

International Issues: Neurology training in Pakistan

My experience as a neurology resident

Uzma Usman, MD,
FCPS (Neurology)

Address correspondence and
reprint requests to Dr. Uzma
Usman, Division of Neurology,
Department of Medicine,
University of Alberta. 2E3 Walter
Mackenzie Centre, 8440-112
street, Edmonton, Alberta,
Canada T6G 2B7
uzusman@gmail.com

Pakistan is a developing country rich in ethnic and cultural diversity in its four provinces. It ranks sixth on the World Health Organization (WHO) list of high disease burden countries. The present national infrastructure of health facilities is equipped with 945 hospitals, 4,755 dispensaries, 562 rural health centers, and 5,349 basic health units.¹ There are 1,452 patients for every available bed, which is far behind the country requirements.¹ Although the total number of registered doctors in Pakistan has increased considerably from 83,682 in 1998 to 127,859 in 2007, there is still only one doctor available for every 1,254 patients and one nurse available for every 2,671 patients, which is below the international recommended ratio.¹ The adult literacy rate in Pakistan is 52%.²

The current number of trained neurologists in the country is particularly low. There are only an estimated 85 consultant neurologists³ in a population of 150 million. Nevertheless, this figure reflects a significant growth in neurology in the past few decades. Neurology has grown rapidly from an almost nonexistent discipline approximately 50 years ago.³ In some ways, this rate of progress is akin to the way in which neurology gained its roots in the United States, where it lagged almost a century behind other disciplines in the 1860s.⁴

Dr. Munawwar Hayat established the first department of clinical neurology in Pakistan at King Edward Medical College and Mayo Hospital in Lahore in the late 1960s. In the early 1970s, Dr. Akhtar Ahmed and Dr. Zaki Hussain jointly established departments of neurology in Karachi at Civil Hospital and Jinnah Postgraduate Medical Centre.³ Within the subsequent two decades, neurology flourished across the country. Currently there are at least 16 academic neurology departments throughout Pakistan.³ There is only one fellowship program, Clinical Neurophysiology, which is offered at Aga Khan University Hospital (AKUH). So far, 10 fellows have completed their fellowship at AKUH.

I was fortunate to receive training from AKUH Karachi. The residency program in neurology at

Figure Aga Khan University Hospital



Reprinted with permission.

AKUH was started in 1995. It is accredited by the College of Physicians and Surgeons and offers a fellowship examination and certification, the FCPS (Fellow of College of Physicians and Surgeons) in neurology. Successful candidates are certified to practice independently as clinical neurologists. I joined AKUH as an intern and then completed the residency program, which requires 2 years of medicine residency, followed by 3 years of neurology training. In the last year of my training, I worked as a chief resident as well as the medicine residents' representative on the institutional postgraduate medical education committee.

As residents, we were on call every fourth day. We had specialized stroke, headache, and epilepsy clinics, in addition to general neurology clinics. Journal club was held once every month. A major emphasis was placed on residents' skills in critical analysis of published trials and research projects. Every month, we also had a clinical neuroscience grand round, at which a faculty member or a guest speaker from neurology, neurosurgery, neuroradiology, or psychiatry delivered a talk on state-of-the-art management of neurologic or psychological disorders. We had weekly sessions for resident presentations, and combined neurology, neurosurgery, and neuroradiology meetings in which interesting and challenging cases were discussed.

From the Division of Neurology, Department of Medicine, The Aga Khan University Hospital, Karachi, Pakistan.

Disclosure: The author reports no disclosures.

The neuroradiology department at AKUH is well equipped with a CT scanner, capable of CT angiography, and an MRI scanner with diffusion, perfusion, and spectroscopy capabilities. However, the situation is not as favorable for most hospitals in Pakistan, particularly in the rural areas. At present, there are an estimated 80 CT and 19 MRI scanners in Pakistan, and at least four are capable of diffusion and perfusion scans.⁵

The availability of state-of-the-art technology at AKU in various domains of clinical neurophysiology provides residents the necessary exposure and training. Apart from routine clinical neurophysiologic procedures (EEG, EMG/NCS, evoked potentials), advanced diagnostic and therapeutic procedures such as continuous EEG monitoring with digital EEG machines (for diagnosis and monitoring of nonconvulsive status epilepticus), video-EEG monitoring (for presurgical evaluation of patients with intractable epilepsy), polysomnography (for obstructive sleep apnea and other sleep disorders), and EMG-guided botulinum toxin injections (for dystonia and spasticity) are being increasingly performed at AKU. The same, however, cannot be said about the majority of the other training institutions in the country, where the lack of resources and trained personnel leads to fairly limited exposure of residents to these areas of neurology.

During my training, I came across a wide spectrum of neurologic disorders, the bulk of which were stroke, epilepsy, movement disorders, and CNS infections, predominantly CNS tuberculosis. We had a stroke registry database, and by the end of my training, 1,000 patients had been enrolled over a period of 1.5 years. AKUH is one of the very few hospitals in Pakistan at which thrombolysis and acute endovascular intervention is available for acute ischemic stroke. On average, three to four patients out of six with ischemic stroke, presenting within 3 hours of stroke onset, receive IV thrombolysis at AKUH every month. Unfortunately, rtPA is only available to those who can afford it due to the absence of a national health insurance system and the high prevalence of poverty in Pakistan. rtPA costs 30 times the average monthly income. The average annual income of a person is \$85 USD, while the average cost for a full stay of an acute stroke patient in a tertiary care hospital in Pakistan is \$1,179 USD.⁶ Of course, this is beyond the scope of more than 80% of people, who then access public sector hospitals where these facilities are not available.

Now that I have completed my residency training, I am able to compare it with other neurology training programs in Pakistan. The number of such academic units in Pakistan is limited. Almost all of

these are crowded in big cities, and Pakistan has a severe shortage of qualified neurologists. The situation at government-based hospitals is worrisome. Approximately 50 to 60 patients are seen by a neurologist in clinics in government-based hospitals each day. The huge burden of patients, limited number of neurologists, and limited resources has made the condition worse. As the bulk of patients show up at government-based hospitals, the doctors in these settings face more hurdles in managing these patients. The government-based hospitals have limited diagnostic and therapeutic technologies. According to WHO, \$34 USD per capita is required for a package of essential health services in Pakistan. However, the total expenditure of health in Pakistan is \$18 USD per capita, out of which total government health expenditure per capita is \$4 USD.⁷ Most of the time, neurologists and trainees have to arrange for good quality CT scans and MRIs for patients by contributing their own money, as the majority of patients cannot afford such tests. At most university-based teaching hospitals, students and residents have founded associations for charity work, and most of the drugs delivered to the patients are made accessible to patients who cannot afford them through these associations. The doctor to nurse ratio in Pakistan is 3:1,⁷ which is the reverse of WHO recommendations. The trainees get overburdened as they often have to perform the duties of paramedics and nurses, in addition to rushing to arrange the drugs and even syringes for their patients. Residents in government-based hospitals only get a chance to learn about recent advancement in neurology through books and literature, rather than by applying these technologies to their patients. The lack of diagnostic as well as therapeutic technologies (for example, digital EEG, continuous EEG monitoring, thrombolysis, and emergency plasmapheresis) may be responsible for much of the morbidity and mortality in patients with neurologic emergencies. Despite these obstacles, neurologists and trainees in government-based hospitals give their maximum effort to meet standards of care and deserve admiration. It is worth mentioning that the trained neurologists from government-based hospitals make up a large proportion of the total number of neurologists in Pakistan.

The rural areas are the most disadvantaged in the provision of health care facilities. Studies have reported the prevalence of epilepsy in Pakistan at around 9.98 per 1,000 population, with twice the prevalence in rural as compared to urban areas.⁸ Paradoxically, the health care system in rural areas is only limited to dispensaries and basic health units. People have to travel long distances in order to access standard medical care, especially for emergencies like

status epilepticus and acute stroke. Most are unable to bear the expenses of the transport. The dispensaries and basic health units are deficient in emergency medicine and trained medical and paramedical staff.

In the context of the dearth of trained neurologists, one concern is the medical brain drain that is making the situation worse in a country where neurologic emergencies are often handled by non-neurologists. The causes of medical migration vary from limited technology to an insecure working atmosphere, but the most important reason is probably the substantial difference in income. The average annual income of the most senior resident (postgraduate year 5) in a private hospital is not more than \$5,200 USD.⁹ The income of a resident in a government hospital is lower. Many of my colleagues at government-based hospitals worked part time after hospital hours and on weekends to subsist. They could not find time to rest even after night calls. This is quite different from the experience of trainees working in the United States or United Kingdom, where trainees may be less burdened. Resident duty hours restrictions have been instituted in many of the Western countries, where maximum duty hours per week are limited to less than 80. Opportunities to practice recent advances, appropriate working hours, promising career pathways, and acceptable salaries are the major key factors responsible for the flow of skilled neurologists as well as trainees from Pakistan to these countries.

Neurology in Pakistan has a number of challenges to face, but we have identified what needs to be done and how it should be done. There is a need to extend neurology training programs evenly throughout the country, but equal emphasis must be placed on building up good infrastructure, hospital facilities, and particularly technology support. To address the problem of the limited number of neurologists in Pakistan, certain steps could be taken to limit medical migration, such as offering incentives like research awards and funding for young investigators, or scholarships for neurology postgraduate training or other higher degrees like graduate studies in neurosciences or public health-related degrees. Raising salaries of trainees may also help generate their interest in pursuing their career in their own country. Promotion of neurology education is required in medical school curricula and efforts are required to

promote neurology as a career among medical students and recent graduates.

Overseas neurologists can contribute through their visits and educational programs. Increased collaboration between local and international neurology societies may add value to collaborative neurology research and education. These challenges cannot be met without workforce and funds. The government must contribute by increasing the average health expenditure, which is currently too low (1.9% of total expenditure per annum).¹⁰

These goals are all attainable. All we need is a persistent effort, dedicated workforce, and an optimistic approach to meet them, all of which are inextricably linked to proper allocation to funds from the public and private sector. This reminds me of my teacher who used to say "It will not be easy, but then hardly anything is."

ACKNOWLEDGMENT

The author thanks Dr. Mohammad Wasay for encouraging him to write this article and Dr. Nadir A. Syed, Head of the Neurology Section, for review of the manuscript.

REFERENCES

1. Health Statistics. In: Federal Bureau of statistics/social statistics. Available at: www.statpak.gov.pk. Accessed July 30, 2008.
2. Pakistan Social and Living Standard Management Survey (PSLM) 2006–2007. In: Federal Bureau of statistics–FBS. Available at: www.statpak.gov.pk. Accessed July 30, 2008.
3. Shafqat S. Neurology in Pakistan: a vision. *Pak J Neurol Sci* 2006;1:159–161.
4. Scott GE, Toole JF. 1860: Neurology was there. *Arch Neurol* 1998;55:1584–1585.
5. Sajjad Z. Neuro-imaging facilities in Pakistan. *J Pak Med Assoc* 2003;53:623–624.
6. Khealani BA, Javed ZF, Syed NA, Shafqat S, Wasay M. Cost of acute stroke care at a tertiary care hospital in Karachi, Pakistan. *J Pak Med Assoc* 2003;53:552–555.
7. Akram M, Khan FJ. Health care services and government spending in Pakistan. In: Pakistan Institute of Development Economics Working Papers. Available at: www.pide.org.pk. Accessed July 30, 2008.
8. Aziz H, Guvener A, Akhtar SW, Hasan KZ. Comparative epidemiology of epilepsy in Pakistan and Turkey: population-based studies using identical protocols. *Epilepsia* 1997;38:716–722.
9. AKU Prospectus 2008. In: Admissions. Available at: www.aku.edu. Accessed October 10, 2008.
10. World Health Organization. World health statistics 2007. In: WHO Statistical Information System. Available at: www.who.int/whosis/whostat2007. Accessed July 30, 2008.

Neurology[®]

International Issues: Neurology training in Pakistan: My experience as a neurology resident

Uzma Usman

Neurology 2009;72:e58-e60

DOI 10.1212/01.wnl.0000345358.02467.f2

This information is current as of March 30, 2009

Updated Information & Services	including high resolution figures, can be found at: http://n.neurology.org/content/72/13/e58.full
References	This article cites 5 articles, 0 of which you can access for free at: http://n.neurology.org/content/72/13/e58.full#ref-list-1
Citations	This article has been cited by 1 HighWire-hosted articles: http://n.neurology.org/content/72/13/e58.full##otherarticles
Subspecialty Collections	This article, along with others on similar topics, appears in the following collection(s): Training-international http://n.neurology.org/cgi/collection/training_international
Permissions & Licensing	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: http://www.neurology.org/about/about_the_journal#permissions
Reprints	Information about ordering reprints can be found online: http://n.neurology.org/subscribers/advertise

Neurology® is the official journal of the American Academy of Neurology. Published continuously since 1951, it is now a weekly with 48 issues per year. Copyright . All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.

