

Report on the 9th European Examination for Young Neurologists.

Amsterdam June 23th 2017

Preamble

The European Examination for Young Neurologists is an initiative of the UEMS-Section of Neurology (also European Board of Neurology, EBN) in cooperation with the European Academy of Neurology (EAN). The first Exam was taken in 2009 under the supervision of professor Wolfgang Grisold.

The aim of this EBN-Examination is to add a contribution to setting European standards for the training of medical specialists in the field of neurology.

Until now, there is no legal status for European Board Examinations but in many countries these examinations are mandatory for completion of a specialist training. Especially anesthesiology and ophthalmology take an advanced position in this field.

The UEMS (Union Européenne des Médecins Spécialistes) supports the conferment of the title 'Fellow of the European Board' to those candidates who successfully passed the examination. This is why our successful candidates become fellows of the European Board of Neurology (FEBN). Although the European Board of Neurology is tightly cooperating with the EAN, passing the board exam does *not* allow candidates to bear the title FEAN.

In 2016, the EBN-Exam was accredited by the UEMS-Examination Board (CESMA).

Contents

The EBN-Examination does not principally aim at testing the ability of retrieval of knowledge but rather skills to use knowledge and to apply competencies. Therefore the Examination is a mixture of written tests and oral examinations. The written parts consist of questions to be solved with use of reference sources ('open book', about 70%) and questions to be answered without ('closed book', about 30%). For the preparation of the written Examination we recommend a textbook, specific EAN-guidelines and EAN electronic learning modules (e-Brain).

Questions are provided by EAN-members according to the contents of the EBN-core curriculum and reviewed by an EBN-committee.

For the oral examination the candidate is asked to write an essay on public/global health or on ethics in the field of neurology. Furthermore a scientific critical appraisal on a clinical topic is required.

These work-pieces should be prepared at home and sent in before the examination. The candidate may ask for help from the EBN-staff to achieve these tasks. All submissions are scanned for plagiarism and candidates may be requested to revise their CAT and/or essay.

Exam Program

The whole exam is taken within one day at the site of the EAN-congress. We are looking for alternatives that make it possible to do a written exam on distance in a local center in the future.

Three to four hours are scheduled for the written examination, about 30-45 minutes for the oral examination. Knowledgeable invigilators, to be consulted in case of uncertainty, are available for the written examinations. The oral examinations are taken by two examiners from the EBN simultaneously. Observers from the World Federation of Neurology and the EAN are around during the oral examinations.

By the end of the day, the results are processed and a final mark is calculated. We aim at handing the certificates to the successful candidates at the end of the examination-day.

ICT-support

This year our exam was supported by Orzone, a Swedish professional company specialized in transfer and analysis of exam-data. As this was our first cooperation, we did a double procedure to get acquainted with each other. Apart from some minor starting problems, there were no irregularities. Orzone will make it possible to take our exam in other remote centers and to extend our exam with images and movies. Other facilities can be offered as well.

Data-processing

Data from the written tests are read by a data-analysis program. For each question the percentage of correctly answering candidates corrected for the level of guessing (Pc-value, $P_c = 0$ at the level of guessing) and the discriminating value in the whole test (RIT-value) are calculated. Questions with both a subliminal P-value and RIT-value are eliminated from the test before calculation of the marks: questions with a significantly negative RIT-value are eliminated in case of a $P_c < .85$, those without significant discriminating value in case of a $P_c < .25$, questions with a significant discriminating value only in case of a $P_c < -.25$.

The passing limit for the written examination is set by a pre-test Angoff procedure¹ (about 10 reviewers) but in case of sufficient participants we finally use the post-test Cohen-procedure².

Students performing at the passing limit level get 55 out of 100 points.

The oral examinations are graded with help of standard forms (2/3) and a global impression of the examiner (1/3). Both examiners give their marks independently. The passing limit for oral examinations is set to 55 out of 100 points.

Results of written (weight factor 0.8) and oral examinations (weight factor 0.2) are taken together to a final mark. Candidates with 55 or more points out of the maximum of 100 are considered successful.

¹Livingston SA, Zieky MJ. Passing Scores: A manual for Setting Standards of Performance on Educational and Occupational Tests (1982).

²Cohen-Schotanus J, Van der Vleuten CPM. A standard setting method with the best performing students as point of reference: Practical and affordable. Med teacher 2010; 32: 154-160.

Exam fees

This year we had to increase our exam fees to avoid a negative balance. European candidates had to pay 600 Euros for the whole enterprise, non-European candidates 750 Euros and students working in low-income countries had to pay 350 Euros. Handling fees is now done by Orzone and candidates only could be enrolled after paying their fees. For the future we will find ways to make arrangements with the EAN in order to enhance the participation of young neurologists.

Candidates

In 2017 77 candidates applied for the Examination, finally 62 showed up. These figures were 100 and 72 respectively in 2016. The lower number of candidates may be due to raising our fees and enrollment after payment.

<u>European</u>		<u>Non-European</u>	
Albania	1	Azerbaijan	1
Belgium	2	Bahrain	1
Czech Rep	1	Egypt	7
Denmark	5	India	5
France	2	Iraq	2
Germany	3	Israel	1
Italy	6	Nepal	1
Luxemburg	1	Saudi Arabia	3
Poland	1	Sri Lanka	1
Portugal	2	Sudan	1
Romania	1	Syria	2
Slovakia	1	Tunisia	1
Slovenia	2	Turkey	5
Spain	3		
	---- +		---- +
	31		31

The Exam

The examination board reviewed 160 questions. 100 of these have been taken into the exam: 20 EAN-guidelines closed book, 20 general neurology closed book and 60 general neurology open book.

The distribution of questions in the written examination according to the EBN core curriculum can be found in appendix 1.

All candidates have submitted two contributions for the oral examination (Appendix 2). At the examination, the essay about public health or ethics was introduced with a powerpoint-presentation. Thereafter the topic was discussed in English. French, Turkish, Spanish, Italian or German candidates could get some support from the examiners. The critical appraisal of a topic was discussed without introduction. The examiners filled their scoring-forms (Appendix 3) independently to get to a mark.

Guidelines to be studied

- Mild traumatic brain injury.
European Journal of Neurology 2012, 19: 191–198.
- EFNS guidelines on the Clinical Management of Amyotrophic Lateral Sclerosis (MALS) – revised report of an EFNS task force.
European Journal of Neurology 2012, 19: 360–375.
- EFNS-ENS Guidelines on the diagnosis and management of disorders associated with dementia.
European Journal of Neurology 2012, 19: 1159–1179.
- EFNS-ENS guidelines for the use of PCR technology for the diagnosis of infections of the nervous system.
European Journal of Neurology 2012, 19: 1278–1297.
- European guidelines on management of restless legs syndrome: report of a joint task force by the European Federation of Neurological Societies, the European Neurological Society and the European Sleep Research Society.
European Journal of Neurology 2012, 19: 1385–1396.
- Summary of the recommendations of the EFNS/MDS-ES review on therapeutic management of Parkinson’s disease.
European Journal of Neurology 2013, 20: 5–15.
- EFNS/MDS-ES recommendations for the diagnosis of Parkinson’s disease.
European Journal of Neurology 2013, 20: 16–34.
- EFNS review on the role of muscle biopsy in the investigation of myalgia.
European Journal of Neurology 2013, 20: 997-1005.
- EFNS/ENS Consensus on the diagnosis and management of chronic ataxias in adulthood.
European Journal of Neurology 2014, 21: 552–562.
- EFNS/ENS Guidelines for the treatment of ocular myasthenia.
European Journal of Neurology 2014, 21: 687–693.
- EFNS-ENS/EAN Guideline on concomitant use of cholinesterase inhibitors and memantine in moderate to severe Alzheimer’s disease.
European Journal of Neurology 2015, 22: 889–898
- A consensus review on the development of palliative care for patients with chronic and progressive neurological disease.
European Journal of Neurology 2016; 23: 30-38
- Mechanical thrombectomy in acute ischemic stroke: Consensus statement ESO/EAN.
Int J Stroke 2016; 11: 134-147
- EAN guidelines on central neurostimulation therapy in chronic pain conditions.
European Journal of Neurology 2016; 23: 1489-1499

Results

Four out of 100 questions (4%) have been skipped because of relatively unreliable statistics. The mean difficulty is expressed in mean Pc; the lower Pc, the more difficult the test.

Pc >.80 is easy, Pc between .70 and .80 is moderate, Pc <.70 is difficult.

In the 2017 Exam the mean Pc was .66, which was comparable to values found in the previous Exams.

The internal consistency is calculated with Kuder Richardson 20 (KR20, a variant of Crohnbach's Alpha) providing values between 0 and 1 with .65 being acceptable, .80 being fine.

In the 2017 Exam the KR20 was equal to .86, indicating a high internal consistency and thus high reliability of the whole test.

The passing limit with help of Angoff's procedure was around 46%, taking Cohen's procedure calculating the maximum by the mean of the five highest scores the limit was set to 51%.

2017

Considering the results of the written examination in the light of this passing limit, results are the following:

9.5-10.0	
9.0- 9.5	
8.5- 9.0	XXXXX
8.0- 8.5	XXXX
7.5- 8.0	XXXXXXXXXXXXXXXX
7.0- 7.5	XXXXXXX
6.5- 7.0	XXXXXX
6.0- 6.5	XXXXXXXXXXXXXXXX
5.5- 6.0	XXXXXX

5.0- 5.5	XXX
4.5- 5.0	XX
4.0- 4.5	X
3.5- 4.0	
Written Examination	
6/72 Candidates failed	

Scores in the oral examinations (max. 20) were the following:

20	xxxx
19	XXXXXXXXXX
18	XXXXXXXXXX
17	XXXXXXXX
16	XXXX
15	XXX
14	XXX
13	XXX
12	XXXX
11	XXX

10	XXXXX
9	x
8	x
7	xx
6	
5	
4	
Oral Examination	
9/62 candidates failed	

Taking results from written and oral examinations together 4/62 candidates (4%) failed in the whole exam. This seems a rather low percentage but it should be realized that a selection has been performed during the preparation process. 15 out of 77 candidates decided not to take part of the exam for various, partially unknown, reasons. They may have decided to postpone the exam to a next year to prepare themselves in a better way.

	9 th EBN Exam Amsterdam 2017		8 th EBN Exam Copenhagen 2016		7 th EBN Exam Berlin 2015		6 th EBN Exam Istanbul 2014	
90 – 100								
80 – 90	11	18%	11	14%	3	5%	6	10%
70 – 80	23	37%	30	42%	21	33%	13	21%
60 – 70	13	21%	14	20%	11	17%	24	39%
55 – 60	11	18%	9	13%	20	32%	14	23%

40 – 55	4	6%	5	7%	8	13%	4	7%

All candidates got a complete personal feed-back on their achievements (Appendix 4). Failing candidates will get a new invitation for the next EBN-Exam with a reduced admission fee.

Survey

A survey with open and closed question was taken amongst the candidates. Results can be summarized as follows:

- Satisfaction with the information support before the examination (2017 96%, 2016 90%)
- Questions have been formulated clearly (2017 85%, 2016 70%)
- Questions could be answered within the timeframe given (2017 88%, 2016 75%)
- The open book exam is an essential part (2017 79%, 2016 65%)
- The oral part is essential in the board exam (2017 85%, 2016 80%)
- The examination fee is affordable (2017 48%, 2016 60%)
- Would you like to have a possible to take your exam in your own country? (no: 60%, yes 30%)

Some additional individual comments

- The exam was very tough, it was a challenging, yet rewarding experience.
- For the open book exam, internet search should be allowed because this is the way we stay updated and we use in our daily practice
- I would like questions to be related somewhat more to clinical practice.
- It will be useful and strength the reliability of the exam, to add OSCE stations (short exam, EEG, video)
- Skills on taking history, registering of subjective symptoms, correct objective examination, making a diagnosis should be tested.
- Scholarships for some candidates who can't afford the fee.
- It is wonderful that the examiners are friendly and non-threatening in their approach. They have gone through the essay and CAT very well and aske very good questions. The discussion added to my knowledge. It was a great experience.

Conclusion

The 9th Exam of the European Board of Neurology may be considered as a multi-competency examination with reliable results and a nice outcome in 2017 for 94% of the candidates. The overall satisfaction amongst the candidates was good, but we could do better following some remarks of the candidates that definitely should be taken into account. Anyway, as in previous years, we got a better rating than in the year before.

In the next future we will further professionalize questions and examiner training. Furthermore the exam will be extended with more oral stations and computer-based questions. In spite of more than half of the candidates not being interested to take exams in local centers, we will further explore the possibility of multi-center exams to allow candidates, not being able to show up at the EAN congress (and thus not completing our evaluation forms), to take part in our exam as well.

Please, visit our Website www.uems-neuroboard.org for further information.

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Appendix 1 Distribution of questions according to topics

	1. Anatomy	2. Biology	3. Therapy	4. Physiology	5. Genetics	6. Chemistry	7. Pathology	8. Clinics	9. Imaging	10. Toxicology
1. Oncology	58				55	54		11, 40	41	
2. Trauma		none		33	none	36	none	12	11	
3. CSF				32	none	31	53	39	none	none
4. Infections	none	16	20		none	15		15, 45	18	
5. Immunology	none	23			none			26		32
6. Vascular	1, 22				4		17	2, 35	10, 16	
7. Epilepsy	39	14		40		37		12, 13		
8. Sleep			14				none	46, 8		
9. Headache							none	38		
10. Cognition	30		17	8		6	21	1, 28		
11. Degeneration Extrap	7	21	9, 31	30	9	29	27, 3, 20	25	10	24
11. Degeneration Cerebr	29		none	33	4	none		5		
12. Spinal cord & Brain	57		3		5	2				
13. Polyneuropathy	none			25	19			24	none	22
14. Mononeuropathy	52				44	none			none	none
15. Cranial nerves	34		7	28	42	none		6, 34, 37		
16. Myopathy	none				43	56	18	19, 23	none	
17. Myasthenia	none			51	none			13	none	47
18. Complications Int Me	none			none	none	26	38	36		none
19. Consciousness	35					60	59	27		
20. Autonomous NS			48		49		50		none	

Classification of subjects according to the EBN-training-requirements (core curriculum neurology).
Green numbers: closed book, red numbers: open book

Appendix 2 Topics chosen by the candidates for oral examination.

A Topics on public health or global health.

National approaches and problems

- Parkinson's Disease in Kuwait
- Malnutrition related Neurological Diseases in India
- Organ transplantation in Israel
- Smoking in Turkey
- Egyptian nutritional factors and MS
- Cerebrovascular disease in Tunisia
- How Saudi society look to the epileptic patient?
- German Law on the Reorganization of the Pharmaceutical Market

Prevention

- Measles immunization in Sri Lanka
- Meningococcal prevention
- Program to reduce the cerebrovascular risk factors for prevention of stroke in Nepal
- Prevention of Stroke Mortality by Government Policy

Availability of medical care.

- Disease Modifying Therapies for MS in India
- DMTs cost affect MS Patients care

Insurance

- Financial sustainability of neurodegenerative diseases management and advanced therapies

Disease and Community

- Epilepsy and driving in Ireland
- Epilepsy and driving in Saoedi Arabia 2x
- Epilepsy and car driving 7x
- Headache is a public health hazard
- The impact of lack of insight in patients with mild dementia
- Headache disorders and their personal and societal impact

Therapies

- Opioids in non-malignant pain

Other issues

- Stigmatization in dementia
- Ethical challenges in dementia care spanning the European continent
- Social media in medical research
- Rounds with medical students as temps for doctors
- Why So Much Violence Against Healthcare Providers?
- Administration of medical resources

B Topics on neuro-ethics.

End of life decisions

- Hard decision making in malignant infarct
- Challenges on end-life planning in patients with Duchenne Muscular Dystrophy
- Dying at neurological intensive care unit
- Do Not Resuscitate Code in terminally ill patients in Islamic countries
- A patient with a disabling multiple sclerosis asking for euthanasia
- Patient changing decision on non-invasive ventilation upon progressing ALS
- Quelques problèmes éthiques chez une patiente SLA en phase terminale
- ALS patient asking for continuous artificial ventilation

- Religion and an incurable condition
- Post-anoxic coma in the patient without a will

Ethics of genetics

- Genetic counseling in frontotemporal dementia

Autonomy of the Patient

- Informing about SUDEP?
- Paternalistic approach in Turkey
- Should the truth be told to the patient?
- Autonomy and paternalism
- The sterilization of Women with Intellectual Disabilities

Industrial interference

- Impact of doctors' conflicts of interests
- Gifts to doctors from pharmaceutical companies

Dealing with patients

- Demanding patients asking for investigations
- Parkinson patient wants to have the DBS system removed
- Will I have Parkinson's disease?
- Refusal of discharge
- Placebo in functional neurologic disorders
- Unnecessary investigations in demanding patients
- The doctor and the demanding patient
- Patients demanding non-medically indicated investigations

C Critical appraisals of topics.

Dementia

- Efficacy of Trazodone in treating sleep disturbances in patients with dementia
- Melatonin in Sleep Disorders in Alzheimer's Disease

Epilepsy

- Cannabidiol in patients with treatment-resistant epilepsy
- Ketamine to treat status epilepticus
- Ketogenic diet in Pyruvate Dehydrogenase Deficiency
- Lacosamide to treat focal epilepsy
- Perampamil in the treatment of idiopathic generalized epilepsies 2x
- Levetiracetam in Adults and adolescents with Status Epilepticus
- Vagal nerve stimulation in epilepsy (children)
- IV Lacosamide for status epilepticus
- Lorazepam and Diazepam in status epilepticus
- Short term recurrence risk of first unprovoked seizure

Meningitis / Encephalitis

- Risk of expansion of arbovirus encephalitis

Movement disorders

- Impact of Rivastigmine on falls in Parkinson's disease
- Pregabalin to treat Idiopathic Restless leg syndrome
- Rasagiline for depression in Parkinson's disease?
- Treatment of functional (psychogenic) dystonia
- Amantadine et dyskinesies liées à la lévodopa
- ECT and Parkinson's disease
- Eye movements in Parkinson's disease
- Duodenal biopsy for the diagnosis PD
- Medical marijuana in Parkinson's disease
- The neuroprotective effect of Exenatide in Parkinson's disease
- Cannabinoids for Parkinson's disease

MS and other white matter diseases

- IVIG to prevent increased postpartum relapse rate in multiple sclerosis
- Ocrelizumab in MS (*)
- Oral methylprednisolone in MS
- Rituximab for NMO
- Nataluzimab vs sflingolimod in RRMS
- IVIG for NMO
- Progressive multifocal leukoencephalopathy
- Treatment of Susac's syndrome
- Therapeutic strategies for CLIPPERS

Neuro-immunology

- Rituximab to treat NMDA-Encephalitis
- Is AQP4-IgG channelopathy/NMOSD immunologically transferable?

Neuromuscular Diseases

- Corticosteroids for Ocular Myasthenia
- Role of steroids in GBS
- PE vs IVIG in GBS
- Pembrolizumab and peripheral neuropathy
- Rituximab and myasthenia gravis
- Rituximab in anti-MAG neuropathy
- Mycophenolate for Myasthenia gravis
- Thymectomy in ocular myasthenia gravis.
- Rituximab for CIDP
- Subcutaneous IVIG in CIDP
- Ataluren to Treat Duchenne Muscular Dystrophy

Pain

- Levetiracetam in Migraine prophylaxis
- Lamotrigine and migraine prophylaxis
- DBS in intractable primary trigeminal headache
- Coenzyme Q10 in Migraine prophylaxis
- Dexamethasone in Acute migraine
- Nerve blocks in chronic cluster headache
- Dexamethasone in migraine attack
- Use of ketamine to relieve chronic neuropathic pain
- Statins use in suspected cerebral amyloid angiopathy
- Is Melatonin effective in the treatment of Cluster Headache
- Dural venous sinus stenting in IIH

Traumatology

- Methylphenidate treatment for fatigue after traumatic brain injury

Vascular

- Treatment of malignant cerebellar infarct with suboccipital decompressive craniectomy
- Effect of cerebral microbleeds on cognitive functions in patients with small vessel disease
- Is sonothrombolysis a valuable acute stroke treatment?
- Cilostazol for secondary prevention of stroke
- Cerebellar Transcranial Magnetic Stimulation in Stroke
- Low molecular weight heparin versus unfractionated heparin in cerebral venous sinus thrombosis
- Piracetam to treat post-stroke aphasia

Various

- Inter-rater Variability between Otorhinolaryngologist and Neurologist in Evaluation of Aspiration Detected by Flexible Videonasopharyngoendoscopy

Appendix 3 Scoring forms for oral examination.

Scoring form for the Critical Appraisal of a Topic (CAT)

	Item Score	Maximal Score	Actual score*
1	There is a clear, concise and focused question	1	
2	The question is original and relevant for clinical practice	2	
3	The search strategy is adequate	1	
4	The research outcome is adequate	1	
5	The table with results is correct	2	
6	The comments described are adequate	3	
7	The final conclusion is sound	1	
8	The references are really the current key-references for this problem	1	
9	The answers to the questions on the exam are adequate	2	
10	Handling ignorance during the exam is adequate	1	
	Total (please add up number 1-10)	15	
	Additional Global Score		
	Global impression on a 10 points scale 1=extreme poor - 10 = excellent	10	

Scoring form for the Essay on Public Health / Ethics Presentation

	Item Score	Maximal Score	Actual score*
1	The topic is relevant for clinical practice	1	
2	There is a sound introduction	2	
3	The elaboration of the problem is adequate	2	
4	The own vision of the candidate is clear	1	
5	The presentation is clear and to the point	2	
6	The answers to the questions are adequate	2	
7	Handling ignorance is adequate	1	
8	Time management is adequate	1	
	Total (please add up number 1-8)	12	
	Additional Global Score		
	Global impression on a 10 points scale 1=extreme poor - 10 = excellent	10	

Appendix 4 Feed-back to candidates

Report feedback EBN-Exam Amsterdam 2017, **your number = 006**
For any questions: j.b.m.kuks@umcg.nl 26-07-2017

1. Your achievements related to other candidates

Legenda to the overall table

****ROWS****

Numbers of columns are given in the first row.
Maximum scores to be obtained are given in the second row.
The following rows contain individual scores.

****COLUMNS****

Column 1. Number of candidate

The original written test consisted of a closed book test (guidelines, general) and an open book test (general) with 100 questions, for the final calculation (columns 12 and 14) 4 questions have been skipped because of bad statistics.

Column 2. Score on the closed book test (guidelines), number of questions: 19
Column 3. Idem Z-score
Column 4. Score on the closed book test (general), number of questions: 21
Column 5. Idem Z-score
Column 6. Summation of 2 and 4 (total closed book test), number of questions: 40
Column 7. Idem Z-score
Column 8. Score on the open book test, number of questions 60
Column 9. Idem Z-score
Column 10. Total score, summation of 2, 4, 6, 8
Column 11. Z-score on the total written test

A passing-limit score has been calculated with an Angoff-procedure and a Cohen-procedure, it was set to 45 (of 95 questions).

For reasons of harmonization scores from column 10 have been transformed to marks ranging from 0-100 with a score of 45 (passing limit) giving a mark of 55 etc.

Column 12. Marks for the total written test.

The oral test consisted of an essay and a CAT presentation, each was scored with a standard list and finally the examiners provided a global impression on a 10-point scale. All candidates got two examiners.

Scores from the essay-examination (0-12 standard points weight 2/3, 0-10 global impression points weight 1/3) and the CAT-examination (0-15 standard points weight 2/3, 0-10 global impression points weight 1/3) were added up and transformed to a mark ranging from 0-20.

Column 13. Marks for the oral test

Marks from the written test (weight 4/5, so magnified with 0.8) were added up with the marks from the oral test, resulting in a final combined mark. 55 being the passing limit.

Column 14. Combined final mark.
80-100 = Excellent, 70-79 = Good, 60-69 = Fair, 55-59 = Marginal, <55 = No pass

1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	19		21		40		60		100		100	20	100	(maximal scores)
		z		z		z		z		z				(z-scores)
018	17	1.46	17	1.47	34	1.66	52	1.72	86	1.84	88	19	89	
026	17	1.46	16	1.11	33	1.45	51	1.59	84	1.66	88	18	88	
054	17	1.46	16	1.11	33	1.45	50	1.45	83	1.57	86	19	87	
075	16	1.07	16	1.11	32	1.24	48	1.19	80	1.31	83	19	85	
005	17	1.46	16	1.11	33	1.45	49	1.32	82	1.49	86	16	85	
073	17	1.46	18	1.83	35	1.87	49	1.32	84	1.66	86	17	85	
036	14	0.30	12	-0.32	26	-0.02	48	1.19	74	0.78	78	20	82	
050	14	0.30	18	-1.83	32	1.24	45	0.78	77	1.04	80	18	82	
022	15	0.68	16	1.11	31	1.03	44	0.65	75	0.86	79	18	80	
028	12	-0.47	16	1.11	28	0.40	46	0.92	74	0.78	77	19	80	
030	14	0.30	16	1.11	30	0.82	46	0.92	76	0.95	78	19	80	
051	14	0.30	16	1.11	30	0.82	48	1.19	78	1.13	82	14	80	
029	16	1.07	15	0.76	31	1.03	41	0.25	72	0.60	76	19	79	
027	13	-0.09	12	-0.32	25	-0.23	50	1.45	75	0.86	79	17	79	
004	16	1.07	11	-0.68	27	0.19	45	0.78	72	0.60	76	18	78	
053	13	-0.09	11	-0.68	24	-0.44	50	1.45	74	0.78	76	18	78	
055	16	1.07	15	0.76	31	1.03	44	0.65	75	0.86	78	16	78	
062	13	-0.09	17	1.47	30	0.82	46	0.92	76	0.95	79	15	78	
010	14	0.30	15	0.76	29	0.61	43	0.51	72	0.60	76	17	77	
012	16	1.07	17	1.47	33	1.45	46	0.92	79	1.22	82	12	77	
016	16	1.07	15	0.76	31	1.03	42	0.38	73	0.69	73	19	77	
032	17	1.46	13	0.04	30	0.82	39	-0.02	69	0.33	72	20	77	
047	12	-0.47	16	1.11	28	0.40	43	0.51	71	0.51	75	18	77	
006	16	1.07	13	0.04	29	0.61	41	0.25	70	0.42	74	18	76	<<<
033	11	-0.86	13	0.04	24	-0.44	45	0.78	69	0.33	73	18	76	
048	11	-0.86	14	0.40	25	-0.23	45	0.78	70	0.42	74	17	76	
044	15	0.68	12	-0.32	27	0.19	44	0.65	71	0.51	74	17	75	
049	16	1.07	14	0.40	30	0.82	43	0.51	73	0.69	77	14	75	
067	13	-0.09	13	0.04	26	-0.02	45	0.78	71	0.51	75	13	73	
064	12	-0.47	15	0.76	27	0.19	39	-0.02	66	0.06	69	17	72	
003	14	0.30	12	-0.32	26	-0.02	35	-0.56	61	-0.38	64	20	71	
021	13	-0.09	11	-0.68	24	-0.44	40	0.11	64	-0.11	66	18	71	
068	13	-0.09	14	0.40	27	0.19	37	-0.29	64	-0.11	67	17	70	
065	11	-0.86	14	0.40	25	-0.23	37	-0.29	62	-0.29	66	18	70	
025	15	0.68	9	-1.39	24	-0.44	36	-0.42	60	-0.47	64	19	69	
040	16	1.07	14	0.40	30	0.82	39	-0.02	69	0.33	73	11	69	
020	14	0.30	12	-0.32	26	-0.02	32	-0.96	58	-0.65	62	19	68	
031	11	-0.86	13	0.04	24	-0.44	40	0.11	64	-0.11	68	15	68	
045	11	-0.86	11	-0.68	22	-0.87	38	-0.16	60	-0.47	64	17	68	
015	9	-1.63	12	-0.32	21	-1.08	39	-0.02	60	-0.47	64	16	67	
039	12	-0.47	9	-1.39	21	-1.08	38	-0.16	59	-0.56	62	16	65	
074	13	-0.09	11	-0.68	24	-0.44	28	-1.50	52	-1.18	56	20	64	
057	16	1.07	16	1.11	32	1.24	30	-1.23	62	-0.29	64	13	64	
001	15	0.68	10	-1.03	25	-0.23	35	-0.56	60	-0.47	64	13	63	
007	11	-0.86	12	-0.32	23	-0.66	35	-0.56	58	-0.65	62	14	63	
042	12	-0.47	13	0.04	25	-0.23	34	-0.69	59	-0.56	63	12	62	
035	9	-1.63	11	-0.68	20	-1.29	37	-0.29	57	-0.74	61	12	61	
069	12	-0.47	14	0.40	26	-0.02	36	-0.42	62	-0.29	66	7	59	
009	12	-0.47	12	-0.32	24	-0.44	28	-1.50	52	-1.18	55	15	59	
008	10	-1.24	7	-2.11	17	-1.92	29	-1.36	46	-1.71	50	19	58	
014	13	-0.09	12	-0.32	25	-0.23	33	-0.83	58	-0.65	62	9	58	
017	12	-0.47	8	-1.75	20	-1.29	38	-0.16	58	-0.65	61	10	58	
034	9	-1.63	11	-0.68	20	-1.29	36	-0.42	56	-0.82	60	11	58	
043	13	-0.09	9	-1.39	22	-0.87	31	-1.09	53	-1.09	57	12	57	
070	15	0.68	12	-0.32	27	0.19	28	-1.50	55	-0.91	58	10	56	
002	9	-1.63	11	-0.68	20	-1.29	26	-1.76	46	-1.71	49	18	56	
059	11	-0.86	11	-0.68	22	-0.87	30	-1.23	52	-1.18	56	11	56	
077	11	-0.86	12	-0.32	23	-0.66	31	-1.09	54	-1.00	56	10	55	
019	15	0.68	9	-1.39	24	-0.44	26	-1.76	50	-1.36	53	10	51	
024	9	-1.63	8	-1.75	17	-1.92	31	-1.09	48	-1.53	51	8	48	
023	6	-2.79	9	-1.39	15	-2.34	26	-1.76	41	-2.16	45	10	46	
071	8	-2.02	6	-2.46	14	-2.55	22	-2.30	36	-2.60	40	7	39	

For Example no. 036 did rather well on the guideline questions (14 out of 19 correct, z-score 0.30 i.e. above the mean) but below the mean on the other closed book questions (12 out of 21 correct, z-score -0.32). The total achievement in the closed book section was slightly below the mean with 26 out of 40 correct and a z-score of -0.02. He (or she) was good in the open book test with 48 out of 60 correct (z-score 1.19, i.e. far above the mean) with a total score of 74 out of 100 (z-score 0.78 being nicely above the mean). As 4 questions have been skipped, his mark on the written test was not 74 but 78 (100 being maximal for 96 correct answers). His (or her) achievement on the oral test was maximal with 20 point. Weight factors written: oral is 4:1 -> $4/5 \cdot 78 + 20 = 82$

2. Your personal detailed results on the orals and the written tests.

ORAL EXAM

These are your scores given for the several items from the scoring list as provided by your examiners 1 and 2, the maximum score obtainable is given in the utmost right column.

Oral Examination CAT	Ex 1	Ex 2	Maximum
C01. There is a clear concise and focused question -----	1.00	1.00	1.00
C02. The question is original and relevant for clinical practice -	1.00	2.00	2.00
C03. The search strategy is adequate -----	1.00	1.00	1.00
C04. The table with results is correct -----	1.00	1.00	1.00
C05. The comments described are adequate -----	1.00	1.00	2.00
C06. The comments described are adequate -----	3.00	2.00	3.00
C07. The final conclusion is sound -----	1.00	1.00	1.00
C08. The references are really the current key-references ----	1.00	1.00	1.00
C09. The answers to the questions on the exam are adequate	2.00	2.00	2.00
C10. Handling ignorance during the exam is adequate -----	1.00	1.00	1.00
C99. Global impresion CAT on a 10 points scale -----	8	8	10

Oral Examination Essay	Ex 1	Ex 2	Maximum
E01. The topic is relavant for clinical practice -----	1.00	1.00	1.00
E02. There is a sound introduction -----	2.00	2.00	2.00
E03. The elaboration of the problem is adequate -----	2.00	1.00	2.00
E04. The own vision of the candidate is clear -----	1.00	1.00	1.00
E05. The presentations is clear and to the point -----	2.00	2.00	2.00
E06. The answers tot the questions are adequate -----	2.00	2.00	2.00
E07. Handling ignorance is adequate -----	1.00	1.00	1.00
E08. Time management is adequate -----	1.00	1.00	1.00
E99. Global impresion Essay on a 10 points scale -----	9	8	10

Examiner 1 (and comments): Prof Ozturk

Examiner 2 (and comments): Prof Cras

WRITTEN EXAM

Your numbers of right (+) and wrong (-) answers per discipline

Cognition	6+ 3-	66% correct answers
Spinal cord	4+ 0-	100% correct answers
Cerebellar	2+ 2-	50% correct answers
Extrapyramidal	11+ 2-	84% correct answers
Traumatology	3+ 1-	75% correct answers
Myasthenia	2+ 2-	50% correct answers
Sleep	2+ 1-	66% correct answers
Infections	7+ 0-	100% correct answers
Vascular	4+ 4-	50% correct answers
Myopathy	3+ 1-	75% correct answers
Polyneuropathy	3+ 0-	100% correct answers
Immunology	2+ 1-	66% correct answers
Internal Medicine	2+ 1-	66% correct answers
Cranial Nerves	5+ 2-	71% correct answers
CSF	2+ 1-	66% correct answers
Consciousness	2+ 2-	50% correct answers
Epilepsy	2+ 3-	40% correct answers
Oncology	3+ 3-	50% correct answers
Headache	1+ 0-	100% correct answers
Mononeuropathy	2+ 0-	100% correct answers
Autonomous	2+ 1-	66% correct answers

Your numbers of right (+) and wrong (-) answers per category

Clinics	20+ 8-	71% correct answers
Chemistry	8+ 2-	80% correct answers
Therapy	9+ 0-	100% correct answers
Genetics	9+ 1-	90% correct answers
Anatomy	5+ 7-	41% correct answers
Physiology	4+ 5-	44% correct answers
Imaging	5+ 1-	83% correct answers
Biology	2+ 1-	66% correct answers
Pathology	5+ 4-	55% correct answers
Toxicology	3+ 1-	75% correct answers

Appendix 5 Evaluation for Candidates of the 2017 EBN Exam (for EBN-delegates only)

1 = Do not agree – 5 = Fully agree.

1. How did you learn first about the examination or who recommended the examination to you?

- | | | |
|-----------------------|-----------------------------|----------------|
| <input type="radio"/> | The EBN Flyer | n = 0 |
| <input type="radio"/> | Previous candidates | n = 11 |
| <input type="radio"/> | The head of your Department | n = 3 |
| <input type="radio"/> | Other colleagues | n = 16 |
| <input type="radio"/> | The EBN-Website | n = 14 |
| <input type="radio"/> | EAN-Pages | n = 6 |
| <input type="radio"/> | National Society | n = 13 |
| <input type="radio"/> | Otherwise..... | Europ J Neurol |

2. What was your motivation for taking the exam? (You may take several answers)

- | | | |
|-----------------------|--|--------|
| <input type="radio"/> | To test your skills and knowledge | n = 36 |
| <input type="radio"/> | To get a certificate | n = 21 |
| <input type="radio"/> | To be a fellow of the European Board of Neurology | n = 27 |
| <input type="radio"/> | To increase possibilities for migrating to another country | n = 6 |
| <input type="radio"/> | Other motivations: | |
| | to get a better job in the country | |
| | because the department payed | |
| | to see whether this could be our national exam | |
| | to increase knowledge while preparing | |

3. Are you satisfied with the information given before the exam and with the help by e-mail?

0	1	1	13	39
1	2	3	4	5

4. Did you find the written questions clearly formulated?

0	4	4	22	24
1	2	3	4	5

5. Have you been able to answer the MC-questions properly within the timeframe given?

0	1	6	21	26
1	2	3	4	5

6. Are you satisfied with the instructions and help during the exam?

0	0	3	10	41
1	2	3	4	5

7. What is your opinion on having an open book exam?

Do you appreciate this as a realistic part of a board exam?

1	5	7	13	28
1	2	3	4	5

8. What is your opinion on the CAT and essay assignments?
Do you appreciate these as a realistic part of a board exam?

0	0	10	16	22
1	2	3	4	5

9. Have you been satisfied with the oral examination?
Do you appreciate this as a realistic part of a board exam?

0	1	6	12	29
1	2	3	4	5

10. Did you find the examination fee affordable?

5	5	15	7	16
1	2	3	4	5

11. Have you taken another national or international postgraduate neurology exam?

- The Royal College Exam (London) N = 9
- A national Exam in your own country N = 13
- Another international exam, namely American board of neurology, postgraduate diploma UCL

12. Do you feel a European board exam useful while having other postgraduate exams available as well?

0	1	5	15	27
1	2	3	4	5

13. How did you appreciate the ICT (information and communications technology) system for the written exam?

0	1	4	13	30
1	2	3	4	5

14. Would you prefer a two step exam with a written exam in a center within your region and subsequently a practical oral exam at the site of the EAN-congress above the current system with all exams on one day at the EAN-congress?

24	5	5	5	9
1	2	3	4	5

15. Do you have any further comments or recommendations for improvement of the examination process?

Further Comments

- Specialist don't need open book: my brain = my book. I did not open any book.
- For the open book exam, internet search should be allowed because this is the way we stay updated and we use in our daily practice
- In daily practice, I'm not used to use a book but electronic versions of the guidelines. As we all have a laptop, the exam could evolve to allow such use.

- The test was too much orientated on rare diseases
- There were no questions from e-Brain's question bank or from the preparatory exam on your website.
- It will be useful and strength the reliability of the exam, to add OSCE stations (short exam, EEG, video)
- The exam was very tough
- A diagnosis is not 0 or 1. It should be possible to give several answers by classifying (diagnosis most probable, 2nd option)
- It was a challenging, yet rewarding experience. I would like questions to be related more to clinical practice.
- Avoid 2 questions with same answer-sets after each other (this is usual in EMQs!)
- Questions about neurovascular and inflammatory problems were underrepresented.
- Skills on taking history, registering of subjective symptoms, correct objective examination, making a diagnosis should be tested.

- Please give a warning 5 minutes before a session is closed.
- Sample questions did not work in the beginning
- User-friendly Orzone system
- There were problems with the system in the beginning

- Exam room too cold.
- The catering was well-done. Testing facilities were suboptimal: desk position not amenable, temperature too low, phones should be turned off - there were multiple phone calls – cheating is possible with phones turned on
- Maybe you can shorten the day-schedule, because there is a lot of waiting.
- It takes really for a long time (however, this candidate voted against double step exam)
- Written exam could be finished in single session.
- Only one type exam: either written or computer-based.
- As we come from other region, full schedule of exam aday-2 before exam, wat needed to bring.

- The fee is affordable, but in my opinion pretty high. Especially because of the fact, that the exam is voluntary and has no legitimation for working approval.
- Scholarships for some candidates who can't afford the fee.

Conclusions

1. The EBN-flyer did not work?
2. Half of the students want to be a fellow.
3. The redaction of questions needs attention.
4. There are mixed feelings about the OB Exam
5. CATs are a moderate success
6. Complaints about the fee
7. More than 15% took the RCP-exam before
8. Apart from starting problems the Orzone-ICT was well-received
9. Most candidates would not prefer a 2-step exam
10. Questions were too far from neurological practice, the curriculum was not well-covered.

Appendix 6 Evaluation for Candidates of the 2017 ORAL EBN Exam (delegates only)

1 = Do not agree – 5 = Fully agree.

Please indicate your group number at the oral exam:

1. Did you feel, the examiners have read your CAT carefully?

	6	44		
1	2	3	4	5

2. Did you feel, the examiners have read your Essay carefully?

	7	43		
1	2	3	4	5

3. Did you find their questions formulated clearly?

	13	37		
1	2	3	4	5

4. Did you get the opportunity to present your work adequately?

	9	41		
1	2	3	4	5

5. Did the discussion of your CAT make sense?

	2	8	40	
1	2	3	4	5

6. Did the discussion of your Essay make sense?

	1	4	45	
1	2	3	4	5

7. Do you feel the timeframe of the session is adequate?

	1	6	44	
1	2	3	4	5

8. Could you give a note to the first examiner? (0 = bad, 5 = excellent)

	4	46		
1	2	3	4	5

9. Could you give a note to the second examiner? (0 = bad, 5 = excellent)

	1	3	46	
1	2	3	4	5

- Thanks for your great work
- Availability of projection could be better
- There was an excellent discussion with experienced examiners (Edan, Llewelyn)
- It is wonderful that the examiners are friendly and non-threatening in their approach. They have gone through the essay and CAT very well and asked very good questions. The discussion added to my knowledge. It was a great experience (Grisold, Notting)
- Thanks for the proper organization
- The oral examinations were precise and questions asked were to the point with salient features. The examiners made me feel comfortable and hence I was able to perform to the best (Perju Dumbrava, Fredrikson)
- Excellent, thank you.
- Very nice and encouraging examiners (Perju Dumbrava, Fredrikson)
- Very nice and encouraging examiners (Meola, Molto)
- Thanks for your efforts