Neurosurgical humanitarian aid

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In their article, “A model for neurosurgical humanitarian aid based on 12 years of medical trips to South and Central America,” Mainthia and coauthors4 have described the methods, evolution, and impact of their sustained endeavor to provide neurosurgical treatment for children in 4 countries of Central and South America. This descriptive report is an unusual yet valuable contribution toward the concept of global neurosurgical humanitarian aid for children in developing countries. It highlights the need of children in developing countries for better access to specialized surgical care and demonstrates a model in which an American pediatric neurosurgical team has made a sustained and organized contribution to a solution.

Children younger than 15 years of age comprise roughly one-third of the human population, but their distribution is concentrated in regions where the resources for healthcare in general, and neurosurgery in particular, are the most limited. In Guatemala, for instance, where the authors report having performed the majority of their work, 43% of the population is younger than 15 years old compared with 20% in the US.5 Contrasting the 2 countries where I have lived and worked exemplifies the inequities among the children of the world when it comes to accessing neurosurgical care. In the US, the ratio of neurosurgeons to children younger than 10 years of age is about 1:12,000 compared with a ratio of 1:2,600,000 in Uganda.6 Existing models for providing neurosurgical care to children principally involve importing neurosurgical teams from more developed countries in the North to less developed countries in the South, exporting children from the South to the North, or building neurosurgical capacity within the country through the training and equipping of national surgeons or neurosurgeons. A great strength of the International Hospital for Children model Mainthia and colleagues have reported is that it incorporates all 3 elements.

The authors describe a program in which children receive a high level of care from the visiting team and local partners are mentored and included in the enterprise. Transport to the authors’ home institution in the US (Virginia Commonwealth University Health Systems) is arranged for children whose problems are deemed too complex for safe management in the local environment. Senior neurosurgery residents participate in each trip. This not only undoubtedly augments their clinical training, for instance, in having the opportunity to close a number of myelomeningoceles, but also probably proves personally formative through the singular experience of delivering much needed care in a challenging practice environment. Clinical follow-up in a poor rural population is extremely challenging, but the authors have made all reasonable efforts to minimize losing track of patients, and the methods they have established to do this are outlined in their report. Over the course of the program's 12 years, the authors have noted an increase in the average age of patients and a decline in the fraction of total operations accounted for by myelomeningocele repairs from 58 to 11%. They attribute part of this to their contribution toward increasing the neurosurgical capacity within the country, but they also rightly acknowledge that this could have resulted from the introduction of a national program of folic acid fortification.

In 1981, Dr. Richard Bergland eloquently warned of the plight of “neurosurgery in a zero-sum society.” I would suggest that, in the context of the 21st-Century global community in an increasingly “flat” world, the pediatric surgical disciplines stand on the threshold of a non–zero-sum opportunity. Most of the world’s children live in the southern hemisphere, whereas most of the resources and expertise to treat pediatric surgical diseases are in the northern hemisphere. Conversely, however, the declining fraction of children comprising Northern populations threatens to limit opportunities for training and research in the pediatric surgical disciplines, including in pediatric neurosurgery. It is apparent that innovative strategies to organize and fund the progressive engagement of the North and South could simultaneously provide surgical care to children who would otherwise not receive it, build capacity within the region to provide specialized pediatric surgical services, create opportunities for training North American and European residents, and facilitate globally oriented research that is energized by data derived from large populations.

It may be helpful to evolve from the idea of “neurosurgical humanitarian aid” toward the concept of global neurosurgical partnerships in which aid is not delivered but rather via strategies of “social entrepreneurship,”10 non–zero-sum engagements between the North and South are formed in which everyone wins. Pioneering projects such as those described by Mainthia and colleagues, as well as similar endeavors by others in our discipline, serve as guideposts on the road ahead.
Response

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We thank Dr. Benjamin Warf for his kind and thoughtful response to our paper regarding neurosurgical aid efforts in South and Central America. His work in Africa has proven tremendously valuable, and we applaud his ability to conduct such rigorous clinical research in the poor, rural areas in which he operates.

In the past 10 years, the Guatemala Ministry of Health and Social Assistance reported a decrease in the rate of child mortality, primarily because of policies directed toward the prevention of diarrhea and infection (E. Calgua Gurerra, personal communication, 2009). Unfortunately, however, these policies have not mitigated the emergence of neurosurgical health concerns such as neural tube defects (NTDs), head injuries, and head and neck cancers in children. Regarding access to neurosurgical care, most children with these ailments are treated in public and private hospitals stocked with adult neurosurgical equipment and staffed by physicians trained primarily in adult neurosurgery. This reality exists, if not to a greater extent, in other developing countries that lack adequate access to specialized pediatric care.

With that said, there is clearly a continued need for traveling surgical teams, especially those that embrace a strict protocol for conducting follow-up. In order to facilitate the long-term follow-up process, our coordinating organization, International Hospital for Children (IHC), recently hired full-time staff to work in partner countries such as Belize and St. Vincent. A full-time employee will soon be hired to work in Guatemala. Because these staff workers (natives of the respective countries) remain closely tied to local infrastructures and organizations, IHC and the VCU surgical team are able to more effectively monitor postoperative progress and communicate with patients and their families.

In our experience, this emphasis on long-term follow-up has enhanced more than just patient care—it has enabled our group to establish year-round partnerships with colleagues in the countries in which we operate. One such partnership involves working with local academic centers to address the high incidence of NTDs from a research perspective. To illustrate this collaboration, Dr. Erwin Calgua Gurerra, director of the Research Center of Health Sciences at the University of San Carlos of Guatemala, writes, "The [VCU] missions have impacted our research concerning the use of folic acid among child-bearing women in areas where there is a high incidence of NTDs. With the support of VCU surgeons, in the form of complication data and follow-up care, we were able to empirically show that regions with high incidences of NTDs coincided with regions in which women received low levels of folate. This was one of the first studies of its kind in our context and has led to other proposals that have subsequently been endorsed by IHC." According to Calgua Gurerra, IHC's integrated approach of partnering with both nongovernmental organizations (NGOs) and the Ministry of Health also helps draw government attention to the problem of NTDs. This attention then serves to bolster and expedite support for pending research and clinical initiatives.

When we weigh the impact that surgical specialty trips can have on doctors and patients within partnering countries (such as the aforementioned emergence of preventative research), Dr. Warf’s idea of non–zero-sum engagements between the North and South is a powerful one that warrants active consideration. Currently, US surgical specialty residents receive an unspoken gain of practical experience in return for specialized care and surgical technology. Along with receiving an incredible training opportunity and witnessing cases seldom seen at home, surgical residents are also able to foster a love and interest for outreach and service. If these feelings are strong enough, these residents will likely incorporate outreach work into their future careers, therefore making this non–zero-sum engagement intrinsically sustainable. Thus far, IHC has sent ~ 40 residents on a variety of medical specialty trips, including cardiac surgery residents to the Dominican Republic, neurosurgery and anesthesiology residents to Guatemala and Guyana, and plastic surgery residents to Belize. In our 12-year experience of organizing surgical trips, resident response has been consistently and overwhelmingly positive. With this in mind, it is worth considering whether such an exchange could be formally incorporated into US residency programs in the same way that Indian medical schools have incorporated a 2-year rural service requirement into their curriculum. In India, this requirement can be fulfilled both domestically and abroad. Applying a similar model in the US would provide residents with an organized and coordinated option of providing surgical specialty care in underserved areas within the US.

As we continue to provide neurosurgical aid to pediatric patients in South and Central America, we recognize...