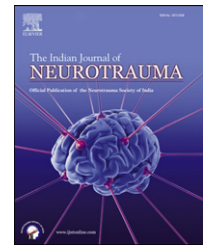


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Letter to the Editor

Feasibility of neurosurgical services in a rural general surgery set up

Dear Sir,

Many rural communities value highly their local rural hospital, and advocate the maintenance of hospital services close to home, though still they will have to travel for more specialized services even in developed countries also.¹ Providing neurosurgical care in general surgery set up is a difficult and challenging task. In developing countries many intuitions provide good quality and comprehensive health care in rural areas while functioning as teaching cum tertiary referral centers. They are responsible for patient care, training of undergraduate and postgraduate students and paramedical staff including health care workers. The main bulk of patients in rural area are composed of trauma related care and a significant volume of neurotrauma is managed surgically in rural areas by general surgeons.^{2,3}

Though orthopedics and neurosurgery together comprise 34% of emergency practice, a fully credentialed general surgeon with additional training in these disciplines can perform up to 90% of early operations.³ Majority of casualties generating a trauma call is managed by accident and emergency staff and most of the patients do not require specialists' intervention except in specific circumstances.⁴ In developed countries the majority (75% or more) of rural surgeons accessed hospitals with necessary basic infrastructure, including 24-h computed tomography scan, emergency department, and intensive care unit.² However it is still not possible in underprivileged countries. This lack of trauma centers is likely to lead to transport of severely injured patients to facilities that are poorly equipped to treat the patient, where care may be substandard and outcomes compromised.⁵ In well developed countries this is taken care by well designed trauma centers composed of physicians and support staff specially trained in trauma care, the presence of readily available multidisciplinary care specialists, commitment to quality improvement processes, and increased financial commitment to trauma care by care providing institutions.⁶ *Tranexamic acid (TXA) has been shown to reduce blood loss in surgical patients and the risk of premature death in patients with traumatic bleeding and it has been suggested that tranexamic acid can be given as early as possible to bleeding trauma patients with no apparent increase in vascular occlusive events. (1–4) Although uncertainty remains, the analysis has provided the ground for further clinical trials evaluating the effect of tranexamic acid in a large*

proportion with potential health gains are in low and middle income countries.^{7–10}

Whether severely injured patients should be transported directly to a level I trauma center or whether they can be safely stabilized at community hospitals or level III/IV trauma centers and then transferred to a trauma center is still debatable.¹¹ It is well known fact that patients with severe injuries will have better outcomes at trauma centers when transferred without delay and it is recommended that it is better to transfer the patient with to such a facility if it is few minutes away.^{5,12,13} However if severely injured patients are initially transported to a hospital not properly equipped to care for the patient, the initial stabilization needs be done quickly with good communication between the community hospital and the trauma center physicians and plans made for prompt transfer.⁵ Most rural communities are too small and remote to sustain specialist services even and may not have access to advanced trauma and neurosurgical care.^{2,14} This is further compounded by paucity of rural and remote procedural non-specialist doctors.¹⁴ Geographic distances between accident site and closest local hospital or tertiary care trauma center with greater transport time.⁵ Also transfer of the patient to a well equipped trauma center can result in a significant delay and similarly, transport of patients with minor injuries to the trauma center may overload the center and reduce its efficiency.^{5,13} Further, there is a need to emphasize the importance of urban planning to reduce the need for motorized travel.

Doctors who practice in rural areas, where subspecialty backup is less available, need special training to work more independently, to provide care for a broader range of illness and for sicker patients, and to perform more types of procedures. They also have to respond to the more demanding community aspects of practice.¹⁴ In spite of having advanced imaging facilities (CT scan, MRI and angiography) it is difficult to perform vascular, epilepsy surgery or functional neurosurgery frequently owing to the lack of support resources. The barriers to the maintenance of advanced procedural skills for rural and remote medical practitioners include, lack of opportunity, expense associated with remaining skilled in advanced procedural areas, lack of access to locum relief to attend educational sessions, lack of flexible options for education, lack of access to advanced procedural training, time constraints, loss of income, travel and accommodation expenses, the cost of participating in educational programs, multiple credentialing requirements

from state health departments and joint consultative committees, family obstacles, and perceived medico-legal problems.¹⁵ These problems can be addressed, at least in part, by increased support for flexible continuing medical education and professional development such as specific skills rural training programs, the availability of group practice opportunities, improved hospital facilities, reasonable workloads, financial incentives, locum assistance, improved housing quality, and better educational support for families.¹⁴ The problems associated with the development of neurosciences in developing many and have been discussed time to time. Growth of neurosurgery in developing countries is jeopardized mainly because of poverty and lack of an appropriate academic culture¹⁶ and in spite of the fact that the ninety's were declared as the decade of the brain, we are not able to truly establish ourselves to match up to the requirements of our large populations.¹⁷

In a developing country neurosurgical care in a general surgery set up is a feasible option to provide care to the underprivileged peoples without compromising the delivery of highly technical care. However it needs judicious use of resources and understanding of limitations and constraints. The question remains even if trained, how much and what type of neurosurgical procedures we can allow general surgery residents to perform independently.

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