Cost of making a comprehensive ophthalmologist and role of non-government institutes: Our experience

India is at a cross roads of development, probably still a work in progress. On one hand we are emerging as an economic superpower, but on the other, we are being challenged in providing basic healthcare services to masses. Some would argue that the innumerable new hospitals and eye care setups symbolize development; but we wonder where the manpower to run these hospitals is. Do we have enough “well trained” ophthalmologists to make these models successful?

In 2014, Dr. Shroff’s Charity Eye Hospital (SCEH), a Non-Government Organization (NGO), based in Delhi with multiple satellite branches, started a 2-year community-based cataract fellowship to train budding ophthalmologists in comprehensive ophthalmology and cataract surgery. Until now 14 ophthalmologists have successfully completed this program and 11 are currently enrolled. The program starts with clinical orientation of enrolled candidates. A 15-day induction program is organized, and candidates are made familiar with workings of the hospital. On first 2 days, there are didactic lectures and hands-on sessions by faculty from various departments on important clinical conditions and diagnostic procedures [Table 1a and b]. Since the trainees are a small group with diverse training background, individual attention is given and if the candidate feels he/she needs more discussion on a particular topic, appropriate arrangements are made. The curriculum of the program is such that the trainee spends the first 3 months at the base hospital, getting trained in clinics for diagnosis and management along with manual small incision cataract surgery (MSICS) in the Operation room (OR) under direct supervision of faculty members. Equal importance is given to clinical rotations, and the trainee is posted with one faculty member in clinics during the day and afternoons are reserved for surgeries. The trainee is then sent to a residential satellite hospital (once the faculty and trainee are both confident of the trainees clinical skills) to see patients, operate and in process enhance skill and serve the community. He/she is called back to the base hospital (SCEH) in Delhi at the...
Day 1

| Time          | Topics                                                                 | Faculty                      |
|---------------|------------------------------------------------------------------------|------------------------------|
| 9.30 AM-10 AM | Introduction and history taking                                         | Consultant                   |
| 10 AM-10.10 AM| Pediatric quiz                                                         | Pediatrics consultant        |
| 10.10 AM-11 AM| Glass prescription, squint examination, pupil examination              | Pediatrics consultant        |
| 11 AM-11.15 AM| Amblyopia management                                                   | Pediatrics consultant        |
| 11.15 AM-12.45 PM | Hands-on squint evaluation                                    | Pediatrics consultant        |
| 12.45 PM-1.15 PM| Lunch break                                                         | Pediatrics consultant        |
| 1.15 PM-1.25 PM | Glaucoma quiz                                                        | Glaucoma consultant         |
| 1.25 PM-2 PM | Gonioscopy technique and instrumentation, Applanation tonometry, Optic disc evaluation with 90d | Glaucoma consultant         |
| 2 PM-3.15 PM | Hands on at, gonioscopy, disc evaluation                              | Glaucoma consultant         |
| 3.30 PM-3.45 PM | Tea break                                                           | Glaucoma consultant         |
| 3.45 PM-4.10 PM | Evaluation of epiphora, Lacrimal syringing and interpretation        | Oculoplasty consultant      |
| 4.10 PM-5 PM | Hands - on syringing                                                  | Oculoplasty consultant      |

Day 2

| Time          | Topics                                                                 | Faculty                      |
|---------------|------------------------------------------------------------------------|------------------------------|
| 9.30 AM-9.40 AM| Cornea quiz                                                            | Cornea consultant            |
| 9.40 AM-10.20 AM| Slit - lamp examination techniques, Corneal scraping for ulcers       | Cornea consultant            |
| 10.20 AM-11.50 AM| Corneal diagrams and color coding, Dry eye evaluation                 | Cornea consultant            |
| 11.50 AM-12.30 PM | Hands-on slit-lamp examination, corneal scrapping                    | Cornea consultant            |
| 12.30 PM-1.15 PM| Lunch break                                                           | Retina consultant            |
| 1.15 PM-1.25 PM | Retina quiz                                                           | Retina consultant            |
| 1.25 PM-2.15 PM | Indirect ophthalmoscopy technique and instrumentation, Retina diagrams, Color coding | Retina consultant            |
| 2.15 PM-3.30 PM | Hands-on retina examination                                            | Retina consultant            |
| 3.30 PM-4.00PM | Tea break                                                             | Retina consultant            |
| 4 PM-5 PM     | Evaluation/revision feedback                                          | Retina consultant            |

Table 1: (a and b): Schedule for first two days during induction

| Particular                                           | Approx. Cost Amt. (INR) |
|------------------------------------------------------|-------------------------|
| Wet lab support                                      | 8,00,000                |
| Microscope with camera                               | 40,00,000               |
| Laptop                                               | 40,000                  |
| Projector                                            | 1,00,000                |
| OPD equipment                                        | 9,30,000                |
| Slit Lamp with attachments (INR 10,000)               |                         |
| Auto-Refractometer (INR 1,50,000)                    |                         |
| Lensometer (INR 60,000)                              |                         |
| A-Scan (INR 20,000)                                  |                         |
| Non-Contact Tonometer (INR 40,000)                   |                         |
| Indirect Ophthalmoscope (INR 20,000)                 |                         |
| Total                                                | 58,50,000               |

Table 2: One time and fixed cost. INR: Indian Rupees

We did a cost analysis of our training module, to better understand our functioning expenses. We divided the expenses into fixed and annual costs. Fixed costs [Table 2] were the one-time costs incurred by the institute (equipment, infrastructure, salaries of trainers etc.). Annual Cost was divided into three subgroups – first 3 months, 4-15 months and 17-24 months, and the phacoemulsification-training month [Table 3]. Other costs of training the trainers, quality assurances, accommodation charges, stipends and hospital administration charges are discussed in Table 4.

The purpose of sharing these figures is to provoke thought in the minds of our readers. How much can various NGOs stretch in preparing ophthalmologists for national duties? Is it just our responsibility, or should the Government be expected to contribute, is a question we feel all the readers should answer. We acknowledge that once the ophthalmologist is trained, he/she does contribute immensely to the functioning of the hospital (and even helps in revenue generation by the end of the training period); but still, costs cannot be ignored. Probably that is the reason why we do not have enough end of 12-15 months for a 1-month phacoemulsification intensive training program. Once the trainee is relatively independent in performing phacoemulsification, he/she is sent to the satellite hospital for last 8-11 months. This is the time when trainee contributes to hospital’s revenue by performing paid cataract surgeries alongside the community surgeries, which they had already been performing.
Table 3: Annual training costs during different phases of fellowship. MSICS, Manual Small Incision Cataract Surgery; OPD, Out Patient Department; VC, Vision Center; INR, Indian Rupees

| Activity                      | Particular                                                                 | Cost per Candidate per month (INR) |
|-------------------------------|----------------------------------------------------------------------------|-----------------------------------|
| 0-3 months Activity and Cost  | Full time surgical mentor                                                 | 1,25,000                          |
| per month (MSICS intensive    | 1. OPD skills Mentorship 2. Surgery supervision/Mentorship                |                                   |
| training, OPD skills,         | 1 circulating and 1 scrub nurse                                            | 25,000                            |
| Managerial skills)            | OT fixed costs                                                             | 75,000                            |
| OT                            | Camps/VC/Outreach team                                                    | 5000                              |
| OT charges                    | Approx. 15 cases/month/per candidate                                       | 15,000                            |
| Patient acquisition charges   | Technician full time                                                       | 12500                             |
| Consumables                   | Consumables for wet lab candidate                                          | 2500                              |
| Wet lab                       | Surgeon mentorship (part time: 10%)                                        | 12,500                            |
| 4-15 months and 17-24 months  | Remote Mentoring and distance learning; senior consultant                  |                                   |
| (Satellite Hospital Posting)  | Full time surgical mentor                                                 | 1,25,000                          |
| Phaco Intensive training at   | 1. OPD skills mentorship; 2. Surgery supervision mentorship               |                                   |
| Delhi                         | 1 circulating and 1 scrub nurse                                            | 25,000                            |
| OT                            | OT fixed costs                                                             | 75,000                            |
| OT charges                    | Camps/VC/Outreach team                                                    | 5000                              |
| Patient acquisition charges   | Approx. 20 cases/month/per candidate                                       | 40,000                            |
| Consumables                   | Technician full time                                                       | 12,500                            |
| Wet lab                       | Consumables for wet lab candidate                                          | 2500                              |
|                               | Surgeon mentorship (part time- 10%)                                        | 12,500                            |
| Total Cost Per Candidate per  |                                                                            | 6,70,000                          |
| year                          |                                                                            |                                   |

Table 4: Miscellaneous costs. HBP- Hospital-based Programs, INR- Indian Rupees

| Activity                        | Particular                                                                 | Cost per Candidate per year (INR) |
|---------------------------------|----------------------------------------------------------------------------|-----------------------------------|
| Train the trainers workshop     | Improving training capability                                              | 40,000                            |
| (one per year)                  |                                                                           |                                   |
| HBP program (once every 6 months) | Travel of mentor                                                       | 2400                              |
| Quality improvement              | 1. Remote Classes capability- Zoom/Internet 2.                              | 40,000                            |
|                                 | Training of Nurses/Optometrists 3. Travel of candidate                      |                                   |
| Administration support           | Part-time officer                                                          | 48,000                            |
| Monthly stipend                 | Paid to the trainee                                                        | 60,000                            |
| Accommodation costs             | Provided free of cost                                                      | 5000                              |
| Total Cost per Candidate per     |                                                                            | 9,12,800                          |
| year                            |                                                                            |                                   |

non-government training institutes, and most of the training responsibilities are shared by a handful of non-government institutes nationwide.

Residency programs around the country are doing a very efficient job in preparing ophthalmologists, but there is still scope for major improvements.[2] In the United States, 86% residents[3] feel confident in practicing comprehensive ophthalmology after 3 years of training. We are not sure what that proportion would be in our country, but recent surveys have shown residents to have performed no more than 25% MSICS[4] and 30 phacoemulsification surgeries[4] during their postgraduation, some figures suggesting 50% of postgraduates not having performed any phacoemulsification during their 3 years.[3] These figures show that even though at the end of 3 years the residents are certified to practice ophthalmology, most of them would not be confident enough to do so. This highlights the role of NGOs like ours, who share Government responsibility by facilitating further skills of ophthalmologists and hence, indirectly in their career development.

Few recommendations can come out of this correspondence. Government should identify centers where these courses can take place, and we could have Government-approved centers for the same. It can be a continuation of the 3-year postgraduation, where in the resident can spend another 2 years at a Government-recognized center, by which he/she betters his/her clinical and surgical skill, and at the same time serves the community at large.

This is the time for all involved partners in ophthalmology training to form a consortium and have representation in government discussions and policy making for training curriculums. A more inclusive approach is needed in coming years where Government should assist consortium members, both intellectually and financially, in preparing a “well trained” ophthalmologist who is independent, confident and can
successfully contribute to alleviating preventable blindness from our country.

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Javed Hussain Farooqui, Umang Mathur, Sima Das1, Ashish Saksena2

Department of Cornea, Cataract and Refractive Surgery, 1Department of Cataract and Community Ophthalmology, 2Department of Orbit, Oculoplasty and Ocular Oncology, Dr. Shroff’s Charity Eye Hospital, New Delhi, India

Correspondence to: Dr. Javed Hussain Farooqui, Department of Cornea, Refractive Surgery, Dr. Shroff’s Charity Eye Hospital, 5027, Kedarnath Marg, Daryaganj, New Delhi - 110 002, India.
E-mail: jhfaroqui@gmail.com

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