The key health priorities for Papua New Guinea (PNG) are to alleviate poverty, improve nutrition, ensure safe drinking water and sanitation, prevent and treat infectious diseases such as malaria, pneumonia, gastroenteritis, tuberculosis and HIV/AIDS (human immunodeficiency virus/acquired immune deficiency syndrome), reduce infant and maternal mortality, and reduce the disability and death arising from trauma, cardiovascular disease and diabetes.

Despite these overwhelming priorities, surgical services are also essential. Most surgery in PNG is performed by general and gynaecological surgeons or by rural medical officers. Since Independence over 70 national surgeons have been trained in PNG to Master of Medicine (MMed) level. These now include specialist surgeons in otolaryngology, ophthalmology, urology, paediatric surgery, head and neck surgery, oral and maxillofacial surgery and, since 2004, the first in neurosurgery (1).

Neurosurgery may seem an esoteric technology-hungry, highly expensive luxury only needed by a few people and therefore of little value to the developing world including PNG because there are other more urgent health priorities. Even some doctors and public health administrators who reside and work in developing countries or who are involved in international health organizations are of this view. However, a ratio of one neurosurgeon to 200,000 population is the recommended requirement for neurosurgical services (2). Although most developing countries do not come close to this ratio, PNG with a population of 5.7 million has one neurosurgeon, which is clearly far below this ratio. More neurosurgeons will certainly be needed in the future but all within the context of a specialist workforce plan.

The common neurosurgery problems encountered in PNG are trauma to the head and spine, central nervous system (CNS) infection such as brain abscess, and congenital disorders such as hydrocephalus, spinal dysraphism and encephalocele (3,4). General surgeons with the appropriate training, but using basic equipment and resources, can treat most of these neurosurgery problems with acceptable morbidity and mortality. Less common neurological conditions require the expertise of a neurosurgeon and include cerebral and spinal tumours, aneurysmal subarachnoid haemorrhage, hypertensive intracerebral haemorrhage, cerebral vascular malformations, subdural empyema, spinal tuberculosis, syringomyelia, cerebellar ectopia, diseases of the skull, peripheral nerve disorders, and a myriad of other neurosurgical problems. Surgery for epilepsy is well developed in many specialized neurosurgery centres including developing countries such as India and Pakistan (5-7). Neurosurgeons from Australia sent by the Tertiary Health Services Programme of AusAID and the Royal Australasian College of Surgeons have been regularly visiting and supporting the neurosurgery service for more than 15 years, and neurosurgeons sent by the People’s Republic of China have been assisting for the past 5 years.

The neurosurgeon also trains the general surgeons who will be practising in remote areas and will perform basic neurosurgery including cranial and spinal trauma and ventriculoperitoneal shunts. It is still the general surgeon and the general physician or paediatrician who will diagnose and manage most neurological and neurosurgical problems in PNG but there is the need for a national referral centre at the Port Moresby General Hospital where the patients with more complex and specialized problems are sent. However, such a service requires some basic minimum standards of equipment for the practice of neurosurgery; for example, a CT (computed tomography) scanner (8), special instruments and an operating microscope. The World Federation of Neurosurgical Societies (WFNS) supplies neurosurgical instruments and an operating microscope at a much-reduced cost to developing countries. There are also minimum requirements for supporting services such as neuro-anesthesia, postoperative/intensive care nursing, physiotherapy and rehabilitation.

Patients with suspected cerebral and
spinal tumours are being referred with greater frequency to Port Moresby General Hospital (PMGH) (4), but today the means for diagnosing and treating them remain very limited. Many of these patients are young and a significant proportion have benign tumours which may cause persistent headaches, epileptic seizures, altered personality, progressive deterioration in cognitive function, and cranial nerve and limb dysfunction, leading eventually to death. It is tragic to see a young person become blind from a pituitary tumour when timely trans-sphenoidal surgery may save their sight; or seeing a patient become increasingly disabled from an acoustic neuroma when even a partial removal may alleviate their symptoms. Malignant brain tumours and cerebrospinal metastases still have a poor prognosis but combinations of surgery, radiotherapy and chemotherapy may produce quality survival for many months or years. These treatments are still for the most part unavailable in PNG. A specialist neurosurgeon could concentrate on the brain tumour cases and undertake the multidisciplinary complex skull base and craniofacial surgery with ophthalmology and ear, nose and throat (ENT) colleagues. Third ventriculostomy is an endoscopic procedure that can obviate the need for ventriculoperitoneal shunts. One enterprising American neurosurgeon working in Uganda has reported the results of 550 third ventriculostomies to treat hydrocephalus in children mostly under one year of age (9). This procedure could be performed in PNG if the equipment were available. The consequences of not treating children with hydrocephalus are mental retardation, lifelong dependence and unsightly cranial enlargement. It is likely that life expectancy will gradually increase in PNG and the western diseases including hypertension, cerebrovascular disease and stroke will also increase. This will generate more work for national neurologists and neurosurgeons.

A neurosurgical service provides an opportunity for medical students and general surgeons to be taught the basics by a specialist. The MB BS and MMed programs will be all the more self-sufficient with resident neurosurgical specialists.

The neurosurgeon should also be a public health policy advocate. The areas of advocacy include reducing road trauma through road safety, driving regulations and public education initiatives. Another area would be to support paediatricians and obstetricians in reducing the incidence of congenital neural tube defects (NTD) such as encephalocele and spina bifida through the administration of folate in the first trimester of pregnancy.

We therefore argue strongly that the status quo is not an option for PNG. There is much to be done to further develop neurosurgery and neurology services and although it will involve some financial outlay, the investment that would be required in the overall health budget is relatively small. We believe the dividends that would result in the reduction of human suffering and improvements in the health of the nation amply justify the outlay, and the health priorities of PNG could still receive their due.

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