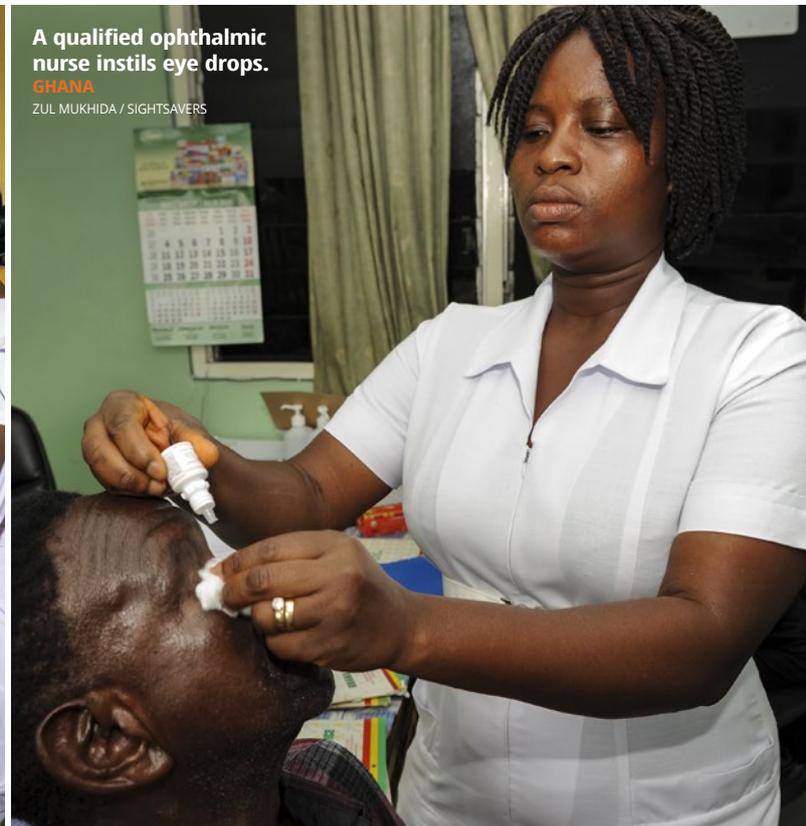


Community Eye Health Journal



Trainees learn about OCT machines. **INDIA**
ARAVIND EYE CARE SYSTEM



A qualified ophthalmic nurse instils eye drops. **GHANA**
ZUL MUKHIDA / SIGHTSAVERS

Investment in human resources improves eye health for all



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There is a widening gap between the need for eye health workers and their availability in low-income countries. Change will come once governments recognise the health workforce as a productive investment, not an expense.

Worldwide, we face a substantial and widening gap between the number and types of health workers needed to provide essential services, and both their availability, and governments' capacity to employ them. This is especially true in low- and middle-income countries. In order to achieve universal health coverage, including meeting the needs of a growing and ageing population, an estimated 54.5 million health workers will be required by 2030. In low-income countries, this means the supply of health workers will have to increase by 40%.¹

In eye health, the situation is much the same. A paper published by the Vision Loss Expert Group² forecasts that there will be close to a three-fold increase in

the number of people with visual impairment over 35 years: from 252 million in 2015 to 702 million in 2050. This threatens to overwhelm existing levels of service provision. It will be a challenge to train and deploy a sufficient number of eye health workers. For example, in Sub-Saharan Africa, there is currently only half the minimum number of eye health professionals recommended by the World Health Organization.

A paradigm shift

Governments must recognise the health workforce as a productive **investment** instead of an expense.³ The objectives set out in WHO's Global Strategy on

Continues overleaf ➤



About this issue

A strong eye health workforce is essential if we are to achieve the goal of universal eye health for all. Setting aside funds to train, recruit and employ eye health workers, and motivate them to stay where they are needed, should be seen as an investment rather than a cost. In this issue, 16 authors from five continents share the lessons they have learnt. Their stories remind us that the eye health workforce is made up of individual human beings, all of whom deserve to be valued and treated with respect. We look forward to your feedback – what have you tried, and what did you learn?
– Elmien Wolvaardt Ellison (Editor: CEHJ International Edition)

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Human Resources for Health: Workforce 2030,¹ describes human resources for health as an investment that enables an 'improvement in health outcomes, social welfare, employment creation and economic growth.'

Investment in trained eye health personnel is essential in order to reduce avoidable blindness and visual impairment, which not only transforms individual lives for the better, but also improves productivity and reduces costs at national level.⁴

Challenges

In order to improve the availability, retention and productivity of eye health personnel, it is important to understand the current situation and what needs to be done.

Availability: number and distribution

Globally, as well as within regions and countries, the eye health workforce is unequally distributed, with poorer areas – where the need for eye care services is highest – receiving the least coverage. Worryingly, training is also unequally distributed. A comprehensive study of data from 193 countries⁵ estimated that, based on the training facilities currently available, the number of ophthalmologists being trained worldwide is insufficient to keep pace with population growth trends. This is worst in low-income countries, where just 1.7 resident ophthalmologists per million are being trained annually, compared to 8.5 residents per million in high-income countries.

It is important to plan human resources for eye health based on local needs. Investment in ophthalmic training for every member of the eye team, and across all service levels, is needed, and this requires an innovative, nationally relevant approach. For example, populations on the Indian sub-continent have a higher incidence of cataract than those in Sub Saharan Africa, a difference that must be taken into account when training, recruiting and distributing eye care workers.

Productivity

The productivity of the eye health workforce is affected by the availability of well functioning infrastructure and equipment. Such essential investment supports staff motivation and high quality eye care delivery. However, it is important to recognise that productivity in some

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low-income settings will be affected due to the combined pressures of a high need for eye care, limited access due to distance and cost, inadequate infrastructure, and legal restrictions e.g. those that prevent non-ophthalmologists to perform cataract surgery or undertake refraction. Tools for planning the health workforce, such as the World Health Organization's Workload Indicators of Staffing Needs (www.who.int/hrh/resources/wisn_user_manual/en), are being introduced. Where possible, it would be beneficial to explore integrating eye health workforce planning within these tools.

The team approach

The team approach is an important component of productivity. In cataract surgery, for example, it is widely acknowledged that it can improve both efficiency (the number of operations per surgeon) and effectiveness (the quality of surgery). The team approach works by ensuring that ophthalmologists – a scarce resource – do not perform tasks which can be done by other staff members once they are trained and qualified. This is known as 'task shifting' and is very important in improving productivity and job satisfaction.

Retention

Retention involves encouraging trained and experienced eye health workers to remain in post. The rate of attrition (a loss of personnel for reasons other than death or retirement) vary between countries and among the different types of eye care professionals. For example, the attrition rate of trichiasis surgeons has been found to be as high as 59% in Northern Ethiopia; this is linked with poor mobile phone coverage, electricity supply, and road access.

Moving forward

Before investing in new strategies and policies, such as those suggested in Table 1, it is important to gather evidence, consider local needs and resources, and examine the effectiveness of past efforts. In this issue, we have included several short case studies and perspectives which we hope will serve as a useful starting point towards our common goal of providing universal access to eye health worldwide.

Table 1 Strategies for improving the availability of human resources for eye care

	Investment requirements: financial and non-financial
Training (p. 41–43)	<ul style="list-style-type: none"> • Appropriate localised selection criteria for training • Competency-based curriculums • Expansion of training programmes • Greater flexibility and access to training, e.g. distance education, flipped classroom or blended learning • Support lifelong learning resources and opportunities for all eye health personnel
Training and managing eye teams (pp. 41–43 and 51–52)	<ul style="list-style-type: none"> • Identification and training for the range of competencies required. • Nationally specific structured career development for mid-level personnel. • Task shifting and task sharing to bridge gaps and ensure the team has the right mix of skills
Recruitment and distribution (pp. 45–47)	<ul style="list-style-type: none"> • Plan for needs-based training • Plan distribution targets at all levels (community, primary, secondary and tertiary) • Policies across promotive, preventive, curative, and rehabilitative services
Retention, motivation and management (pp. 48–52)	<ul style="list-style-type: none"> • Appropriate remuneration • Improved facilities and equipment • Supportive management and leadership • CPD and other career development opportunities • Supervision for Allied Ophthalmic Personnel
Advocacy	<ul style="list-style-type: none"> • All eye health stakeholders to unite around resolving the workforce crisis • Introduce integrated workforce planning which is supported by resource allocation • Strengthen data and evidence for the cost/benefit of human resource development as an investment.

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- 3 Darzi, Ara et al. The global shortage of health workers – an opportunity to transform care. *The Lancet*, Volume 388, Issue 10060, 2576–2577
- 4 Fred Hollow Foundation. The Price of Sight: The Global Cost of Eliminating Avoidable Blindness. 2013;(August):63. Available from: www.hollows.org.au/sites/default/files/pdfs/research/FHF_Price_of_Sight_Report_final_201302.pdf
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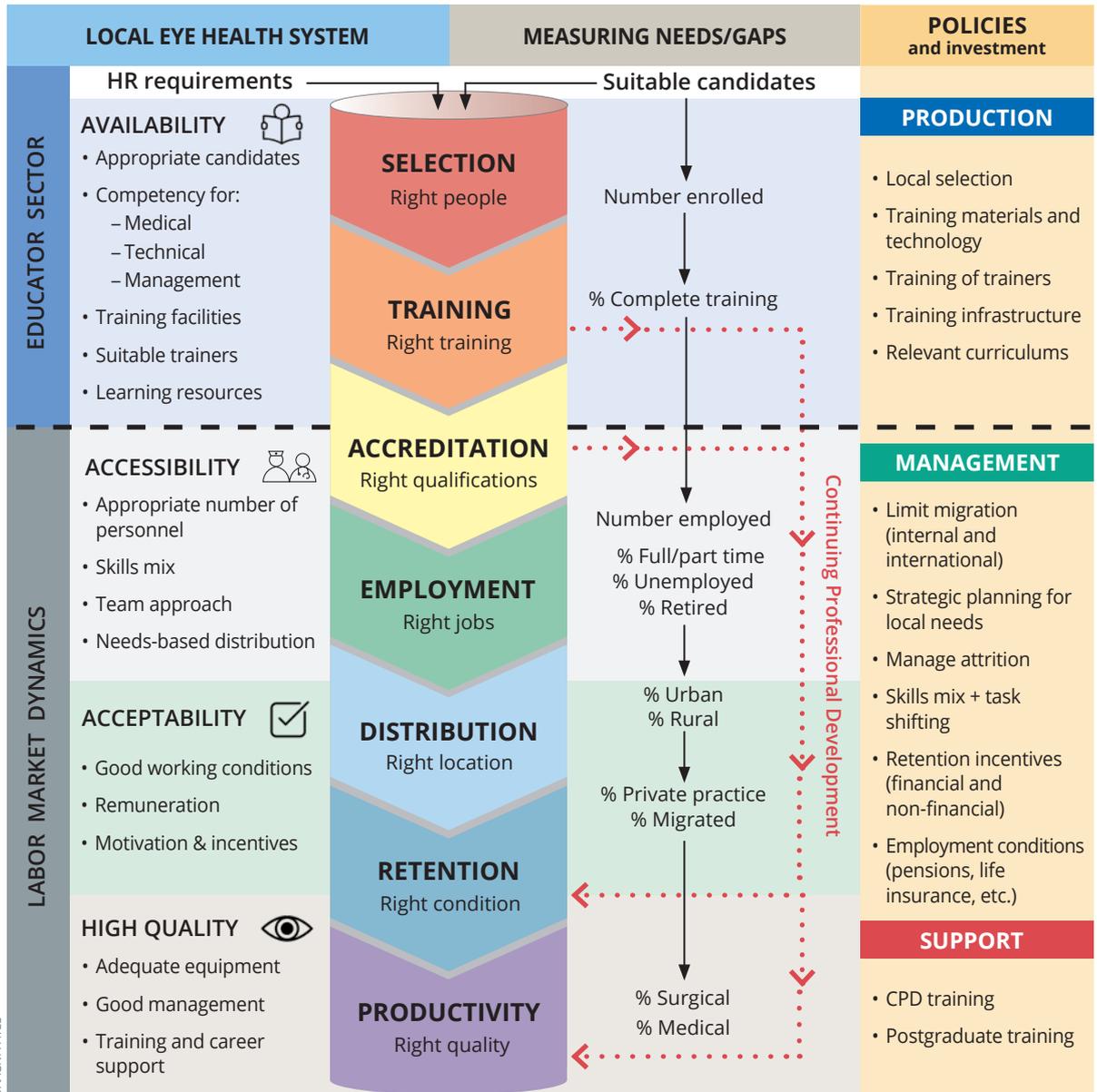


Human resources for eye health: ensuring a smooth pipeline

Health workforce planning improves when activities in the education system align with labour market dynamics.



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The health workforce ‘pipeline’¹ depicted in the infographic above shows what is required to produce a functional eye health workforce.

It suggests ways to measure gaps and progress, and highlights the essential role of education and continuing professional development to support service provision.

The four E’s (Entry planning, Entry, Exist, Exit) highlight the four stages in the life cycle of the health workforce – each of which requires careful planning and adequate investment.

- **Entry planning.** Understanding the need for eye health personnel and working out how many candidates to recruit, as some are likely to fail or drop out
- **Entry.** Training the workforce
- **Exist.** Managing the workforce and their working conditions

- **Exit.** Keeping track of the number of workers who retire, start to work part time or migrate.

Investment to improve retention and limit attrition (loss of staff members due to reasons other than death or retirement) includes establishing functional working conditions along with realistic financial and non-financial incentives.

Universal health coverage² relies on the availability of the workforce and their accessibility as a result of equitable distribution, particularly in rural areas.

Universal health coverage also depends on the quality of their performance – initially achieved through mastery of appropriate competencies and maintained after graduation through ongoing continuing professional development. It is essential that health workers are fit for practice – and remain so.

Selecting and training candidates to suit their role



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Training the eye team can improve individual and community eye health – provided the right people are trained, and in the right way.



Select and train the best candidates. INDIA

ARAVIND EYE CARE SYSTEM

In health care, the quality and training of eye care personnel determine the health outcomes for individual patients and the community.

We can improve the quality of human resources for eye health by understanding the different roles within the eye team, selecting the right people to train for each role, training them well, and continuing their training as needed.

Understand the different roles

In the eye care team, each role is defined by a job description, which lists the set of **competencies** (tasks and processes) which the person must be able to perform with a specified degree of expertise. For example, a vision technician in India must be competent to perform torchlight examination, retinoscopy, subjective refraction, fundus photography, tonometry, and other specified skills.

Investment in training is needed if the required competencies (knowledge and skills) are not available.

Selection

When selecting candidates to train, consider what will be expected of them in their role once they qualify. What criteria should they be able to meet (e.g. language, past learning achievements, location, gender)? Would their attitude (e.g. compassion, patience and the ability to work as part of a team) suit the role? This is sometimes referred to as their **value fit**.

The criteria for selection must be clearly explained before inviting candidates to apply. Selection must be non-biased and designed to find the best candidate. It can be done based on candidates' curriculum vitae, simple written or practical exercises to identify existing knowledge and skills (e.g. testing visual acuity), and observation of the candidate to assess their attitude.

Training

Training must be based on the required job description. For each competency, there must be an equivalent 'learning outcome' or 'learning objective' (these terms are often used interchangeably). For example, the competency 'Competent to perform torchlight examination' becomes: 'By the end of this course, graduates will be able to competently perform a torchlight examination'.

Training programmes must ensure that candidates receive the following:

- All the theoretical knowledge they need to perform the procedure, including safety procedures and contraindications
- Practical supervised instruction and opportunities to practice the procedure

Continues overleaf ➤

Providing supportive supervision improves learning. INDIA



ARAVIND EYE CARE SYSTEM

- Suitable opportunities to demonstrate each procedure in a patient-centred manner.

Training tips

- Draw on candidates’ existing capabilities and knowledge
- Give them opportunities to practice and learn from mistakes in a safe learning environment (e.g. by practicing in a wet lab)
- Assess candidates’ progress at regular intervals by checking their knowledge and skills against the standards expected of them (Figure 1). Give relevant and accurate feedback that will help them improve (**formative assessment**)
- Practical assessments and examinations at the end of the course or module is designed to objectively determine if the candidate has mastered the taught competencies (**summative assessment**).

Teaching methods for active learning

How students learn is as important as what they learn. Training should include exposure to real-world or clinical situations. This can be done through observation, using practice labs (e.g. surgical wet labs), or by performing the procedure under supervision. Hospitals that perform their own training should strive to integrate training within patient care.

Today’s technology allows for flexible training options such as online courses, videos and webinars to supplement or even replace the classroom.

In the **flipped classroom** model of teaching, trainees are required to engage with the content online before coming to class, and the classroom sessions are typically used to clarify and test their understanding.

In **mixed-mode** or **blended** learning, trainees complete part of the course online, over a set period (while away from the training centre) and then come to the centre to complete their training. This makes better



ARAVIND EYE CARE SYSTEM

use of trainers’ time and learners actively take charge of their learning.

Ongoing training

Quality is a moving target, and procedures and equipment change as time goes on. Constant retraining is essential to maintain quality. Here are some examples of what to look for when re-assessing training needs.

- Patient safety incidents
- Patient complaints
- New technology
- Changes made to standard protocols and procedures
- Staff performance records (e.g., a surgical outcomes audit may highlight needs for retraining)

We can sustain and improve the quality of human resources for eye care by recruiting the right people and training them to be competent.

Interactive learning supports the team approach.

INDIA

Further reading

Supportive supervision
www.who.int/immunization/documents/MLM_module4.pdf



From the field

My journey: from clinician to educator

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Institute of Ophthalmology and Dr Agarwal’s Eye Hospital, Kigali, Rwanda.

Just before my final year of residency training, the entire faculty from the University went on an industrial strike that would last a whole year. We were on our own as residents and yet I credit this year as the most productive in my training. Our seniors took on the role of educators and mentors, teaching me more surgical and administrative skills than I had learnt in my previous years. They were my role models. They made me realise that, as clinicians, we have a moral obligation to be educators. I have

continued to cherish and invest in this role throughout my career.

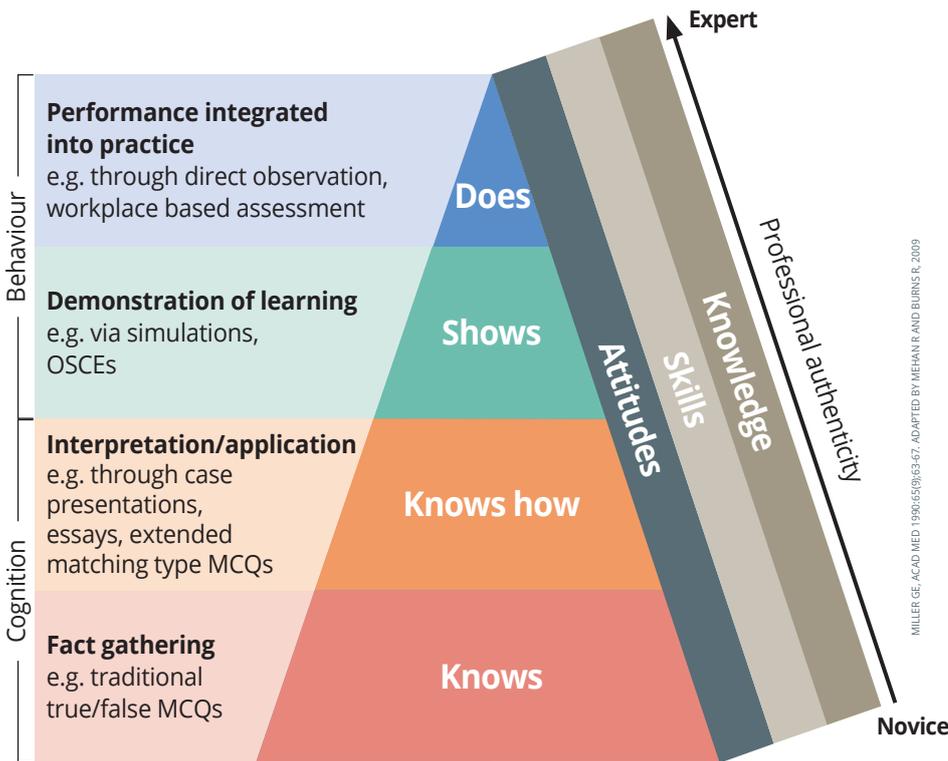
In later years, as Head of Department of Ophthalmology in Rwanda, I realised that, as clinicians, we teach but have no training as educators. Being a great ophthalmologist does not make one a great ophthalmology educator!

I purposefully set about to improve my skills as an educator through online courses for educators, learning about curriculum development and how to evaluate different ophthalmology curricula for our local needs. At conferences I registered for education courses, and was lucky to benefit from a ‘Training the Trainers’ programme through a link between my College of

Ophthalmology (COECSA) and the Royal College of Ophthalmologists in the UK. I now consider myself a clinician-educator.

Blending my clinical and education skills and knowledge has enabled me to design a curriculum that was benchmarked against international standards. I was able to design the Primary Eye Care curriculum for use by nurses in the WHO Africa region. In my quest to mentor a new generation, we have now launched the first ophthalmology residency programme in Rwanda using an innovative model that is untried in our region. I am glad that I have adequate skills to confidently navigate the world of competencies, mind maps, assessment tools such as Socrative or Kahoot, milestones and portfolios.

Figure 1 Miller's pyramid: assessing competency and performance



Useful resources for training

A framework for allied ophthalmic training programmes (IJCAHPO)

Contains step-by-step information on the development of training programmes.

http://documents.jcahpo.org/documents/A_Framework_for_Allied_Ophthalmic_Training_Programs.pdf

International core curriculum for refractive error

www.icoph.org/resources/268/International-Core-Curriculum-for-Refractive-Error.html

International core curriculum for ophthalmic assistants

www.icoph.org/resources/31/International-Core-Curriculum-For-Ophthalmic-Assistants.html

Useful apps for classroom teaching

- Padlet
- Kahoot
- Socrative

MILLER GE. ACAD MED 1990;65(9):63-67. ADAPTED BY MEHAR AND BURNS R, 2009

Developing training programmes for eye teams



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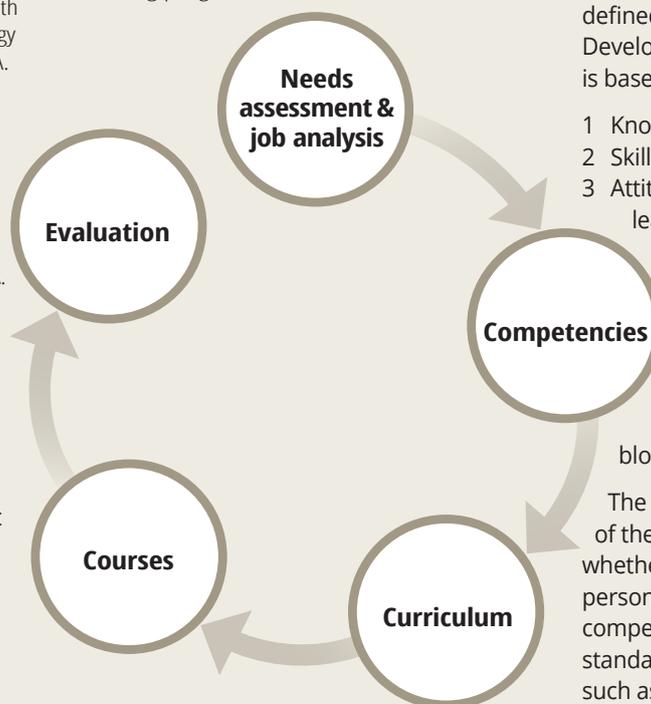
Chairman: Department of Ophthalmology, University of Cincinnati, ICO Director for Education, IJCAHPO Secretary for International Affairs, Cincinnati, Ohio, USA.

With the increased need for eye care services worldwide, educators must approach curriculum design and teaching in a systematic way with a clear goal in mind: education of the whole eye care team, with specific competencies, to work together effectively to provide high quality patient care.

Developing or adapting training programmes for the different personnel in the eye team follows the cycle shown in Figure 1.

The first task is to perform a **needs assessment** (i.e., which key competencies must the eye team be able to perform in order to ensure high quality care for patients?) and a **job**

Figure 1 Developing appropriate and relevant training programmes.



broken down into specific 'competencies' (i.e. a specific task, performed in a defined way and to a specific standard). Developing training for each competency is based on:

- 1 Knowledge: What must they know?
- 2 Skills: What must they be able to do?
- 3 Attitudes: What motivates them to learn and perform?

The answers form the 'intended learning outcomes' determines *what* and *how* they should be taught and assessed (the **curriculum**) and then *organised* within manageable building blocks (as **courses** or **modules**).

The final component is **evaluation** of the training programme to check whether it had enabled eye care personnel to attain the relevant competencies. Internationally established standards of practice and assessment, such as IJCAHPO's core progressive and specialty certifications and ICO's core curriculums, facilitate a standardised approach to guide training programmes.

As the need for eye care changes and develops over time in a particular population, the cycle is used to revise and review the curriculum and competencies.

analysis (i.e., which roles are best suited to take responsibility for the required tasks?). Shifting tasks appropriately can improve productivity.

Competencies. The various tasks required by each team member can be

Competency training: Using the ICO cataract rubric to learn and teach cataract surgery



William Dean
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Assessing surgical skills is a challenge. The ICO cataract rubric offers a helpful solution.

Trainee eye surgeons learn surgical techniques in various ways. Often, they observe many operations, then start performing different stages of an operation under the supervision of a senior ophthalmologist. After further practice in either a wet lab (if available) or under supervision in the operating theatre, full surgical procedures, such as cataract surgery, are performed.

But practice is not enough. Before surgeons can qualify, their surgical technique must be assessed. Unfortunately, surgical skills are often the least well assessed component of clinical education and is often done subjectively, for example by evaluating a retrospective report from a supervisor. As a result, the standards surgeons achieve may differ from one training institution or supervisor to another.

How can the assessment of surgical skills be improved?

In order to ensure standard and robust assessment, the International Council of Ophthalmology (ICO) has created the Ophthalmology Surgical Competency Assessment Rubric, or ICO-OSCAR.^{1,2} ICO-OSCAR is known as a 'rubric'; it breaks an operation down into its separate steps (e.g., from 'draping' to 'wound closure') and sets clear guidelines for the different levels of skill with which a step is performed (from 'novice' to 'competent'). The steps of the operation are arranged in rows, and the columns correspond to the level of skill achieved (see Figure 1).

The ICO have developed many OSCARs for different procedures; including extracapsular cataract extraction, phacoemulsification, pediatric cataract surgery, small incision cataract surgery, strabismus, lateral tarsal strip surgery, trabeculectomy, and vitrectomy; all available in English. Selected



Surgical training may differ from one institution to another. MALAWI

ICO-OSCAR's are available in Mandarin Chinese, French, Portuguese, Russian, Spanish, and Vietnamese.¹

The ICO-OSCAR also assesses more general aspects of surgical performance. These are termed the 'global indices' and include central eye positioning under the microscope, tissue handling, intraocular spatial awareness, and the overall fluidity of the procedure.

Benefits for learning and teaching

The ICO-OSCARs provide a wonderful tool to learn, reflect, teach, and assess eye surgical performance.

As a **training tool**, it helps trainers to assess surgical skills in a structured and objective way. Knowing exactly what will be assessed makes it possible to plan the training programme in detail, so that trainees are clear about what is expected of them and have lots of opportunities to practice.

The ICO-OSCAR is also an exceptionally valuable **learning tool**, particularly if it is shared with trainees from the outset. It is a great learning exercise for them to study the OSCAR rubric and aim for 'competent' at each step. What is even more profoundly effective, is for a trainee cataract surgeon to video-record an operation they perform and assess or mark it themselves using the OSCAR rubric, and then reflect on what they need to improve. Such reflective learning is invaluable, especially when a trainer gives additional feedback.

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Figure 1 An example from the ICO-OSCAR for small-incision cataract surgery (SICS)

ICO-Ophthalmology Surgical Competency Assessment Rubric: Small Incision Cataract Surgery (ICO-OSCAR: SICS)					
Date _____					
Resident _____					
Evaluator _____					
		Novice (score = 2)	Beginner (score = 3)	Advanced beginner (score = 4)	Competent (score = 5)
1	Draping	Unable to start draping without help	Drapes with minimal verbal instruction. Incomplete lash coverage	Lashes mostly covered, drape at most minimally obstructing view	Lashes completely covered and clear of incision site, drape not obstructing view
2	Scleral access and cauterisation	Unable to successfully access sclera. Cauterisation insufficient or excessive both in intensity and localisation	Accesses sclera but with difficulty and hesitation. Cauterisation insufficient or excessive in location or intensity	Achieves good scleral access with mild difficulty. Adequate cauterisation	Precisely and deftly accesses sclera. Appropriately and precise cauterisation

Recruiting and distributing eye health workers



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Recruitment of the right people to the right places requires local investment.

As with any market, the eye health labour market facilitates an exchange between the **demand** for trained personnel to meet the health needs of the population and the **supply** (or availability) of trained personnel.

The labour market in each country is influenced by a number of factors such as:

- Who is recruiting (private or public sector)?
- Where is the work required? (Urban or rural, or by level of service? For example, community level, district level or tertiary level)
- How many jobs are available, and what skills do they require? Are these new jobs, or replacement for retired personnel?



Testing visual acuity at a school screening camp. INDIA

SHANTANU DAS GUPTA

- How many skilled personnel are available to fill these posts? Are they graduates or transfers?
- What are the terms and conditions for the employment?

Recruitment of the right people to right places in eye health are influenced and challenged by a number of factors:

Continues overleaf ➤

Recruiting for local needs



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Dr Shroff's Charity Eye Hospital is a network of eye hospitals consisting of a main tertiary hospital in New Delhi, India and five smaller hospitals in surrounding areas. In 2012, we faced a significant shortage of trained allied health personnel (support workers), which prevented us from moving to a high-volume eye surgery model.

Because the candidates available locally were few and very inadequately trained, we decided to create our own workforce that would have the necessary skills and would be aligned to the mission, vision and values of our institution. In 2014, with the support of Lavelle Foundation for the Blind, we launched our own certified ophthalmic paramedic programme.

Deciding who to train

Rural Indian society in North India is deeply patriarchal, with girls considered to be less valuable than boys, and early marriage is a common cultural practice. To address this, the programme was limited to women from underprivileged backgrounds aged 18–21 who had completed high school and lived near one of the hospitals. We felt that the programme had the ability to not only improve the economic status of the family but

would empower the women in the long run. Candidates are selected after a written test, a personal interview and a meeting with their parents. A five-month foundation course at the tertiary hospital is then followed by 19 months of on-the-job training at the hospital nearest to them. It all culminates in an internal certification exam and a formal graduation. Different modules train women as vision technicians, nursing assistants, operating theatre assistants, medical record administrators, front office personnel and patient counsellors. Other modules currently in development include optical services, housekeeping, stores & purchasing and basic accounting.

At the start of the programme, the big questions were:

- Would we get support from the community and the families?
- What proportion would leave after we had invested in their training and employment?
- Would this approach really help us to reach out to more patients and reduce avoidable blindness?

As expected, the recruitment of candidates was difficult initially, as it challenged cultural expectations. However, the reputation of the hospital and the ambition of the young women meant that 15 women were enrolled in the first year. After graduation, they

became the best ambassadors for the course and the career pathway, which is evident in the fact that we currently have three intakes per year of 30 students each.

As a result of the programme, we have seen a 64% increase in the number of outpatients (from 250,000 to 400,000) and a 62% increase in the number of operations (from 18,000 to 29,000).

	2013–2014	2016–2017	% growth
Outpatients	245,357	402,429	64%
Operations	17,584	28,543	62%

Out of the 305 women trained to date, 30 (10%) have left Shroff at various stages, mainly because of moving away from the area after marriage.

The initiative is guided by a 5-year plan that links recruitment and training to our strategic goals on volumes. As a result, we have been able to assure jobs for all our graduates over the next five years, provided that the current growth in patient volume is maintained.

The labour market pressures we faced in 2012 forced us to take radical action. Before, we were just a hospital providing quality eye services. Today, we offer valuable employment that empowers young women and brings local communities closer to us.

- The number entering (from education or migration) into the labour market (the supply)
- Where the jobs are (which should ideally correspond with where the eye health needs are)
- The conditions of employment
- Policies on recruitment and distribution
- Numbers exiting the services (due to retirement, death or migration), which makes positions available.

The number entering the labour market

The number of eye health professionals trained annually are insufficient to meet the need. Data from the Vision Loss Expert Group (VLEG)¹ indicates the critical shortages experienced, and their impact on service provision. For example, fewer than 1% of the world's ophthalmologists are available to meet the needs of 4.8 million blind in Africa, and critical human resource shortages are experienced across all professional groups.

How to create a balanced eye team: an example from Malawi



Khumbo Kalua

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Malawi has a population of 17 million people, 87% of whom live in rural areas. There just twelve ophthalmologists in the whole country, equating to 1.4 ophthalmologists per million people – far short of the 4 per million recommended by the World Health Organization.¹ To make matters worse, eleven of the ophthalmologists are based in urban areas.

Eye teams have aimed to address this by running outreach services that include cataract surgery. However, sustaining outreach services is expensive and requires a lot of travelling, which can disrupt the entire health system. Patients often have to wait for months before gaining access to eye care services. In our experience, staff fatigue eventually results in fewer visits being conducted.

To bridge the gap in eye services, Malawi's ministry of health has now established a task shifting approach. This means that some of the services usually offered by ophthalmologists are shifted to, and offered by, mid-level or allied eye health personnel who are recruited from rural hospitals and given additional training.

Ophthalmic clinical officers (OCOs) are clinical officers who have undergone training in ophthalmology and received a diploma. OCOs can manage most eye conditions and perform basic extraocular surgery. There is currently at least one OCO in each rural hospital. OCOs can train further and become cataract surgeons or trichiasis surgeons.

Cataract surgeons are OCOs who have attended an additional one-year surgical training course at a teaching hospital. They are able to perform cataract surgery within their rural hospital. Trainees remain on full salary, and a non-governmental organisation (NGO) pays for their training and upkeep.

Trichiasis surgeons. OCO's working in trachoma-endemic regions are trained and equipped to undertake trichiasis surgery at community level. They are usually trained 'on the job' over a period of two weeks.

Optometrists/optometrist technicians

Optometrists have been trained Malawi since 2008 and an integral part of the eye care workforce, to provide basic ocular disease management and refractive services. They are active in both the private and government facilities. Optometry technicians are posted to rural hospitals, where they provide refractive services.

Ophthalmic nurses are general nurses who have received further training in eye care and are able to manage patients in the wards and assist in theatre.



KHUMBO KALUA

Task shifting: a trachoma trichiasis surgeon performing trichiasis surgery in the community. MALAWI

Equipment and consumables are often provided by the eye NGO partner working in an area, and supervision is conducted by the Regional Ophthalmologist in each area. For OCOs and cataract surgeons in particular, greater opportunities for promotion, and allowances for outreach work, encourage them to remain in the rural areas.

What has been the impact of the task shifting programme?

- Eye service delivery has improved, resulting in fewer cases referred to a tertiary hospital. In the case of trichiasis surgery, there have been an average of over 1,000 operations per year over the last three years, compared to less than 200 per year before task shifting was introduced. Districts with cataract surgeons are managing almost all cataract operations (except for complicated cataract) at district level
- Additional training has increased the performance of mid-level/allied ophthalmic personnel
- Fewer staff members are now involved in outreach
- Activities, such as referrals between rural and urban eye units, are now better organised
- The geographical coverage of eye health services have increased
- There has been a reduction in the level of inequity in access to eye health services between rural and urban areas.

In conclusion, task shifting has addressed some of the human resource gaps in eye health in Malawi, and has helped improve service delivery, especially the delivery of trichiasis surgery.

Reference

1 VISION 2020: The Right to Sight. Developing an Action Plan www.iapb.org/vision-2020/

Further reading

First Global Conference on Task Shifting www.who.int/healthsystems/task_shifting/en/

Task shifting to tackle health worker shortages www.who.int/healthsystems/task_shifting_booklet.pdf

Elijah E, Lewallen S, Kalua K, Courtright P, Gichangi M and Bassett K. Task shifting for cataract surgery in eastern Africa: productivity and attrition of non-physician cataract surgeons in Kenya, Malawi and Tanzania. *Human Resources for Health* 2014;12(Suppl 1):S4 <https://doi.org/10.1186/1478-4491-12-S1-S4>

Gichangi M, Kalua K, Barassa E, Elijah E, Lewallen S, Courtright P. Task Shifting for Eye Care in Eastern Africa: General Nurses as Trichiasis Surgeons in Kenya, Malawi, and Tanzania. *Ophthalmic Epidemiol.* 2015;22(3):226-30. doi: 10.3109/09286586.2015.1040924.

Even if there are enough ophthalmologists, it can be a challenge to recruit enough nurses and allied ophthalmic personnel to achieve the right balance of skills in an eye team. This often requires local solutions, such as the training programme for local women in India described by Shantanu Gupta (p. 45).

Governments must plan and invest in the recruitment of new eye personnel, or risk the possibility that promising candidates will choose to work in private health care or leave the country in search of better jobs.

Distribution based on health needs

In the ideal setting, distribution of eye health workers would be based on where the demand is. In most low- and middle income countries, the eye health needs within rural settings are much higher than in urban settings, but attract very few eye health workers,² often due to the inadequate working conditions.

Health needs are also changing, and the range of specialisations also need to be considered when distributing the skilled workforce. For example, the growing burden of diabetic retinopathy will require personnel for the establishment of services for screening, grading and treatment.

Conditions of employment

Entry into employment needs to be balanced with how many are leaving the service; it is not always about creating new posts. Exit points may be due to death, retirement, migration or even a change from full-time to part-time roles. Employment conditions also need to be considered when trying to attract the right people to the right places (pp. 48–50).

Policies on recruitment and distribution

Policies at the regional, national and local level need to evolve based on changes within the labour market, such as the migration of eye care workers to high-income countries.

Planning health workforce recruitment is a complex process. IAPB Africa is currently taking action to develop a harmonised, competency-based training curriculum to improve the distribution of skills in the eye team. The usefulness of mandatory placements to rural districts, and/or bridging the gaps through outreach services, need to be identified by each country. Khumbo Kalua describes how this was done in Malawi (p. 47).

Recruitment must be carefully planned. Investment in hiring, placement and appropriate working conditions are essential to achieve universal access to good quality eye care.

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- 2 Palmer JJ, Chinanayi F, Gilbert A, Pillay D, Fox S, Jaggernath J, et al. Trends and implications for achieving VISION 2020 human resources for eye health targets in 16 countries of sub-Saharan Africa by the year 2020. *Hum Resour Health*. 2014;12(1):1-15.

From the field

Policy making to address imbalances in human resources for eye health in rural Kenya



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A human resources mapping study in 2011 highlighted that Kenya had attained the WHO target of 4 ophthalmologists per million population. However, 49% of the ophthalmologists were based in the capital city and served only 8% of the overall population. The cataract surgical rate was 553 operations per million population per year, which is significantly below the required rate of 2,000 per million population per year.

Shortages in the health workforce in Kenya are aggravated by the country's limited training capacity and the steady, internal migration of health workers from rural to urban areas, which is driven by economic, social, professional and security factors.¹ This is an example of the inverse care law,² which states that medical services are inverse to the need in the population.

This problem called for a comprehensive and integrated investment in incentives to recruit and retain personnel in rural areas.^{3,4}

We conducted a literature review, collected data from existing policy documents, and carried out interviews with key informants on strategies for the recruitment and retention of (eye) health workers in Kenya. We wanted to collect evidence about:

- Trends in the recruitment and retention of health workers in rural districts
- Existing policies, strategies and interventions to retain health workers, and their impact
- Existing retention incentive schemes, and their impact
- Lessons learned and guidelines for non-financial incentive packages to promote the retention of health workers.

The evidence was discussed in 2018 at the annual Kenya Health Forum meeting,⁵ and the following actions (supported by changes in policy) were agreed.

- Setting up an integrated human resource information system to plan the training and distribution of the workforce
- Planning national, comprehensive training needs assessments (TNAs) to gather detailed evidence about which eye care professionals are needed where. This takes place every two years, and the the next one is planned for 2018
- Developing and implementing a human resource advisory group responsible for improving the welfare of the workforce in order to improve productivity and retention, especially in rural areas.

The Ophthalmic Services Unit of the Kenyan Ministry of Health now works with partners to offer affordable scholarships as an incentive for people from marginalised rural counties wanting to join the eye health workforce.

The progress of these initiatives will be evaluated at the Kenya Health Forum meeting in 2019.

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Encouraging eye care workers to stay: the role of investment and management



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Considering how expensive it is to train, recruit and employ eye health personnel, it makes sense to invest time and energy into creating a positive and productive working environment.



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Considerable effort (and often public money) is invested in the initial training, recruitment and placement of eye care professionals. It therefore makes good sense to support and motivate staff members to remain in their place of work – known as ‘retention’.

Financial compensation and support

Good pay is an important factor in a person choosing to remain in post; particularly if there are attractive offers elsewhere. In the public sector, it may not be possible to



Delivering eye care to rural communities. SRI LANKA

offer substantial increases in direct wages; however, it may be possible to offer other financial incentives such as health insurance, pension schemes and/or allowances for child care, transportation and housing. Safe and secure accommodation, supplied with water and electricity, is a huge priority for staff members. Access to good schools – where practical – may also be a good incentive to stay. Financial incentives, although important, are not the

Retention through career development: on-the-job training in Trinidad



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Recruiting, training and retaining an effective eye care team present challenges for the 35 ophthalmologists working in Trinidad and Tobago due to a shortage of allied ophthalmic personnel (AOP). AOP are essential members of the eye team and support both the productivity and quality of eye care provided.

In order to address the skills shortage, our private eye care practice has developed an on-the-job training (OJT) model that implements the International Joint Commission on Allied Health Personnel in Ophthalmology's (IJCAHPO) curriculum.

Potential candidates are offered a job in a practice (30% in our practice, and 70% in other practices in Trinidad and Tobago) and come to us for a six-month programme

of basic to advanced courses. These are delivered by four ophthalmologists from our practice as well as guest lecturers.

Potential candidates have to meet the Caribbean Examination Council's required level of skills (or equivalent) in English, mathematics, science and computer literacy. Students receive textbooks; participate in classroom, skills, independent, and on-line training; and are assessed using quizzes and rubrics. Clinical training provides patient experience. Upon completion, students take certification preparation courses and take the IJCAHPO's certification examinations. The examinations are offered at the Ophthalmological Society of the West Indies' (OSWI) annual congress and at computer-based centres in Trinidad.

Fifteen allied ophthalmic personnel are currently in training. Long-term programme viability will be enhanced by increasing the number of trainees and by state recognition of the qualification – this will create job opportunities for our trainees in public hospitals. Formal, recognised AOP training programmes

will then be sustainable and produce sufficient personnel to ensure the country's workforce is in keeping with the global health workforce requirements.

Training and qualification supports:

- Retention by building technician self-esteem
- Career progression with increased responsibilities and remuneration
- Lateral movement of employees, e.g. from one practice to another or to a government hospital.

At our practice, our training, retention and reward ('perk') strategies are aligned, and involve sending employees to conferences locally and abroad and giving them leadership roles. At OSWI's annual conference, we conduct a 4-5 day workshop consisting of lectures and hands-on training which is taught by ophthalmologists and qualified allied ophthalmic personnel.

We also recognise our employees by displaying their diplomas alongside their photographs so that patients can recognise their professional status and afford them the respect they deserve.

only factors that influence retention. The conditions in which one works also have a powerful influence on job satisfaction, behaviour and, ultimately, retention.

Good leadership and management

Managers and leaders set the tone in an organisation. Their values determine the kind of workplace it is for staff members; is it supportive and encouraging, or a 'blame culture', with an emphasis on fault finding?

Managers are most effective when they see themselves as providing:

- **Leadership**, e.g. by ensuring that staff members understand and share in the goals of the organisation.
- **Supportive supervision and feedback**, by means of regular review meetings that celebrate successes and review errors or challenges in a safe and

supportive environment. Allowing staff members to get in touch with managers at any time, whether to discuss patient care or personal problems, is highly motivating.

- **An environment that supports effective service delivery.** Staff rosters and schedules must balance work with time off. Provide access to a car or other means (e.g., a car or bike) and access to tools for communication and report writing (e.g., mobile phones and laptops).

"We encourage our team members to take on new roles in teaching or outreach."

Supportive human resource policies

Any organisation must have human resource policies in place that are responsive to staff members in terms of their personal, family and professional needs; for

Continues overleaf ➤



From the field

Investing to improve conditions for retention and satisfaction at a paediatric eye centre in South Sulawesi, Indonesia

Marliyanti Nur Rahmah Akib

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Increasing the capacity and retention of human resources in specialised tertiary health centres is very important in order to achieve good quality eye care services for children. Our paediatric eye centre, part of the university hospital of Hasanuddin in Makassar (a province of South Sulawesi), provides services to the eastern islands of Indonesia.

Until recently, our centre was led by a paediatric ophthalmologist and a refractionist. At that time, the number of children we were able to help was very low, as refractions, orthoptic evaluations, ocular examinations and counselling took a long time, which meant that children and their parents had to wait for extended periods. Low vision assessment was similarly affected. The working conditions were stressful and staff members' overall satisfaction levels were low.

In 2016, supported by the Seeing is Believing programme and collaborating partners, a significant investment was made to increase the number of trained staff responsible for providing paediatric services. In addition to the paediatric ophthalmologist and refractionist, the centre now has a second ophthalmologist, an orthoptist, a counsellor, a low vision specialist and a rehabilitation worker. The centre was moved to a more child-friendly environment and the flow of patients through the clinic was re-organised to



NUR AULIA AMIR

Improving conditions in an eye unit benefits staff and the community. INDONESIA

reduce waiting times and improve the quality of services.

Since this additional investment, the waiting time for patients in the outpatient department has decreased by 75% and up to 20 patients are seen daily. Furthermore, surgical referrals have become more varied as the ophthalmologists are now able to handle complicated cases. Low vision services improved after staff members at the clinic received basic and advanced low vision training, which is supported by the new facilities and space available to them. Currently, 3–5 paediatric low vision cases are assessed each day, compared to 1–2 cases per month before.

Retaining our new staff members is very important to us. In addition to the services they provide in the eye clinic, we encourage our team to take on the role of teaching residents and/or being responsible for outreach activities, including school eye health screening. We also encourage them to discuss patients' cases in internal meetings. All of this gives them a sense of belonging in the team and in the wider community. In order to give our staff members the best financial package we can, we now employ them as civil servants.

With thanks to Marliyanti Akib, Adelina Poli, Abrar Ismail, Habibah Muhiddin, Rishiraj Borah and Satyaprabha Kotha

example, policies giving guidelines about annual and maternity leave. This can build staff members' connection to the institution.¹ Equally important is having fair and transparent systems that highlight the duration of a posting (particularly to remote settings) and clear processes to address any difficulties or grievances in a supportive manner.

Status and career advancement

Staff members are more likely to stay if they understand the potential career path open to them and know exactly what they must achieve in order to be promoted to a more responsible or demanding post with more benefits.

Continuing professional education

Training enables health care professionals to set – and achieve – personal goals, retain their professional registration, and develop their skills and careers; all of which is motivating and improves their willingness to remain. Training existing staff members (for example, through online learning) can improve and extend the services offered at an eye clinic or hospital. This may be more cost-effective than recruiting new personnel.

Recognition

There are many ways to express our appreciation of a person. These can be inexpensive, yet effective, such as regular 'checking-in' by the supervisor to see how personnel are doing or what they need, receiving a kind word from a manager/director to commend good work, or simply noting the birth or graduation of a family member. Awards or recognitions build the confidence of staff members and contribute toward the feeling of being valued and included.

Teamwork

Working as part of a team is highly motivating. This requires first and foremost that the organisation genuinely values teamwork and ensures that everyone in the team clearly understands, accepts and values their own and each other's roles – whether clinical or non-clinical. Involve staff members in planning and identify what each member is willing to take responsibility. This ensures ownership – and pride! – when the team succeeds.

Hospital infrastructure and community relations

The good reputation of an organisation within the community, smooth patient registration systems, functioning equipment, reasonable wait times, and pride in providing quality care all are big motivators for staff and patients. Demonstrate, and encourage staff members to develop, a relationship of mutual respect, trust and acceptance with the local community.

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Guatemala: How we create a welcoming workplace for our staff and patients



Juan Francisco Yee

Architect, MBA. Executive Director, Visualiza. Guatemala City, Guatemala.

Change and growth in our hospital can be stressful. We decided to address this by promoting staff motivation and team efficiency. Here is a short description of what we do at Visualiza in Guatemala.

We have created a hospital-wide engagement process to prevent and address problems of wide concern. The process is led by a service committee (SC), consisting of leaders from each of the departments, including counselling, outpatient, surgery, management. The SC is responsible for promoting improvement and motivation throughout the hospital.

Interaction

The SC identifies problems that require improvement and carries out activities with all 135 staff members. Through quizzes, talks and games, they encourage groups to be creative and design solutions to the problems that have been identified. All are encouraged to make suggestions, and prizes are given to the most popular solutions in order to keep the process fun.

The SC also collaboratively develops – and then promotes – a profile setting out the qualities of a good employee. We train everyone in the "Magic of Service" and choose service tutors who observe and congratulate other staff members who offer high quality patient service.

Continuity

After tutoring, the training is kept alive with reminders and activities to enforce the change. For example, we have lunchtime cinema every Tuesday to play a segment of a movie that brings out a situation that is thought-provoking and appreciated by the staff. We encourage everyone to participate.

The director encourages the SC to keep up with their motivational activities for the hospital by reviewing the SC agenda of activities, schedule and providing a budget.

Outcomes

The willingness of staff members to express ideas has increased. Communication between managers and their team has improved. For the most part, team members are happy in their work area. This has a positive impact on teamwork and on the atmosphere the patients feel. We believe this positive culture-building attracts patients and boosts our overall quality of care.

Regional and institutional culture influences what kinds of motivation and team building activities are effective. How would you apply this example from Latin America to your own eye hospital or department? Please share your experience and ideas with us by writing to editor@cehjournal.org



A group puzzle game spells out: 'Your health and wellbeing is our reason for being'. GUATEMALA

VISUALIZA

Tips for team management



RD Thulasiraj
Executive Director:
Aravind Eye Care
System, Madurai,
India.

Eye care is effective and efficient when there is a cohesive team effort. This can be achieved by all, by following a few practical steps and having in place simple processes that build an effective team.



Allied ophthalmic personnel screen for glaucoma. INDIA

Providing eye care is multi-faceted. It starts with working in the community to functions in the hospital such as investigations, diagnosis and treatment. This involves a number of people performing different functions. Thus, by design, eye health requires a team effort. At the same time, specific actions happen at individual levels. The following helps to transform such individual effort into a team endeavour.

Recruitment and selection: Every eye hospital has fairly well-defined service area. As much as practical, the recruitment pool should be from this area. In the selection process, while competency is essential, equal importance must be given to the individual's personality. Some of the key elements to be judged are aptitude to work with others, capacity for hard work and being self-driven.

On boarding: A new employee becomes productive when he/she integrates with the organisation. This involves developing a deep appreciation of the purpose of institution, knowing the key people and those that he/she will interact with frequently, as well

as understanding the system and processes to be followed. It is not a good idea to leave this to chance, or hope that it will happen over time. It is ideal to have this happen within the initial few days. This is possible with a structured orientation programme for all new employees. A good orientation ensures that the employee gets a good understanding of how their work directly relates to the purpose of organisation. This is an important foundation for good teamwork.

Role clarity: Every employee must have clear understanding of what is expected of them and how their work will be measured or judged. Teams are stronger when staff members have clearly defined roles and know how they contribute to, or impact, the performance of others.

Enabling work environment: Staff must have all that is required to perform their role well. This includes basic things like work space, well-functioning instruments or equipment, required supplies and knowing who to approach for issues beyond their current capability. The staffing and other resources provided must fully reflect patient volumes and workload so as to minimise stress, frustration and burn-out.

Coordination: While systems and processes can be designed for synergy, in real life things don't happen with clockwork precision. There will be variations in patient volumes, staff availability and challenges with supplies. Periodic coordination meetings and micro-planning for a day or specific tasks are necessary to manage such circumstances.

Monitoring and continuous learning: Regular reflection is what leads to continuous improvement through ideas generated by the staff. Often it is this process of seeing one's idea become an activity that builds a sense of belonging and greater motivation to perform well.

Reference

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Measuring blood pressure in patients admitted for cataract surgery.

INDIA



Leading and managing a team



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Kisii, Kenya.

Team leaders can ensure that an eye clinic or programme is effective by encouraging and maintaining the morale, motivation and efficiency of the team.



The team at Kisii Eye Hospital. KENYA

As mentioned in the article by Daksha Patel and Suzanne Gilbert (p. 48–50), it is widely acknowledged that a team approach improves the ability of eye hospitals, clinics and programmes to be effective and achieve their goals. This can only occur when team members are well organised, determined, motivated and efficient.

When setting up and managing a new eye hospital in Kenya, I quickly learnt that the greatest responsibility for shaping an effective team belongs to the team leader.

“Leaders have to create and maintain the values and culture of the organisation (its ‘DNA’) and be champions of its goals.”

Be a leader

Team leaders have to possess skill and energy and must be well motivated and visionary. They have to be good role models, good listeners and fair in all that they do. Leaders have to create and maintain the values and culture of the organisation (its ‘DNA’) and be champions of its goals. They

must actively motivate team members to be excited about the progress and direction of the organisation.

Appoint team members to positions that suit them

The team leader has to hire and place individuals in appropriate positions that suit them best, which creates a great starting position for the team as a whole. For instance, a quiet, serious nurse may be a good fit in surgical theatre, whereas nurse who is a talkative ‘people person’ will be better placed in the clinic. This can be

reviewed over time and changes made as leaders come to understand everyone’s strengths.

Set rules and boundaries

A staff manual is necessary to enable the workers to know the dos and don’ts in the organisation. The manual must provide guidelines about reporting structures and methods of conflict resolution.

Support effective communication

Set up clear management structures that show how the senior management team (SMT) and heads of departments work together and communicate these to the whole team. The SMT must have frequent meetings, chaired by the team leader, to set the pace and direction of the group. Departments must have their own meetings and encourage everyone in the department to share their views. Depending on the size of the organisation, it is advisable for the whole team to have frequent meetings to remind them of the organisation’s shared vision.

Create good working environment

To ensure optimum productivity, set up the workplace as somewhere team members will be happy to spend their time. For example, ensure there are appropriate toilets and good temperature regulation, as well as lunch arrangements and tea/coffee breaks. Create a good atmosphere so people can bond as a team – an appropriate sense of humour is vital! The team should be proud to work at the hospital.

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How to enhance your own development as a teacher and learner



Sally Parsley

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UK.

Digital technology can transform the way we learn and teach. Are you ready?

Digital capabilities are the skills and competencies we need in order to use devices, such as mobile phones, laptops and tablets, that help us to achieve our goals – whether related to work, everyday life, or teaching and learning (Figure 1).

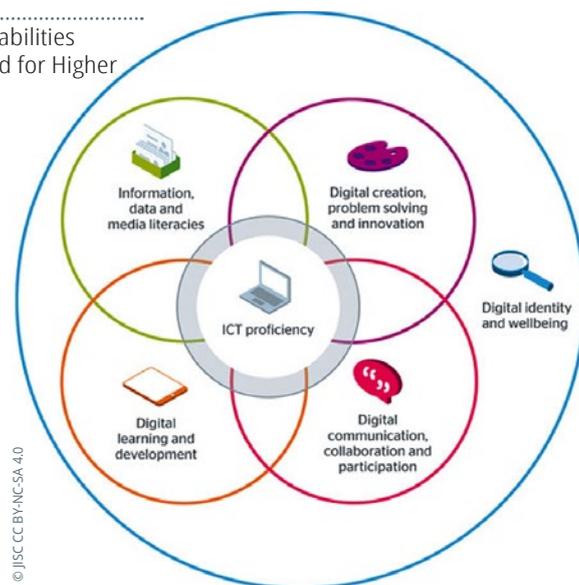
Being digitally capable is an ongoing process of development and change over time and across different contexts. For example, we may be competent at communicating with our friends on our mobile phone but less capable when participating in an e-learning course. Developing our digital capabilities can help us to save time and be more effective as teachers and learners. It can also help us to prepare for the future in a fast-changing technological world.



VERONICA MITCHELL/CC-BY-HTTPS://CREATIVECOMMONS.ORG/LICENSES/BY/4.0/

Technology enhanced teaching and learning at the University of Cape Town. SOUTH AFRICA

Figure 1 Digital capabilities framework developed for Higher Education in the UK¹



Useful resources

We hope the links below can help you develop your digital capabilities and achieve your teaching and learning goals. Which links look the most important or interesting to you? We suggest you start there first.

International Council of Ophthalmology Center for Ophthalmic Educators

Courses, curricula and resources for the professional development of ophthalmic educators. <https://educators.icoph.org>

International Joint Commission on Allied Health Personnel in Ophthalmology

Online courses (over 300), curricula, simulations and activities to support learning for the whole eye care team. Free or for a nominal fee. <https://eyecarece.jcahpo.org>

Reference

- JISC. Building digital capabilities: The six elements defined http://repository.jisc.ac.uk/6611/1/JFL0066F_DIGIGAP_MOD_IND_FRAME.PDF

Teaching in online and blended environments

Written for faculty at the University of Cape Town, South Africa, this guide provides an overview of different digitally enhanced blended teaching and learning possibilities. https://docs.google.com/document/d/17gQ1c1jjiau0DSbZyLD842jc8VpogT9D_QwKotv8gt8/edit

ORBIS Cybersight: Ophthalmic Educators' Resources

Curricula and competencies to support blended teaching using Cybersight free online courses: <https://cybersight.org/portfolio/ophthalmic-educators-resources/>

International Centre for Eye Health & University of Cape Town: Webinars series on technology enhanced teaching and learning for health professionals

See how health professionals around the world use digital technologies to prepare for practice, keep their knowledge and skills updated and train others. <http://iceh.lshtm.ac.uk/oer/tel-webinars/>

Open University (UK) Get started with online learning

Free short course (6 hours) introducing online learning, the skills you need to take part and how to evaluate your own study skillset. <http://www.open.edu/openlearn/education/get-started-online-learning/content-section-overview>

Accessing good health information and resources

This CEHJ article from last year aims to help eye health workers find and manage digital information for professional development. <https://www.cehjournal.org/article/accessing-good-health-information-and-resources/>

What is available locally? Is a college, university or professional body in your area offering courses or community activities in information and communications technology (ICTs) or digital skills?

Help us find more resources

If you know of other good resources for online learning and teaching, we would like to hear from you. Please email editor@cehjournal.org

Achieving universal eye health coverage: planning and human resource lessons from trachoma



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Sightsavers.



Susan Lewallen
Co-founder
Kilimanjaro Centre
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Teamwork has made a crucial difference to the success of trachoma elimination programmes. However, more trained supervisors are needed.

In October 2018, the World Health Organization (WHO) will publish its World Report on Vision. The report will provide a strategic path for the achievement of universal eye health coverage (UEHC). As the world's leading infectious cause of blindness, lessons from the global trachoma elimination programme will support conversations on the achievement of UEHC.

Significant progress has been made to eliminate trachoma through the implementation of the WHO-endorsed SAFE strategy, including elimination in seven countries. However, in order to sustain the gains made, trachoma services must be embedded into routine public services. This will allow individual cases to be managed even as countries reach elimination thresholds. Mobilising the full range of health workers involved in the implementation of the SAFE strategy will be important to maintain high quality case management and to strengthen health systems.

Lessons learned from programmatic efforts to manage trachomatous trichiasis (TT) in sub-Saharan Africa inform us of three ways to strengthen the principles of UEHC, which will be relevant to other eye health issues detailed in the report. These include the importance of district micro-planning; effectively using limited human resources, and adopting pro-active supportive supervision to improve the quality of care.

1. Carrying out district-level micro-planning of trichiasis services ensures that all people with trichiasis can be accurately identified and offered services. Micro-planning is a process where maps are used to divide the district into smaller manageable units and (a) decide which communities will be linked to each specific outreach site, (b) train case finders in these communities to identify suspected trichiasis cases, and (c) plan outreach based upon the findings from the case finding. Case finding and outreach will not be appropriate for all eye care services; however, we must recognise the value of service delivery mapping in order to strategically plan how to reach patients.

2. Strategies to effectively use limited human resources are crucial in resource-poor settings. Training ophthalmic nurses and ophthalmic clinical officers to manage TT surgeries is common in many trachoma endemic countries, including Kenya, Tanzania and Chad. Research shows that these personnel can be highly productive and capable TT surgeons,¹ making



A senior ophthalmic technician, left, supervises a trichiasis surgeon during a mobile surgery campaign in June 2017. CAMEROON

them essential to deliver TT surgical services at the scale needed to achieve elimination. In Ethiopia, the large backlog of trichiasis patients requiring surgical services and a lack of human resources has resulted in 'task-shifting' – the training of general health workers to provide eye care services, including TT surgery. However, due to external factors such as poor mobile phone coverage and weak transport at many hard-to-reach health facilities, some surgeons do not remain in these settings very long and attrition levels are high.

In order to achieve and sustain elimination, trachoma programmes need to employ and support people with the right set of skills to complete the wide range of tasks needed for efficient service delivery. Strong trichiasis surgical teams include workers who counsel patients, assist with surgery, sterilise instruments, and coordinate activities. This has enabled programmes to significantly increase both their effectiveness and efficiency. Strengthening general eye care services requires a similar approach to team development.

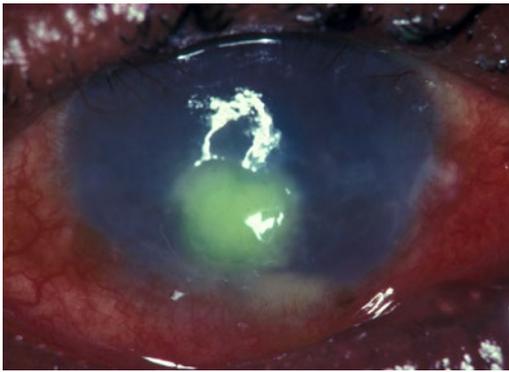
3. The adoption of pro-active supportive supervision is critical to improve the quality of care. Evidence shows that TT surgeons provided with supportive supervision focused on the quality of surgery and the efficiency of service delivery, and improved all aspects of patient care.¹ Training in supportive supervision, and the adoption and use of supervision checklists, have helped clarify the role and activities of supervisors. The shortage of trained supervisors continues to vex programmes, however. Training and empowering supervisors is a key activity for all eye care programmes to ensure the delivery of quality care to all.

Momentum for UEHC is growing. In April 2018, 53 heads of state across Asia, Africa and the Pacific re-committed to the elimination of trachoma and bringing vision to everyone, everywhere. The World Report on Vision and lessons from trachoma will be an important resource to enable ministries of health and partners to bring a wide range of experience and evidence to support equitable access and quality eye health care for all.

Reference

¹ Gichangi M, Kalua K, Barassa E, Elish E, Lewallen S, Courtright P. Task shifting for eye care in Eastern Africa: General nurses as trichiasis surgeons in Kenya, Malawi and Tanzania. *Ophthalmic Epidemiol* 2015;22(3):225-230.

Picture quiz



ALLEN FOSTER

A 45-year-old woman in a country with limited eye care services presents with a one-week history of a painful eye with loss of vision. There is no history of injury. After applying fluorescein to the conjunctival sac the appearance is as shown.

Tick ALL that are TRUE

Question 1 What is the most likely diagnosis?

- a. Conjunctivitis
 b. Iritis
 c. Herpes simplex viral keratitis
 d. Microbial keratitis
 e. Traumatic abrasion

Question 2 What clinical signs are present?

- a. Hyphaema
 b. Corneal ulceration
 c. Corneal vascularisation
 d. Hypopyon
 e. Trichiasis

Question 3 What treatments might be useful in managing this condition??

- a. Atropine eye drops
 b. Acyclovir eye ointment
 c. Epilation
 d. Prednisolone 0.5% eye drops
 e. Topical or sub-conjunctival antibiotics

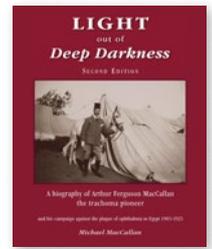
ANSWERS

(1) d. There is evidence of corneal fluorescein staining, corneal infiltration and hypopyon consistent with a diagnosis of microbial keratitis.
 (2) b, c, d and e. There is no evidence of hyphaema; all other signs are present. Note the one broken off eyelash on the upper eyelid at about the 10 o'clock position of the cornea, which may be the cause of this corneal ulcer.
 (3) a, c, and e. This ulcer is unlikely to be due to herpes simplex virus as there is no characteristic branching pattern. Prednisolone is not indicated. Epilation is important to remove the intumed eyelash. Treatment with topical or sub-conjunctival antibiotics is essential.

Biography traces the steps of a trachoma pioneer

Ophthalmic surgeon Arthur Ferguson MacCallan (1872–1955) worked in Egypt between 1903 and 1923. The MacCallan Classification of Trachoma (now replaced by the WHO grading system) was the first grading system used to standardise the diagnosis of the disease. Grandson Michael MacCallan has now published the second edition of his book about Arthur: *Light out of Deep Darkness. A biography of Arthur Ferguson MacCallan, the trachoma pioneer* (2nd edition).

Reader offer. *Community Eye Health Journal* readers can order the book for the reduced price of £30 plus postage and packing (usual price £45). Contact The Choir Press at enquiries@thechoirpress.co.uk or by telephone on +44 (0) 1452 500 016, quoting reference CEHJ09. Offer valid until 30 September 2018.



Obituary: Professor Janet Marsden



Former *Community Eye Health Journal* Nursing Advisor, Janet Marsden, has passed away on the 31st of May 2018. Janet was Professor of Ophthalmology and Emergency Care at Manchester Metropolitan University and has authored several nursing articles in this journal. She was the editor of *Ophthalmic Care* (Wiley) and later made a significant contribution to the International Centre for Eye Health's Ophthalmic Operating Theatre Practice: a Manual for Lower-resource Settings (<https://www.cehjournal.org/resources/ootp/>). Janet's insight, experience and kindness will be missed very much, and we extend our deepest condolences to her family.

Courses

MSc Public Health for Eye Care, London School of Hygiene & Tropical Medicine

Fully funded scholarships are available for Commonwealth country nationals. The course aims to provide eye health professionals with the public health knowledge and skills required to reduce blindness and visual disability. For more information visit www.lshtm.ac.uk/study/masters/mscpec.html or email romulo.fabunan@lshtm.ac.uk

Free online courses

The ICEH Open Education for eye care programme offers a series of online courses in key topics in public health eye care. All the courses are free to access and include: Global Blindness, Eliminating Trachoma, Ophthalmic Epidemiology: Basic Principles and Application to Eye Disease.

More free courses coming! Certification also available.

For more information visit <http://iceh.lshtm.ac.uk/oer/>

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Next issue



DESHREE MURRAY

The next issue of the *Community Eye Health Journal* is about **planning and preparing for eye emergencies**

Peripheral iridotomy: a first-line treatment for acute angle-closure glaucoma.

Key community eye health messages

Why invest in human resources for eye health?



KHUMBO KALLUA

- A strong eye health workforce is essential if we are to achieve the goal of universal eye health for all. Strategic investment is needed to meet the growing demand for eye health services worldwide
- A shift in thinking is needed: spending money to train, recruit and keep eye health workers in post (retain them) is an investment not a cost

What are the priorities for investment?



JAMSHYD MASUD/SIGHTSAVERS

- Designing competency-based curriculums that allow trainees to develop essential skills
- Offering life-long learning opportunities/ continuing professional development
- Training allied ophthalmic personnel in order to strengthen eye teams
- Creating and funding posts for skilled eye care workers, where they are needed
- Establishing well-functioning health facilities and offering appropriate incentives to help retain staff members in remote and rural areas

How can we work strategically?



ARAVIND EYE CARE SYSTEM

- Joined-up education and eye health workforce planning will help to ensure that there are enough trained people, with the right skills, to provide services where they are needed
- Investigate, research, and/or forecast local eye needs by volume and type of service needed. This will guide the training and placement of eye health workers

Human Resources for eye health in South Asia



Yuddha Dhoj Sapkota
South East Asia
Regional
Coordinator:
International
Agency for the
Prevention of
Blindness,
Kathmandu,
Nepal.

Human resources in the right numbers, mix and distribution are key to ensuring universal eye health. It is imperative to get a good sense of the current status and challenges in the different countries in South Asia.



Mid-level Ophthalmic Personnel Training at Aravind Eye Care Systems, Chennai. INDIA

The South Asian region has the largest share of the visual impairment burden in the world. While it has offered many innovative models and solutions that has revolutionised eye care delivery around the world, the region is challenged by a lack of adequate human resources in every cadre of eye care. This article, and this issue of the Community Eye Health Journal South Asia edition, will look at the many contours of this issue and discuss some of the solutions on offer.

The World Health Organization (WHO)'s Global Action Plan 2014-19 (and indeed, all the documents from the original VISION 2020 Initiative in 1999) emphasise the need for skilled human resources for a sustainable and stable eye health delivery system. South Asia is one of the most populous regions of the world and all the countries in the region have varied health systems, governance structures as well as health indicators. However, the good news is that national governments have robust national eye health plans that are also funded.

The International Agency for the Prevention of Blindness's (IAPB) Vision Atlas presents the latest available data on blindness prevalence across regions. We now know that more than 87% of visual impairment in the South Asian region is avoidable. 73 million people live with visual impairment in South Asia. Uncorrected refractive errors (URE) and cataract continue to be the main causes. While the prevalence of visual impairment has come down from 8.47% to 5.74%, there is a clear danger that with an increasing and ageing population, and the epidemics of myopia and diabetic retinopathy these fragile gains will be lost.¹

The paradox

The South Asian region is full of innovation, massive public-private collaborations and immense world-changing success stories. Key developments in the region like mass manufacturing of high quality and yet affordable intraocular lenses (IOLs), the pyramid

model of eye care delivery, innovations in surgical techniques and the presence of world-class eye hospital networks have been the engines of success here and around the world.

So, how can the two seemingly contradictory facts co-exist in the same region? The inadequacy of eye health resources is a crucial factor in explaining this gap.

Before we explore this in more detail, we must note that the region has successful models of task-sharing with other eye care personnel. The region has many reputed training institutes, with a network of training centres catering to subspecialty training for ophthalmologists and to an extent for optometrists and allied ophthalmic personnel (AOP).

Current scenario

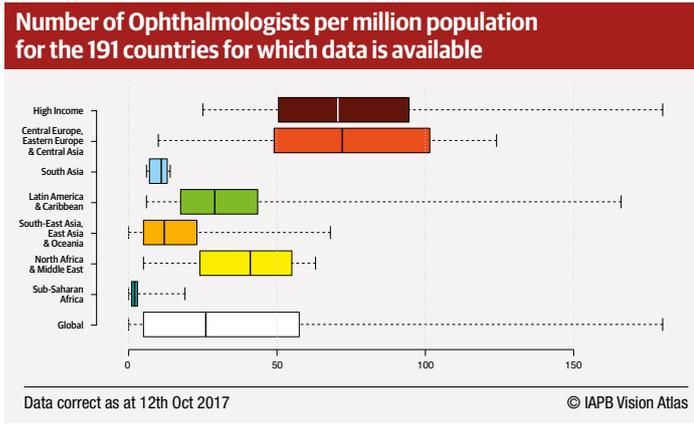
The three main cadres of human resources in an eye care service delivery system are ophthalmologists, optometrists and AOPs (ophthalmic assistant, ophthalmic technician, ophthalmic nurses and opticians—there is considerable variation in role definition and no internationally accepted understanding of what makes up this cadre exists). The IAPB Vision Atlas provides data on world-wide availability of human resources. While the data has different confidence intervals for different cadres, it gives a macro picture of the status of human resources for eye care in the South Asian region.

Figure 1 and Table 1, show the general inequity in the availability of ophthalmologists across world regions, for example, it highlights the severe resource challenge in South Asia--second only to Sub-Saharan Africa.

The major issues effecting human resources in the South Asian region are:

- Inadequate numbers
- Varying skill levels
- Uneven distribution and
- Low productivity

Figure 1 Graph to show the number of ophthalmologists per million population for the 191 countries



India, with the largest population of 1.2 billion, also has the largest number of ophthalmologists (20,000). India also has a large training capacity and supports subspecialty training for neighbouring countries as well.

There are inequities in the availability of eye care cadre in rural vs urban areas, especially the distribution of ophthalmologists. This exacerbates the lack of access to eye care. In some countries like Bangladesh and Sri Lanka, allied ophthalmic personnel such as optometrists and ophthalmic assistants are not fully recognised nor accredited to carry out eye care services independently. This means the precious time of ophthalmologists is spent on primary eye care and routine skill-based activities like refraction services. Needless to say, this also effects the overall productivity of ophthalmologists in the country and in the region. Further the lack of surgical training and diagnostic skills during primary ophthalmic training for optometrists or para-ophthalmic assistants necessitates several years of retraining. The annual output of cataract surgeries per ophthalmologists in

Nepal is much higher than its neighbouring countries. In Nepal all primary eye care and refraction services are performed by either optometrists or ophthalmic assistants. All countries except Maldives has training capacity for all cadres of eye health human resources. Given their very small population, Bhutan and Maldives do not have sub specialty fellowship training nor such services.

Conclusion

The solutions to addressing this inadequacy in human resources in the countries of the region are diverse. Adoption of strategies like competency based assessments (CBA) and skill certification are emerging as innovative ways to fast-track the development of allied ophthalmic personnel and ensure that they are competent and reliable. Multiple creative—and successful—approaches are being deployed to bring and retain AOP in rural settings across the region. This issue presents a number of these examples from the region. In conclusion we need every effort and innovation to develop and retain skilled human resources, so that we can ensure that eye health reaches everyone, everywhere.



A trachoma elimination survey in Nepal.
NEPAL

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- 1 Bourne RRA, Flaxman SR, Braithwaite T, Cicinelli MV, Das A, Jost B et al., on behalf of the Vision Loss Expert Group. Magnitude, temporal trends and projections of the global prevalence of blindness and distance and near vision impairment: a systematic review and meta-analysis. Lancet 2017;5(9): e888-e879

Table 1 Available information on the number of eye care personnel in various cadres and the rate per million population.

S.No.	Country	Population	HR Cadre	Number	Ratio per million	Comments
1	Bangladesh	26,00,00,000	Ophthalmologist	1100	4	
			Optometrist	200	0.7	
			AOP	1000	4	
2	Bhutan	7,50,000	Ophthalmologist	8	10	
			Optometrist	4	5	
			AOP	54	72	
3	India	1,20,00,00,000	Ophthalmologist	20,000	16	
			Optometrist	9,000	7	
			AOP	40,000	33	
4	Nepal	3,00,00,000	Ophthalmologist	308	10	
			Optometrist	470	15	
			AOP	950	31	
5	Pakistan	2,00,000,000	Ophthalmologist	2590	13	
			Optometrist	1605	8	
			AOP	2156	11	
6	Maldives	3,50,000	Ophthalmologist	10	28	(8 are expat)
			Optometrist	10	28	(All expat)
7	Sri Lanka	2,10,00,000	Ophthalmologist	195	9	

Paediatric eye care team: a comprehensive approach



Rahul Ali
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International,
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When India's capacity for paediatric eye care presented itself as a mammoth challenge, India Childhood Blindness Initiative (ICBI) was launched by Orbis to help ensure that India's children have access to quality eye care. These efforts have not only contributed towards building the capacity of various cadres of eye health professionals but have systematically created a milieu where paediatric ophthalmology could develop and flourish.



Examining children needs special skills and training. INDIA

One of the most critical deficits in global eye health is the lack of an adequately trained workforce. This is the very reason Orbis was founded: to provide ongoing training and support to eye care teams around the world.

India is home to more than 20 percent of the world's blind population and the largest number of blind children in any country. However, since children constitute only 3% of the world's blind population, childhood blindness has not been given its due importance as compared to other causes of blindness and visual impairment. In 2000, there were only four comprehensive tertiary paediatric eye care centers in India. At that time, with a population of 1 billion, India needed 100 Children's Eye Centers (CEC) as per the WHO guidelines of one center per 10 million population.

required. Having the right people in the right place is the cornerstone of any successful public health programme. Keeping all of this in mind, in 2002, the India Childhood Blindness Initiative (ICBI) was launched by Orbis to help ensure that India's children have access to quality eye care for generations to come.

Comprehensive capacity building

The programme began by identifying tertiary level eye hospitals where CECs could be established. Further, a country-wide survey was undertaken to generate evidence for human resource and infrastructure requirements for elimination of avoidable childhood blindness. This was the first time that such an extensive survey was undertaken in India.

The easier part was the development of infrastructure and systems. The challenging aspect was identifying staff and creating the paediatric ophthalmology teams at a time when paediatric ophthalmology was not recognised as a distinct subspecialty in India. This resulted in limited career options and therefore initially not many individuals were willing to undergo training.

Paediatric ophthalmology team

It is imperative to take a team approach to paediatric ophthalmology to ensure comprehensive care. A paediatric eye care team typically comprises of at least six people: an ophthalmologist, anaesthesiologist, optometrist, nurse, counsellor and outreach coordinator who have undergone specific training in the management of eye diseases in children. Furthermore, other clinical, non-clinical and support staff are trained or oriented to complement the core team.

Paediatric ophthalmologist

The ophthalmologist is trained to conduct a comprehensive ophthalmic evaluation of children keeping in mind the nuances of a child's eye. They need to be able to identify paediatric eye conditions



A paediatric ophthalmologist keeps in mind the nuances of a child's eye. INDIA

Building India's capacity for paediatric eye care presented itself as a mammoth challenge. Examining children needs special skills and their treatment protocols require specific training, knowledge and equipment. This meant we had to build the infrastructure for service delivery including equipping the facilities and supporting community work, along with development of all cadres of human resources

and manage them appropriately to achieve the best possible outcome. The paediatric ophthalmologist will need to work closely with his/her colleagues in other departments - cornea, glaucoma, retina etc. -- and be aware of community paediatric eye care, vision screening and awareness initiatives.

Anaesthesiologist

Unlike adults, children undergoing eye surgery will nearly always require general anaesthesia. A paediatric-trained anaesthesiologist makes it possible for children to safely undergo sight restoration surgeries, even a few days after birth.

Optometrist

Optometrists are trained in the diagnosis and management of routine and complex eye conditions including refractive error, amblyopia (lazy eye), strabismus and more. They also travel outside the CEC to deliver services to children in the community.

Paediatric nurse

Management of drugs, drawing blood, counselling patients and families, supervising sterilisation, managing the operating room, and assisting surgery are some of their responsibilities. Very often they become the child’s best friend during the child’s time at the hospital before, during and after a surgery.

Counsellor

Patient education and counselling are an integral part of both medical and surgical management of a disease. In children, the eye is still developing therefore information on any intervention, especially surgery and care required before/after surgery are quite different as compared to adults. The counsellor assists parents in decision-making by giving detailed information about the management plan. They alleviate anxiety among parents by providing a detailed description of pre-operative evaluation including pre-anaesthesia check, post-operative care, discharge, and the necessity of long term follow-up. Their training includes basic anatomy and physiology of the eye, common eye diseases and their management, basics of surgical procedures and counselling skills including interpersonal communication.

Community eye care/outreach coordinator

Planning, organising and reviewing outreach activities such as screening camps, community-based rehabilitation, school eye health programmes, etc. are taught. Networking with local government and building strategic relationships within the community are key to their role.

We strongly recommend organisations to have a comprehensive child protection policy to provide clear guidelines for them and their staff to ensure a safe environment for children.

For the team to work more effectively, we recommend:

• **Timing of training**

Considering varying durations of training programmes, it is important to plan the training such that all members complete their training and return to the new CEC around the same time to begin work as one team.

• **Training center**

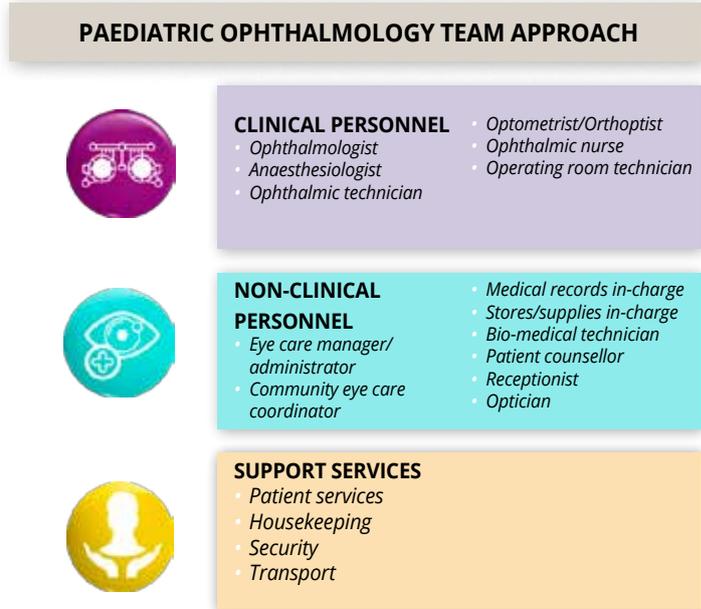
All members should undergo training at the same institution to ensure ideological alignment and familiarity with the same systems and processes across the team.

Developing the paediatric ophthalmology team

Once people were identified for training, ‘where’ and ‘how’ they would be trained continued to remain a challenge. To address this, three of the existing tertiary level paediatric facilities in the country were developed as paediatric ophthalmology learning and training centers (POLTCs) by providing infrastructure as well as technical support. This included standardisation of the curricula for different cadres of eye health professionals for the CECs and community work.

POLTCs offer fellowships in paediatric ophthalmology, short/ long-term training programmes and periodically conducted workshops/ refresher training as well as continuing medical education (CME). Conducting impactful research on child eye health is an integral part of a POLTC.

To aid continuing education and support, Orbis creates customised hands-on opportunities through the Flying Eye Hospital and hospital-based trainings (HBTs) to increase clinical and surgical abilities of eye care providers. These trainings are tailored to address the requirements of the trainee as well as the community they will be serving. HBTs are especially well-received as they provide an opportunity for the entire clinical staff to get trained and gain experience in their own setting.



In addition, Cybersight, equal parts library, school and remote-medicine service, is open to all eye health professionals around the world for training, consultation and research. Also, it keeps professionals who have undergone training connected with their mentors.

These efforts have not only contributed towards building the capacity of various cadres of eye health professionals and their affiliated institutions to provide care and support to children in need but has systematically created a milieu where paediatric ophthalmology could develop and flourish as a distinct subspecialty within the Indian ophthalmology landscape.

Today there are 33 CECs that have been developed with Orbis support across 17 states in India, and the good work is continuing at these child-friendly facilities. POLTCs continue to provide training and support to the eye care system in India and many neighbouring countries. Further, this model has been successfully replicated in Nepal and Bangladesh.

Competency-based assessment as a reliable skill building strategy for allied ophthalmic personnel



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Parul Datta
Associate Medical
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Dr. Shroff's Charity
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Delhi, India.

Further reading

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Developing a cadre of allied ophthalmic personnel poses a particular challenge for ophthalmic institutes as there are no accredited standards or curricula in most of the countries in the developing world. Competency-based assessments are gaining acceptance as they allow students to demonstrate mastery over a subject and earn competency without adhering to a rigid course schedule.



A teacher's role is to facilitate students to take a lead in their own learning. INDIA

Developing a cadre of allied ophthalmic personnel poses a particular challenge for ophthalmic institutes as there are no accredited standards or curricula in most of the countries in the developing world. In such a scenario, it becomes even more relevant to have a robust rubric for assessing skills and knowledge to ensure that this critical workforce gains a desirable level of competence.

A competency is the capability to apply or use a set of related knowledge, skills, and abilities required to successfully perform "critical work functions" or tasks in a defined work setting. Competency-based assessment (CBA) is a process that determines whether a person meets the standards of performance required for a job. It ensures greater accountability, flexibility, and it is learner-centric. See Table 1, for an example of CBA framework.

In particular, the model has garnered a lot of attention from policymakers and accreditation agencies. CBA allows students to demonstrate mastery over a subject and earn competency without adhering to a rigid course schedule. As soon as a student can prove mastery of a particular set of competencies, he or she is free to move on to the next level. Inclusion of CBA in curriculum of allied ophthalmic personnel has the potential for assuring:

- quality and extent of learning,
- shortening the course duration,
- developing stackable credentials that ease students' transition between learning and work, and
- reducing the overall cost of education

Considering the rising popularity of CBA, we at the Dr. Shroff's Charity Eye Hospital (SCEH) attempted to

adapt CBA into our training and assessment. CBA is a formative approach to assessment compared to the traditional method which is restricted to giving ranks, marks and grades. The process we followed was:

- Revisiting and revising the curriculum of ophthalmic paramedics to align with existing standards
- Identifying core competencies of allied ophthalmic personnel and summarising those core capabilities that are important across all jobs that we believed contributed to the hospital's overall success
 - Patient care
 - Medical knowledge
 - Professionalism, inter-personal and communication skills
 - Technical and scientific Skills
 - Community and health services
- Identifying areas of assessment for each core competency:
 - Mapping the areas of assessment into the various levels of performance such as novice, beginner, advanced beginner and competent and each level of competence is well-defined. For example, a novice observes an activity while the one who has mastered the competency can even supervise others.
- Outline the tasks required to be performed for each area of competency:
 - For example, for pupillary evaluation, one of the tasks can be, checks pupil for shape, size and reaction under varying illumination levels.
- Scoring criteria can be laid down for each milestone for instance 2 for novice, 3 for the beginner, 4 for the advanced beginner and 5 for the competent.

Table 1 An example for CBA to assess visual acuity

Medical Knowledge					
Area	Activity	Novice (score = 2)	Beginner (score = 3)	Advanced beginner (score = 4)	Competent (score = 5)
Visual acuity	Ability to determine the visual acuity of the patient	Needs assistance to measure visual acuity appropriately and has limited knowledge	Measures visual acuities with Snellen charts	Measures visual acuities appropriately with correct usage of appropriate charts	Accurate measurement of visual acuities with respect to age with correct usage of appropriate charts
		Needs assistance in documentation of the findings	Measures monocular visual acuity and may measure binocular visual acuity for distance and near	Measures both monocular and binocular visual acuity for distance and near	Measures both monocular and binocular visual acuity for distance and near appropriately
			Assesses visual acuity with presenting glass prescription	Assesses visual acuity with presenting glass prescription	Assesses visual acuity with presenting glass prescription
			Assesses pinhole vision	Assesses pinhole vision when indicated	Assesses pinhole vision whenever indicated
			Documents the findings	Assesses visual acuity in special cases (Nystagmus nonverbal cases) appropriately	Assesses visual acuity in special cases (Nystagmus nonverbal cases) appropriately
				Documents the findings properly	Does proper documentation of the findings

- Students can be involved in creation of competency framework development so that they know what they are supposed to achieve to attain a specific level of competence.

A lot of effort is required in defining the areas of competence in a manner that remain unbiased, charts progressive development, and at the same time can demonstrate individual trajectory of competency acquisition. Subject matter experts review the competencies created, modify them and try to ensure that resulting competencies reflect all that a trainee must know and be able to do by the end of the course. We also field tested the competencies and continue to revise them to ensure that individualised learning is measured. Standard operating procedures were developed to ensure smooth transmission of training.



Assessments are done in multiple ways to get a holistic view of a student's understanding. INDIA

We realised that effective assessment is the driving force behind the conversion of the traditional system of teaching to a competency-based education programme. To have better results, the lessons were altered from lectures to supportive/remedial sessions that reach out to students who need additional help. The trainers were selected carefully and were

trained to use the outlined competencies. They were counseled for their role as facilitators to help students to take a lead role in acquiring the outlined competencies in a stipulated time. Adoption of CBA was quite useful as students gained clarity about the level of competency they have achieved. It provided progression of growth and encouraged self-directed remediation.

Potential downsides

On the flip side, CBA can give an impression of “expertise” (as opposed to achieving “competence”). At times students shy away from disclosing difficulties with an innate fear that they will not be pronounced competent. Students feel that they are solely responsible for carving their own learning progression while most of the time it is based on set training schedule. CBAs don't assess “soft skills” that are just as crucial to a successful professional. These could be skills like timeliness, tidiness or team work.

To address such limitations we measure each competency more than once, in multiple ways and by more than one person. In order to get a holistic view about a student, a battery of tests like multiple choice tests, question papers, presentations, log book, case studies, peer-review etc. can also be used to compare them with findings of CBA.

CBA provides an allied ophthalmic professional, transparent job expectations and a potent tool for performance assessment that provides an advancement path. CBA reduces subjectivity and creates a more positive work environment. Since it is new and more research is needed, we should be cautious in relying on results from a single method of assessment. We recommend that CBA be used in conjunction with other formative and summative assessment techniques to supplement the overall assessment of allied ophthalmic personnel rather than using it as standalone method of assessment.

Building an eye care team in rural areas: a central Indian case study



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If attracting, retaining and motivating eye care professionals to give their best is challenge in cities it is a seemingly impossible task in remote rural areas. Sadguru Netra Chikitsalaya (SNC) at Chitrakoot is one of the few hospitals that have turned its rural setting to its advantage. Strategies and details described in this article will help countless other institutions that are struggling with similar issues.

Chitrakoot is an important Hindu pilgrimage centre in the state of Madhya Pradesh, India. All throughout the year, thousands of pilgrims through this small town from various parts of India. Apart from the religious significance of this town, Chitrakoot is also famous for its quality eye care services. From only a few camps a year during winter many years ago, to a state-of-the-art eye hospital, Chitrakoot has come a long way.

Shri Sadguru Seva Sangh Trust engaged in eye care delivery to the socially neglected communities in Chitrakoot since the 1950s. The organisation had conducted occasional eye camps, especially during winters, as patient turnout was huge compared to other seasons of the year. With the patronage of the founder of the Trust, Ranchhoddasji Maharaj, such programmes managed to serve people even in Chitrakoot's challenging terrain.

Surgical services were mainly organised and provided by voluntary ophthalmologists and nurses from various parts of India, while local volunteers were also involved. Huge tents were laid out to perform eye surgeries and facilitate pre- and post-operative care. Seeing that the annual camps had a huge turnout and a large number of beneficiaries, the Trust management decided to extend the services around the year and established a full-fledged eye hospital in the year 2000, named Sadguru Netra Chikitsalaya (SNC).

With the infrastructure in place, ensuring availability of human resources for provision of services throughout the year was a key challenge. Chitrakoot is a rural area and lacks proper connections with other major towns, good educational institutions for children or even a social life. These were significant barriers for hiring and retaining people. Surgeries were limited to the winter season, and so ophthalmologists were reluctant to join the organisation for a long-term career or training. As a



One of the surgical camps at Chitrakoot. INDIA

SNC, CHITRAKOOT

result, till 2002, almost 98% of the workload was taken up during the winter months with support from volunteers.

The value of leadership

Dr B K Jain, an ophthalmologist and an ardent supporter of the Trust's mission, joined the eye care division in 1973. Dr Jain was newly married and had to face several challenges convincing his wife to shift from a cosmopolitan city like Mumbai to rural Chitrakoot. However, his passion for service drove Dr Jain to survive and build the organisation. His unique style of leadership ensured others in the team felt valued and brought together people from diverse backgrounds.

Challenges

The Trust was unable to afford permanent staff as there were almost no work during summers. This led to concerns around plans for further expansion of services. As a majority of surgeries were done without IOL implants, quality of the cataract surgery was a big concern. Surgical follow-up among the patients was also poor. Financial constraints added to the list of challenges as the funds came entirely from donors. It limited the hospital's ability to provide adequate financial remuneration and amenities to employees. This even made it difficult to afford state-of-the-art facilities and technical advancements for the patients.

Change

To tackle the seasonal imbalance in patient inflow, the organisation initiated many community-based approaches including cataract screening camps and the establishment of vision centers in remote areas. Collaborations with several eye care hospitals such as Aravind Eye Care System, non-governmental organisations (NGOs) and iNGOs such as SEVA and Orbis provided the exposure and expertise to add speciality services.

To assure quality in cataract surgical services, a policy of ‘intraocular lenses (IOL) for everyone’ was implemented with capacity improvement. With the establishment of the School of Paramedical Science at Chitrakoot in the year 1999, the Trust ensured availability of qualified and trained allied ophthalmic staff to the organisation. This was a huge opportunity for ophthalmologists to enhance their productivity without compromising on quality.

To cope with rising financial requirements, in the year 2002 the Trust created a fully paid and a subsidised wing for patients who could afford to pay for the services. The Trust offered the choice of opting for free, subsidised or paid services to the patient themselves. As the patient inflow to paid and subsidised segments increased, it helped to provide adequate financial benefits and better living conditions for the employees on the campus. Professional growth of ophthalmologists and other



SNC, CHITRAKOOT

State of the art eye hospital at Chitrakoot. INDIA

essential cadres was ensured by offering them tiered training courses for all cadres of eye care staff. Continuing medical education (CME) sessions and workshops with visiting faculty helped in keeping the knowledge current and improved the prestige of the hospital.

An overhaul of the information technology (IT) infrastructure was done to improve data management and global connectivity. A dedicated broadband connection made it possible to include tele-ophthalmology at SNC and also considerably improved communication and entertainment for the employees.

Provision of good quality living quarters, shopping facilities, an English-medium school for children and strengthening the *Mahila* (women’s) wing for gainful employment of wives of employees were some of the measures taken by the management that were helpful in retention of employees in the long run. These strategies not only ensured an increase in retention of ophthalmologists, but also helped in the establishment of super-speciality departments including a paediatric eye care centre and a vitreo-retinal department at Chitrakoot.

Progress

Today, SNC is one of the largest rural eye care providers In India with more than 85 ophthalmologists working round the year with the support from 600 para-clinical and support staff. It is also considered as one of the pioneer institutes in the field of community ophthalmology. Its successful engagement with the community to tackle seasonal imbalances is well recognised resulting in more than 35,000 surgeries in summer months. As an organisation committed to its community, today SNC helps various other eye hospitals to tackle such issues and improve overall performance through a continued consultancy programme.

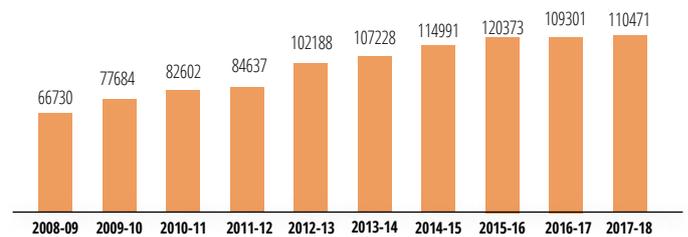
The cataract surgical volume grew year on year with 100% IOL implants, and today it is one of the few organisations in the world to perform more than 100,000 cataract surgeries each year. The establishment of 40 primary eye care centres (vision centres) spread across Madhya Pradesh and Uttar Pradesh ensures an increased cataract follow-up rate.

With increased retention of ophthalmologists, improved systems and quality assurance, the hospital today is able to provide comprehensive eye care services in appreciable volumes.

The institute is also a recognised centre for training government surgeons and ophthalmic assistants from various parts of India. A large number of private organisations within India and other countries also enrol for the post-graduate training programme. Affiliation with the International Council of Ophthalmology (ICO), has so far enabled ophthalmologists from 12 countries enrol into different programmes. The paramedical wing also provides quality training to several rural youth through its structured courses that include diplomas in ophthalmic assistance, vision technicians, health care workers, operation theatre assistants and lab assistants.

To cope with the high volume and ensure quality, modern infrastructure and equipment were added including 25 state-of-the art modular operation theatres and a world-class central sterile supply department (CSSD). These advancements help us perform 600- 800 surgeries each day.

Figure 1 Cataract surgeries from 2008- 09 to 2017-18



Key Learnings

- Leadership with long-term vision is the key to bringing people together in difficult rural areas.
- The value-based transparent system gives people the confidence to be a part of the system, tackle difficulties and grow together.
- Continuous focus on improvement coupled with partnerships with similar organisations can help build sustainable systems with high volume, quality and increased financial viability.
- Training programmes promote a continued inflow of aspiring workforce and improve the overall functioning and quality.
- Involving employees in decision making for continuous improvement builds a team that is effective and efficient.
- An encouraging work environment and extending support for social life can enhance overall contribution and loyalty of employees towards the organisation.

Speciality	Total number of surgeries
Glaucoma	4,032
Vitreo-retina	6,067
Cornea	4,203
Orbit and oculoplasty	5,780
Strabismus	303
Refractive surgery	745
Paediatric surgeries (squint & others)	3,193

Table 1 Speciality surgeries 2017-18

Nepal: self-reliant in ophthalmic human resources



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In the early 1980s, Nepal barely had any eye care professionals – neither ophthalmologists nor ophthalmic assistants. In three decades this was addressed systematically and Nepal now has a significant workforce, adequate in-country training capacity and training ophthalmologists for other developing countries in Asia. Nepal's incredible journey is an inspiration for other developing countries.



First batch of ophthalmic assistants in Nepal in 1981. NEPAL

The VISION 2020: The Right to Sight global initiative emphasised the key role that eye care human resources play in reducing avoidable blindness, both at a national and global level.¹ In a short period, Nepal has achieved remarkable progress in reducing avoidable blindness and developing a formidable eye care work force. This article takes you through Nepal's journey in becoming self-reliant in ophthalmic human resources.

In the 1980s, Nepal had only one eye hospital in the capital city, Kathmandu, and seven ophthalmologists in the urban centers of Central and Eastern regions and no other trained eye care workforce. About 1000 cataract surgeries were performed every year as people would often travel to India for cataract surgeries. There were no training programmes, either for ophthalmologists or paramedical staff.²

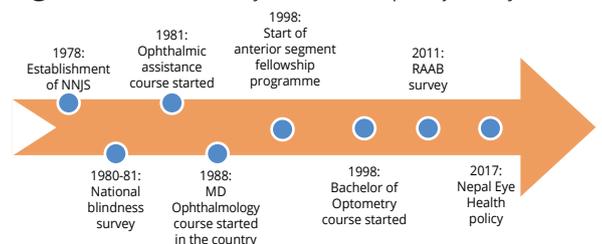
In 1978, nine enterprising and passionate individuals, comprising of social workers, ophthalmologists, industrialists and traders started the Nepal Netra Jyoti Sangh (NNJS). It was started as a national society to develop and provide high quality, sustainable, comprehensive and affordable eye care services to the people of Nepal.

A national blindness survey in 1980-1981 showed the prevalence, distribution and causes of blindness in Nepal. The survey helped in formulating a national plan for the development of eye care services and reduction of avoidable blindness. One of the key components of the plan was to be self-reliant in the ophthalmic human resources within the next 20 years. To achieve that target NNJS reached out to NGOs, hospitals and different institutes in India and other countries to provide post-graduate training in ophthalmology to students from Nepal.

- 10 medical doctors in different batches received training from the All India Institute of Medical

- Sciences (AIIMS) in New Delhi.
- Three doctors received training from Post Graduate Institute of Medical Research (PGIMR), Chandigarh and five doctors received training from Kasturba Medical College (KMC), Manipal. Different organisations like the World Health Organization (WHO) and the Swiss Red Cross financially supported the training of these ophthalmologists.
- Similarly, six doctors received training from the United Kingdom through the British Council.

Figure 1 Timeline of key events in Nepal's journey



1988: post graduate MD ophthalmology course in Nepal

In Nepal, a post-graduate course in ophthalmology was started in 1988 at the Tribhuvan University Teaching Hospital. Initially, only two candidates were enrolled per year and this was later increased to ten. After the establishment of the National Academy of Medical Sciences (NAMS), existing infrastructure and human resources of different eye hospitals began to be utilised through NAMS for post-graduate training. Presently through different institutes, 45 ophthalmologists are trained each year in Nepal.

Fellowship in anterior segment surgeries was started at Sagarmatha Choudhary Eye Hospital, Lahan in 1998 to attract fresh and young ophthalmologists to come and support the existing workload. Different subspecialty fellowships were also started in Tilganga Institute of Ophthalmology and other eye hospitals. At present subspecialty fellowship training is available in almost all ophthalmic institutes.

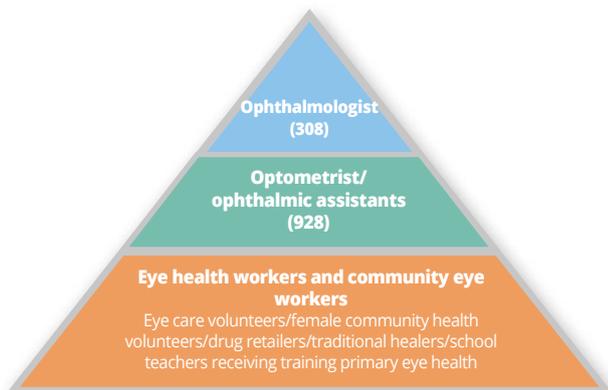
1981: ophthalmic assistant course

To deal with the acute shortage of paramedical staff, a three-year ophthalmic assistant training course was started in 1981 and 50 ophthalmic assistants were enrolled in first batch. The main objective of this course was to develop multitasking paramedical staff to assist ophthalmologists in managing patients at out-patient departments, operation theatres and camp settings. Ophthalmic assistants received training in diagnosis, management and treatment of common ophthalmic disorders. They were also trained to assist in operations, in giving retrobulbar anaesthesia and perform minor eye operations. Currently, eight eye hospitals in affiliation with the Council for Technical Education and Vocational Training (CTEVT) train about 320 ophthalmic assistants each year. As of today, there are 920 ophthalmic assistants and about 600 more are required by the year 2020.

1998: bachelor in optometry

A bachelors in optometry course was started for the first time in 1998 at the B P Koirala Lions Centre for Ophthalmic Studies. Recently, bachelors' courses in optometry and vision science was started at different eye hospitals in affiliation with NAMS. At present, 50 optometrists receive training every year from two institutes and their affiliated hospitals. Another 50 optometrists trained in India and other countries also join the eye health workforce every year. There are 350 optometrists in Nepal and nearly 250 more are needed by the year 2020.

Figure 2 Three tier pyramid of ophthalmic human resource in Nepal



Eye health worker and community eye workers

Community eye workers form a strong referral network for patients seeking eye care within their communities to the eye care centres and eye hospitals. Eye health workers carry out numerous tasks while aiding ophthalmologists, ophthalmic assistants and optometrists in operation theatres, out-patient departments, for optical dispensing, and screening and surgical eye camps. Various eye hospitals in affiliation with CTEVT are running this training programme for community eye workers as per the need.

Most of the eye hospitals in Nepal provide a one day to one week training on primary eye care to eye care volunteers, female community health volunteers, drug retailers, school teachers and traditional healers. According to their background, different training modules of varying duration are designed for these volunteers. Although the available ophthalmic human resources do not meet the required number according to WHO standards, the capacity is increasing gradually to cater to the needs of the Nepalese population. Despite having insufficient number, more than 3 million patients were examined and more than 300,000 operations were performed in the year 2017. This is only possible

due to adequate and effective utilisation of existing human resources.

Challenges

Brain Drain: A mid-term VISION 2020 review in 2010 showed that brain drain was a major challenge in terms of human resources. Nearly 36% of optometrists, 25% of ophthalmic assistants and 11.2% of ophthalmologists moved out of Nepal for better opportunities.

Distribution: There is an inequality in the distribution of existing human resources in Nepal. Geographically all ophthalmologists are positioned in hilly and flat areas of Nepal whereas not a single ophthalmologist practices in the mountainous region. Nearly 37% of population in Provinces 1 and 3 have access to 60% of eye care human resources while the remaining 63% are served by 40% human resources.

Figure 3 Distribution of eye care human resources in Nepal



Lack of job opportunities in government health care system:

In Nepal, non-governmental organisations (NGO) and privately-run eye hospitals provide basic eye care to tertiary level services throughout the country. This has led to under-utilisation of existing government infrastructure in rural and urban areas.

Insufficient number of trained human resources with different subspecialties :

The rapid assessment of avoidable blindness (RAAB) survey done in 2010 showed that cataract is the major cause of blindness followed by retinal disease, glaucoma and corneal disease. Nepal has insufficient number of specialists to deal with new emerging causes of blindness.

Conclusion and recommendations

Although there has been tremendous progress in availability of trained ophthalmic human resources, there is a need for more, to meet future challenges. Nepal needs to address a gap in specialists and other eye health professionals. Inequality in the distribution of human resources in different states and across different geographical regions can be tackled by providing extra incentives and opportunities for continuous medical education. We need to provide opportunities for ophthalmic human resources to work within government systems, so that existing HR can be distributed at community and district levels in different geographical regions of Nepal. Furthermore, qualitative and quantitative research is needed to test innovative ways to recruit and retain the work force.

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Football to eyeball: thinking out of the box to create an ophthalmic talent pool in difficult geographies



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To create and retain locally available pool of ophthalmic talent, thinking out of the box has helped Akhand Jyoti Eye Hospital to recruit, train and retain local talent successfully.



Football is used as an icebreaker to negotiate opportunities for young girls. INDIA

It is well established that a pool of optometrists and similar allied ophthalmic personnel are the backbone of any successful eye care programme. It is also true that recruiting and training them is a significant challenge; high turnover of such human resources makes the problem even more significant. Similar scenarios under challenging geographies, especially areas of high poverty and poor infrastructure, makes it all the more complicated.

To create a locally available pool of ophthalmic talent, we need to think beyond traditional solutions. Thinking out-of-the-box has helped us at Akhand Jyoti Eye Hospital to recruit, train and retain local talent successfully.

The hospital was started in early 2006 in a remote village in the eastern Indian state of Bihar. It grew from a ten-bed hospital to 400 beds and from 4000 annual surgeries to 65,000 surgeries in just seven years. All the while, it never had to struggle for ophthalmic personnel, especially optometrists and ophthalmic assistants.

The “football to eyeball” programme was started in 2010 to develop a local talent pool of ophthalmic personnel. Under this programme, girls from the local villages are encouraged to play football and train to qualify as professional optometrists thereby empowering them to cure blindness and make a broader societal impact in a very patriarchal society.

This unique programme uses football as an icebreaker to negotiate opportunities for young girls. Girls between the ages of 12-16 are nurtured by the hospital to aspire to become professional footballers or optometrists or both. This initiative is instrumental in targeting gender-based inequalities, exploitation and child marriage - all of which afflict girls in Bihar - and to provide equal opportunities to them. We work as

a hub-and-spoke model wherein football is a crucial instrument of change. Our motto for the programme is “teach football to the girls and draw them out of their homes.” The eye hospital works as a hub for this programme. The spokes are the villages where we had conducted outreach camps.

Football is introduced as a sport to these girls under the supervision of a physical instructor in the local government schools of the villages. Once a girl develops an interest in the sport, we offer them to join full-time and reside at the hostel facilities within the hospital centre. The entire cost of education, training, and living is undertaken by Akhand Jyoti with an objective to motivate these girls to become ophthalmic personnel and role models for future in their local communities.

The girls can simultaneously opt for a four-year bachelors course in optometry after completing their standard XII (A levels). As a qualified optometrist, she can choose to practice at the hospital or start her own optical clinic. This qualified optometrist can easily earn at least five times more than the per capita earning of the rural families in India, creating significant opportunities for livelihood and improving gender parity in the society. Over 90% of these girls opt to work full-time at the hospital centres thereby creating a vast pool of talent from which we can choose. The hospital's current and future human resources gaps mandated stability in support staff, especially ophthalmic personnel. The football to eyeball programme helped us achieve this and at the same time helped us address a significant social issue in the local community - gender inequality.

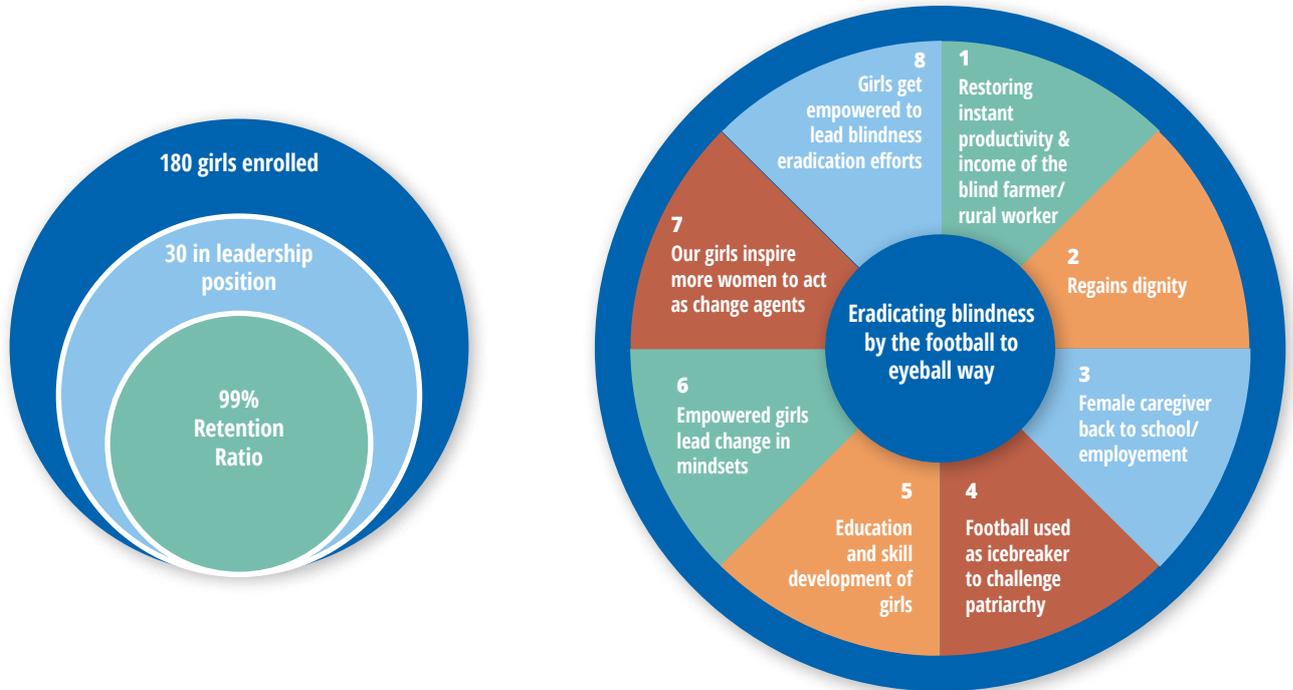
In summary, these girls are enrolled and provided secondary education, including English and computing skills, and then trained on the optometry and ophthalmic assistant course, and finally offered

employment in the hospital. The optometry course combines theory and practical sessions conducted by our in-house ophthalmologists and senior optometrists. The completion of the course ensures that the girl is qualified to practice as an optometrist and in turn they can assist Akhand Jyoti Eye Hospital achieve its vision of eliminating blindness in low-income states of India.

A similar model can be replicated by applying the following steps

- Primary objective (critical) – identify an inequity or unjust situation which exists in the community (we identified the girl child – they face strong gender, social and economic inequality in Bihar).
- Secondary objective – to create a locally available pool of skilled manpower which the organisation can continuously use

Figure 1 The success of the programme and the link with blindness.



Key learnings from this talent creating exercise are

- The personal commitment of the leadership towards talent creation is crucial.
- Locally available talent is more straightforward to retain; much more so if their training is carried out at the institution where they are employed.
- Eye care programmes have the potential to make a more significant social impact on local communities.
- Solutions to human resource issues are hidden in the community themselves; it is just a matter of understanding how to transform and use the available raw talent.

- Identify main skills desired to be imparted (optometry in our case)
- Identify the bridging abilities (for us it was English and computing skills)
- Identify how and where the career opportunities at the local level would come from (for us direct employment at the hospital).
- Formalise the enrollment process (we documented the agreements, career plan, sponsorship mechanism, and exit policies)
- Start with direct contact with parents and counsel them along with the candidates (it took us nine months to convince the first girl to enrol; now we have waiting lists of 700 names).
- Identify and create an enabling environment (we had greater success when girls started living 24x7 with us rather than the earlier situation when they were with us for three days in a week)
- Identify the talent with preference to those living in greater inequity (our primary selection criterion is the economic condition of the family).
- Groom and nurture the talent (our priority for the first three months was to improve confidence levels and change mindsets)
- Create a long-term plan to retain the talent (we devised and communicated, in advance, a three year career plan after the girls completed their course)



Optometry class in progress. INDIA

Effective engagement of community health workers in primary eye care in India



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Active and sustained involvement of existing community health workers in primary eye care service can help South Asian countries tackle a major challenge in the region - lack of trained human resources.

Bourne and colleagues from the Vision Loss Expert Group estimated that there are close to 253 million visually impaired individuals worldwide in 2015 of which 14.2% are blind. India contributed about one-fifth to the global magnitude of blindness.^{1,2} Despite the recent gains, cataract and refractive errors continue to constitute about 75% of moderate to severe vision impairment (MSVI) globally.¹

The WHO's Universal Eye Health: A Global Action Plan 2014 – 2019 has prioritised the development and maintenance of a sustainable workforce for the provision of comprehensive eye care services as a key action for reaching the objective of universal eye health.³ Lack of trained human resources is recognised as one of the greatest challenges to reducing the prevalence of avoidable blindness in India.⁴ Given the inadequacy of human resources in healthcare settings including eye care, Mishra and colleagues have strongly argued for a greater role and engagement of community level volunteers like Accredited Social Health Activist (ASHA) provided they are appropriately trained and sensitised.⁵

Mission for Vision's (MFV) experience in engaging community health workers in primary eye care

Anganwadi workers (AWW)

Anganwadi centres are government-run mother and child care centres in the villages of India. The *anganwadi* workers are women selected from local communities who ensure antenatal and postnatal care for pregnant women, nursing mothers and immediate diagnosis and care for new born children. They are also agents of social change and mobilise community support for better care of young children, girls and women.⁶



School eye health project in Meerut district, Uttar Pradesh. INDIA

ARAVIND EYE CARE SYSTEMS

MFV's engagement with AWWs began in 2015 with a joint initiative with Dr Shroff's Charity Eye Hospital (SCEH), New Delhi. It involved provision of eye health services to children, enrolled in schools and those out-of-schools in Sardhana and Daurala, in Meerut district of Uttar Pradesh. As part of this two-year initiative called Mission Roshni, a total of 89,433 children aged 0 to 16 years were screened for eye conditions. Children in schools and madrasas (an institution for the study of Islamic theology and religious law) were screened by optometrists whilst those out of school and aged 0 to 6, by trained AWWs. Approvals from officials at the local Integrated Child Development Services (ICDS) office were obtained for the training and involvement of AWWs in the community eye health (CEH) project.

The training programme for AWWs was tailor-made to suit the project objectives and were standalone exercises. AWWs were paid a monetary incentive of INR. 250/- per each surgical referral and INR. 2/- for each child mobilised for eye screening. A total of 662 teachers and 302 AWWs were trained. Of the total child screenings done, 16,544 (18.5%) were by AWWs. A total of 3,161 (3.5%) were identified with refractive errors and 3,147 (99.6%) received corrective glasses. Ten children were identified with low vision and 139 (0.2%) were identified for surgical treatment.⁷

Active engagement of AWWs helped in generating awareness and counselling of parents to seek appropriate treatment for their children. Working with AWW was a challenge particularly given their varied backgrounds and competencies which impacted the overall performance.

Accredited Social Health Activist

ASHAs are community health workers instituted by the government of India's Ministry of Health and

Family Welfare as a part of the National Rural Health Mission.⁸ ASHAs serve as a bridge between the healthcare system and rural populations. They motivate women to give birth in hospitals, bring children to immunisation clinics, encourage family planning, and treat basic illness and injury with first aid.⁹

In two of India's north-eastern states, Mizoram and Meghalaya, community eye health (CEH) initiatives were undertaken with the help of ASHAs. First, in collaboration with Synod Hospital, Aizawl, trained ASHAs conducted door-to-door eye screenings in



ASHA training for community eye health project in Kolasib district, Mizoram. INDIA

all the 118 villages of Aizawl and Kolasib districts. Adults aged 50 years or older, who were suspected or self-reported to have eye health issues were advised to visit a local eye camp organised in their respective villages. At these camps, optometrists screened patients for eye conditions including cataracts. Those diagnosed with cataracts and having a visual acuity (VA) of $<6/24$ were referred to the base hospital for further medical assessment. A total of 158 trained ASHAs helped in organising 143 eye screening camps. 5,445 individuals were screened of which 935 eyes were operated.

The Meghalaya Integrated Eye Health Project was initiated in collaboration with Society for Promotion of Eye Care and Sight (SPECS), Shillong in 2017 in two districts: East and West Jaintia Hills. The target of this project was to screen 9,000 individuals living in small clusters of villages across the two districts. A total of 135 ASHAs were trained and door-to-door campaigns were conducted to educate and screen the local population for eye conditions. All suspected or self-reported cases were referred to local eye outreach camps, where optometrists screened for potential eye conditions. ASHAs also accompanied the patients from their residence to the camp-site. A total of 122 outreach camps were organised with active participation of ASHAs. 13,790 adults were screened and referred by ASHAs, of whom 1,038 (7.5%) were diagnosed with cataracts and 405 eyes were operated upon.

In both the states, approvals from officials at the District Medical & Health Office (DMHO) were sought for the training and involvement of ASHAs. All trained ASHAs were paid a one-time monetary incentive of INR. 1,000/- for screening and referral to eye health camps.

Involving ASHAs in the CEH projects had helped in creating awareness in the community and improved demand for eye health services. However varying levels of motivation and willingness of ASHAs was a challenge as some felt this was

an additional burden on them. Transport is a major issue in Meghalaya which made it difficult for both ASHAs and patients to travel to eye care centres.

Mahila Arogya Samiti (MAS) workers

MAS workers are community-based women's groups who serve local communities in health planning and action under the National Urban Health Mission framework.¹⁰ Vision centres (VCs) set up by Mission For Vision in association with Sightsavers and Kolkata Municipal Corporation in Kolkata city are the first point of interface for this urban population to address their eye health needs. There are nine VCs in the urban slums of Kolkata to cater to the eye health needs of underprivileged populations.

In 2016, local MAS were co-opted to improve demand for eye services in the region and over the last couple of years 504 MAS workers were trained. These training programmes were tailor-made to suit the needs of the project. No monetary incentives were provided to MAS for their role in the project. In the last two years, the nine VCs catered to about 40,000 patients, of which MAS accounted for about a quarter of all referrals. Actively engaging MAS workers has contributed to an increase in the uptake of primary eye health services, and ensured provision of appropriate follow-up services to the patients. High rates of attrition was the main challenge while working with MAS workers.

Conclusion

Blindness and visual impairment continues to be a major public health problem in India. Availability and easy access to primary eye care services is therefore essential for elimination of avoidable blindness. The advantage of integrating eye health within community health and development initiatives with the engagement of local community workers promotes increase in uptake of primary eye care services. Active and sustained involvement of existing community health workers in primary eye care service provision is a win-win solution, specifically in geographies which are difficult and remote.

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Evidence-based management of eye care delivery



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This article is the the first in series on evidence based eye care delivery. The series highlights the importance of using evidence for planning and effectively managing eye care – both at programme and hospital levels.

Evidence-based management (EBM) is essentially about consciously using sound information for effective management and decision-making.¹ It is an approach that should be practiced to improve the way decisions are made in day-to-day work. This requires having the right evidence or information and a habit of taking decisions based on such evidence.

It is a well-established practice in medicine for many years and in the recent times getting popular in other fields.² Akin to physicians, evidence is important for managers looking to 'cure' their organisation's ills. Just as it is untenable for doctors to treat patients without evidence from patient history and appropriate investigations, it is equally or more dangerous when strategic or operational decisions are taken without appropriate evidence.¹ In this context, it is important to understand what should be measured and monitored to efficiently manage hospitals and healthcare programmes.

In the application of evidence, it is critical that we identify the right metrics so that it serves the organisational goals and brings in excellence in the operations. In this context, the following framework could be helpful. Let us consider the following situation to bring in a practical understanding of this.

Primary eye care or vision centres (VC) are seen as a viable strategy to ensure universal coverage for eye care. This would require everyone in need of eye care accessing the VC and receiving appropriate treatment or referral to address all eye conditions at a cost that is affordable. This requires, amongst other things that the VC has adequate demand. We can explore, how evidence can help the primary eye care strategy to succeed.

Framework for defining metrics

Right metrics are those that help us figure out 'the right things to do' and then ensure that we 'do them right'. The metrics to manage programmes



Productivity depends on right mix and number of allied ophthalmic personnel. INDIA

or projects at strategic level are usually defined at the planning stage itself using Log Frame, a management technique that summarises a project into a 4x4 table, based on goals, objectives and specific tasks of the project, thus ensuring that all aspects are comprehensively covered. Similarly the following framework will ensure comprehensiveness of the metrics identified, to manage eye care effectively.

Purpose: Metrics to assess whether we are aligned with the vision and mission, as well as achieving it. For a VC, the possible metrics could be

- % of population reached out of the service area population
- % of refractive error patients examined against estimated annual need
- % of cataract surgeries against annual need
- % of glaucoma cases identified against estimated need in service population

Demand: Metrics to know where the patients come from and where they don't, the variations; health seeking behaviour viz. how early they come; conditions they come for

- Village level distribution of patients
- Age/gender distribution of patients
- Vision or average duration of eye problem- how early they come
- Diagnosis distribution – for what conditions they come
- Purpose of visit – in addition to eye care needs, patients could also be coming for replenishment of medicines, blood sugar monitoring or information.

Compliance: Metrics to continually know what proportion comply with the advised treatment or follow-up;

- % patients buy/use spectacle as per prescription
- % patients reporting to base hospital as per referral
- % patients buy/use medicine as per prescription
- % patients underwent surgery as per advise

Quality: Metrics to assess care in terms of surgical outcomes as well as patient satisfaction with service and how it impacts demand.

- % of patients needed referral as per base hospital
- % of patients returned with complaints after using spectacles
- % of patients with postoperative visual outcome conforming to WHO standard³
- % of patients who rate the overall experience as excellent
- Net promoter score - measures willingness of a patient to recommend to others

Human resource: Metrics to ensure that right number and mix of staff are available; productivity measures, retention and attrition rates; employee satisfaction and engagement

- Number of patients handled per day
- Average time-taken per patient
- Punctuality in opening the centre
- Number of days a VC centre had to be closed due to lack of human resources

Finance: Metrics to ensure financial viability; awareness of trends in expenses and revenues

- % of total income over expenses - cost recovery
- Costs incurred per patient

External: Metrics to monitor activities beyond our direct control but would affect our organisation.

- Are there any new/other eye care providers started serving
- Population movement (any migration happening in service region)

Effective use of evidence

Sometimes data by itself may inform the status. However to trigger actions for improvement, making comparisons against a benchmark can be effective. Such benchmarks can be defined based on community needs, targets, external performance and previous achievements. For instance, if we assume that 20% of the service area population would need eye care services then this can become the target for coverage; compliance target could be set at 80% for patients referred to hospital and to ensure financial viability, the costs recovery through patient revenues could be set as more than 100%. When there are multiple centres, comparison of the same metrics across centres facilitates cross learning and improvements. Without having such standards as benchmarks to compare, the evidence on hand cannot translate to corrective measures.

Information is needed at all levels

We need to recognise that information is required at all levels and the design of the information system should reflect it. The senior leadership would be interested in strategic information to know the performance of the primary eye care centre at macro level in terms of population coverage, patient load, revenue, etc. While a mid-level manager would be interested to know about the compliance rate of referrals, surgery, follow-up exam, etc. He or she would need this periodically as well as a comparison across all the centres, for providing appropriate support. Whereas the technician delivering patient care and managing daily operations, would like to review details such as patients who are due for a visit or those who are non-compliant to surgery, so that he or she can act on it.

Practicing evidence-based management

Practicing EBM requires an organisational and individual discipline of making decisions based on evidence. When top management

demonstrates this behaviour, others in the organisation will follow. Information generated should be reviewed periodically at appropriate levels. Such review will invariably throw up action items and these need to be followed through (see Figure 1). These practices ensure continuous improvement and a healthy work environment.

Practical considerations for generating good evidence

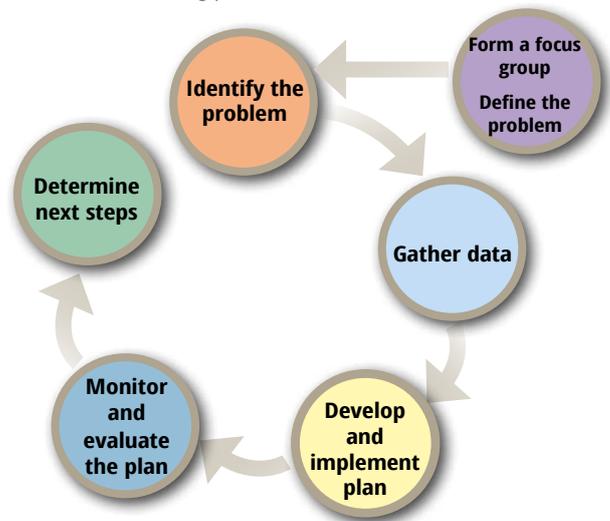
Data quality or its timely availability is often the reason for not using evidence. The root cause of poor quality of data could be due to poor design of the system, lack of training or not having the required technology. However we should recognise that the quality of the data depends on how effectively we use them. Regular usage of information is what improves the quality of data and its timely availability.

The system should be designed to capture data as part of the workflow and allow the users to generate daily report to reflect the quality of the data captured. It is important to verify the quality of data as they are generated and at the end of each day, to avoid surprises when we generate periodic reports.

Role of technology in practicing EBM

Information technology (IT) plays a significant role in building an information system. It is becoming increasingly affordable and easy to use. It is now possible to give information in real-time which can be accessed from anywhere at any time.

Figure 1 Problem solving process



Conclusion

Practicing EBM requires access to accurate and current information as needed; trigger exceptions; highlight areas needing focus, etc. All of this is possible with IT enabled systems. There are many tools available including open-source products such as spreadsheets, databases, statistical packages and Power BI that could help to build a process to capture, process and share the information more efficiently. This in turn facilitates action on the basis of the information, resulting in improved performance or outcomes.

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VISION 2020 INDIA's annual conference

The key outcomes of the VISION 2020 INDIA's annual conference this year was the submission of six recommendations on improving the Health Management Information System (HMIS) to the National Programme for Control of Blindness (NPCB), the nodal body in charge of blindness programmes in India.



A session in progress at the conference. INDIA

VISION 2020 INDIA's annual conference titled 'advocacy and inclusive partnership for eye health' was hosted by Sri Sankaradeva Nethralaya, Guwahati, Assam on 9 and 10 June this year. This time the conference was held in the north east of India, a region where delivering eye health is a major challenge. The states of Assam and Arunachal Pradesh, for example, have the highest and the second highest prevalence of blindness in the country respectively. More than 500 delegates attended the conference, which had a mix of senior officials from both the central and state governments, heads of organisations, ophthalmologists, programme managers, optometrists and mid-level ophthalmic personnel.

the grant-in-aid programmes of the government and HMIS is the key monitoring tool for grant reimbursements. "Currently NPCB is in the process of revamping the HMIS and recommendations from organisations based on their experiences will help in building a strong HMIS," says Mr Phanindra Babu Nukella, CEO, VISION 2020 INDIA.

A session on 'challenges in delivering eye health in northeast region' highlighted some of the success stories from the region and also recommended improvements. The session was chaired by Dr Promila Gupta, Director General Health Services, Ministry of Health and Family Welfare, Government of India and co-chaired by Dr Dipali Deka, RIO, Assam.

His Excellency, Shri Jagdish Mukhi, Governor of Assam, inaugurated the conference. In his speech, he hoped that the deliberations can be the "key to solve the issue" of Assam having the highest blindness prevalence rate in the country.

Over the years, the annual conference has metamorphosed into a national conference for community ophthalmology. "This conference is an unique opportunity for learning which is generally not available in the more commonly held CMEs that are more clinical in nature," said Dr T P Das, President, VISION 2020 INDIA. The conference is uniquely positioned to discuss and promote delivery aspects of community eye care and has something useful for all departments of a hospital.



Dr Taba Khanna, State Programme Officer, Arunachal Pradesh, NPCB presenting challenges in northeast region. INDIA

One of the key outcomes of the conference was the submission of six recommendations on improving the Health Management Information System (HMIS) to the National Programme for Control of Blindness (NPCB), the nodal body in charge of blindness programmes in India. A robust and glitch-free HMIS system is vital in the Indian scenario, where several not-for-profit eye care organisations perform cataract surgeries under

This year's conference included four tracks: advocacy for eye health; eye care delivery to the unreached; improving patient outcomes in cataract surgery and; skill enhancement for optometrists and ophthalmic assistants. 20 sessions enabled debates, discussions, experience and knowledge sharing from organisations across the country.