

## One Europe, one neurologist?

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### Keywords:

continuous medical education/continuous personal (professional) development, exchange, migration, neurological manpower, post-graduate education, residency training, subspecialties, undergraduate/pre-graduate

Received 23 February 2006  
Accepted 28 September 2006

In recent years, there has been a major shift in emphasis within neurology from being a largely diagnostic discipline to one much more actively involved in treating disease. There have been major scientific advances leading to new and effective treatments. There is also a much greater awareness of the burden of neurological disease (Olesen J, Leonardi M. *European Journal of Neurology* 2003; **10**: 471) and informed sufferers are requesting specific intervention. There is wide variation in the delivery of neurological services throughout Europe. This is reflected in manpower levels, the place of neurology related to other medical specialties and different mixes of hospital and private office practice. These differences have been thrown into sharper focus by the recent expansion of the European Union (EU). Initial training in neurology is given to undergraduate/pre-graduate students. Post-graduate education is delivered within a residency program leading to specialist qualification and certification. We now recognize that this is only the beginning of a life long program of continuous education and development (CME/CPD). National and international exchange programs facilitate the growth of knowledge and promote professional harmony and cooperation. The free migration of medical specialists has been an aspiration but remains limited by cultural, linguistic, personal, professional, political and economic factors. Two bodies, the European Board of Neurology (EBN–UEMS) <http://www.uems-neuroboard.org> (Union Européenne des Médecins Spécialistes) and the European Federation of Neurological Societies (EFNS) <http://www.efns.org> are actively involved in harmonising and developing neurology at the European level.

### Introduction

The political face of Europe with its interfaces between east and west and north and south has seen many changes over the centuries (Fig. 1: Europe). A few have been as dramatic as those taking place during the present and past two decades. It is helpful to consider European neurology in geographic terms by dividing it into three zones: (1) zone 1: pre-2004 representing the core European Union (EU) nations and those represented by the start up period of the European Board of Neurology–Union Européenne des Médecins Spécialistes (EBN–UEMS); (2) zone 2: the region covering the new EU countries that joined in May 2004; and (3) zone 3: European reform countries not presently in but aspiring to future membership. Within the whole

region, there are diverse national regulations and medical systems, training programs for neurologists and structures for their ongoing professional education and development (CME/CPD). A measure of harmonization has been achieved within zone 1 but even here significant differences exist. Europe as a whole has a wide political and economic spectrum and this translates into large differences in standards of care, available equipment and treatment resources. At the extremes, there are huge variations in neurological manpower levels.

Pre-graduate/undergraduate and post-graduate training programs and CME/CPD are the three broad stages of professional education. Pre-graduate/undergraduate education at university level tends to show common core features but post-graduate programs vary widely outside zone 1. A detailed overview of the CME/CPD situation within the EU can be found in the 'Basel Declaration' <http://www.uems.net> (UEMS D0120) [1].

As the EU expands, changes and settles, the migration of trainees and neurologists will become an increasingly important factor in neurological education.

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**Figure 1** European neurology in geographic terms: zone 1: pre-2004 representing the core EU nations and those represented by the EBN-UEMS; zone 2: the region covering the new EU countries that joined in May 2004; zone 3: European reform countries not presently in but aspiring to future membership.

Despite differences in manpower, training and national systems, neurologists from EU countries are becoming increasingly mobile in both training and working terms. It is still difficult to migrate into the established EU states from zone 2, and even more so from zone 3. The main obstacles relate to language and cultural differences, standards of training and their certification and the differing economic systems.

### Manpower and medical systems

Two questionnaire based studies were published on neurological manpower within Europe [2,3]. Both are incomplete but allow a reasonable estimate of the numbers and distribution of neurologists. There is a marked variation ranging from seven (UK) to 166 (Lithuania) neurologists per million of population. It is also evident that the overall numbers have risen in the 10 years between the surveys (1994–2004). A recent survey on behalf of the EFNS Education Committee deals with neurologist numbers in the new EU countries and Eastern Europe (Table 1). In general, the numbers are higher than in the older EU states.

The wide variations seen in these studies cannot be explained in terms of neurological disease epidemiology but rather reflect profiles of neurological practice in different areas. For example, cerebrovascular disease, the commonest neurological disorder is treated exclusively by neurologists in some countries but by general internists in others. In some areas, dementia is largely dealt with by geriatricians and by neurologists

**Table 1** The new European Union (EU) countries and non-EU countries, number of inhabitants related to one neurologist

Number	Country	Population <sup>a</sup> (mln)	Number of neurologists	Number of inhabitants related to one neurologist
1.	Albania	3.17	120	26.420
2.	Belarus	9.9	1200	8.250
3.	Bosnia	4.1	50	82.000
4.	Bulgaria	7.91	1180	6.700
5.	Croatia	4.5	300	15.000
6.	Czech Republic	10.2	1100	9.270
7.	Georgia	5.1	761	6.700
8.	Hungary	10.12	750	13.500
9.	Latvia	2.3	250	9.200
10.	Macedonia	2	60	33.300
11.	Moldova	4.2	320	13.125
12.	Poland	38.2	2550	15.000
13.	Romania	22.3	700	31.857
14.	Russia (Tatarstan)	4.5	600	7.500
15.	Serbia and Montenegro	8.1	183	44.260
16.	Slovenia	2	90	22.220
17.	Turkey	71	NK	70.000

<sup>a</sup>World Bank Data (<http://www.worldbank.org>, Population 2003).

in others. The list of such conditions is large and includes meningitis, epilepsy, facial palsy, mental handicap and chronic physical disability. The situation is further complicated by differing numbers of neurological beds, different patterns of office, outpatient and inpatient care and different patterns of funding and case mix for public and private patients. The recent World Federation of Neurology/WHO Neurology Atlas gives a good overview of this diversification worldwide [4].

### Pre-graduate/undergraduate education

The wide spectrum and heavy burden of diseases affecting the nervous system should be reflected adequately in the clinical teaching program of medical schools. A working group of the EFNS education committee was set up to evaluate this problem [Report of the Task Force on Pre-graduate Education in Europe of the Education Committee of the European Federation of Neurological Societies. José M. Lopes Lima, Anton Mesec, I.M.S. Wilkinson, *et al.*] The teaching programs of each European country were analyzed by questionnaire and recommendations made for future teaching of neurology in university curricula. The important points included

(i) The total length of the clinical neurology training period (excluding basic neuroscience) should include a minimum of 5 weeks full time.

(ii) The total number of teaching hours should be at least 72, including demonstrations, bedside teaching, etc.

(iii) Each student should examine a minimum of 14 neurological patients, covering the most relevant pathologies.

(iv) Neurology should be considered an independent subject area and assessed separately by both continuous evaluation of the training period and written and verbal examination.

(v) The bulk of the program should consist of clinical neurology but it should also include related topics including Neurosurgery, Clinical Neurophysiology, Neuropathology, Neuroradiology, Neurorehabilitation and Child Neurology.

There is a positive attitude in medical schools towards neurology. This probably reflects an awareness of the importance of the brain and the nervous system. Neurology is seen to be in the forefront of clinical medicine and scientific research. This positive attitude should be encouraged and used to promote expansion of neurological training and convince hospital administrations, faculties and university faculties that such an expansion is necessary. Neurology also has the reputation of being a particularly difficult discipline [5], and efforts to improve teaching are necessary.

### Training of residents as neurologists

The first phase of post-graduate training in neurology is a residency program leading to a level of competency to be adjudged capable of practising as a neurologist. This is to be distinguished from the subsequent professional lifelong education in the speciality (CME/CPD) which will be dealt with separately. The residency program is primarily concerned with acquiring the basic knowledge, skills and experience necessary to deal with patients presenting with the broad spectrum of neurological illness. The entry to neurological training, monitoring of training and final board examinations are handled differently in most European countries, usually by the responsible national medical society. The development of a neurological core curriculum [6] is an important step towards harmonizing neurological residency programs. Exchange and rotation programs are important developments; to date they still concern only a limited number of trainees. The number of trainees in the EU states is not clear. For the new EU and non-EU states the percentage of trainees in relation to qualified neurologists varies from 2% to 23% (Table 2). The status of the trainee within the institution also varies within Europe. In most countries, the training period is a fully paid position, which implies that the trainee is fully included in routine work, which is the core of the

**Table 2** Numbers of trainees (residents) in new European Union (EU) and non-EU states

Number	Country	Number of neurologists still in training/ in percentage to the number of neurologists in the country	Duration of post-graduate training in neurology
1.	Albania	6 (5)	4
2.	Belarus	40 (3.24)	2–3
3.	Bosnia	5 (10)	4
4.	Croatia	35 (11.7)	4
5.	Czech Republic	200 (18.2)	5
6.	Georgia	16 (2.1)	4
7.	Latvia	14 (5.6)	5
8.	Macedonia	15 (25)	4
9.	Moldova	30 (9.4)	3
10.	Romania	100 (14.28)	5
11.	Russia (Tatarstan)	50 (8.3)	Internship – 1 year; residency – 2 years
12.	Serbia and Montenegro	37 (20.2)	4
13.	Slovenia	18 (23.7)	6
14.	Turkey	NK	4

training, whereas the formal training is still a matter of national definition. In some countries, residents have a special training status and are exposed to more rigorous training programs.

### Entry to training

This varies in different countries and often includes a prior period of training in general internal medicine.

### Training program

Within the EU states, a minimum training period of 4 years is mandatory (UEMS Training Charter, <http://www.uems.net>). In reality, the training period varies considerably ranging from 4 to 8 years and even more so in Eastern Europe; for example, the training period in Ukraine is only 1 year! The UEMS–EBN and the education committee of the EFNS have developed a consensus ‘core curriculum’ for specialist training in neurology, covering areas such as access, duration, structure, training sequence, training objectives, supervision and assessment. Due to different wishes and needs from member countries the development of this common core curriculum was a lengthy and difficult process. This neurological ‘core curriculum’ [6]. Similar recommendations have been reported in the USA [7]. Much less effort has been invested in training methods, which in most countries are still based on clinical ‘apprenticeship’ [8]. Newer

methods of teaching and assessment [e.g. directly observed procedural skills (DOPS), mini clinical evaluation exercises (MiniCEX) and a 360° assessment] are being introduced into revised training programs.

### **Examination**

The introduction of a European board examination as an instrument to provide a quality assessment of trainees in Europe may be a future common effort of the UEMS–EBN. Such an examination would only be a sign of excellence and have no legal standing in the EU. The EBN has decided not to attempt to introduce an obligatory European board examination. Current assessments of training are practiced differently in European countries and include progressive assessment interim evaluations, final examinations and combinations of these. An unpublished survey by UEMS/EBN in 2004 indicated that final examination is compulsory in six European countries at present. The Netherlands are particularly well developed in their assessment of neurology trainees [9].

### **Visitation**

Visitation as a permanent quality assessment of training has been implemented in some European countries, mostly based on UEMS suggestions. These programs are often run by the national medical societies or by specialist sections. To date the UEMS–EBN has not created a multinational visitation committee, but visitations of national institutions upon request will be considered in the future. The UEMS–EBN will consider a commission, which could attend national board examinations in an observer capacity.

### **The exchange of trainees**

It is neither likely nor desirable that residents would complete their training in one institution. Exchanges already occur on a national basis within most countries. This enhances the knowledge of trainees in regard to training programs, centre specific activities, scientific contents and differing clinical team structures and management and educational styles. It can be expected that depending on the neurological department different spectra of neurological patients will be seen by the residents. A regular national exchange between large (university) and small training centres should be established. To achieve this task national organizational structures such as different health systems, employment plans and hospital providers have to be considered.

Structured international exchange systems are much more poorly developed but a number of initiatives are under way.

### **OFTEN program**

The OFTEN program is a training exchange program [10] which has been launched jointly by the UEMS and EFNS. Willing and suitable departments receive trainees from abroad, without financial support. The host institution is expected to help with regard to local organisation and local facilities including reasonably priced accommodation and meals. The OFTEN list can be found on the website <http://www.uems.org/neuro/> [11] and is maintained by the European Association of Young Neurologists and Trainees (YNT – contact: <http://www.uems-neuroboard.org>).

### **Department to department exchange program**

The department to department exchange program of the EFNS (<http://www.efns.org>) was originally intended for trainees from the East European countries to come to the West but has now been extended to include western participants. Trainees receive a lump sum of 1800 Euros to spend ideally up to 6 weeks at a neurological department abroad. This program has worked well over the past years and has had an increasing number of participants. It may be amalgamated with the OFTEN program in the future.

### **Individual fellowships**

Individual fellowships for the support of scientific projects are offered by the European Neurological Society (ENS) and EFNS. The selection of young neurologists for the fellowships is highly competitive (<http://www.efns.org>) [12]. The individual fellowships are primarily intended to support a scientific project in the host institution and are beneficial to both the student and the department.

### **Academy-like institutions and regional teaching courses**

Academy-like institutions and regional teaching courses (<http://www.efns.org>) are EFNS initiatives directed towards neurologists in training and young neurologists and are a valuable instrument of education. They have mostly taken place in Eastern Europe. The number of participants is comparatively low in relation to the total number of neurologists in training. It is expected that the knowledge and experience obtained by the participants would be further spread by them acting as multipliers.

### Internet and virtual universities

The increasing availability of IT based teaching methods will allow the establishment of Internet and virtual universities. The European stroke initiative (EUSI) <http://www.eusi-stroke.com> [13] is presently establishing a model for this (virtual stroke university).

A little is known about the individual personal satisfaction of trainees. A questionnaire based survey of the training in Italy has been published [14]. The results show that residents were not satisfied with some training programs and a number of suggestions for future developments have to be taken seriously. The Young neurologists in training (YNT) <http://www.eaynt.org/> [15] are an independent association of trainees and young neurologists based in Brussels. The YNT tries to take care of the needs of trainees and makes suggestion for the improvement of training in neurology. A joint committee was founded in Helsinki in 2003 to coordinate activities of the EFNS education committee and the YNT.

### CME/CPD

A newly trained neurologist is embarking on a 25–30 year long career and we increasingly recognise that ongoing updating of medical knowledge and skills is necessary throughout the professional life. This continuing medical education (CME) is the longest period of professional training in the lifetime of a neurologist. CME activity was first developed by professional bodies to provide high quality educational events for physicians and to stimulate doctors to participate in these events as actively as possible.

Accreditation of CME events is an important issue. Several factors have to be considered: (i) The authority of CME accreditation lies with the national authority; (ii) A European UEMS platform, called EACCME tries to facilitate the supranational acceptance of CME activities in Europe; and (iii) The criteria for 'quality' CME are difficult to assess.

The EFNS CME Committee has published guidelines for accreditation of CME [16]. The approval of a CME meeting is based on (i) the scientific content; (ii) acceptance by the national society; (iii) review by a peer review board; and (iv) freedom from commercial interest. It is expected that interactive internet based teaching materials will become more and more important for upgrading individual knowledge and expertise. Online educational programs can as of recently be accredited by EFNS [16] <http://www.efns.org> [12], but EACCME as the central European accrediting agency is still in the process of assessing its present position of not accrediting internet based learning.

Potential influences of the pharmaceutical industry on CME are a matter of intensive discussions. Currently, transparency of relations is sought by accrediting only events organised through unrestricted grants, and industry organized satellite symposia at meetings are as a rule not given accreditation. The pharmaceutical industry has established foundations and scientific academies, which are run by scientific boards that declare their independence and freedom from influence in the bylaws of their institutions. The present consensus is that if CME guidelines are strictly followed by such institutions, events can be accredited after careful scrutiny. Accrediting bodies should – particularly in such teaching – adopt a strategy of close control of accredited events.

Initially driven by the ethical responsibility of the individual physician to maintain his education standards and skills, CME is now expanding into new areas. While updating knowledge and skills is important for a productive professional life, the assessment of quality of professional activity extends into other areas. This is included in the concept of continuing professional development (CPD) which is outlined in the UEMS paper (D0449) <http://www.uems.net> [1]. Additional skills are necessary to practice and inter-relate with patients, colleagues and others involved in the ever increasingly complex area of healthcare.

Continuous medical education was first organised as a service to doctors seeking quality updates on knowledge but is becoming a more 'required' activity particularly with regard to the re-certification of doctors which has already been introduced in several countries. Future re-certification, among other requirements, may depend on the physician being able to demonstrate relevant CME activity in the preceding time period of professional activity. Such required CME activity may be strictly defined, as for instance in the Netherlands [9]. A UEMS paper (D 0349) <http://www.uems.net> [1] gives an outline of what measures are necessary to prove to patients, the public and stakeholders whether a physician is able to continue practice after a defined period of professional activity. The criteria for re-certification can be based on scientific content (such as attendance of meetings) or include a broader spectrum such as opinions of collaborating colleagues, the institution worked in, patients treated and also a demonstration of results (portfolio). Yearly appraisals and 5-yearly recertifications are currently proposed in the UK.

To date, it has been possible in most European countries to organise CME as a self-regulatory mechanism within and by the medical community. It is hoped that by such measures outside regulation imposed on physicians by governmental institutions will be unnecessary. However, in some countries this policy has not

been successful. In the UK, government initiated quality assurance control is being implemented even though professional self-regulating mechanisms are in place. In some countries (Italy and Germany), CME is now government controlled <http://www.uems.net> [1].

### Sub-specialization

Sub-specialization within neurology varies significantly across Europe. This is seen in a number of areas, but particularly in Paediatric Neurology, Clinical Neurophysiology and Neurological rehabilitation. This raises important questions. If many sub-specialities exist, the neurologist in training may receive a narrower range of experience unless specific training is provided in these areas and this may lengthen the training period. A questionnaire based survey on sub-specialization was conducted by the Education Sub-committee of the EFNS [3]. It indicated the most frequently accredited sub-specialities in Europe to be Paediatric Neurology (12 countries), Neurophysiology (five countries) and Rehabilitation (four countries). Sub-specialities without accredited governmental status, but with diplomas from national societies included neurophysiology (10 countries), paediatric neurology (eight countries), neuroradiology (five countries), neuropathology and stroke (four countries). The last three appear to be areas of growing interest and diploma provision. These developments have significant impact on how neurological practice is profiled in different countries. Should Clinical Neurophysiology be completely independent or reside within neurology? Should Paediatric Neurology develop through paediatrics, neurology or both? Should Neurological Rehabilitation be within neurology, physical medicine and rehabilitation or both? To what extent can these questions be addressed by a multidisciplinary team delivery in larger units?

### Migration – a future development?

As the EU enlarges, migration of neurologists within the region becomes increasingly important. We need to consider neurologists in training who seek more interesting, varied and prestigious training centres, and fully trained neurologists who are more likely to change their environment for professional and economic reasons. Apart from language, the duration of formal training is likely to be the most important limiting factor. The situation was examined on behalf of the EFNS education committee. The preliminary results indicate a large potential for movement. The majority of European neurologists in the new EU and non EU countries would like to migrate. Understandably, this desire is stronger among neurologists in poorer countries.

### Education in the broader sense

We increasingly recognize that neurological education should not be limited to neurologists and neurologists in training but also reach related health groups and the public in general. Advocates, stakeholders, and most of all patients have a clear need to be aware of the importance of neurological illnesses, the burdens they carry, available therapies and rehabilitation facilities [17].

### Leadership and educational meetings

The American Academy of Neurology (AAN) has created advocate and leadership seminars, called D.M. Palatucci Advocacy forums (<http://www.aan.com>) [18]. These meetings are aimed at providing education for neurologists in areas such as media skills, grassroots advocacy, action planning and practical skills needed to deal with opinion leaders and politicians. This template of AAN leadership seminars will be recommended by the education committee for teaching these skills to European neurologists and hopefully improve the promotion of the speciality within European national environments.

### Conclusion and visions

Neurology is a long established speciality but it is far from being uniformly handled within Europe. This applies to undergraduate and post-graduate training, the practice of the speciality and the implementation of CME/CPD. Freedom of practice and mobility are fundamental principles of the new united Europe and this clearly implies that European neurologists should have similar training, knowledge and standards. In the longer term, a high quality standardized ongoing specialist training and development (CME/CPD) should be uniformly available to neurologists within the EU. Furthermore, migration of neurologists within Europe is likely to become increasingly important; this also implies a need for uniformity.

Much future work remains to synchronize education at all levels. In addition to formal training, exchange programs, educational academies and summer training schools offer important new ways of enhancing the process.

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