Tidsskriftet Tidsskrift for Den norske legeforening

Establishment of neurosurgery training in Ethiopia

GLOBAL HELSE

MORTEN LUND-JOHANSEN

E-mail: mljo@helse-bergen.no
Morten Lund-Johansen (born 1959), senior consultant, Department of Neurosurgery at Haukeland University Hospital, and professor in neurosurgery, Department of Clinical Medicine, Faculty of Medicine, University of Bergen.
The author has completed the ICMJE form and reports no conflicts of interest.

JON WIGUM DAHL

Jon Wigum Dahl (born 1957), head of department, Department of International Collaboration, Haukeland University Hospital.
The author has completed the ICMJE form and reports no conflicts of interest.

GRETE MARIE EILERTSEN

Grete Marie Eilertsen, advisor, Department of International Collaboration, Haukeland University Hospital.
The author has completed the ICMJE form and reports no conflicts of interest.

KNUT WESTER

Knut Wester (born 1940), professor emeritus, Department of Clinical Medicine, Faculty of Medicine, University of Bergen.
The author has completed the ICMJE form and reports no conflicts of interest.

There are more African doctors working in western countries than in Africa. Many do not return home after completing their education in the USA or Europe. Western training programmes for African specialist doctors therefore often miss the mark. Here we present how a Norwegian-supported neurosurgery training programme contributed to the establishment of specialist training in Ethiopia, and discuss why 19 out of 21 qualified specialists stayed in their native country.

It is a little-known fact that conditions requiring surgery, and traumas in particular, are becoming one of the world's biggest health problems (1). For example, surgery and traumatology were not included as relevant topics in the announcement of this article series despite the World Health Organization's claim that more people die from injuries every year than from tuberculosis, malaria and HIV put together. Large numbers of people do not receive curative surgical treatment for conditions that may otherwise be highly debilitating or lethal. Two examples of such conditions are head trauma with epidural haematoma and hydrocephalus in children (2, 3).

Many countries with well-developed health services have qualified surgeons from low-income countries. The standard training model, whereby young doctors receive grants to study abroad, often results in the doctors not returning home. Consequently, their native country does not benefit from the arrangement (4). The brain drain of doctors from the Global South to the Global North has been shown to lead to major losses for the doctors' own countries and considerable gains for the recipient countries (5).

Ethiopia has a population of around 100 million, and a rapidly growing economy, despite the continued poverty in the country. Approximately 6 million people live in the capital city of Addis Ababa. Until 2010, the only two neurosurgeons in Ethiopia worked at the city's university hospital, the Black Lion Specialized Hospital. Both surgeons were Ethiopians who had completed specialist training outside Ethiopia. There was no programme for training neurosurgeons, and only 100 – 150 neurosurgery operations were performed at the hospital every year.

In this article, we present a Norwegian-Ethiopian collaboration project to establish a training programme for neurosurgeons at the university hospital in Addis Ababa, Ethiopia. The project was previously presented in a neurosurgery journal (6).

Establishment of neurosurgery training programme in Ethiopia

After four years of preparation, the University of Bergen, Haukeland University Hospital, the Black Lion Specialized Hospital and a private hospital in Addis Ababa signed a collaboration agreement in 2004 for the training of

neurosurgeons. A professional curriculum for the programme was devised in line with the template from neighbouring countries. This was approved by the Association of Surgeons of East Africa (ASEA) and the College of Surgeons of East, Central and Southern Africa (COSECSA). The Norwegian partners undertook to provide teaching staff. The programme gradually evolved into two main focus areas: the exchange of Norwegian and Ethiopian healthcare professionals in the field of neurosurgery, and the training of Ethiopian neurosurgeons in their native country.

The first three specialists who completed the programme received approval in 2009 and 2010. Training these three was a challenge because it required the almost continuous presence of teachers, i.e. foreign neurosurgeons who were recruited from a website or by word of mouth. A total of 23 neurosurgeons from ten countries participated, most of whom were from Norway or another Scandinavian country. Many funded the travel themselves, while their stay was covered by the educational institution. In the years that followed, the need for the continuous presence of teaching staff was gradually reduced, as the newly trained specialists themselves trained younger colleagues.

In December 2016, the 21st specialist was approved. Neurosurgeons in Addis Ababa are now trained at five hospitals, and in 2016 performed a total of approximately 2500 neurosurgery procedures. The cooperation between the Department of Neurosurgery and Addis Ababa is still in place, but the training programme is now operating well without external assistance.

Execution of the programme

The Department of International Collaboration at Haukeland University Hospital was responsible for the practical organisation of the programme. The neurosurgery project was funded by the partner institutions, but the main sponsor from 2010 to 2015 was FK Norway. During this period, the project had an average annual budget of NOK 3.1 million (USD 391 000). This funded the exchange of healthcare personnel between Ethiopia and Norway.

A total of 25 Ethiopian and 14 Norwegian healthcare workers participated for exchange periods of 6 to 12 months. Of these, 19 were Ethiopian specialist candidates in neurosurgery, while the remainder were nurses. The total cost of the project during the period 2006 – 2015 (grants from FK Norway, the University of Bergen and Haukeland University Hospital) was approximately NOK 20 million (USD 2.5 million). Some of the funds were spent on equipment. In addition, a private sponsor from Bergen provided funds for the purchase of new monitoring equipment and a neurosurgical microscope. As far as possible, the equipment has been purchased locally in Addis Ababa, but the larger pieces of equipment were imported, which has been a time-consuming process due to the Ethiopian customs authorities' extensive documentation requirements. Together with the Black Lion, Haukeland has solved this problem by compiling a detailed list of the customs authorities' documentation requirements.

The Department of International Collaboration assisted the candidates with visas, courses, housing, wages, taxes, national registration etc. Many of the candidates came to Bergen in November, when the limited daylight and the climate are a challenge even for those who are used to them. They received instruction in neuroradiology, neuropathology and intensive care, assisted in surgical procedures and participated in the department's routines as observers.

The candidates were each assigned a Norwegian specialty registrar as a contact person, and participated in the annual Scandinavian course in neurosurgery at Beitostølen in Norway. One nurse stayed in Norway at the end of her training. Consequently, only nurses with family in Ethiopia and no relatives in Europe were recruited to the project after this. The Norwegian immigration authorities have made it more difficult for Ethiopian citizens to obtain a visa into Norway in recent years.

There are two aspects of neurosurgery in Ethiopia in particular that are distinct from Norwegian conditions: one is that patients are often in an advanced stage of disease, and the other is the imbalance between the large influx of patients and the scarcity of available resources. This leads to situations that Norwegian doctors are unaccustomed to, both in terms of diagnostics and treatment.

Some examples: Norwegian patients who are diagnosed with a tumour near the optic nerves normally only have moderately impaired vision. In Ethiopia, patients are often not diagnosed until they have been blind for several months. Norwegian children born with hydrocephalus are almost always intercepted at an early stage. In Ethiopia, children may be diagnosed at the age of one or two with a significantly enlarged head and permanent brain damage.

Norwegian patients requiring an operation on a spinal fracture or with a cross-sectional injury are operated on and then rehabilitated in a special unit. In Ethiopia, surgery is only an option if body supports are available and the patient can afford to pay for the screws. Rehabilitation is almost non-existent.

The disease panorama allows Norwegian doctors to gain experience in treating conditions that are less common at home. This applies, for example, to congenital malformations such as hydrocephalus and meningocele, and intracranial infections such as tuberculosis. Norwegian specialty registrars have therefore also had enormous professional benefit from working in Ethiopia.

Training surgeons in low-income countries

The project has been successful: the volume of operations has increased from 160 in 2010 to 2500 in 2016 (fig 1). Ethiopia can now train its own neurosurgeons without external help, and the vast majority have remained in the country.

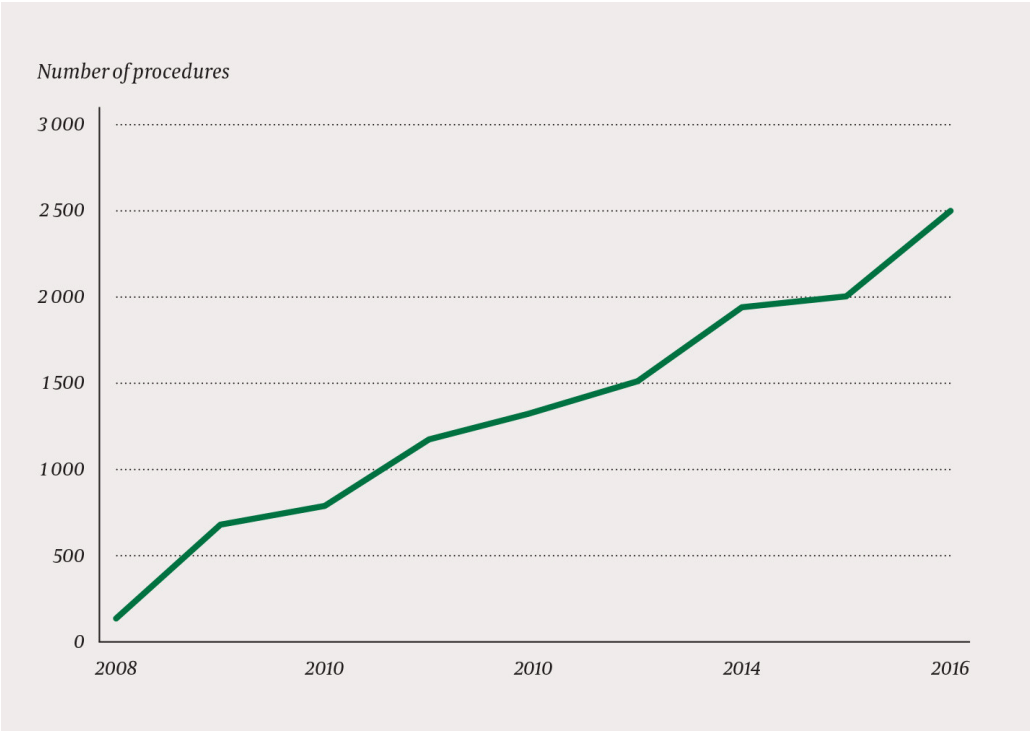

Figure 1 The number of neurosurgery procedures per year in the period 2008 – 2016 at hospitals participating in the training programme in Addis Ababa. The data are from the hospitals' operation protocols.

Why did they stay when so many African doctors choose to leave their home country? For example, almost half of the medical students from Uganda want to leave their native country at the end of their studies (7). The World Health Organization's Code of Practice lays down guidelines aimed at trying to keep healthcare professionals in the Global South. Nevertheless, the brain drain is increasing, and many western countries are willingly opening their borders to qualified health workers from Africa because they do not have to fund their education (8).

We believe the drop-out rate in our programme was low because the candidates were trained in their own country, coupled with the Ethiopian authorities' strengthened focus on neurosurgery. This last point is important. A review article from 2008 observes that recognition and career development are just as important motivators for doctors as salary (9).

We have seen examples of this in our own project: newly qualified Ethiopian neurosurgeons choose to leave hospitals where hospital management does not provide equipment for them. Fortunately, most have chosen to move to other Ethiopian hospitals instead of emigrating. In general, Ethiopia has an ambitious training programme for doctors, partly aimed at offsetting migration (10). Several authors, including collaborating colleagues in surgery and orthopaedics from Haukeland and Malawi, have suggested a similar model (11, 12).

We believe that the experiences from Ethiopia have shown that training healthcare professionals in their home country is essential if they are to stay in that country.

This article is part of the series 'Global Health in the Era of Agenda 2030', a collaboration between Norad, the Centre for Global Health at the University of Oslo and The Journal of the Norwegian medical association. Articles are published in English only. The views and opinions expressed in the articles are those of the authors only.

LITERATURE

1. Haagsma JA, Graetz N, Bolliger I et al. The global burden of injury: incidence, mortality, disability-adjusted life years and time trends from the Global Burden of Disease study 2013. Inj Prev 2016; 22: 3 - 18. [PubMed] [CrossRef]

2. Emejulu JK, Uche EO, Nwankwo EU. The challenges of managing acute extradural hematoma in a Nigerian neurosurgical center–still a long way to go. World Neurosurg 2014; 82: 969 - 73. [PubMed][CrossRef]

3. Kahle KT, Kulkarni AV, Limbrick DD et al. Hydrocephalus in children. Lancet 2016; 387: 788 - 99. [PubMed][CrossRef]

4. Hagander LE, Hughes CD, Nash K et al. Surgeon migration between developing countries and the United States: train, retain, and gain from brain drain. World J Surg 2013; 37: 14 - 23. [PubMed][CrossRef]

5. Mills EJ, Kanters S, Hagopian A et al. The financial cost of doctors emigrating from sub-Saharan Africa: human capital analysis. BMJ 2011; 343: d7031. [PubMed][CrossRef]

6. Lund-Johansen M, Laeke T, Tirsit A et al. An Ethiopian Training Program in Neurosurgery with Norwegian Support. World Neurosurg 2017; 99: 403 - 8. [PubMed][CrossRef]

7. Kizito S, Mukunya D, Nakitende J et al. Career intentions of final year medical students in Uganda after graduating: the burden of brain drain. BMC Med Educ 2015; 15: 122. [PubMed][CrossRef]

8. Tankwanchi AB, Vermund SH, Perkins DD. Monitoring Sub-Saharan African physician migration and recruitment post-adoption of the WHO code of practice: temporal and geographic patterns in the United States. PLoS One 2015; 10: e0124734. [PubMed][CrossRef]

9. Willis-Shattuck M, Bidwell P, Thomas S et al. Motivation and retention of health workers in developing countries: a systematic review. BMC Health Serv Res 2008; 8: 247. [PubMed][CrossRef]

10. Wasswa H. Ethiopia plans to train extra 9000 doctors to fill gap left by migration. BMJ 2008; 336: 689. [PubMed][CrossRef]

11. Qureshi JS, Young S, Muyco AP et al. Addressing Malawi's surgical workforce crisis: a sustainable paradigm for training and collaboration in Africa. Surgery 2013; 153: 272 - 81. [PubMed][CrossRef]

12. Karan A, DeUgarte D, Barry M. Medical "Brain Drain" and Health Care Worker Shortages: How Should International Training Programs Respond? AMA J Ethics 2016; 18: 665 - 75. [PubMed][CrossRef]

Publisert: 18. September 2017. Tidsskr Nor Legeforen. DOI: 10.4045/tidsskr.17.0282
Received 27.3.2017, first revision submitted 8.5.2017, accepted 30.5.2017.
© Tidsskrift for Den norske legeforening 2026. Downloaded from tidsskriftet.no 6 July 2026.