

# Training ophthalmologists for developing economies: an African-German partnership

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Globally, 32.4 million people (95% CI 29.4 to 36.5 million people; 60% women) were blind in 2010, and 191 million people (95% CI 174 to 230 million people; 57% women) had moderate or severe visual impairment (MSVI).<sup>1</sup> The most common cause of blindness is cataract, which contributes to about 48% of all blindness in the world. 'VISION 2020: The Right to Sight' is a global initiative that aims to eliminate avoidable blindness by the year 2020.<sup>2-4</sup> The three pillars of VISION 2020 are: (1) disease control; (2) human resource development for eye care at all levels; and (3) provision of infrastructure and appropriate technology.

VISION 2020 is the global initiative for the elimination of avoidable blindness, a joint programme of the WHO and the International Agency for the Prevention of Blindness (IAPB), with an international membership of NGOs, professional associations, eye care institutions and corporations.

Sub Saharan Africa faces severe shortages of eye care workers at all levels,<sup>5,6</sup> with countries such as Malawi having only one ophthalmologist for every 1.5 million people.<sup>7</sup> The VISION 2020 minimum target for the number of ophthalmologists in Africa is four per million population. Malawi now has only 10 ophthalmologists (seven Malawian and three expatriates) for a population of 15 million people, so it is 50 short of the recommended number of ophthalmologists. Reaching Malawi's 2020 target depends on significant increases in training capacity for specialist ophthalmologists. Before the programme started in 2006, only three ophthalmologists were working in Malawi.

Developing countries have three options for training surgeons: train them themselves, join a regional network for

training, or send doctors to more developed countries for specialist training.<sup>8</sup> Until 2006, Malawian doctors went abroad for specialist training in ophthalmology. However, these doctors tended to not return. Therefore, Malawi's College of Medicine no longer encourages this approach to training ophthalmologists,<sup>9,10</sup> but with no local training programme in ophthalmology, this leaves the country with a huge burden of reversible blindness and no way of increasing the number of specialists. In addition, establishing specialist training within Malawi would overburden the only potential teachers (the small cohort of practicing ophthalmologists) and would have to rely on funding from outside agencies.

A fourth option is to develop a different relationship between Malawi's healthcare system and established training programmes in developed countries. Malawi's College of Medicine has done just that by setting up a local MMed (Ophthalmology) programme, but with a difference. Malawi's ophthalmology training programme is linked to the University Eye Hospital Tübingen, Germany and is funded by the German Academic Exchange Service (DAAD).<sup>11</sup> During this 4-year course, trainees are based in Malawi and work with, learn from, and support local ophthalmology service delivery. However, for 4 weeks each year these residents travel to Tübingen for intense and specialist tuition. Also, while working in Malawi, these doctors are supervised by two full-time lecturers, one from Malawi (2006–2013) and one from Tübingen (2011–2013). In this way, residents experience medical practice locally, yet gain from the sort of specialist training that is simply not available nearer to home. Malawian postgraduate students receive 48 months of well-structured medical and surgical training that includes intensive examinations. In addition, these trainees also take the International Council of Ophthalmology (ICO) examinations and can compare their progress and attainments with those trained elsewhere in the world. This training model in ophthalmology has previously been successfully established in Nairobi, Kenya and Moshi, Tanzania, resulting in a very low brain drain.<sup>12</sup>

The Master's programme is in two parts and in many ways is similar in outline to those of developed countries. The first part includes anatomy, embryology, physiology, medical optics, pathology and microbiology, and the second is based around the principles and practice of clinical ophthalmology. Trainees are expected to log their clinical experience and progress to carry out a certain number of procedures (box 1). The weekly training activities of trainees would be familiar to residents worldwide: they attend lectures on a range of topics including pathology and microbiology, prepare for tutorials, present at grand rounds, organise journal clubs, and attend courses and the residents' conferences. Their experience in Germany is very different—not least as the trainees are not delivering care—and focuses on very specific aspects of training (box 2).

The theory and the potential benefits are clear. As the trainees learn and develop skills and competencies, they become familiar with the ophthalmic conditions common in Malawi and learn to manage them with the sort of pragmatic approach needed within everyday local constraints such as shortages of drugs and consumables. But by also attending a well-established ophthalmology training unit in a developed country, trainees experience a different medical culture, undergo a period of intense training, and are exposed to modern technologies and techniques. Importantly, too, by staying in Malawi, trainees do not experience a distancing of social relationships and can continue home life in Malawi. Each of these factors contributes to encouraging continued engagement in healthcare in the local community.<sup>13</sup>

## Box 1 Residents' expected surgical experience in Malawi

- ▶ Cataract extractions (200)
- ▶ Glaucoma operations (30)
- ▶ Lid surgery (25)
- ▶ Tear sac operations (10)
- ▶ Canaliculi repair (15)
- ▶ Chalazion (20)
- ▶ Pterygia (25)
- ▶ Orbital surgery (15)
- ▶ Enucleation/evisceration (50)
- ▶ Strabismus surgery (20)
- ▶ Intraocular traumas (40)
- ▶ Argon/diode laser procedures (50)
- ▶ Buckling of retinal detachment (10)
- ▶ Excision of conjunctival tumours (25)
- ▶ Extraocular trauma (45)

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### Box 2 Residents' experience during the 4-week yearly fellowships at the University Eye Hospital in Tübingen

- ▶ Medical glaucoma specialist clinic
- ▶ Macular diseases department including high tech exams (fluorescein angiography, optical coherence tomography)
- ▶ Retina clinic
- ▶ Phacoemulsification training simulator
- ▶ Uveitis specialist clinic
- ▶ Neuro-ophthalmology clinic
- ▶ Low vision devices (LVDs) training

The benefits are not all one sided. Supervisors in the established ophthalmology programme in Tübingen value the opportunity to work on this programme and to become much more aware of both the needs of Malawi's specialist trainees and the extent of Malawi's healthcare needs.

Many factors needed to come together for this small programme to work and there have been significant difficulties. Training residents in a country that has poor ophthalmic resources with recurrent instrument breakdowns was one of the most frustrating aspects of this programme. The support from Tübingen University and the presence of a Malawian full-time coordinator of the entire MMed (Ophthalmology) programme were key factors in its success. However, the language barrier, short-term attachments in Tübingen, and poor co-ordination were disadvantages experienced by the residents. None spoke German and, although tuition in Tübingen was in English, the Malawian residents were limited in their interactions outside their training. These problems were to some extent balanced by the opportunities for connecting with ophthalmology residents on other MMed courses and being part of a small programme.

One of the fundamental weaknesses of the programme—similar to many development programmes worldwide—is the dependency on tranches of short-term funding from external agencies. Such programmes need resources, both in terms of funding as well as other forms of support. This teaching programme was sponsored by Christian Blind Mission, Sightsavers International, Lions Aid Norway and Malawi's Ministry of Health. Money from an external NGO together with a small amount of additional funding from the Malawian Ministry of Health paid for the training that took place in Malawi. Additional funding from DAAD supported

the yearly fellowships in Tübingen, and the German Else Kröner-Fresenius-Stiftung provided support both for the full-time lecturer whom Tübingen based in Malawi (2011–2013) and for essential equipment. It remains a challenge to maintain supplementary donor funding.

Continuity of this programme is essential if Malawi is to develop its own ophthalmologists and meet the visual health needs of its population. We are optimistic that the Malawian Ministry of Health will take over the sponsorships previously provided by the NGOs. However, looked at in terms of the benefits to the community of the career lifetime of a trained ophthalmologist who makes a significant contribution to the health and quality of life of so many, it must be considered as one of the most cost-effective ways of investing in the visual health of a population in a developing country. Donors might continue their support if they can be convinced that their hard acquired money is well spent: the three graduates of this residency programme who all passed their ICO exams at the first opportunity and who are now all practising in Malawi, are evidence of that. And, importantly, there are currently five residents in training. But there are other challenges.

The population of Malawi is growing fast and so is the number of trained ophthalmologists needed to meet the target of one per 250 000 people. Moreover, the MMed (Ophthalmology) programme focused on training general ophthalmologists, but there is also a need for subspecialists. Other specialties and other countries might want to look at our experience. A local fellowship training programme, combined with yearly rotations at a European academic ophthalmological centre, has resulted in the retention of talented doctors comfortable applying the skills obtained during their 4 years of residency.

Improved vision for the population of Malawi and for all people living in developing economies depends on the presence of trained eye care workers and this includes trained ophthalmologists. Meeting the VISION 2020 targets will be impossible unless there is a greater focus on training these essential staff. An innovative training programme that enables Africa to benefit from some of Europe's expert training facilities now needs an innovative approach to long-term funding with a widening group of local sponsors.

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