International Issues: Expanding neurologic education to resource-poor countries

Lessons from Moi Teaching Hospital

It is well-recognized that there is a disparity in health care resources and availability in low- and middle-income countries, often due to a combination of poverty, lack of clean water, inadequate nutrition, and political conflict. Yet it seems less attention is given to challenges specific to the provision of medical education in such developing nations. Besides war, famine, drought, and the AIDS epidemic, eastern African nations carry a heavy burden of neurologic disease and insufficient infectious disease programs, coupled with a paucity of subspecialty-trained providers. Over the past decade, there has been increasing concern over the so-called “brain drain”—the ongoing relocation of African doctors to more profitable parts of the world, presumably due to the challenges inherent to practicing in resource-limited settings. This is exemplified by the estimated 0.03 neurologists per 100,000 people in low-income African countries (compared to 1 to 10 per 100,000 in Western countries), and further by the lack of neurologists in all of sub-Saharan Africa. Similar estimates in sub-Saharan Africa suggest that there is only 1 neurosurgeon for every 4,000,000 people, with dedicated neurologic and neurosurgical services available in only a few private centers—insti...
equivalent to attending physicians in the US system and tend to have backgrounds ranging from general practice to internal medicine subspecialties and even surgical fields. Consultants change daily and supervise patient care over several minutes spent at the bedside on daily rounds. Teaching on rounds varies widely, depending on the interests of the consultant, with the primary responsibility lying on the chief registrar. Additionally, the chief registrar is also responsible for the supervision of the entire ward and coordination of didactic conferences for the students and registrars.

As a public health service institution, challenges at Moi Teaching Hospital include limited resources within the hospital for appropriate diagnostic testing, bolstered by the requirement of prepayment for a majority of laboratory tests and procedures. Additionally, nursing shortages, limited medical supplies, inadequate intensive care facilities, and recent physician strikes further strain the system. CSF analysis is particularly difficult to obtain, as there is generally inadequate and unreliable reporting of CSF studies — commonly, Gram stains are processed by registrars, and cell counts and protein are rarely reported through the facility laboratory. Additionally, the difficulty of obtaining neuroimaging beyond CT not only directly affects patient care but also affects the training of physicians. When diagnostic equipment is unavailable, physicians must rely solely on clinical examination, with the inability to confirm a suspected diagnosis, which innately limits prerequisite portions of the adult learning process within medical education. Limited medical supplies include medications, with the short list of available medications punctuated by unreliable accessibility. A patient on an anticonvulsant can be stopped abruptly due to pharmacy shortages, leaving him or her at risk for further seizures, injury from those seizures, and future hospitalizations to treat such injuries. Similar shortages of anticonvulsants and antibiotics are not uncommon in the inpatient setting, and medication selection is often guided more by availability than evidence-based practice or judicial pharmacology.

Without the usual arsenal of diagnostic tests and treatment modalities, one’s management style is whittled down to a bare-bones history and physical examination approach. Registrars take the most likely diagnoses into account and often administer empiric treatment in both an effort of therapeutic trial and as a means of diagnosis. While it is nearly impossible to estimate the actual prevalence of certain conditions on wards, one begins to develop a concise list of clinically evident entities: protein-energy malnutrition, cognitive impairment related to parasitosis, iron deficiency anemia, pellagra, ischemic and hemorrhagic stroke, epilepsy, advanced neuropathy, traumatic head injuries, consequences of birth asphyxia/trauma, sequelae of polio and polio-like viral infections, and traumatic nerve injuries. The mantra on wards consists of essentially 3 questions: “What is the immune status?” “Do we have a chest x-ray?” and “Can the patient afford testing and/or treatment?”

Taken together, the regional health threats that carry neurologic sequelae combined with a host of mitigating nutritional deficits and other risks underscore the urgent need for improvement of neurologic training in countries such as Kenya. It is with this objective that we continue to work to establish a sustainable curriculum for Kenyan trainees that focuses on the neurologic examination, localization, and algorithm-based teaching materials for the most common neurologic diagnoses. The ultimate goal of this program is to transfer this curriculum to a faculty of nationals, keeping with the sustainability mission of all AMPATH programs. While efforts to address health care disparities, risk factor modification, and treatment gaps at the population level are essential and ongoing,9,10 the importance of neurologic education and training must not be forgotten. It is our hope that programs such as this will continue to grow and that through an international effort we can work together to educate the national physicians to combat the brain drain in Africa and similar underserved countries.

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Melissa M. Cornez was responsible for submitting the manuscript and for all communications with the journal throughout the review process. Jana J. Wold made substantive intellectual contribution to the submitted manuscript, including content, conceptualization, and revisions. David R. Renner made substantive intellectual contribution to the submitted manuscript, including content and conceptualization.

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REFERENCES


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