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Doing More with Less

## Practical Challenges and Perspectives for the Development of Neurosurgery in a Peripheral East African Hospital During a One-Volunteer Midterm Mission

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### Background

Several strategies have been proposed for developing and spreading surgical specialties in Sub-Saharan East Africa. Regarding neurosurgery, improvements are coming from the cooperation between Western and African institutes by means of the World Federation of Neurological Surgeons and independent organizations but, far from big cities and more equipped hospitals, shortcomings in the delivery of services persist.

### Methods

Through the application of 1 formally trained neurosurgeon volunteer, the Foundation for International Education in Neurological Surgery and Neurocirugía, Educación y Desarrollo coordinated a 2-month neurosurgical project at Mathari Consolata Hospital in Nyeri (Kenya), designed to analyze critical points and to find suggestions for initiating and developing a neurosurgical service, providing in the meantime clinical and surgical care for patients.

### Results

During the mission, general and local issues limiting the neurosurgical activities at the hospital were studied. They were discussed with the hospital board and the project supervisors, thereby ensuring short-term and medium-term solutions and possible future cooperation with the hospital. The volunteer also carried out clinics and surgery for neuro cases and neurosurgical training for nurses and doctors.

## Conclusions

The model proposed should be considered a preliminary and immersive survey to evaluate the eligibility of a decentralized East African hospital to interface with neurosurgical activities, through the support of experienced local institutes and Western organizations. Host hospitals would also have the chance to enhance clinical services currently lacking and to train its personnel at low cost. The program may represent a rewarding personal and professional opportunity for young trained neurosurgeons, which also addresses the contemporary shortage of local specialists.

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## Introduction

The development of surgical specialties in Sub-Saharan Africa is considered a priority and a new challenge for the promoters of fairer worldwide delivery of health care services. To this end, only regarding neurosurgery, during the last few years, several strategies have been proposed and carried out, despite the challenge of keeping up with geopolitical and socioeconomic changes and technological progress, as a result of the work of independent volunteers and the commitment of the World Federation of Neurological Surgeons and satellite organizations.<sup>1</sup> More recently, publications about this topic have mainly focused on the elaboration of models of development, pointing out the benefits of partnerships between Western and African institutes, alongside the creation of training programs for local aspiring neurosurgeons.<sup>2, 3, 4</sup> In decentralized areas, far from well-equipped urban institutes, neurosurgery is still usually performed by general surgeons, sometimes by national private neurosurgeons for a fee, and occasionally by missions of overseas specialized teams. The aim of this article is to describe a specific type of cooperation, based on the experience of the first author as a solitary young volunteer neurosurgeon, coordinated and supervised by Neurocirugía, Educación y Desarrollo (Neurosurgery, Education and Development [NED]) (through its president, Dr. J. Piquer) and the Department of Neurological Surgery of Aga Khan Hospital, Nairobi (through Dr. M.M. Qureshi, NED vice-president) at Mathari Consolata Hospital in Nyeri, Kenya, from February to April 2017.

The results are analyzed to discuss whether a medium-term solitary volunteer-based neurosurgical program may be a suitable model for the delivery of further neurosurgical care in the selected hospital and more generally in other decentralized areas of Sub-Saharan East Africa. A possible systematic role in this programs for young nonlocal neurosurgeons is discussed.

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## Section snippets

### Methods

Volunteers were recruited by the Foundation for International Education in Neurological Surgery (FIENS) at the end of 2016. The applicant neurosurgeon was interviewed directly by the FIENS Volunteers' Coordinator (Prof. M. Haglund), to fully check his suitability and motivation. Subsequently, in January 2017, under the supervision of FIENS, the logistic and organizational phase was planned with the NED executive board. NED is a nonprofit organization, which over the past 10 years has...

### Nonclinical Objectives

The project focused first on an observational study, in which the volunteer was called on to identify the main issues impeding neurosurgery in the hospital, second on discussion with the partners, and third on active setup and planning.

The first problem identified was the appropriateness of equipment for surgery and intensive care. Initially, the theater had a craniotomy set made up by 1 hand perforator, Gigli saws, and old suckers incompatible with the suction machine. Bipolar forceps, even if ...

### Discussion

Neurosurgery has a long-standing history in Sub-Saharan East Africa. Starting from prehistoric skull trepanations and passing through the contribution of local and foreign pioneers after the Second World War, during the last 30 years, it has developed significantly, leading to the emergence of high-level institutes and locally trained specialists.<sup>5</sup> This development has also been possible as a result of medical volunteering and the significant support given by qualified foreign specialists with...

### Conclusions

This 2-month neurosurgical mission provided many data regarding practical aspects limiting the development of neurosurgical services at Mathari Consolata Hospital in Nyeri, Kenya, and by extension, at similar decentralized areas in Sub-Saharan East Africa, some of which may be resolved in the near future. From a clinical point of view, a medium-term 1-person mission in a virgin area scarcely seemed able to answer all the needs of neurosurgical patients properly and safely, before general and...

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Conflict of interest statement: The program was coordinated by FIENS represented by Prof. M. Haglund, Duke University Medical Center, Durham, North Carolina, USA; NED represented by Dr. J. Piquer (FIENS board member, NED president), Hospital Universitario de la Ribera, Alzira, and Aga Khan Hospital, Nairobi, represented by Prof. M. Qureshi (FIENS member board, NED vice-president). The first author was involved in FIENS and NED as a neurosurgeon volunteer without any financial benefit. This research did not receive any specific grant from funding agencies.

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