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NEUROLOGY MISSION(S) IMPOSSIBLE

Neurologists have become increasingly engaged in global health.¹ Historically, infectious disease specialists were among the first global health practitioners due to associations with tropical medicine and the prevalence of infectious diseases in resource-limited settings. This led to programs focused on individual diseases (e.g., malaria, polio, HIV, tuberculosis), often called vertical programs.² Horizontal programs subsequently emerged, seeking to augment primary care infrastructure for the world's poorest patients and improve the conditions of poverty intimately intertwined with their diseases.² Superimposed upon these systemic programs have been medical missions: isolated efforts in particular places for discrete time periods. While medical missions can provide beneficial contributions, they have been criticized as unsustainable, or worse, undermining local infrastructure and causing more harm than good.^{3–9} Such critiques note that missions may actually reinforce the health disparities and cycles of poverty they intend to ameliorate, as inadequately trained volunteers may provide ineffective, culturally irrelevant, or disparaging care that is below recognized public health standards and burdensome to local health facilities.^{3,4,10}

Most global health work falls along a continuum between these seemingly dichotomous extremes of vertical/horizontal and isolated/longitudinal. Where does global neurology belong? As global neurology is a somewhat new field, neurologists can learn from the successes and challenges of past and present global health endeavors. Past failures were rarely failures of intentions, which have in most cases been noble. Yet noble intentions do not guarantee positive results, a phenomenon I call intention–result mismatch (*à la* V/Q mismatch). The concept of intention–result mismatch implies no critique of intention. Rather, it is meant to propose a critical examination of the way intention manifests as actions with potentially unintended consequences.^{10,11} In global health, this can occur when such intention is not accompanied by an understanding of historical, local, sociocultural, or medical context.^{10,11}

The emergence of neurology missions raises concern for potential intention–result mismatch. A neurology

mission is typically a brief visit to a place with no local neurologists, during which patients are evaluated, diagnostic possibilities are suggested, and treatments are initiated. However well-intentioned, neurologists trained in resource-rich settings may not have the expertise to make context-appropriate diagnoses and treatment recommendations without an understanding of the local neuroepidemiology and health care system. When recommendations are given for diagnostics or treatments that are not locally available, patients may feel disheartened, lose confidence in the ability of their own physicians and facilities to address their concerns, and abandon medical care entirely. Some patients may seek medical attention for the first time due to the presence of foreign physicians, and when missions are not well-coordinated with local health systems (as is often the case), patients with new diagnoses and treatments may have no clear follow-up plan. For example, a patient diagnosed with epilepsy and given a limited supply of antiepileptic drugs by mission volunteers may not be adequately monitored for potentially lethal medication toxicities and may have withdrawal seizures when medication supplies run out. Missions may thus undermine not only the local health care system, but also the health of its patients.¹² Intention–result mismatch can be fatal.

As an analogy, imagine a particular city with no movement disorders specialists and a general neurologist without training in movement disorders who presumes he or she is “better than nothing,” and plans movement disorders missions to the region. Without relevant expertise, care may be substandard compared to that of someone with formal training, potentially even causing harm, which would be “worse than nothing.” The neurologist’s interface with the local health care system may be suboptimal, or even counterproductive, interfering with the efforts of others more experienced in this area. Furthermore, the visiting neurologist’s presence could inhibit the development of local expertise, which will remain inadequate if the mission is limited in time, space, or efficacy.

As with any specialized field, the practice of global health requires an understanding of the discipline’s history, scope, and methodologies beyond neurology’s

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limited interface with it. Simply stated, the primary goal of the field of global health is the reduction of health inequities. Substantial barriers to health in situations of poverty cannot be rectified by limited, isolated interventions, but require development of sustainable infrastructure by increasing local capacity at all levels, from human resources and expertise to physical infrastructure, from drug supply chain to technological innovation, and from prevention to treatment and rehabilitation. Understanding how to initiate, develop, and sustain such efforts in collaboration with local practitioners requires specialized training and experience, as does knowledge of how to diagnose and manage movement disorders within the complexity of our own health care system, to return to the analogy above. Uninformed practice of global health is as potentially harmful as the practice of any specialty without appropriate training and collaboration.

It is perhaps no surprise that internists, pediatricians, and family practitioners are often at the center of global health efforts that support, develop, or design health systems in resource-limited settings. Generalist physicians are trained to care for the whole patient over the patient's entire lifespan. This training often translates into an integrated, holistic vision of global health that accounts for both the patient as a whole and the epidemiologic and sociocultural contexts of all patients. As specialists, neurologists may have a more limited scope of practice. We are consultants. Our care of patients may focus on just one aspect of their health, or we may care for patients for a brief period (or even a single appointment) in their lives. This is not a criticism, but a reality of our trade. What role should consultant specialties like neurology serve in global health? Our expertise in a specialized domain can be a powerful tool if used to expand our role as consultants to aid practitioners seeking to develop neurologic capacity where it is currently nonexistent. However, failure to acknowledge our limited capacity as consultants can result in overestimation of our abilities in other contexts. This can lead to the notion of independent, isolated neurology missions that, however well-intentioned, can be counterproductive or harmful to patients and the health care systems that serve them.

In order to support our global health colleagues in bringing the advances of modern medicine sustainably to the world's poorest patients, neurologists should abandon the notion of isolated missions and instead embrace our role as consultants by working collaboratively with established global health programs as we would work with physicians who consult us in our domestic practice. Just as the consultant neurologist must understand a patient's neurologic symptoms in the context of the patient's medical history, so too must the global neurologist understand not only the medical context where care is to be

provided, but also the sociocultural and historico-political context in which the patient and health system exist. Just as the consultant neurologist must commit to a patient's care from diagnostic evaluation through treatment in a process of ongoing re-evaluation and modification by both patient and physician, so too must the global neurologist commit to a longitudinal relationship with partners in the field that spans the processes of understanding local needs, collaboratively conceiving of solutions and how to implement them, and monitoring and evaluating such efforts to improve their outcomes and efficacy.

Neurologists are in limited supply in many parts of the world, and therefore have much to offer to global health. Bridging humanitarian intention with meaningful results, however, requires long-term commitment to a mission in the truest sense of the word: an endeavor into largely uncharted territory that is well-informed, well-planned, and well-studied as it works collaboratively toward improved access to sustainable, context-sensitive, context-specific neurologic care and education in areas where it is currently unavailable.

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REFERENCES

1. Siddiqi OK, Korolnik JJ, Atadzhanyan M, Birbeck GL. Emerging subspecialties in neurology: global health. *Neurology* 2013;80:e78–e80.
2. Mills A. Mass campaigns versus general health services: what have we learnt in 40 years about vertical versus horizontal approaches? *Bull World Health Organ* 2005;83: 315–316.
3. Suchdev P, Ahrens K, Click E, Macklin L, Evangelista D, Graham E. A model for sustainable short-term international medical trips. *Ambul Pediatr* 2007;7:317–320.
4. Unite for Sight. Pitfalls in volunteering abroad. In: The Importance of Avoiding Pitfalls in Global Health and Development. Available at: <http://www.uniteforsight.org/pitfalls-in-development/pitfalls-in-volunteering-abroad>. Accessed December 10, 2013.
5. Bezruchka S. Medical tourism as medical harm to the third world: why? For whom? *Wilderness Environ Med* 2000; 11:77–78.
6. Dupuis CC. Humanitarian missions in the third world: a polite dissent. *Plast Reconstr Surg* 2004;113:433–435.
7. Wolfberg AJ. Volunteering overseas: lessons from surgical brigades. *N Engl J Med* 2006;354:443–445.

8. Montgomery LM. Short-term medical missions: enhancing or eroding health? *Missiology* 1993;21:333–341.
9. Martiniuk AL, Manouchehrian M, Negin JA, Zwi AB. Brain gains: a literature review of medical missions to low and middle-income countries. *BMC Health Serv Res* 2012;12:134.
10. Unite for Sight. Pitfalls in global health work. In: The Importance of Avoiding Pitfalls in Global Health and Development Available at: <http://www.uniteforsight.org/pitfalls-in-development/pitfalls-in-global-health>. Accessed December 10, 2013.
11. Merton RK. The unanticipated consequences of purposive social action. *Am Sociol Rev* 1936;1:894–904.
12. Unite for Sight. The significant harm of worst practices in eye care. In: Community Eye Health Online Course. Available at: <http://www.uniteforsight.org/community-eye-health-course/module8>. Accessed December 10, 2013.

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