



Report of the Task Force on Pre-graduate Education in Europe of the Education Committee of the European Federation of Neurological Societies.

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| Complete List of Authors: | Lopes Lima, José; Hospital Geral de Santo António, Serviço de Neurologia Mesec, Anton; University Medical Centre, Department of Neurology Wilkinson, I.; Neurologist Wiles, Charles; University Hospital of Wales, Department of Neurology Gilhus, Nils-Eric; University of Bergen, Department of Neurology Zimprich, Franz; Allgemeines Krankenhaus der Stadt Wien Univ., Klink für Neurologie Aleksenko, Yuri; Vitebsk State Medical University Grisold, Wolfgang; European Federation of Neurologic Societies, Chairman - Education Committee |
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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 (a), Anton Mesec (b), I.M.S. Wilkinson(c), Charles M. Wiles (d), Nils-Eric. Gilhus (e), Franz Zimprich (f), Yuri V. Alekseenko (g), Wolfgang Grisold (h)

Composition of the Task Force of the Education Committee on pre – graduate education

a-Departamento de Neurologia – Hospital Geral de Stº António. Porto, Portugal. b-Department of Neurology. University Medical Centre, Ljubjana, Slovenia. c-Cambridge, UK. d-University Hospital of Wales Heath Park, Cardiff, UK. e-Department of Neurology. University of Bergen, Norway. f-Allgemeines Krankenhaus der Stadt Wien. Univ. – Klinik für Neurologie, Wien, Austria. g-Vitebsk State Medical University. Belarus. h-Chairman – Education Committee EFNS

Correspondence: José M. Lopes Lima - Departamento de Neurologia – Hospital Geral de Stº António. 4050 – Porto – Portugal. Phone + 351 91 959 1057. FAX + 351 22 606 5275
Email lopeslima@esoterica.pt

Summary : The demographic evolution and the technologic revolution seen in the last decades, in the developed countries, have dramatically changed the practice of Neurology. However the academic curriculum in many medical schools has not been updated accordingly over many of the European Countries. The Education Committee (EC) of the European Federation of Neurological Societies (EFNS) implemented in 2000 a Task Force on pre-graduate education trying to give guidelines to adequate pre-graduate education to the present status. Based on the results of two questionnaires, the first sent to the delegates of the EFNS and to the delegates of the European Board of Neurology (EBN) and the second answered by the Task Force members themselves, this paper describes the Task Force recommendations aimed to improve Neurology Education in the Medical Schools. These recommendations are also discussed with the analyses of the current bibliography available.

Key words : Neurology ; EFNS Task Force ; Pre-graduate ; Education

Introduction – The Education Committee of the European Federation of Neurological Societies implemented a Task Force to elaborate guidelines for education of Neurology at a pre-graduate level throughout Europe.

Methodology – The Task Force obtained thorough information from a large number of the member countries of the European Federation of Neurological Societies (EFNS). Although we were aware, that there were many difficulties in gathering sufficiently rigorous information through the use of a questionnaire, there was no other practical alternative.

The Task Force decided to use a multiple approach to obtain the needed information.

A short 20 questions questionnaire (annex I), with the most “easy to get” information was sent to the delegates of every country participating in the EFNS Council. The same questionnaire was sent to all the national representatives of the European Board of Neurology (EBN) (1 – 2 for each member country) in order to engage more people from each country. They were asked to have the questionnaire answered using the example that each delegate knew best, either their own Medical School or any other that they knew well.

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4 A second approach was also followed using a much more
5 comprehensive questionnaire (annex II). Each Task Force member himself
6 answered it with the help of the colleagues working in a representative sample
7 of the different Medical Schools within their own country. One country from
8 each of the different cultural regions within Europe (Nordic Countries,
9 Southern Countries, Central Europe, Balkans, Eastern Countries and the
10 British Isles) was chosen. However we are aware that there are many
11 differences between and within countries and between the different
12 universities, which makes it difficult to gain a reliable perspective of the
13 European situation. This dual approach aimed at complementing the
14 information gathered from a spread number of countries, with the first
15 questionnaire, with the depth of information gathered from a few of
16 representative countries by the second questionnaire.

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19 Additionally a Medline search was performed using as key words
20 Neurology and Education from the year 1996 onwards.
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22 23 **Results I – Short questionnaire**

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26 The short questionnaire has 20-questions dealing mainly with the
27 essential information we need to obtain (see annex I).

28 We obtained 25 responses from different countries. As both
29 Luxembourg and Cyprus have no pre-Graduate teaching, a total of 23
30 completed responses were analysed.

31 The exposition of the results will expand the report too much and it will
32 be impossible to publish in paper format. The AA decided simply to present
33 their recommendations based on the analysis done. The full analysis of the
34 results will be available in the EFNS web page.
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37 38 **Results II – Extensive questionnaire**

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40 The extensive questionnaire was a 12 item questionnaire (Annex II)
41 which every member of the Task Force answered, either directly or with the
42 help of a responsible person from the different Medical Schools of their own
43 country.
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45 A sample of each country was chosen using in the smallest countries
46 all or almost all of the available Medical Schools, and in the others a wide
47 spread sample from established Medical Schools.

48 The Task Force received information from six countries Austria,
49 Byelorussia, Norway, Portugal, Slovenia and the United Kingdom.

50 From the UK, information was collected from the different parts of the
51 Country based on information from Edinburgh and Glasgow from Scotland,
52 Belfast from Northern Ireland, Cardiff from Wales and Liverpool and
53 Cambridge from England.
54

55 From Byelorussia, Norway and Portugal we obtained information from
56 four different Medical Schools in each Country (*Gomel, Grodno, Minsk and*
57 *Vitebsk, from Byelorussia, Bergen, Oslo, Tromse and Trondheim from Norway*
58 *and Coimbra, Lisbon and Porto (two different MS), from Portugal). From*
59 *Austria we gathered information from Vienna, Graz and Innsbruck and from*
60 *Slovenia Medical School in Ljubljana.*

Discussion

The demographic evolution and the technologic revolution seen in the last decades in the developed countries since the last world war have dramatically changed the practice of Neurology (Pedley 1999, Olesen 2004).

With the aging of the population the leading neurological diseases that affect patients are those such as stroke, Alzheimer's or Parkinson's diseases, together with headache and epilepsy. For instance stroke was classified in sixth place as a leading cause of mortality world-wide in 1990 and it is estimated that it will be the second leading cause in 2020 in developed countries (Menken 2000). Increasing frequency will probably occur with Alzheimer's or Parkinson's diseases and many other neurological diseases and their consequences especially those that are more prevalent in the elderly. Primary tumours of the central nervous system or metastases from the generalised tumours, trauma, hypertension, diabetes or epilepsy are all diseases that will be more and more frequent among an aging population. Even in some developing countries the panorama is not much different (Ferri de Barros 2000). A recent evaluation of the disability adjusted life years (DALYs) in Europe, allocated 35% of all DALYs to brain diseases (Olesen 2004).

Advances in basic and clinical neuroscience are changing the practice of Neurology. Topics like CNS neurotransmitters (other than GABA, acetylcholine), receptors and mechanisms of receptor actions, ion channels and membrane biophysics, intercellular and intracellular communication, cell death: necrosis and apoptosis, no synaptic cell-cell interaction, realistic computer modelling of neuronal networks and biochemical and molecular genetics were unknown three or four decades ago (Pedley 1999). Many areas of knowledge in Clinical Neurology have been developed and expanded including epidemiology and disease prevention (Feigin 2004), new medical and surgical therapies, quality of life, behavioural and ethical issues and health service research (Pedley 1999, Brooke 2000; Menken 2000).

The experience of the Decade of the Brain and others (Murray 1977; Maloney 1984; Miller 1986; Hopkins 1989; Papapetropoulos 1989) have emphasised that more than 10% of the patients seen by primary care physicians have symptoms suggestive of neurological disease. Having this evolution in mind it seems more than reasonable to ask for a minimum of 10% in time and resources to teach Neurology from the total burden of the Medical Schools. Generally speaking, Neurology is perceived to be more difficult to handle than other disciplines like Cardiology or Gastroenterology, throughout all the medical community including medical students (Schon 2002, Menken 2002). More and better integrated teaching is necessary to overcome these difficulties (Schon 2002, Menken 2002).

General recommendations: The review of the bibliography, concerning the proportion allocated to Neurology at an undergraduate level, gives a clear idea that the amount of time and resources allocated to Neurology is insufficient. It seems that the study of the nervous system and the

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3 musculoskeletal system must be allocated significant and major quotas.
4 (Murray 1977; Maloney 1984; Miller 1986; Hopkins 1989; Papapetropoulos
5 1989; Schon 2002; Menken 2002). The Global Burden of Disease (GBD)
6 study conducted jointly by the WHO, Harvard University and the World Bank
7 provided new measures to evaluate the burden of disease which are now
8 becoming universally accepted (Olesen 2003). The fact that approximately
9 one third of all burden of disease is caused by brain diseases should have an
10 impact on resource allocation to teaching, research, health care and
11 prevention (Olesen 2003). Although other factors are also of importance, it
12 seems reasonable that one third of the teaching curriculum at medical schools
13 should deal with the brain and that one third of life science funding should go
14 to basic and clinical neuroscience (Olesen 2003).

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17 These recommendations were consensually accepted by the Task Force as
18 the minimum accepted for teaching neurology at a pre-graduate level.
19 Objectively they derive from the average and/or the median of the data
20 collected from the different countries.
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22

23 Table I

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26 Other issues like the responsibilities given to students, the existence of
27 elective periods in Neurology for students from other national or foreign
28 Medical Schools and others didn't obtain a homogeneous answer in order to
29 be converted into recommendations.
30

31 These recommendations are broad and do not try to interfere with the
32 different methods used in the different places. Recent experience with
33 problem oriented teaching and small group tutorials (Ohno 1996, Yu 2000,
34 Heckman 2003) and new informatics' means (McLay 2001, Maulden 2003,
35 Thomas 2004) have shown themselves to be rewarding. However there is not,
36 as yet, an approved general acceptance of these methods which can be
37 recommended widely.
38

39 Although the task of neurological teaching should be undertaken by
40 practising neurologists preferably with an academic career some of the
41 teaching may be shared with neurology residents (Gill 2004), other disciplines
42 specialists, including neurosurgeons, psychiatrists, and primary care
43 physicians (Corbet 2000; Resnick 2000; Resnick 2000a) and other specialities
44 (including non medical) who contribute to the multidisciplinary team approach
45 (Grisold 2004).
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47 A recommended curriculum on Neurology for medical students has
48 been proposed in the US (Charles 1999; Gelb 2002, Griggs 2002), and a
49 similar proposition may be considered in the near future for European use by
50 this Task Force.
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Table 1: Recommendations for teaching neurology at a pre-graduate level.

1 – *The total length of the clinical Neurology training period (excluding basic neurosciences) as full time Neurology should have a minimum of five weeks.*

2 – *The total number of teaching hours should be at least 72 hours, as a whole, including demonstrations, sabbaticals, lectures, etc.*

3 – *Each student should examine a minimum of 14 neurological patients, covering the most prevalent pathologies.*

4 – *Neurology should be considered an independent subject area and assessments should be independent from the other disciplines. These should be made through both written and verbal examinations and include a continuous evaluation of the training period.*

5 – *The bulk of the program is in Clinical Neurology but it should include related topics like Neurosurgery, Clinical Neurophysiology, Neuropathology, Neuroradiology, Neurorehabilitation and Child Neurology.*

6 – *Preclinical topics like Neuroanatomy, Neurophysiology, Neurogenetics and Neurochemistry should also be part of a horizontal and vertical integration through the entire course. Clinical Neurological input should be integrated into the planning of the pre-clinical curriculum to aid clinical relevance of the pre-clinical course, preferably with the participation of the Clinical teachers.*

7 – *The average ratio of teachers and students should not exceed one teacher to 21 students.*

8 – *Each student should have learning opportunities to undertake a full clinical neurological history and examination, have knowledge and understanding about the most prevalent neurological pathologies including the most frequent emergency problems and the skills to initiate appropriate investigation and management.*

9 – *Students should be introduced to the team management of patients with chronic neurological disability including rehabilitation.*

10 – *Students should have opportunities to study neurological topics in depth (beyond the core curriculum) to develop their learning skills and, when possible, encouraged to take part in research.*

11 – *There should be a senior, preferably academic, Neurologist with formal responsibility for the student's neurological teaching program.*

12 – *There is generally a positive attitude in medical faculties towards neurology. This is probably due to an awareness of the importance of the brain and the nervous system. Neurology is regarded to be in the forefront regarding clinical medicine and science, in daily work and research. This positive attitude should be used to expand the education in neurology and to convince the hospital administrations, faculties and universities that such an expansion is necessary.*

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For Peer Review

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