

Training Ophthalmologists for Children's Eye Care Centres

Anil K Mandal MD

Director

Jasti V Ramanamma

Children's Eye Care Centre

L V Prasad Eye Institute

L V Prasad Marg, Banjara Hills

Hyderabad 500 034

India

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.¹ Vision 2020 will be implemented through the following activities:²

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.³ 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:²

- 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.² 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.



LV Prasad Eye Institute, Hyderabad, India

Photo: Anil Mandal

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.²

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.²

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

1. Human Resources

| | Essential | Useful | Ideal |
|--|-----------|--------|-------|
| Paediatric-orientated ophthalmologist | 1 | 2 | 3 |
| Multiskilled OMA: for refraction, orthoptics and low vision services | 2 | - | - |
| Refractionist | 2 | 2 | 4 |
| Orthoptist | 1 | 2 | 4 |
| Low vision specialist | 1 | 1 | 2 |
| Paediatrician/neonatologist (part-time) | 1 | 1 | 1 |
| Paediatric anaesthetist | 1 | 2 | 2 |
| Paediatric nurse | 1 | 4 | 8 |
| Operating room assistant | 2 | 4 | 8 |

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

2. Equipment

| | Approx. Unit Cost (US \$) | Essential | Useful | Ideal |
|--|---------------------------|-----------|--------|-------|
| For use in operating theatre: | | | | |
| Operating microscope (co-axial) | 10,000 | 1 | 2 | 4 |
| Cryotherapy machine with paediatric probes | 10,000 | 1 | 1 | 1 |
| Vitreotomy machine | 20,000 | 1 | 2 | 2 |
| Paediatric anaesthesia equipment | 10,000 | 1 | 1 | 1 |
| CT/MRI (access to) | | - | 1 | 1 |
| For use in outpatients and/or theatre*: | | | | |
| Laser (diode-indirect) | 30,000 | 1 | 2 | 2 |
| Tonometer- Perkins or Tonopen | 3,000 | 1 | 2 | 2 |
| Indirect ophthalmoscope | 1500 | 3 | 4 | 6 |
| Slit-lamp portable | 2000 | 1 | 1 | 2 |
| A-scan ultrasound | 5,000 | 1 | 1 | 2 |
| B-scan ultrasound | 10,000 | 1 | 1 | 2 |
| Keratometer-hand held | 3,000 | 1 | 2 | 2 |
| For use in outpatients: | | | | |
| Tests of visual acuity for pre-verbal children | 500 | 4 | 6 | 8 |
| Colour vision tests | 200 | 1 | 1 | 1 |
| Automated visual fields | 5,000 | - | 1 | 1 |
| YAG laser | 15,000 | - | 1 | 1 |
| Refractometer | 3,000 | - | - | 1 |
| Low vision equipment | 5,000 | 1 | 1 | 1 |
| Electrodiagnostic equipment | 25,000 | - | 1 | 1 |

* children often need to be examined under anaesthesia

a range of likely prices. In most cases, it will be possible to obtain equivalent equipment at a lower cost.

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 mil-

lion 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%) children could be blind due to glaucoma.²

The Global Initiative for Elimination of Avoidable Blindness (Vision 2020: The Right to Sight), by definition seeks to eliminate avoidable blindness. It is estimated that 40% of childhood blindness is avoidable. It is against this background that

L V 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 lensectomy 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.

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. The admission year and month and number of candidates is shown in Table 3 below:

Table 3: Admission Year and Month / Number of Candidates

| Long Term (1 Year) No. of candidates | Year/Month | | | | |
|--|------------|----------|-----------|------------|-----------|
| | July 2001 | Jan 2002 | July 2002 | Jan 2003 | July 2003 |
| 2 | 2 | 2 | 2 | 2 | 2 |
| Short Term (3 months) No. of candidates | July 2001 | Oct 2001 | Jan 2002 | April 2002 | July 2002 |
| 2 | 2 | 2 | 2 | 2 | 2 |

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
- Ophthalmoplasty 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-to-date.

References

- 1 Rao G N. Ophthalmology in India. *Arch Ophthalmol* 2000; **118**: 1431-1432.
- 2 World Health Organization. Preventing blindness in children. Report of a WHO/IAPB scientific meeting. WHO/PBL/00.77. Geneva: WHO, 2000.
- 3 Global Initiative for the Elimination of Avoidable Blindness. Geneva, World Health Organization, 1998 (unpublished document WHO/PBL/97.61).

☆ ☆ ☆

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**

Or Tel: 00 44 (0) 20 7935 0702

Or Fax: 00 44 (0) 20 7487 4674

Or E-mail: rco.exams@btinternet.com

Or visit the College website www.rcophth.ac.uk

UK and Overseas Examination Calendar 2002

| Exam | Dates of Examination | Location | Closing Date |
|----------------------------|---------------------------------|---------------------|----------------------|
| Part 1 MRCOphth | 8-9 April | India | 22 February |
| | 22-23 April | UK | 11 March |
| | 7-8 October | UK, India | 26 August |
| Part 2 MRCOphth | 9-11 April | India | 22 February |
| | 17-21 June | UK | 6 May |
| | 9-10 October | India | 26 August |
| | 4-8 November | UK | 23 September |
| Part 3 MRCOphth | 4-8 March | UK | 21 January |
| | 11-12 April | India | 22 February |
| | 9-13 September 10-11 October | UK India | 29 July 26 August |
| DRCOphth | 27-28 June | UK | 16 May |
| | 18-19 November | UK | 7 October |

Overseas Location:

- Aravind Eye Hospital, Madurai, Tamil Nadu, India