Report on the 11th European Board Exam for Young Neurologists.

Oslo June 28th 2019

Preamble

The European Board Exam 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-Exam is to add a contribution to setting European standards for the training of medical specialists in the field of neurology.
Until now, there is still no legal status for European Board Exams but in many countries these exams 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-Examin does not principally aim at testing the ability of retrieval of knowledge but rather skills to use knowledge and to apply competencies. Therefore the Exam 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 (European training requirements) 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. This year we added a third part: a clinical case presentation. The essay and the CAT 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. This was the case in about 25% of the candidates because not providing original work and just copying texts from the internet.

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, 45 minutes for the oral examinations. 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 with different couples for the 3 parts, so every candidates sees 6 examiners in total. 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. Afterward, all candidates get written feedback to their achievements (see appendix 4).

ICT-support

Until 2019 our exam was supported by Orzone, a Swedish professional company specialized in transfer and analysis of exam-data. Due to circumstances and differences with Orzone we decided to take the 2019 Exam back in our own hands. For next year a new policy is foreseen.

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, Pc = 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 Pc<.85, those without significant discriminating value in case of a Pc<.0, questions with a significant discriminating value only in case of a Pc<-.50.

The passing limit for the written examination is set by a pre-test Angoff procedure[1] (about 10 reviewers) but in case of sufficient participants we finally use the post-test Cohen-procedure[2]. 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). Examiners give their marks independently. The passing limit for oral examinations is set to 55 out of 100 points.

Results of written (weight factor 0.7) and oral examinations (weight factor 0.3) are taken together to a final mark. Candidates with 55 or more points out of the maximum of 100 are considered successful.

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

European candidates have 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. We made arrangements with the EAN in order to enhance the participation of their young members.

Candidates

In 2019 115 candidates applied for the Examination, finally 95 showed up at the exam.

European			Non-European		
Austria	1		Bahrein	1	
Belgium	16		Egypt	4	(-3)
Denmark	4		India	9	
France	7		Iraq	3	(-3)
Germany	6	(-1)	Jordan	1	
Greece	1		Kuwait	1	
Ireland	1		Libanon	1	
Italy	23	(-4)	Malaysia	1	
Lithuania	1		Oman	1	(-1)
Portugal	3		Qatar	1	
Romania	2	(-1)	Saudi Arabia	9	(-2)
Russia	1		United States	2	(-1)
Slovenia	1				
Spain	1				
Sweden	1				
Turkey	7	(-1)			
United Kingdom	5	(-2)			
	-------	+		-------	+
	81			34	

*Numbers of candidates canceled or not showing up

The Written Exam

The examination board reviewed 160 questions for a previous exam. 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.

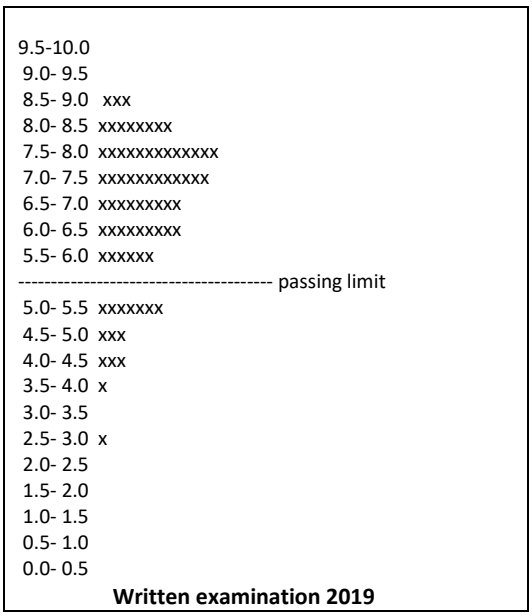
The distribution of questions in the written examination according to the EBN core curriculum can be found in appendix 1.

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 (ALS) – 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 patientswith 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
- ESO guideline on cerebral venous thrombosis.
  European Journal of Neurology 2017; 2: 195-221
- EAN consensus review on tick-boren encephalitis. European Journal of Neurology 2017; 24: 1214-e61.
- ECTRIMS/EAN guideline on pharmacological treatment of multiple sclerosis. European Journal ofNeurology 2018,25:215–237

Results
Five out of 100 questions (5%) were 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 2019 Exam the mean Pc was .71.
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 2019 Exam the KR20 was equal to .89, 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 50%.

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

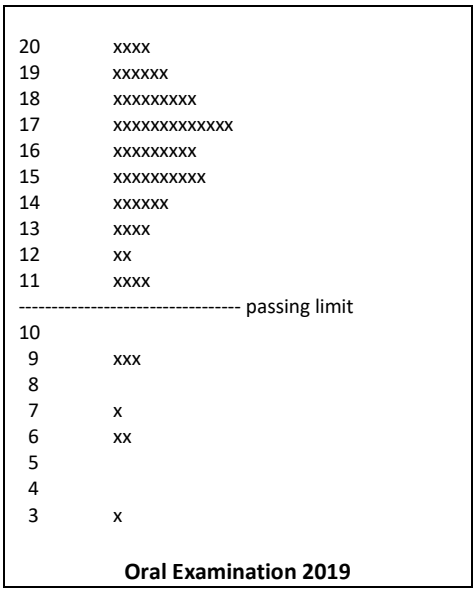


Step 1 Exam in Paris

Thanks to the effort of the Societé Francaise de Neurology we were able to offer a written exam on location in Paris Februari 1st 2019. Six candidates participated. Five of them were successful. Two of these came up in Oslo to take the oral exam and becoming a fellow of the European Board of Neurology. In the future we will continue this policy to enable candidates to choose between a two step Board Exam or an all-in-one-day exam at the site of the congress.

The Oral Exam

All candidates submitted two contributions for the oral examination (Appendix 2) and went up with a clinical case. At the examination, the essay about public health or ethics and the clinical case were 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.
Every candidate faced six independent examiners.



Final results

Taking results from written and oral examinations together 11/95 candidates (11%) 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. 20 out of 115 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 in order to prepare themselves in a better way.
Please see appendix 7 for statistics over the last 5 years.

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. See appendix 5.

Results can be summarized as follows:

- Satisfaction with support before examination **82%** (2018 86%, 2017 96%, 2016 90%)
- Questions have been formulated clearly **72%** (2018 88%, 2017 85%, 2016 70%)
- Questions could be answered within timeframe given **83%** (2018 88%, 2017 88%, 2016 75%)
- The open book exam is an essential part **82%** (2018 86%, 2017 79%, 2016 65%)
- The oral part is useful in the board exam **79%** (2018 91%, 2017 85%, 2016 80%)
- The examination fee is affordable **60%** (2018 55%, 2017 48%, 2016 60%)

Conclusion
The 11th Exam of the European Board of Neurology may be considered as a multi-competency examination with reliable results and a favorable outcome in 2019 for 89% 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.
In the next future we will further professionalize questions and examiner training. Furthermore the exam probably 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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Professor of Neurology and Medical Education
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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 Cereb	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 and ethics.

Car driving

- A car driver with epilepsy forbidding you to make his diagnosis known.
- Alzheimer's disease and driving
- Dealing with a car driver with epilepsy
- Driving and epilepsy: how to deal with mandatory reporting in Italy.
- Driving license for epileptic patients

Dementia

- Does dementia diagnostic work-up in the Danish private sector contribute to the public dementia health care?
- Dementia: a growing challenge in Germany.
- Dementia: an epidemic of the 21st century?
- Dementia in India – a silent epidemic.

Diseases in a national system

- Malnutrition leading to neurological problems
- Burnout syndrome in Russia
- Obesity and Neurological disorders in the Kingdom of Saudi Arabia

Doctor patient interactions

- Breaking bad news: truth- telling to a young female patient about MS
- Relationship between Iraqi doctors and Iraqi patients
- The "empowered patient": a new perspective on medical decision making
- Advertising to attract your patients.
- How to deal with a demanding patient with functional disorder asking for investigations your feel unnessary?

End of life decisions

- End of life decisions in Alzheimer
- Euthanasia in advanced dementia. Should Belgian legislation changes?
- Euthanasia and dementia.
- Euthanasia and dementia.
- Written negative medical wills in acute situations.
- Tracheostomy assisted ventilation in amyotrophic lateral sclerosis – ethical challenges in the respect for patient autonomy.
- An end-stage ALS-patient asking for continuous artificial ventilation
- Consulting ALS Patients Regarding Continued Assisted Ventilation
- How to deal with a patient with ALS and depression asking for active euthanasia in the Netherlands
- Tracheostomy and invasive mechanical ventilation in amyotrophic lateral sclerosis patients: the need for a timely end-of-life discussion
- Autonomy and self-determination in ALS
- Die hard: the case of dysthanasia
- Death by Neurological Criteria: variability of definitions, open questions and future challenges.
- Hydration at the end of life as a part of palliative care
- Cardiopulmonary resuscitation (CPR): ethical issues surrounding life-and-death decisions

Epilepsy

- Bridging the treatment gap in epilepsy in a developing country
- Women with Epilepsy-Problems faced
- Misunderstanding of epilepsy in Saudi Arabia community "eye evil"
- Non-Adherence to antiepileptic medications in India
- Valproic Acid used in Women of child bearing age with Epilepsy
- A car Driver with Epilepsy, forbidding you to make known his diagnosis.
- Epilepsy in Cameroon: the need for a community based participative approach.

Genetics

- Apolipoprotein E genetic testing: ethical implications of genetic susceptibility testing.

- Pre-symptomatic/prenatal genetic counselling in a pregnant patient with familial history of Huntington's disease
- Drooping eye lids as a family trait
- Is pre-symptomatic genetic testing in Huntington's disease beneficial?
- The pre-symptomatic diagnosis of Huntington disease: the right to know and not to know
- Incidental findings in the era of Next Generation Sequencing
- Implications of presymptomatic genetic testing in Huntington's disease.

Infectious diseases

- Epidemiology of tick- borne encephalitis in Germany. A vaccine preventable disease.
- Meningococcal Vaccination in Makkah
- Hepatitis B vaccination for patients with multiple sclerosis in Belgium.
  Central nervous system tuberculosis in India and new RNTCP guidelines
- Vaccine Rejection-Where do we stand?
- Vaccination Refusal in Turkey; Increasing Day by Day
- Influenza vaccination in the United Kingdom: why we need better vaccines?
- Measles Virus and Associated Central Nervous System Sequelae
- The burden of Neurocysticercosis and epilepsy in low and middle income countries
- The vaccine scare - impact of internet and social media
- Italy's vaccination program for infective neurological disease: current situation and future prospects.
- Botulism prevention and anti-toxin therapy in Turkey
- Measles vaccination in Turkey

National health care systems

- The health care system in Slovenia. Should it be changed?
- Hospital accreditation in Flanders: a critical reflection
- The insurance system in Germany influencing possibilities of medical care in single patients.
- Health Insurance system in India: is this the time for a complete overhaul?
- Plight of self pay patients in US healthcare system
- Consolidation of Neurology services in primary health care in India
- Time to plan for health worker gap crisis in Italy. A focus on emergency and acute neurological settings..
- Medical misinformation for Neurological Diseases in Turkey
- What is the difference between private and public health care in Iraq.. Should it be changed?
- The difference between private and public health care in Jordan.

Stroke care

- Do stroke units play a role in lowering the mortality in subsaharian African countries?
- Organization of stroke centers to optimize acute stroke treatment: implementation of recently updated guidelines in clinical practice.
- Stroke awareness in Saudi Arabia
- Stroke emergency service in Egypt, Golden time is lost.
- Stroke rehabilitation in patients with dementia: a discussion on costs in Sweden.
- The challenges for tackling stroke in Romania

Who should be treated?

- Mechanical thrombectomy in acute ischemic stroke in the elderly: should age matter?
- Deep brain stimulation. An ethical issue?
- Alzheimer's disease in Italy. After several therapeutic failures, is there still hope for an improvement in quality of life?
- Neuro-enhancement: lights and shadows of the last frontier of non-invasive brain stimulation
- The fleeting limit between what can and cannot be done
- The access to expensive orphan medications: Nusinersen for SMA types III and IV
- A reflexion on delisting of anti-Alzheimer drugs in France.

Workplace issues

- How do neurologists overcome burnout syndrome ?
- The credibility of doctors who smoke on advising patients not to smoke for health reasons
- Very Important Person Syndrome (VIP Syndrome) - A Very Important Problem.
- Breaching medical confidentiality to protect others.
- Mentorship malpractice
- What to do when a drug representative brings a gift?

- How to deal with a colleague who is misbehaving in his field of expertise?

Various

- The abuse of Pregabalin
- Privatisation of medical knowledge: to whose benefit?
- Blood transfusion in a Jehova's witness
- Refusing lumbar puncture procedure in patients with neurological disease in Saudi Arabia
- A protocol for lumbar puncture.
- Telemedicine in Parkinson's Disease
- Could a clinical scale decide for a Physician?
- Artifical intelligence and medical ethics: unresolved issues.
- Management of chronic neurological diseases in undocumented immigrants.

B Critical appraisals of topics.

Dementia

- Rationale and outcomes of dementia drugs discontinuation in patients with advanced Alzheimer's disease
- Huperzine A for Alzheimer's disease
- Cerebrospinal fluid level of neurofilament light as a biomarker for differentiating PSP from FTD
- Obstructive sleep apnoe in patients with Down syndrome and Alzheimer dementia
- Does negative 14-3-3 rule out Creutzfeld Jacob Disease=

Epilepsy

- Folate supplementation in patients taking anti-epileptic drugs
- Discontinuation of antiepileptics in Juvenile myoclonic epilepsy
- Vagal nerve stimulation in medically refractory epilepsies
- Serum prolactin measurements to differentiate true epileptic seizures from psychogenic non epileptic seizures.
- Effect of CPAP on seizures control in patients with medically refractory epilepsy and co-morbid OSA
- Intravenous Immunoglobulin (IVIG) to treat refractory status epilepticus in adult patients
- Lacosamide to treat absence status epilepticus
- Lacosamide as first add-on in partial epilepsy
- Perampanel efficacy and tolerability in patient with focal seizure
- Perampanel in refractory status epilepticus
- Perampanel in progressive myoclonus epilepsies

Headache

- Melatonin in migraine prophylaxis
- Postdural puncture headache: does bed rest after a lumbar puncture matter?
- Botulin toxin in pregnant women for headache prevention
- Acetazolamide in idiopathic intracranial hypertension
- Botulinum Toxin to Treat Intractable Trigeminal Neuralgia
- Use of non-invasive vagus nerve stimulation in cluster headache.
- Triptans in cluster headache attacks
- Anti-CGRPs in Cluster Headache
- Melatonin to treat Cluster Headache

Inflammatory diseases

- Medical cannabioids as additional the treatment of bacterial meningitis
- Aspirin for reduction of cerebral infarction as a complication of TBC meningitis
- Serum procalcitonin in bacterial meningitis
- Effectiveness of Cidofovir in treating Natalizumab-associated Progressive Multifocal Leukoencephalopathy

Movement disorders

- Riluzole in Parkinson's disease and Parkinson-plus disorders?
- Riluzole in the treatment of chronic ataxia
- Deep brain stimulation for the treatment of cerebellar ataxia
- Deep brain stimulation in fragile X-associated tremor/ataxia syndrome
- Deep brain stimulation and long-term mortality in Parkinson's disease

- Evidence for Opicapone reducing 'off' time in Parkinson's disease
- Efficacy of levodopa/carbidopa intestinal infusion in non-motor symptoms in Parkinson's disease
- Magnetic resonance guided focussed ultrasound thalatomy for Parkinson's disease patients.
- Elevated Serum Homocysteine and Parkinson disease
- Botulin toxin to treat musician's dystonia

Multiple sclerosis

- Maraviroc for treating PML-IRIS in MS patients
- Efficacy of simvastatin in patients with multiple sclerosis
- Stem Cell therapy for my MS
- High dose biotin as a treatment in progressive multiple sclerosis
- Autologous hematopoietic stem cell transplantation (aHSCT) for the treatment of multiple sclerosis.
- Defining the risk of malignancy in patients affected by multiple sclerosis and treated with Ocrelizumab.
- Preventing infusion-related reactions with ocrelizumab.
- Self-Assessment Questionnaire in Multiple Sclerosis
- Intravenous or oral corticosteroids for optic neuritis
- Use of Rituximab in the treatment of neuromyelitis optica spectrum disorders.
- IVIG To Treat Neuromyelitis Optica
- Tocilizumab for neuromyelitis optica
- Tocilizumab and neuromyelitis optica

Neuroimmunology

- Effectiveness of rituximab in stiff person syndrome
- Maintenance therapy in primary angiitis of the central nervous system
- Efficacy of Immunotherapy in anti-IgLON5 autoimmunity
- Methylprednisolone to treat NMDA encephalitis

Neuromuscular

- Combination of intravenous immunoglobulins and plasmapheresis in Guillain Barré syndrome.
- Rituximab for treatment of chronic inflammatory demyelinating polyradiculoneuropathy
- Statins in treating Guillain Barre syndrome.
- Rituximab treatment in Chronic Inflammatory Demyelinating Polyradiculoneuropathy (CIDP)
- First line therapies for CIDP
- What's the evidence about efficacy of Rituximab for the treatment of CIDP?
- Rituximab to treat anti-myelin-associated glycoprotein (MAG) polyneuropathy
- The evidence for vitamin B in polyneuropathy
- From cornea to neuropathy
- Lacosamide in neuropathic pain
- What is the evidence for the efficacy of nusinersen for spinal muscular atrophy?
- Nusinersen to Treat Spinal Muscular Atrophy
- NT5c1A autoantibodies for the diagnosis of sporadic Inclusion Body Myositis
- Efficacy of Rituximab for the treatment of Immune-Mediated Necrotizing Myopathy
- Edaravone in the treatment of Amyotrophic lateral sclerosis
- Rituximab to treat acetylcholine receptor autoantibody-positive Myasthenia Gravis
- Rituximab to treat Ab AChR myasthenia gravis
- Eculizumab and Myasthenia Gravis

Oncology

- Lomustine plus temozolomide in methylated MGMT promoter, newly diagnosed glioblastoma.
- Temozolomide in recurrent ependymoma of the adult.

Stroke

- Computed tomography perfusion in detecting seizures mimicking acute stroke.
- Edaravon in acute ischemic stroke
- NOACs in preventing stroke in patients with atrial fibrillation
- Aspirin or anticoagulation in cryptic stroke with patent foramen ovale
- Novel oral anticoagulants for stroke prevention in patients with dementia and non-valvular atrial fibrillation
- General anesthesia and clinical outcome after thrombectomy.
- Intravenous thrombolysis for acute ischemic stroke in unknown acute aortic dissection

- Tenecteplase for the treatment of acute ischemic stroke.
- Extending the Thrombolytic Time Window with alteplase more than 4.5
- Intravenous thrombolysis in management of unknown time onset stroke
- Endovascular thrombectomy for acute ischemic stroke in the elderly
- Sonothrombolysis for patients with acute ischemic stroke
- Does mechanical thrombectomy alone better than bridging therapy mechanical thrombectomy and thrombolysis in large vessels occlusion stroke?
- Hypothermia as adjunctive therapy to thrombolysis or intravascular thrombectomy in acute ischemic stroke.
- Closure of left atrial appendage for prevention of thromboembolic events in patients with both CAA and AF.
- Role of transcranial magnetic stimulation in the management of poststroke dysphagia
- rTMS in the treatment of post-stroke aphasia.
- The role of fluoxetine on motor recovery in acute ischemic stroke patients
- Yoga and Stroke Rehabilitation
- A conservative approach to pituitary apoplexy

Various

- Music therapy to treat coma
- First line therapies for Rapid Eye movement sleep behaviour disorder

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	

Scoring form for the Clinical Presentation

		Possible Scores	Actual Score
	History		
1	Pace and clarity of presentation	0 – 1 - 2	
2	Systematic approach	0 – 1 - 2	
3	Establishment of case facts	0 – 1 - 2	
	Physical examination		
4	Systematic approach	0 – 1 - 2	
5	Establishment of relevant physical findings	0 – 1 - 2	
	Ancillary exams		
6	Logical sequence of investigations	0 – 1 - 2	
7	Appropriate management	0 – 1 - 2	
	Problem solving and analytical skills		
8	Candidate's ability to identify and solve problems	0 – 1 - 2	
9	Putting the case in a broader context	0 – 1 - 2	

10	Originality and contribution to clinical practice	0 – 1 - 2	
	Total (please add up number 1-10)	20	
	Additional Global Score		
	Global impression on a 10 points scale 1=extreme poor - 10 = excellent	10	

*Eventually there will be a conversion of the score to a mark between 0 and 10 during the analysis

Appendix 4 Feed-back to a candidate

Report feedback EBN-Exam Oslo 2019, **your number = 014**

For any questions: j.b.m.kuks@umcg.nl 20/10/2019

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 according to numbers of candidates.

COLUMNS

Column 1. Number of candidate

The original written test consisted of a closed book test (guidlines, general)
and an open book test (general) with 100 questions, for the final calculation
5 questions were skipped because of bad statistics.
This resulted in.....

Column 2. Z-score on the total written test for each candidate

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

Column 3. 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)
* CAT-examination (0-15 standard points weight 2/3, 0-10 global impression points weight 1/3)
* Clinical case examination (0-20 standard points weight 2/3, 0-10 global impression points weight 1/3)

were added up and transformed to a mark ranging from 0-30
as shown in .....

Column 4. Marks for the oral test

Marks from the written test (weight 7/10) were added
up with the marks from the oral test, resulting in a final combined mark.

0.7 * [Column 3] + [Column 4] = [Column 5]

This led to.....

Column 5. Combined final mark.

80-100 = Excellent, 70-79 = Good, 60-69 = Fair, 55-59 = Marginal, <55 = No pass

Overall table with results

1	2	3	4	5	
Max		100	30	100	
089	1.70	91	28	91	
005	1.62	89	30	91	
007	1.62	89	26	88	
047	1.53	88	26	87	
020	1.20	83	29	86	
025	1.12	82	29	86	
024	1.20	83	27	84	
018	1.20	83	26	84	
019	0.95	79	28	83	
023	1.03	80	26	82	
009	0.86	78	28	82	
028	1.03	80	27	82	
090	0.86	78	28	82	
084	1.03	80	25	81	
029	0.95	79	26	81	
012	0.95	79	26	81	
026	1.03	80	26	81	
063	0.86	78	27	81	
003	0.95	79	25	80	
100	0.53	73	29	79	
045	0.86	78	24	78	
048	0.61	74	27	78	
051	0.78	76	26	78	
006	0.70	75	25	77	
035	0.53	73	27	77	
094	0.78	76	24	77	
053	0.53	73	25	76	
074	0.61	74	23	75	
077	0.70	75	23	75	
014	**0.53**	**73**	**24**	**74**	**< your scores**
071	0.19	67	28	74	
059	0.28	69	26	74	
078	0.70	75	21	73	
065	0.44	71	24	73	
010	0.44	71	24	73	
017	0.78	76	21	73	
027	0.19	67	26	73	

039	0.28	69	23	71
085	0.02	65	26	71
041	0.53	73	21	71
030	0.19	67	23	70
069	-0.06	64	24	69
011	-0.23	61	27	69
032	-0.06	64	24	68
054	0.02	65	23	68
061	0.11	66	22	68
049	0.02	65	22	67
072	-0.06	64	22	67
044	0.11	66	21	67
086	-0.40	58	27	67
013	-0.40	58	26	66
031	-0.14	62	23	66
042	0.19	67	18	65
052	-0.40	58	25	65
055	-0.31	60	24	65
056	-0.06	64	20	65
095	-0.40	58	25	65
093	-0.31	60	23	64
075	-0.48	57	25	64
022	-0.48	57	25	64
070	-0.65	55	25	63
058	-0.31	60	21	63
002	-0.56	56	24	63
036	-0.90	51	27	62
066	-0.56	56	23	62
097	-0.73	53	24	61
034	-1.07	48	27	60
081	-1.15	47	27	60
008	-0.40	58	18	59
046	-0.73	53	23	59
087	-0.56	56	21	59
073	-0.98	49	24	58
098	-0.81	52	21	57
057	-0.73	53	21	57
083	-0.65	55	18	56
050	-0.81	52	20	56
088	-0.90	51	20	55
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043	-0.90	51	18	53
004	-1.07	48	19	52
080	-1.65	39	25	52
067	-1.07	48	17	50
064	-1.23	46	17	49
037	-1.57	40	19	47
060	-2.07	33	21	43
040	-2.83	21	26	40
016	-1.91	35	15	39
082	-1.91	35	15	39
092	-3.16	16	18	29

For further general information about the Oslo Exam:
see www.uems-neuroboard.org

The following are your personal detailed results on the orals and the written tests.

O R A L E X A M

Examiners

Aamo = Prof Aamodt, Norway
Ande = Dr Andersson, Norway
Bisd = Dr Bisdorff, Luxemburg
Cali = Dr Caliskan, Turkey
Coun = Dr Counihan, Ireland
Cras = Prof Cras, Belgium
Defe = Prof Defebvre, France
Fred = Prof Fredrikson, Sweden
Gris = Prof Grisold, Austria
Jage = Dr Jager, France
Kruj = Prof Kruja, Albania
Mani = Dr Maniol, Norway
Oztu = Prof Öztürk, Turkey
Perj = Prof Perju-Dumbrava, Roumania
Raku = Dr Rakusa, Slovenia
Rodr = Dr Rodrigues, Portugal
Scho = Prof Schoser, Germany
Sier = Dr Irimia Sierra, Spain
Zier = Prof Zierz, Germany
Zis = Dr Zis, Greece

These are your scores given for the several items from the scoring list
as provided by your examinators 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	1	1
C02. The question is original and relevant for clinical practice	1	1	2
C03. The search strategy is adequate	1	1	1
C04. The table with results is correct	1	1	1
C05. The comments described are adequate	2	2	2
C06. The comments described are adequate	2	2	3
C07. The final conclusion is sound	1	1	1
C08. The references are really the current key-references	1	1	1
C09. The answers to the questions on the exam are adequate	1	1	2
C10. Handling ignorance during the exam is adequate	1	1	1
C99. Global impresion CAT on a 10 points scale	7	7	10

Examiner 1:Rodr
Examiner 2:Raku

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

Examiner 1: Sier
Examiner 2: Zier

Oral Examination Clinical Presentation	Ex 1	Ex 2	Maximum
K01. Pace and clarity of presentation history	2	2	2
K02. Systematic approach history	1	1	2
K03. Establishment of case facts history	2	1	2
K04. Systematic approach physical examination	1	2	2
K05. Establishment of relevant physical findings	2	2	2
K06. Logical sequence of anxillary investigations	2	1	2
K07. Appropriate management of anxillary test	2	2	2
K08. Ability to identify and solve problems	2	2	2
K09. Putting the case in a broader context	1	2	2
K10. Originality and contribution to clinical practice	2	1	2
K99. Global impresion Clinical presentation on a 10 points scale	8	7	10

Examiner 1: Jage
Examiner 2: Zis

W R I T T E N E X A M

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

Spinal cord / Brainstem	4 + / 1 -	80% correct answers
Cerebellar	3 + / 1 -	75% correct answers
Cognition	4 + / 3 -	57% correct answers
Extrapyramidal	9 + / 4 -	69% correct answers
Traumatology	2 + / 2 -	50% correct answers
Myasthenia	2 + / 2 -	50% correct answers
Sleep	3 + / 0 -	100% correct answers
Infections	6 + / 1 -	85% correct answers
Vascular	4 + / 3 -	57% correct answers
Myopathy	4 + / 0 -	100% correct answers
Polyneuropathy	3 + / 0 -	100% correct answers
Immunology	3 + / 0 -	100% correct answers
Internal Medicine	3 + / 0 -	100% correct answers

Cranial Nerves	8 + / 0 -	100% correct answers
CSF	2 + / 1 -	66% correct answers
Consciousness	3 + / 1 -	75% correct answers
Epilepsy	2 + / 3 -	40% correct answers
Cranial nerves	2 + / 0 -	100% correct answers
Oncology	4 + / 1 -	80% correct answers
Headache	1 + / 0 -	100% correct answers
Mononeuropathy	1 + / 1 -	50% correct answers
Autonomous	3 + / 0 -	100% correct answers

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

Clinics	24+ / 5 -	82% correct answers
Chemistry	5 + / 4 -	55% correct answers
Genetics	9 + / 1 -	90% correct answers
Therapy	7 + / 2 -	77% correct answers
Anatomy	7 + / 5 -	58% correct answers
Physiology	6 + / 4 -	60% correct answers
Imaging	3 + / 2 -	60% correct answers
Biology	2 + / 1 -	66% correct answers
Pathology	9 + / 0 -	100% correct answers
Toxicology	4 + / 0 -	100% correct answers

Appendix 5 Evaluation for Candidates of the 2019 EBN Exam

1 = Do not agree – 5 = Fully agree.

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

2	*1*	*5*	*13*	*24*	*(Numbers of candidates answering 1, 2, 3, 4, 5)*
1	**2**	**3**	**4**	**5**	

2. Did you find the written questions clearly formulated?

0	*0*	*13*	*19*	*15*
1	**2**	**3**	**4**	**5**

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

0	*1*	*7*	*9*	*30*
1	**2**	**3**	**4**	**5**

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

0	*1*	*1*	*11*	*34*
1	**2**	**3**	**4**	**5**

5. What is your opinion on having an open book exam? Do you appreciate this as a realistic part of a board exam?

2	*3*	*4*	*12*	*25*
1	**2**	**3**	**4**	**5**

6. Do you feel the following parts realistic and useful for an EBN-Exam?

		0	*1*	*9*	*9*	*26*
a.	Critial Appraisal of a Topic	**1**	**2**	**3**	**4**	**5**
		0	*2*	*6*	*9*	*28*
b.	Essay	**1**	**2**	**3**	**4**	**5**
		0	*0*	*5*	*9*	*31*
c.	Clinical Presentation	**1**	**2**	**3**	**4**	**5**

7. Did you get proper instructions to prepare yourself adequately?

		0	*0*	*5*	*12*	*28*
a.	Critial Appraisal of a Topic	**1**	**2**	**3**	**4**	**5**
		0	*0*	*2*	*14*	*29*
b.	Essay	**1**	**2**	**3**	**4**	**5**
		0	*1*	*2*	*14*	*29*
c.	Clinical Presentation	**1**	**2**	**3**	**4**	**5**

8. Did you feel the examiners prepared themselves well?

		0	*0*	*1*	*13*	*31*
a.	Critial Appraisal of a Topic	**1**	**2**	**3**	**4**	**5**
		0	*0*	*2*	*11*	*32*
b.	Essay	**1**	**2**	**3**	**4**	**5**
		0	*1*	*3*	*9*	*32*
c.	Clinical Presentation	**1**	**2**	**3**	**4**	**5**

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

0	*0*	*1*	*13*	*31*

a.	Critial Appraisal of a Topic	**1**	**2**	**3**	**4**	**5**
		0	*0*	*2*	*11*	*32*
b.	Essay	**1**	**2**	**3**	**4**	**5**
		0	*1*	*3*	*9*	*32*
c.	Clinical Presentation	**1**	**2**	**3**	**4**	**5**

10. Did you feel the examiners were interested in your presentation?

		0	*0*	*4*	*113*	*31*
a.	Critial Appraisal of a Topic	**1**	**2**	**3**	**4**	**5**
		0	*0*	*3*	*11*	*31*
b.	Essay	**1**	**2**	**3**	**4**	**5**
		0	*2*	*3*	*7*	*32*
c.	Clinical Presentation	**1**	**2**	**3**	**4**	**5**

11. Was the time frame sufficient?

		0	*0*	*3*	*8*	*34*
a.	Critial Appraisal of a Topic	**1**	**2**	**3**	**4**	**5**
		0	*0*	*3*	*8*	*34*
b.	Essay	**1**	**2**	**3**	**4**	**5**
		0	*1*	*3*	*9*	*32*
c.	Clinical Presentation	**1**	**2**	**3**	**4**	**5**

12. Did you find the examination fee affordable?

4	*13*	*10*	*14*	*4*
1	**2**	**3**	**4**	**5**

13. Have you been taking another national of international postgraduate neurology exam?

O	The Royal College Exam (London)	N = 7
O	A national Exam in your own country	N = 17
O	Another international exam, namely	*Sonography*

12. 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?

18	*3*	*7*	*6*	*10*
1	**2**	**3**	**4**	**5**

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

- The exam is too long, reduce the number of sessions from 3 to 2 (6x). Too much time between the exam parts.
- More time for the open book exam is required. Less open book questions.
- More movies, more symptom recognition.
- Allow a powerpoint for the presentation of a CAT.
- Keep the annual exam in one and the same city every year.
- Update the website properly in case of changes announced by a letter (i.e. no use of laptops possible).
- Provide more sample questions to get familiarized with the question type before starting the exam.
- The site of the examination was to far away from hotel rooms.
- The examiners were excellent (14x).
- Thank you for the nice exam!

Appendix 7 Statistics over 5 years

	Oslo 2019	Lisbon 2018	Amsterdam 2017	Copenhagen 2016	Berlin 2015	Istanbul 2014
#Applicants	115	89	77	100	80	No data
# Candidates Participating	95	74	62	69	63	61
Written examination		(psychometric data)				
Mean P-value	.71	.65	.66	.67	.67	.64
KR20 value	.89	.91	.86	.91	.88	.89
Passing limit	54%	50%	51%	45%	67%	54%
Oral examination		(scores 1-20 transformed to a 0-100 scale)				
90-100	10%	14%	22%	15%	21%	NA because
80-90	37%	30%	31%	20%	30%	of a different
70-80	26%	25%	11%	18%	16%	type exam
55-70	24%	22%	21%	34%	22%	
<55	3%	9%	15%	13%	11%	
Final results		(combined written/oral transformed to a 0-100 scale)				
90 – 100	2%	1%				
80 – 90	18%	19%	18%	14%	5%	10%
70 – 80	26%	32%	37%	42%	33%	21%
60 – 70	29%	22%	21%	20%	17%	39%
55 – 60	13%	12%	18%	13%	32%	23%
40 – 55	12%	14%	6%	7%	13%	7%