>308</td>
<td>49.5</td>
</tr>
<tr>
<td>Retinal disease</td>
<td>137</td>
<td>126</td>
<td>263</td>
<td>42.3</td>
</tr>
<tr>
<td>Leukemia</td>
<td>13</td>
<td>12</td>
<td>25</td>
<td>3.9</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>27</td>
<td>24</td>
<td>51</td>
<td>8.0</td>
</tr>
<tr>
<td>Corneal ulcer</td>
<td>6</td>
<td>4</td>
<td>10</td>
<td>1.6</td>
</tr>
<tr>
<td>Optic atrophy</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>1.0</td>
</tr>
<tr>
<td>Uveitis</td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>1.3</td>
</tr>
<tr>
<td>Capsule opacity</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>0.8</td>
</tr>
<tr>
<td>Amblyopia</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>0.8</td>
</tr>
<tr>
<td>Encrustation</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>0.8</td>
</tr>
<tr>
<td>Phthisis</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0.3</td>
</tr>
<tr>
<td>Ocular tumour</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.2</td>
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<tr>
<td>Other CNS</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0.3</td>
</tr>
<tr>
<td>Post-operative endophthalmitis</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>Uncertain</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>227</td>
<td>147</td>
<td>374</td>
<td>100</td>
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</table>

The causes of blindness by bilateral blindness are noted in Figures 2 and 3. Cataract (63.0%), trauma (25.1%), retinal disease (9.1%) and leukemia (7.8%) were the most frequent causes of bilateral blindness.

Table 2: Causes of Bilateral Blindness

<table>
<thead>
<tr>
<th>Condition</th>
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<th>Female</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cataract</td>
<td>83</td>
<td>70</td>
<td>153</td>
<td>63.0</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>16</td>
<td>13</td>
<td>29</td>
<td>12.0</td>
</tr>
<tr>
<td>Retinal disease</td>
<td>10</td>
<td>7</td>
<td>17</td>
<td>7.0</td>
</tr>
<tr>
<td>Optic atrophy</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>3.7</td>
</tr>
<tr>
<td>Leukemia</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>3.7</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>16</td>
<td>13</td>
<td>29</td>
<td>12.0</td>
</tr>
<tr>
<td>Corneal Blindness</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>2.1</td>
</tr>
<tr>
<td>Trauma</td>
<td>6</td>
<td>0</td>
<td>6</td>
<td>2.5</td>
</tr>
<tr>
<td>Aphakia</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>2.1</td>
</tr>
<tr>
<td>Cortical Blindness</td>
<td>4</td>
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<td>5</td>
<td>2.1</td>
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<td>0</td>
<td>2</td>
<td>0.8</td>
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<td>2</td>
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<td>0</td>
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<td>0.4</td>
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<tr>
<td>Ocular tumour</td>
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<td>Plutary tumour</td>
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<td>0.4</td>
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<tr>
<td>Other CNS</td>
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<td>1</td>
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<td>1.6</td>
</tr>
<tr>
<td>Uncertain</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>138</td>
<td>105</td>
<td>243</td>
<td>100</td>
</tr>
</tbody>
</table>

Discussion

The 3:2 ratio of male to female patients (365:252) is similar to that found in other studies. This probably does not represent actual prevalence rates, but is more likely due to a greater tendency on the part of men to seek evaluation and surgical treatment.

Age-related cataract was the greatest single cause of treatable blindness among patients at the Lighthouse. Unfortunately, treatment is sought late. One indicator of this is the fact that one out of every five bilaterally blind cataract patients over the age of 50 had only light perception in one eye.

In our experience most glaucoma patients are first seen when they seek help because of vision loss, often very profound loss. Among the 29 bilaterally blind glaucoma patients, 13 had lost all perception of light in one or both eyes. Such findings indicate that there is a considerable delay in making the diagnosis of this disease.

Injuries were a major cause of unilateral blindness, especially among younger patients. The most frequent causes of traumatic blindness were injuries from sticks (41%), fists (8%), stones (7%), thorns (5%) and knives or pangas (4%). Other blindness...
Blindness in Kenya

injuries were due to the following: an insect sting, a goat’s horn, a kick from a cow, a fall into a fire, a bullet, a crocheting needle, football contusions and a beating with a rifle butt by bandits in Somalia.

Although not a direct injury to the eyes, a 28 year old Somali male related his bilateral blindness to the bite of a viper (the ‘awess’). Following the bite on his left hand he developed haematuria and noted decreasing vision. Ten months later he had become totally blind. Visual acuity testing at our clinic showed no light perception (right eye) and light perception without projection (left eye). Slit-lamp examination revealed an opaque, vascularized membrane immediately posterior to the lens in both eyes. Presumably, membrane formation occurred secondary to vitreous haemorrhage. While we generally see one or two spitting cobra injuries each year, this was the first case of blindness related to envenomation by a viper.

Leucomata accounted for 7.8% of unilateral blindness and active corneal ulcers were responsible for another 5.6%. If considered together, corneal disease was the third most common cause of unilateral blindness. Among bilateral cases, corneal leucomata constituted 2.9% of the total number of the blind. Severe xerophthalmia was evident in two small children with corneal perforations and, based on histories, was most likely the cause of other leucomata.

Retinal pathology accounted for 9.1% of the cases of unilateral blindness and 7% of those with bilateral blindness. Among the varied entities were retinal detachment (9), diabetic retinopathy (6), retinitis pigmentosa (2) and retinopathy of prematurity (1).

There were five cases of cortical blindness in children. In each there had been a preceding febrile illness which was stated to have been malaria. Cortical blindness does occur in about 4% of the cases of cerebral malaria. Professor Kevin Marsh of the Malaria Research Institute at Kilifi stated in February, 1999 that there is quite often some recovery of vision after a period of several months.

Treatment for malaria was a likely cause of optic atrophy and blindness in at least four adults. In only one case was the identity of the medication known, although the exact quantity was not recalled. This patient was a 35 year old Swahili female who lived in ‘Old Town’, Mombasa. She described an attack of malaria, accompanied by delirium, which took place a little over two weeks prior to her clinic visit. Three days after the onset she received an injection of chloroquine and then took quinine tablets. A few days later she noted a marked loss of vision over a period of several hours. When seen at the Lighthouse she had no perception of light (right eye) and light perception without projection (left eye). There was an afferent pupillary defect of the right eye and pallor of both optic nerves (right-left).

Conclusion

There needs to be a greater awareness on the part of the public concerning:

1. The benefits of cataract surgery. Hopefully, this will lead to the restoration of good vision prior to incapacity through blindness.

2. The need for early detection of glaucoma. By the time vision loss has occurred it is often too late for any effective treatment.

3. The need for the addition of vitamin A containing fruits and vegetables to the daily food intake. The staple cornmeal ‘ugali’ is all too often supplemented by inadequate quantities of such foods.

4. The potential dangers of antimalarials. These are easily obtained and most often taken without the guidance of a physician.

The main patient waiting room at the central clinic and the patient assembly areas on mobile clinics should be utilized to a much greater degree for educational purposes.

Acknowledgements

The authors would like to thank Dr Sharon Bolin for preparation of the figures and Mrs Betty Harrell for the typing of the manuscript.

References


4. Manjunatha HR. Blindness at the FISH Clinic, Kingston, Jamaica, West Indies. Br J Ophthalmol 1990; 74:

Abstracts

Glaucoma in China: How Big is the Problem?
Paul J Foster
Gordon J Johnson

Aims – To derive preliminary estimates for the number of adults in China suffering from glaucoma, and project the burden of visual morbidity attributable to primary and secondary glaucoma.

Methods – Age and sex specific data from two population surveys were applied to US Census Bureau population estimates for urban and rural China. It was assumed that data from Singapore were representative of urban China, and those from Mongolia were representative of rural China.

Results – It was estimated that 9.4 million people aged 40 years and older in China have glaucomatous optic neuropathy. Of this number, 5.2 million (55%) are blind in at least one eye and 1.7 million (18.1%) are blind in both eyes. Primary angle closure glaucoma (PACG) is responsible for the vast majority (91%) of bilateral glaucoma blindness in China. The number of people with the anatomical trait predisposing to PACG (an ‘occludable’ drainage angle) is in the region of 28.2 million, and of these 9.1 million have significant angle closure, indicated by peripheral anterior synechiae or raised intracocular pressure.

Conclusions – This extrapolation of data from two east Asian countries gives an approximate number of people in China suffering from Glaucoma. It is unlikely that this crude statistical model is entirely accurate. However, the authors believe the visual morbidity from glaucoma in China is considerable. PACG is probably the leading cause of glaucoma blindness in both eyes, and warrants detailed investigation of strategies for prevention.

Published courtesy of: Br J Ophthalmol 2001; 85: 1277–1282

The Burden of Trachoma in the Rural Nile Delta of Egypt: a Survey of Menofiya Governorate
Gamal Ezz Al Arab
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Background – Evidence of widespread distribution of trachoma in Egypt has not been clarified as previous surveys were limited to individual communities which may not have been representative of the general population. The Nile Delta of Egypt presents a unique environment for trachoma to persist. Economic improvements in the past decade have affected even the poorest rural environments; availability of electricity is now found in many rural communities. Availability of water in the Nile Delta has always been good but poor hygiene conditions have been the primary factor in trachoma transmission. A survey of trachoma was undertaken in MenofiyagovernoratetodetermineEgypt should be identified as trachoma endemic and targeted for trachoma control efforts.

Methods – A multistage random cluster study design was used with the target population defined as adults aged 50 and over and children aged 2-6 years from throughout the governorate. Among pre-school children only trachoma was graded while among adults presenting visual acuity and cause of vision loss or blindness were also recorded. Adults were interviewed regarding past trichiasis surgery; those currently with trichiasis or history of trichiasis surgery were also interviewed regarding outcome of surgery.

Results – A total of 3272 children aged 2-6 and 3122 adults age 50+ were enumerated. Among the children 81.3% were examined and among the adults 73.0% were examined. Active trachoma follicles (TF) and/or intense inflammation (TI) was found among 36.5% (95% confidence interval (CI) 34.7-38.3%) of the children. TI was 1.89 (95% CI 1.22-2.94) times more common in rural children compared to urban Menofiya. TT accounts for blindness (presenting vision <3/60) in 8% of patients and accounts for 13.2% of visual impairment. Overall, trichiasis surgical coverage was 34.4%, slightly higher among men than women. The outcome of trichiasis surgery was poor in 44.4% of cases.

Conclusion – Trachoma is a serious public health problem in Menofiya governorate and a significant contributor to vision loss. These findings would suggest that continued poor hygiene conditions in rural Egypt have limited the reduction of active trachoma even in the face of significant improvements in socio-economic status. Furthermore, the high proportion of trichiasis surgery cases with a poor outcome would indicate a need to reassess current surgical practices in Egypt and improve training and monitoring.

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The Epidemiology of Ocular Trauma in Singapore: Perspective from the Emergency Service of a Large Tertiary Hospital
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Tien Yin Wong

Purpose – To describe the epidemiology of ocular trauma from the perspective of the emergency service of a large tertiary hospital in Singapore.

Methods – A prospective survey was conducted over a 3 month period (August to October 1997) on all patients seen at the ophthalmic unit at the Singapore General Hospital’s emergency service. Data on clinical presentation, type and cause of injury and use of eye protective devices (EPD) were collected via a standardised interview and examination.

Results – A total of 870 persons presented with a diagnosis of ocular trauma, out of the 1631 patients seen during the study...
period. Compared with non-trauma cases, trauma cases were more likely to be male (odds ratio (OR): 4.2, 95% confidence interval (95% CI): 3.2, 5.4), non-residents (OR: 6.2, 95% CI: 3.7, 10.5), younger than 40 years of age (OR: 3.2, 95% CI: 2.7, 4.1) and less likely to require follow-up or hospital admission (OR: 0.2, 95% CI: 0.2, 0.3). The three most common types of injuries were superficial foreign body (58.2%), corneal abrasion (24.9%) and blunt trauma (12.6%), while open globe injury occurred in only 17 cases (2%).

Letters to the Editor

Assessment of Learning Versus Competence

Dear Editor

Dr Prozesky has expertly described why and how learning should be assessed (J Comm Eye Health 2001; 14: 27-28). It should be emphasised that assessing competence in a workplace situation follows the same designs although this assessment is often summative and based on the principles of evidence. In assessing competence, one is concerned with whether the evidence collected (through observation, MCQ, checklists, or oral examination) is current, authentic and sufficient to declare a candidate competent in performing a specific task. That is when the use of OSPE/OSCE is very helpful for the purpose of assessment because it is possible to assess in a given scenario the knowledge, the skills and the attitude of candidates. Historical evidence (reports, testimonials, work history) is also considered in the assessment of competence but its value is limited by its authenticity which can be questionable. As teachers move from didactic to problem-based learning methodology, the assessment of competence becomes a critical issue. Assessment skills will then become not only necessary but also a specialised area with qualified assessors, moderators and verifiers working alongside teachers or trainers as partners. This is the system that is already implemented to some extent in countries including UK, Australia, Singapore and the United States, to name a few.

Mr Ntambwe Malangu
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Cataract Surgery

Dear Editor

I did not know that there was room for arguments on whether or not to do ICCE. I thought that all efforts are towards IOL after lens extraction, preferably by the ECCE method. Sadly, in those regions where no surgeon exists to do ECCE with IOL or he/she exists but there is no relevant equipment, ICCE may be performed. I will restrict myself to the Africa that I know and have worked in – East, West and Central. In all these regions, I have found that there exists a backlog of unoperated cataracts (according to surveys and epidemiological projections) but there are no (or insignificant) surgery waiting lists in eye departments. The pressure is not on surgery time but community awareness and mobilisation campaigns to increase cataract surgery uptake. Backlog or no backlog, Africa or Asia, I would rather take 15 minutes on ECCE with PC IOL than 3 minutes on ICCE with no implant (and no sutures).

With proper distribution of existing resources within countries in our region - human resources and equipment - every patient needing and willing to have cataract surgery should have lens extraction with IOL inserted. To increase cataract surgery uptake we need to demonstrate improved quality of service. In my catchment area we used to get resistance to surgery because nearly every elder could name somebody who was blinded by cataract surgery - over a decade ago! Today, nearly every other patient who comes for cataract surgery is on recommendation of our former, satisfied cataract patient. There was a change from ICCE to ECCE with PC IOL. Cataract surgical uptake is increasing by about 20% every year.

I agree with my old friend and ICEH classmate, Dr Mthenga, that some vast regions still do not have microscopes or surgeons trained in ECCE with IOL and that ICCE may therefore be a good solution. But we must sing the song how inappropriate the technique is and how the relevant local NGOs and Ministries of Health must make acquisition of the very affordable equipment a top priority.

Internally, within the countries, we should retrain ICCE surgeons in ECCE with PC IOL technique.

Dr Kenneth Kagame
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Abstracts

Cataract Surgery

Conclusions – Ocular trauma at the emer- gency service level in Singapore involved mainly young non-resident men, were work-related and associated with well-defined activities, and were generally minor. The low prevalence of EPD use reinforces the need for a review of the design and implementation of occupational eye safety programmes, especially among non-resident workers.

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Cataract Surgery

Conclusions – OCT is a non-invasive, non-contact imaging technique that can be used to evaluate corneal topography. In the present study, OCT was found to be a valuable tool in the diagnosis of corneal disease.

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Monitoring and Evaluation of Intervention Programmes for Cataract and for Refractive Errors in India
by Hans Limburg

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