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# NEUROLOGY TRAINING IN PAKISTAN: PERSPECTIVES FROM PHYSICIANS IN A NEUROLOGY UNIT WORKING AT DIFFERENT LEVELS

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Pakistan is a developing country of South East Asia. It stands amongst the highest in the list of high disease burden countries including that for neurological diseases. The current number of trained neurologists in the country is extremely low and the facilities not too frequently available. The training facilities are none the less quite limited. 1, 2

Although structured training in neurology has been developed over the past two decades in the country, the program is still at a stage of infancy as compared to that in the developed West and struggling to survive in a resource poor environment. 2, 3

The aim of this article is to present the different points of view about neurology training from the most senior to the most junior medial doctors having hands on experience in neurology. The article has been divided into four sections that each gives the real thought process of the respective cadre of doctor from neurology based on their experiences. It is accompanied by presentation of facts regarding the above from local literature. In each cadre, four to five physicians were interviewed and all were from public sector. This is followed by discussion on a structured plan for development of neurological sciences in Pakistan. The article gives a real-time picture of current practices and prevailing norms of neurology in Pakistan. The rationale behind this discussion is to highlight the growth of neurological sciences in Pakistan and the need to improve on the areas which are weak and tenuous.

## A) Perspectives from the point of view of registrar Neurology:

Neurology residency program in Pakistan is a rapidly evolving field. Currently 3 different training programs are being offered in various institutes of Pakistan. These are Diploma in clinical Neurology (DCN), FCPS Neurology and MD Neurology. 1, 2, 3 Whilst DCN is probably the oldest training program, FCPS Neurology is considered by most neurologists to be the most structured training program in Pakistan. The history of FCPS Neurology dates back to early 1990's and its first fellow was produced in 1995. As with all other specialties of Medicine in Pakistan, Neurology also has evolved tremendously over the past two decades. The main evolutionary factors have been

formal structuring of the training program and increase in the number of neurologists and supervisors. 2,3

There is a need to focus more on the state of FCPS program in Pakistan. One of the biggest problem that is facing not only the FCPS program, but also other programs is a lack of uniformity amongst the training institutes. Most neurology institutes till date are still not offering a full fledged cover for neurological emergencies. As a result of which these patients are being taken up and managed by general medicine departments. This creates serious lacunae in the acute neurology exposure of the neurology residents. It goes without saying that there will be an obvious difference in the level of care and management of acute neurological patients by trained neurologists versus the general medicine residents who are also catering to patients of other disciplines. So as a result of this lack of acute neurological admissions, these institutes are left only with cold neurology patients which are being admitted from the outpatient departments primarily for workup. Another consequence of this is a lack of exposure of neurology residents to the neurological patients which are being admitted in the intensive care units (ICU). As is well known that most patients who are admitted in Medical ICUs are acute neurological emergencies (e.g. Status epilepticus, Guillain-Barre syndrome, Myasthenia Gravis, Cerebral Venous Thrombosis, CNS infections amongst others). 2,3,4,5,6,7,8

One aspect of neurological training which is showing steady improvement is the increasing availability of neurodiagnostic studies. These include the availability of Neurophysiological testing and Neuroimaging studies. This increasing exposure of Neurology residents to neurodiagnostic studies has helped tremendously in uplifting the standard of neurology training. 2,3,6

Regarding, what can we expect with respect to the future of Neurology training in Pakistan, the areas to emphasize for the future is post-fellowship training in various neurology subspecialties. Currently only one training institute is offering such post-fellowship programs and that too only in two disciplines, neurophysiology and stroke. These fellowships also need to be extended to other institutes along with an increase in the number of various fellowships. 3,6

## **B) Perspectives from the point of view of post-graduate Neurology resident:**

Neurology training in Pakistan is still in the era of infancy. While neurology training worldwide has grown into a well recognized subspecialty in the last few decades, developing countries like Pakistan have recently anchored their roots deep in the soil of medical training in neurology.<sup>1,2,6</sup>

The programs that are currently running have both have their pros and cons. While the training has become structured over the years, some aspects of neurology are still overlooked, such as electroencephalogram (EEG), electrophysiology and movement disorders. Although there are clinical rotations during the training programs to cover these aspects, there are no certified specialized programs to address these fields separately. There are currently no post-fellowship training programs available to help neurologists get hands on experience in at least two of the most important of the above domains i-e-, EEG/ epilepsy/ seizure disorder and movement disorders.<sup>1,2,6,9,10</sup>

The stroke program in the country is lagging behind that in the rest of the world. While few centers have the facility of thrombolysis, majority of teaching hospitals do not have this facility. This is particularly discouraging at the level of post-graduate residents as no hands-on experience is currently offered regarding the most persuasive new intervention in the field of neurology.<sup>2,6,9,10,11,12</sup>

The electrophysiological training is still in neonatal stage and only a handful of neurologists have the experience pertaining to it. An even lesser number have certified qualifications specifically in the field and thus transfer of this knowledge to juniors is extremely limited. Same stands true for electroencephalography.<sup>1,2,6,10,11,12</sup>

Only at some of the centers, the neurology residents are directly indulged in emergency facilities. At most training institutes, a primary medical team deals with neurological emergencies. Thus while hard core neurology does makes the major part of training, lack of exposure to emergencies puts neurology training at stake at these centers. From a professional and standard-care approach, residents should be able to focus on cases related to their field whether chronic or acute equally and should be able to understand all domains of the training program.<sup>1,2,6,11,12,13,14</sup>

The research opportunities in neurology are also limited in Pakistan. As the world is discovering newer therapies at a fast pace for neurological diseases and expanding its research prospects in the field, research funding facilities in Pakistan are still scarce.

There needs to be a strong central database registry for neurological diseases all across Pakistan and residents should have the opportunities for carrying out new interventional and well oriented research projects like that on stroke, Guillain-Barré Syndrome and especially Tuberculous meningitis. This aspect in particular needs major improvements so to help neurology training grow at a faster rate.<sup>1,2,11,13,15,16</sup>

## **C) Perspectives from the point of view of house physician working in Neurology:**

Neurology has come a long way since the time of Sir Charles Sherrington. The major advances in the knowledge of neurological disease processes as well as their treatment protocols are both encouraging and disheartening. In Pakistan Neurology is a world of its own, growing at its own pace and facing its own personal hurdles. After starting house job in Neurology, one quickly discovers that one has entered a place of paradoxes. Even though one knows there were more treatment options now than a decade ago, there also seems to be more patients who are morbidly sick in the Neurology department in comparison to other departments.<sup>1,2,3,6</sup>

As house officers, job description includes taking the patients histories, doing physical examinations, performing lumbar punctures, sending labs, and carrying out any other diagnostic or therapeutic orders specified by seniors. With the amount of patients that are common in the department, this means that one would have to be on feet all day carrying out orders. Being in a public sector hospital in a resource poor country, one often meets with technical issues, such as labs that needed to be sent outside of the hospital because of lack of laboratory equipment to process those tests and fighting for early dates for MRI scans for patients who need an urgent diagnosis.<sup>1,2,3,6</sup>

The first thing that thrills a house officer about working in the department of Neurology is how performing a simple physical examination could help unfold a complex diagnosis. With so many patients, acquiring hands on experience is easy. As one would take medical histories, one becomes aware of a troubling fact that many patients and their families are still unaware of the common signs and symptoms of even the most common Neurological diseases. Often patients would present with Hemorrhagic stroke and a blood pressure of 180/100. However, their attendants would adamantly deny a history of hypertension. Later it would be discovered that the patient had never had his blood pressure checked. The ratio between patient and neurologist has become extremely disproportionate in Pakistan and it is painfully evident in public sector. In the beginning each patient is an enigma, a mystery waiting to be solved. However, even with the natural vitality of

being a young doctor, a day in Neurology feels like a week, a week feels like a month. Even though there has been a great increase in Neurologists, since Neurology was introduced in Medical Schools in Pakistan in the 1960s, Neurology departments are still grossly understaffed.<sup>1,2,6,11,12</sup>

#### **D) Perspectives from the point of view of consultant Neurologist:**

Neurology is an exponentially growing field of medical sciences in the modern era of evidence based medicine. The training in neurology begins from years in medical school and continues throughout life for a neurologist. In order to promote growth of neurology in Pakistan, every medical college should make it imperative that anatomy, physiology and pathology of diseases of brain, spine, nerves and neurovascular disease should be taught and proper assessment of students be done. In our country, the two most popular post-graduate programs are MD and FCPS Neurology in different teaching hospitals. Both these programs are well structured. It is ensured that each post-graduate student is exposed to all aspects of his or her specialty. Students are exposed to and trained in electrophysiology and neuroimaging. They are introduced to plasma exchange, immunomodulation and treatment of other neurological disorders.<sup>1,2,6,11,13,16</sup>

Among neurological disorders, the one that every neurologist comes across almost daily is stroke. Stroke is the third leading cause of mortality in the world. It is the leading cause of morbidity and disability in the elderly. In our country, it contributes significant dependency and loss of quality and quantity of life. Pakistan is seeing a lot of stroke in younger age group especially in women following parturition. The need of the day is to establish a stroke unit in every hospital of the country and expose residents to this very important aspect of neurosciences. It is of utmost importance to recognize the signs and symptoms of acute stroke. One should know the pertinent investigations that one needs to order, including specialized ones, to come to the diagnosis and relevant management one should undertake. Establishment of a stroke unit in every hospital of the country is a necessity. There is a dire need to employ stroke specialists and ensure proper training to the young neurologist with a special focus on stroke.<sup>1,2,6,11,13,16</sup>

#### **The need for an enhanced, structured Neurology training with super sub specialty programs**

The major issues currently faced by the field of Neurology in Pakistan can be solved through simple restructuring of the training program. Programs should be focused on equipping Neurologists with the training to tackle all the important aspects of Neurology. The current programs and few suggested

improvements along with for a comprehensive structured based training are presented as follows.

1. The Neurology Basic Training as part of a mandatory one year of house job. The one year of house job is a vital stepping stone before specialization, where junior doctors are able to receive training in the major medical and surgical Fields.<sup>Fig1</sup>

2. The Specialty Entrance Exam based on Medicine and Neurology before embarking on training program. The program itself is divided into 2 year core medical training (CMT) and 3 year basic neurology training.<sup>Fig1</sup>

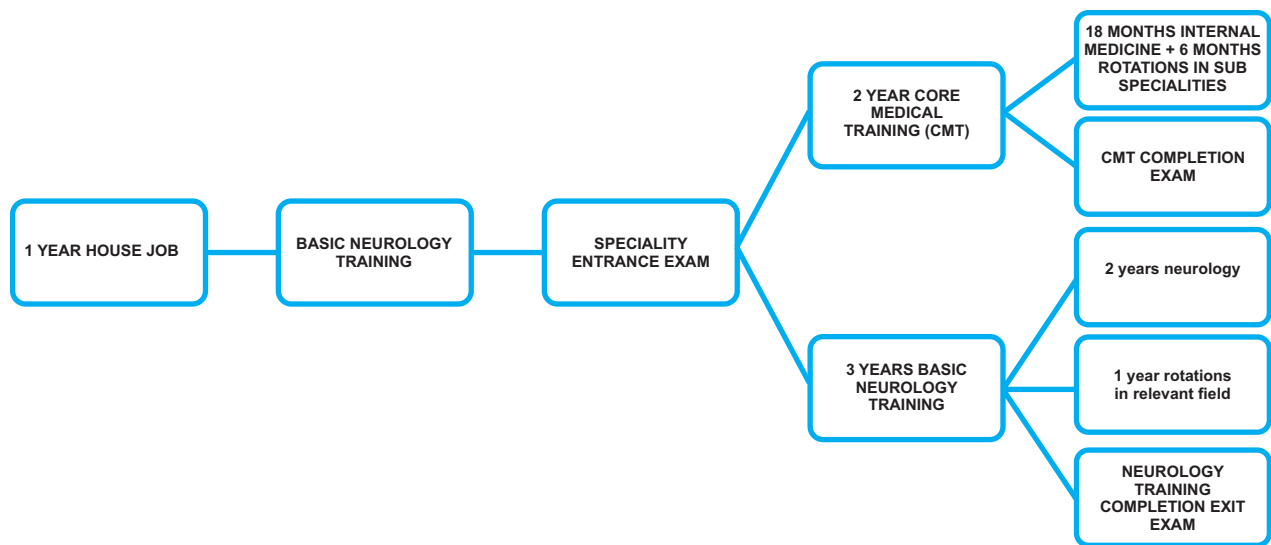
3. Core Medical Training comprises of 18 months of Internal Medicine, including 6 months rotations in subspecialties. The 2 years will be capped with a CMT completion exam. The resident enters the Neurology training program after completion of exit exam for CMT.<sup>Fig1</sup>

4. During the basic neurology training, the trainee spends 2 years in the Neurology department followed by a 1 year rotation in a relevant field. Rotations are important to allow growth in medical fields in close relation to Neurology. After finishing training and passing the Neurology Training Completion Exit Exam, the Neurology Resident will continue onto the further pursuing subspecialty training specifically in a specialized field from Neurology. Fig 1 This training will further diversify the trainees' knowledge of Neurology specific cases as seen under other subspecialties.<sup>Fig2</sup> 1-2 years post-fellowship training is recommended in neurology subspecialties such as vascular neurology, clinical neurophysiology, epilepsy/ seizure disorders, neuroimmunology, sleep medicine, headache medicine, pain medicine and movement disorders.<sup>Fig2</sup>

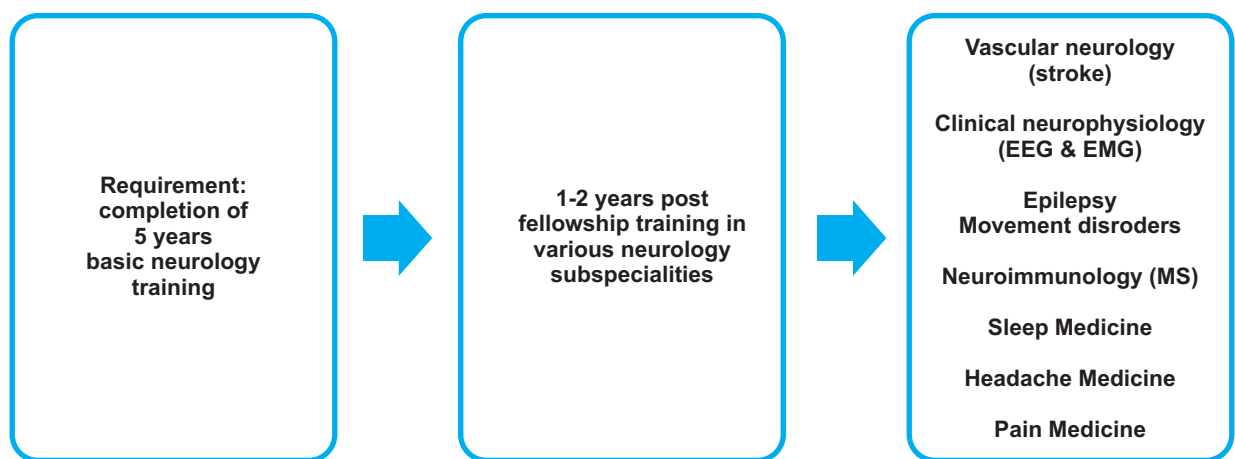
Furthermore, the structured programs should be extended to hands-on experience in particular expertise like botulinm toxin injection training, polysomnography and sleep studies, exposure to DBS (deep brain stimulation) and some newer available neuroimaging techniques like CTP (contrast tomography perfusion), MRS (magnetic resonance spectroscopy) and fMRI (functional MRI) at least. This can be done by further extension of existing programs to 6-12 months courses in the above mentioned modalities and awarding proper and formal certifications in the respective domains. At the same time, research programs both in clinical and basic neurosciences should be offered to young neurologists as the pace of neurology research in Pakistan is extremely slow. Moving one step ahead, training programs in Pakistan can offer post-graduate in-training exposure to various subspecialties of neurology via arranging international collaboration ventures specifically in super subspecialties in neurology with teams in Europe, USA, Australia and

other countries in Asia. The availability of these opportunities will not only help existing neurologists to enhance their skills but also encourage young physicians to opt for training and career in neurology. This will help both fulfill the dire need of more and more neurologists in the country as well as improve the current delivery of health care in neurology to the nation in the best interest of Pakistan.

**Figure 1: Neurology basic training and residency programs prevailing in pakistan**



**Figure 2: Neurology post-fellowship programs across the globe**



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### Author's contributions:

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