Framework for Advancing Otolaryngology: Head and Neck Surgery in Ethiopia

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Framework for Advancing Otolaryngology: Head and Neck Surgery in Ethiopia

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Abstract
The American Academy of Otolaryngology—Head and Neck Surgery and its members have shown continuing commitment to improving global otolaryngology care through humanitarian and international outreach programs. These efforts, based on a surgical mission model, have produced only modest improvements in otolaryngologic care in Ethiopia. In cooperation with the Ethiopian Ministry of Health and 2 Ethiopian medical schools, we present a framework for otolaryngology education for the next decade. It recognizes the limitations of the current didactic paradigm and aims to use available domestic and international resources to improve the quality and availability of head and neck surgical and medical services.

Keywords
Africa, Ethiopia, global health, health care disparities, humanitarian medicine, physician extender, surgical education

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Introduction
The American Academy of Otolaryngology—Head and Neck Surgery, through its humanitarian and international outreach programs, has been an important supporter of medical care and education in the developing world. Healing the Children has worked closely with the Academy to advance the standard of otolaryngology care in Ethiopia through a series of semiannual, weeklong educational and patient care missions over the past 5 years. As we have recently completed the tenth of these missions, it is appropriate to stop and consider whether we have been doing the right things and to discuss what we might do differently in the next decade to make a greater impact upon global healthcare disparities.

In collaboration with the Deputy Minister of Health of Ethiopia, the provost of St Paul’s Medical School (Addis Ababa, Ethiopia), and the associate dean for Graduate Medical Education at Addis Ababa University, we have prepared a framework for improving otolaryngology medical education and care in Ethiopia. Some of these comments reflect the unique complexities of delivering health care in the Federal Democratic Republic of Ethiopia. However, those who have been working in other resource-limited parts of the world will recognize many of these challenges as universal.

Scope of the Problem
Ethiopia, with 90 million citizens, is the second most populous nation in Africa. Located in the Horn of Africa and surrounded by military conflicts, Ethiopia devotes a large portion of its wealth to defense, leaving 1% of its GDP for health care. There has been a continuing “brain drain” of Ethiopian physicians to the United States, Europe, and more prosperous African states. The majority of the remaining physicians are located in a few major cities—impossibly far from the 80% of the population who live in rural settings.

There are no formal studies of the incidence of otolaryngologic disease in Ethiopia. Judging from surveys in other parts of sub-Saharan Africa and from our experience, there is a considerable burden of advanced disease, including chronic otitis media with hearing loss, infectious disease of the head and neck, aerodigestive tract foreign bodies, and congenital and acquired head and neck tumors.

When we began our missions to Ethiopia 5 years ago, we were told that there were 12 otolaryngologists in Ethiopia. Most of these were educated in Eastern Europe and Cuba during the time of communist rule in Ethiopia. These intelligent, motivated otolaryngologists thus have skill sets limited by the technology of the nations in which they trained.

Six years ago, Addis Ababa University initiated the first otolaryngology residency in Ethiopia. This 4-year postgraduate program recruits between 2 and 5 general medical physicians each year for additional training in otolaryngology. Based at Tikur Anbessa (Black Lion) Hospital, the nation’s premier teaching hospital, the program has graduated 9

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residents, nearly doubling the number of Ethiopia otolaryngologists. Unfortunately, these residents’ operative experiences were limited. Protracted operating room closures, lack of functional surgical instruments, and abbreviated teaching hours in the government hospitals reduced training opportunities for them. Interviewed graduates felt unprepared at the end of their training.

**Improving Otolaryngology Knowledge Transfer**

In the past decade, access to recorded medical knowledge has improved in Ethiopia and other resource-limited countries. Connection to the Internet is common through fiberoptic service at universities and through mobile networks in major cities and some rural sites. Students can access online textbooks and medical journals without cost thanks to the HINARI alliance (Health InterNetwork Access to Research Initiative) and the cooperation of medical publishers worldwide. As a result, the quality of “book knowledge” is quite high among motivated students and residents in Ethiopia. There is less access to advanced teaching materials, including online lectures, massive online open courses, and conferences due to limited bandwidth and security restrictions that make large downloads and streaming video impractical. Improved high-speed Internet access at major teaching sites should be a priority, as much advanced medical knowledge is shared this way.6 Further, it is essential to the development of practical telemedicine services.

Graduate medical education, and graduate surgical education in particular, depends on an apprenticeship model for information transfer. Experienced clinicians teach individuals or small student groups while practicing their craft. This model is labor intensive, slow, and relatively expensive. It has not worked well in Ethiopia. Experienced surgical educators are few, and their focus on educating the next generation of surgeons is dogged by economic exigencies. Surgeon-educators at government hospitals are typically paid about $400 per month. This is less than a month’s rent in most cities. Therefore, faculty must supplement their salaries with private practice work, distracting from the teaching mission. As paying patients are few, trainees may be viewed as future competitors. Faculty may not share all they know freely with their students.

Progress in otolaryngology education will depend on establishing a cadre of well-trained, adequately paid educators who are held accountable for the quality of their educational work. These teachers will define a curriculum of necessary knowledge and take responsibility for coordinating the available educational resources for their students. They must have no impediment to the free transfer of information and skills. In the beginning, this may require the recruitment of foreign-trained otolaryngologist-teachers or providing supplemental education to Ethiopia otolaryngologists through visiting fellowships abroad.

There must be adequate access to the operating room hours and a commitment to resident education as well as patient care. This will require that hospital administrators take responsibility to have operating days begin on time and not end prematurely with staff leaving for second jobs.

Residents, to date, have been highly dependent on visiting international groups for hands-on experience and exposure to advanced head and neck techniques. Most international groups come to Ethiopia on short surgical missions.7 The focus of these missions is typically on patient care, rather than on training young surgeons. Residents observe complex surgeries but seldom take a leading role. This occurs in part because of the visiting surgeons’ concerns about relinquishing control to unfamiliar trainees in an uncertain environment. Encouraging volunteer teachers to make longer or repeated commitments should reduce this barrier (Figure 1).

Several of us who care about Ethiopian otolaryngology resident education are now in communication. We hope to organize our lectures and operating room activities into a set curriculum such as that offered by the American Board of Otolaryngology (http://www.aboto.org/pub/Core%20Curriculum.pdf), with each visiting group presenting new, structured material. Ethiopian faculty and residents should take an active teaching role in such a didactic program. Ultimately, education should be coordinated by an Ethiopian Otolaryngology Program Director, rather than the international visitors, to assure quality and provide feedback to the teachers. Likewise instruction in the operating room should
focus on providing a thorough and progressive experience to the maturing residents. Establishing defined roles for the residents in each operation and progressing to complete knowledge of the surgery by graduation should be emphasized. Surgical skill should be formally reported to the Program Director after each operative experience.

Given the limited availability of operating rooms, simulation should assume a greater role in resident education.8 We have conducted soft tissue training courses at the Surgical Skills Laboratory at Black Lion Hospital. These resulted in immediate noticeable and measurable advances in technical skill. Further, simulation provides an opportunity for senior residents to teach more junior ones (Figure 2). Low-cost simulations of neck dissection, facial fracture repair, endotracheal intubation and airway management, and laryngeal surgery are currently available. The development of a temporal bone laboratory to advance skills in ear surgery is a high priority.

**Accelerating Available Otolaryngology Technology**

Surgical specialties are technology-driven. This is particularly true for otolaryngology, where the use of operating microscopes, endoscopes, and specialized instruments allows minimally invasive surgery on the aerodigestive tract, paranasal sinuses, and ears. While funds are available through the Ministry of Health to secure these instruments, there have been significant impediments to purchasing them. Among these are complex paperwork required by the universities and the Ministry of Health, lack of coordination with the Ethiopian Revenue and Customs Authority, import taxes and restrictions on spending Ethiopian funds on foreign-made products.

We would strongly recommend that the purchase of equipment be centralized through the Ministry of Health and that a clear procedure for importation of these instruments be established. This should significantly lower the cost of purchasing by allowing competitive bids for larger equipment orders. Centralization should facilitate accountability and decrease the possibility of fraud by foreign distributors and importers. The procedures for importation of donated, used equipment and material must be streamlined through better coordination between the Ministry of Health and the Customs Ministry.

Finally, there is considerable potential for the production of medical equipment and instruments in Ethiopia. Small startup companies should be encouraged to produce the furniture, cabinets, and instruments necessary for medical practice. This will enhance the Ethiopian economy and lessen imbalances in foreign trade.

**Expanding Capacity through Training of Medical Extenders**

It will be decades before Ethiopian-trained otolaryngologists are sufficient in number to provide for the needs of the population. Otolaryngology training must be offered to non-physician extenders. Public Health Officers provide much of the primary care to the Ethiopian population. Including otolaryngology training in their undergraduate education and offering a certificate program in otolaryngology would greatly expand capacity. Skills including examination of the head and neck, otoscopy and ear cleaning, audiology, and an introduction to soft tissue surgical technique could be achieved during a 3- to 6-month training period.9

There are currently no fully trained audiologists in Ethiopia. Most hearing testing is performed by otolaryngologists or partially trained otolaryngology nurses. Basic skills in audiometric testing can be learned rapidly. Audiometric screeners and computer-based audiometers are widely available and relatively low in price. Sound-protected environments needed for accurate hearing testing can be created using domestic materials. Low-cost hearing aids from India and China can help with hearing rehabilitation. A certificate or master’s level program would receive support from the Global Humanitarian program of the American Academy of Audiology and similar European organizations (Figure 3).

**Sustainability**

While primary care and the control of infectious diseases have been the focus of Ethiopian medical education in the past decade, the need to advance the surgical specialties has become clear.10 For any surgical educational program to be a success, there must be a national commitment of funds and political will. This will require recognition of the importance of surgical education at the highest levels of government and coordination of education between the various ministries, universities, and hospitals. The success of Ethiopian medical education and the retention of trained physicians and physician extenders will depend on an environment of peace and cooperation and a dedication to individual well-being that goes beyond security concerns.
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