

## **Report on the 14<sup>th</sup> European Board Exam for Young Neurologists. May-June 2022**

### *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 took place in 2009 under the supervision of Professor Wolfgang Grisold.

The EBN-Exam aims to contribute to the establishment of European standards for the training of medical specialists in the field of neurology.

So far, there is still no legal status for European Board Exams, but in many countries, these exams are mandatory for the completion of a specialist training. Also, many neurologists from outside Europe are taking the board exam.

The UEMS (Union Européenne des Médecins Spécialistes) supports the conferment of the title 'Fellow of the European Board' to candidates who successfully passed the examination. For this reason, 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).

### *General principles*

- The exam is based on the European Training Requirements for Neurology (ETRN, <https://www.uems-neuroboard.org/web/index.php/european-training-requirements>).
- A candidate who (nearly) finished training in Neurology should be able to take the exam. We do not ask for credentials.
- English is the official language but participants are allowed to use their own dictionary and will not explicitly be assessed for their skills in the English language.
- The exam is based on European foundations but non-European candidates are welcome and get the opportunity to bring in their experiences in their home country during the oral examination.
- Candidates have to send in original submissions. These will be checked on unlooked-for plagiarism.

### *Preparing the EBN exam*

The EBN-Exam does not primarily aim to test the ability to recall knowledge, but rather the ability to use knowledge and apply competencies. Professional roles, as defined by the CANMEDS model cannot all easily be tested in a written exam without dialogue because of cultural differences between several countries. Therefore, the Exam consists of a mixture of written tests and oral examinations. The written parts consist of questions to be solved with use of reference sources ('open book', approx. 60%) and questions to be answered without these ('closed book', approx. 40%). To prepare for the written

exam, we recommend a textbook and specific scientific papers provided on the website. Questions are set by EAN-members and selected according to the content of the EBN-core curriculum (European Training Requirements Chapter 8A, see see appendix 6). The examination-committee did a final review.

For the oral examination, candidates are asked to write an essay on public/global health or ethics in the field of neurology. In addition, a critical scientific appraisal of a clinical topic and a clinical case presentation are required. The essay and the CAT workpieces should be prepared at home and sent in before the examination. The candidates may ask examination staff for assistance to achieve these tasks. All submissions are scanned for plagiarism and candidates may be requested to revise their CAT and/or essay.

Moreover the candidates have to present a clinical case of their own practice and show the clinical reasoning process to solve the diagnostic and therapeutical problem. This clinical presentation should not be sent in before the examination and will not be checked for plagiarism.

## *Course of the exams in 2022*

### **The oral exams**

In 2022, the online oral examinations were held on Friday, May 20<sup>th</sup> or Saturday, May 21<sup>th</sup> via ZOOM. A life exam was provided at the site of the EAN congress in Vienna on June 24<sup>th</sup>.

The online exam was hosted by the European Academy of Neurology. This means that the exam was taken from the examinees' homes, on their own computers or laptops and that visual and audio streaming was made of the examinees taking the test.

The examination committee had established a set of standards for conducting the online test to prevent fraud. These can be found on the website ([www.uems-neuroboard.org](http://www.uems-neuroboard.org)).

The live oral exams were taken at the site of the EAN congress. The candidates had to bring their own laptops with their PowerPoints ready for presentation.

Both at the online and the live exams every candidate was examined by two examiners, who were in charge of all three presentations (see appendix 8). Although from the educational viewpoint it would be preferable to have the three submissions examined by three different couples of examiners this was not feasible in the online setting.

117 candidates took the online oral exams and 24 showed up at the site of the congress. The online exams elapsed without complications.

30 Examiners from the EAN and EBN could be recruited for the online exams and 8 were present at the onsite exams in Vienna. They are acknowledged in appendix 3 of this document and on the EBN website.

### **The written exam 2022**

The written exam took place online at the candidate's own desk with a reliable WIFI environment in the run-up to the 8<sup>th</sup> EAN Congress on May 27<sup>th</sup>, 2022. The rules for this exam were the same as for the online exams. The written examination consisted of three sections (see appendix 8).

The written exam elapsed as expected and without complications apart from two candidates who could not be controlled by the watching camera during part of the exam because they did not use the browser as prescribed. We analyzed their results obtained during this 'silent period' and found them concordant with the achievements of the remainder of the exams and they passed without further

repercussions. Some candidates had to be warned because they spoke loudly (to themselves as they said) during the exam. A couple of candidates did not show up with the correct identification documents. They were summoned for a recheck the day after.

### *Data-processing*

Data from the written tests are read by a data-analysis program. For each question, the percentage of candidates who answered the question correctly, corrected for the level of guessing (Pc-value,  $P_c = 0$  at the level of guessing which is 20% for best-of-five-questions) and the discriminating value in the whole test (RIT-value) are calculated. Questions that have 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  $P_c < .0$ , questions with a significant discriminating value only in case of a  $P_c < -.50$ .

The passing limit for the written exam is set by use of the post-test Cohen-procedure<sup>1</sup>. Taking the mean of the score of the 5 best students as the maximally obtainable score and using a real knowledge percentage of 55% (see below). Students performing at the passing limit level receive 55 out of 100 points.

The oral examinations are graded using standard forms (2/3) and a global impression of the examiner (1/3). Examiners award their marks independently of each other (**see appendix**). The results of all three presentations judged by the two examiners are lumped together and transferred to a score between 0-100 points. The passing limit for oral examinations is set at 55 out of 100 points.

The results of the written examination (weighting factor 0.7) and the oral examination (weighting factor 0.3) are combined into a final mark. Candidates who score 55 or more out of the maximum of 100 points are considered successful.

<sup>1</sup>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.

### *Candidates*

There were 158 candidates for this year's exam; the portion of participants from outside Europe is (taking advantage of not having to travel) is still growing (see appendix 7).

In the end, 141 showed up. Dropouts partly are explained by feedback to the submissions that might have been discouraging.

### *Exam fees*

European candidates must pay 600 Euros for the whole enterprise, non-European candidates 750 Euros and students working in low-income countries had to pay 350 Euros. After the early bird deadline fees are raised by 50 Euros. The EAN offers incentives to encourage the participation of its young members.

Deserting candidates do not get back their paid fee because of bank-transfer rates and administration costs but they will get the opportunity to renew their application next year against a reduced fee. The same holds for candidates who fail the exam taking a new chance next year.

### *Exam-results*

## **Written exam**

The written exam took place online with the help of our provider iCognitus, who offered perfect technical support. The statistics can be found in appendices 4 and 5.

Two out of 100 questions were eliminated because they had a  $P_c < 0.25$  (i.e., <40% of the candidates provided the correct answer with a guessing level set to 20% which is appropriate for best-of-5 questions) while the question had a low RIT-value (i.e., no discrimination between 'good candidates' and 'bad candidates') (see appendix 4).

The internal consistency of the exam after leaving out 2 questions was quite good ( $KR_{20} = .86$ , generally  $> .70$  is acceptable) (see appendix 5).

The 5 top candidates scored 85 out of 98 points on the average. Their mean score was considered the best obtainable score for passing limit.

The passing limit using the Cohen Method, where 55% actual knowledge is assumed to be marginal (with correction for guessing (approx. 20%) and taking into account the best obtainable score was set at 58 correct answers. A student with 59 correct answers was awarded 55 marks, etc. Maximal 100 points. *24/141 candidates failed the written exam.*

## **Orals**

The orals were scored by the examiners on standard forms (see appendix 1). A score was calculated from the mean of the CAT, Essay and Clinical Case and the maximal obtainable score was set at 100. Each of these 3 scores is composed of 1/3 global impression and 2/3 detailed scores. Fifty-five points was the minimal score to pass (this is arbitrary). *16 candidates failed the oral exams.*

## **Combination Oral and Written exams**

8 candidates compensated for their insufficient written with the oral exam, and 5 candidates compensated their insufficient oral exam with the written exam results (appendix 9).

Adding the results of the written and oral examination together, *17/141 participants (12%) failed in the overall exam.* This was 7% in 2021, 12% in 2019, 14% in 2018.

## ***Feed-back***

We took a survey at the end of the written exam. Results are given below in appendix 2. Furthermore we asked our examiners for their opinions but the response rate was subliminal. On the other hand candidates got the opportunity to get personal feed-back on their achievements. Score forms from the orals could be obtained and we made calculations regarding the results in the different (ETRN-set) fields in Neurology. For logistical reasons, there was no possibility to gain insight into the questions and the answers given.

## ***Verification of certificates***

Verification of the certificates is more and more requested e.g. from the Educational Commission for Foreign Medical Graduates (ECFMG®), the Licensing Department of the Pakistan Medical Commission, the Dataflow Group, and others. They are usually easy to answer, but some are more demanding as they require the completion of many documents. This increases the administrative burden.

## *Conclusion*

The 14<sup>th</sup> Exam of the European Board of Neurology may be considered as a multi-competency exam with reliable results and a favorable outcome in 2022 for 88% of candidates. Overall satisfaction among the candidates was good, but we could improve if we took into account some of the remarks made by candidates.

**Please, visit our website [www.uems-neuroboard.org](http://www.uems-neuroboard.org) for further information**

## *Members of the Examination Committee 2022*

Prof Manuel Alegre Esteban, EAN, Pamplona (E)  
Dr Tim Counihan, EBN, Galway (IRL)  
Dr Francesco Di Lorenzo, EAN-EQTF, Roma (I)  
Prof Gilles Edan, EBN, Rennes (F)  
Prof Pablo Irimia Sieira, EAN, Pamplona (E)  
Prof Jan Kuks, chair, EBN, Groningen (NL)  
Mrs Mag Gabrielle Lohner, executive chief, Vienna (A)  
Mrs Dr Deborah McIntyre, EBN, Luxembourg (L)  
Prof Benedikt Schoser, EAN, München (D)

For this Report: JBM Kuks, October 2022

## Appendices

### 1. 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	
	<b>Additional Global Score</b>		
	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	
	<b>Additional Global Score</b>		
	Global impression on a 10 points scale 1=extreme poor - 10 = excellent	10	

### Scoring form for the Clinical Presentation

		Possible Scores	Actual Score
	<b>History</b>		
1	Pace and clarity of presentation	0 – 1 - 2	
2	Systematic approach	0 – 1 - 2	
3	Establishment of case facts	0 – 1 - 2	
	<b>Physical examination</b>		
4	Systematic approach	0 – 1 - 2	
5	Establishment of relevant physical findings	0 – 1 - 2	
	<b>Ancillary exams</b>		
6	Logical sequence of investigations	0 – 1 - 2	
7	Appropriate management	0 – 1 - 2	
	<b>Problem solving and analytical skills</b>		
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	
	<b>Additional Global Score</b>		
	Global impression on a 10 points scale	10	
	1=extreme poor - 10 = excellent		

\* In the evaluation, the score is finally converted into a mark between 0 and 10.

## 2. Evaluation for Candidates of the 2022 EBN Exam

The results of this enquiry will be analyzed after the results have been communicated to the candidates!

1 = Do not agree – 5 = Fully agree.

### General considerations

1. Did you find the examination fee affordable?

13	22	53	29	24
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

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

	6	24	47	64
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

3. Do you prefer an online exam above a live exam?

7	12	18	27	77
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

### Written part

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

1	2	13	20	105
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

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

1	2	10	35	93
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

6. Did you find that the written questions were clearly formulated?

2	11	27	59	42
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

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

	6	16	41	77
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

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

1	4	12	39	85
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>



9. What is your opinion on having an open book exam?  
Do you consider this to be a realistic part of a board exam?

5	10	14	34	77
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

**Oral part**

10. How did you appreciate the ICT system for the Oral exam

		14	29	98
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

11. Do you appreciate the oral exam as a realistic part of a board-exam?

	2	11	26	102
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

12. Do you feel the CAT is realistic and useful for an EBN-Exam

1	3	15	33	89
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

13. Did you find the questions formulated by the examiners formulated clearly?

		21	31	79
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

14. Did you the opportunity to present your work adequately?

	1	18	22	99
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

15. Did you feel the discussion of your CAT made sense?

		17	30	94
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

16. Did you feel the discussion of your Essay made sense?

		16	29	96
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

17. Did you feel the discussion of your clinical case made sense?

	1	13	27	100
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

18. Did you feel the examiners had read you submissions carefully?

	2	17	38	84
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

19. Was the time frame for the orals sufficient?

1	4	17	23	96
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

### Open Questions

How did you learn first about the examination or who recommended you to take it?

- The EBN flyer 1
- Previous Candidates 53
- The head of the department 16
- Other colleagues 27
- The EBN website 21
- EAN pages 7
- National Society 12
- Otherwise 4

What was your motivation for taking the exam?

- Testing skills and knowledge 65
- To get a certificate 15
- To be a fellow of the EBN 49
- To increase possibilities moving to another country 6
- Others 6

### 3. Examiners in the oral board exams 2022

Dr. Ramy Abdelnaby, Germany  
Prof. Eduard Auff, Austria  
Prof. Manuel Alegre, Spain  
Dr. Alex Bisdorff, Luxemburg  
Prof. Paul Boon, Belgium  
Dr. Tim Counihan, Ireland  
Prof. Patrick Cras, Belgium  
Prof. Alain Créange, France  
Prof. Gilles Edan, France  
Prof. Sten Fredrikson, Sweden  
Dr. David Garcia Azorin, Spain  
Prof. Wolfgang Grisold, Austria  
Dr. Fandler Höfler, Austria  
Prof. Pablo Irimia Sieira, Spain  
Prof. Anita Kamondi, Hungary  
Prof. Jera Kruja, Albania  
Prof. Jan Kuks, The Netherlands  
Prof. Helmar Lehmann, Germany  
Dr. Deborah McIntyre, Luxemburg  
Prof. Elena Moro, France  
Prof. Serefnur Öztürk, Turkey  
Prof. Lacramioara Perju-Dumbrava, Romania  
Dr. Martin Rakusa, Slovenia  
Dr. Jochen Schäfer, Germany  
Prof. Benedikt Schoser, Germany  
Prof. Vincenzo Silani, Italy  
Dr. Olivier Vandhuick, France  
Dr. Takis Zis, Greece  
Prof. Stephan Zierz, Germany  
Prof Mathieu Zuber, France

#### 4. Statistics questions written exam

K = Key (number of the correct answer)

N = Number of alternative answers

P = P-value (percentage of candidates providing the right answer)

PC = P-value corrected for guessing rate (20% for best-of-five, 25%, for best-of-four)

RIT = relation between the results of the question and the relation of the total test

SC+ = mean total score of candidates providing the right answer in the question

SC- = mean total score of candidates providing a wrong answer in the question

(1) = percentage of candidates choosing the first alternative, etc. for 2-5

	K	N	P	PC	RIT	SC+	SC-	(1)	(2)	(3)	(4)	(5)
1	5	5	0.411	0.264	0.103	71.95	69.69	0.02	0.06	0.44	0.07	0.41
2	3	5	0.390	0.238	0.225	73.67	68.66	0.25	0.04	0.39	0.04	0.28
3	2	5	0.702	0.628	0.245	72.34	66.55	0.28	0.70	0.01	0.00	0.01
4	4	5	0.979	0.973	0.031	70.67	68.33	0.00	0.00	0.02	0.98	0.00
5	4	4	0.844	0.792	0.290	71.97	63.32	0.07	0.01	0.08	0.84	
6	1	5	0.149	-0.064	0.127	73.90	70.04	0.15	0.02	0.18	0.23	0.43
7	4	5	0.652	0.566	0.228	72.42	67.22	0.00	0.05	0.04	0.65	0.26
8	1	5	0.745	0.681	0.362	72.91	63.92	0.74	0.01	0.18	0.01	0.04
9	2	5	0.844	0.805	0.382	72.39	61.00	0.04	0.84	0.02	0.08	0.02
10	3	4	0.383	0.177	0.075	71.65	69.98	0.02	0.21	0.38	0.38	
11	1	5	0.631	0.539	-0.016	70.48	70.85	0.63	0.01	0.36	0.00	0.00
12	5	5	0.823	0.778	0.289	72.07	63.88	0.00	0.13	0.00	0.05	0.82
13	2	5	0.716	0.645	0.452	73.70	62.83	0.00	0.72	0.18	0.02	0.08
14	1	5	0.504	0.379	0.482	75.80	65.36	0.50	0.04	0.16	0.09	0.21
15	4	5	0.823	0.778	0.211	71.68	65.68	0.01	0.04	0.00	0.82	0.12
16	5	5	0.830	0.787	0.163	71.42	66.71	0.00	0.01	0.02	0.14	0.83
17	3	4	0.887	0.849	0.299	71.78	61.56	0.06	0.05	0.89	0.01	
18	4	5	0.844	0.805	0.169	71.40	66.36	0.09	0.02	0.02	0.84	0.03
19	2	4	0.844	0.792	0.358	72.29	61.59	0.01	0.84	0.07	0.08	
20	2	5	0.411	0.264	0.370	75.41	67.27	0.02	0.41	0.01	0.02	0.54
21	4	4	0.454	0.272	0.353	74.81	67.13	0.06	0.13	0.35	0.45	
22	2	4	0.936	0.915	0.189	71.15	62.78	0.01	0.94	0.01	0.05	
23	5	5	0.922	0.902	0.197	71.24	63.27	0.01	0.01	0.04	0.02	0.92
24	5	5	0.957	0.947	0.190	71.05	60.83	0.00	0.04	0.00	0.00	0.96
25	4	4	0.915	0.887	0.257	71.47	61.50	0.01	0.00	0.08	0.91	
26	5	5	0.759	0.699	0.275	72.30	65.32	0.18	0.00	0.01	0.04	0.76
27	1	5	0.496	0.371	0.487	75.93	65.38	0.50	0.28	0.20	0.02	0.00
28	4	5	0.461	0.326	0.295	74.08	67.66	0.02	0.09	0.25	0.46	0.18
29	2	4	0.879	0.839	0.258	71.65	63.06	0.10	0.88	0.01	0.01	
30	2	5	0.879	0.849	0.252	71.63	63.24	0.02	0.88	0.00	0.09	0.01
31	3	5	0.929	0.911	0.220	71.27	62.00	0.03	0.00	0.93	0.01	0.03
32	1	5	0.887	0.858	0.348	71.97	60.06	0.89	0.01	0.01	0.01	0.08
33	4	5	0.645	0.557	0.349	73.42	65.52	0.18	0.10	0.05	0.65	0.03
34	2	5	0.858	0.823	0.156	71.31	66.45	0.04	0.86	0.01	0.01	0.09
35	5	5	0.851	0.814	0.237	71.69	64.48	0.06	0.08	0.01	0.00	0.85
36	4	5	0.809	0.761	0.224	71.80	65.63	0.06	0.03	0.00	0.81	0.11
37	1	5	0.518	0.397	0.335	74.12	66.85	0.52	0.05	0.15	0.21	0.07
38	5	5	0.929	0.911	0.240	71.34	61.20	0.01	0.01	0.01	0.03	0.93
39	5	5	0.638	0.548	0.409	73.96	64.73	0.18	0.01	0.02	0.14	0.64
40	2	5	0.695	0.619	0.349	73.12	64.91	0.05	0.70	0.08	0.13	0.05
41	3	5	0.638	0.548	0.133	71.70	68.71	0.13	0.01	0.64	0.06	0.16
42	4	5	0.667	0.583	0.262	72.63	66.60	0.04	0.14	0.09	0.67	0.06
43	2	5	0.865	0.832	0.454	72.56	58.16	0.01	0.87	0.01	0.03	0.09
44	3	5	0.879	0.849	0.154	71.23	66.12	0.06	0.01	0.88	0.01	0.05

This question was skipped

45 5 5 0.780 0.725 0.457 73.25 61.29 0.08 0.01 0.04 0.09 0.78  
46 3 4 0.709 0.612 0.371 73.19 64.34 0.05 0.17 0.71 0.07  
47 2 5 0.908 0.885 0.294 71.63 60.62 0.04 0.91 0.05 0.00 0.00  
48 4 5 0.702 0.628 0.059 71.03 69.64 0.03 0.00 0.01 0.70 0.26  
49 4 5 0.411 0.264 0.084 71.71 69.86 0.03 0.07 0.30 0.41 0.18  
50 3 5 0.844 0.805 0.167 71.39 66.41 0.02 0.13 0.84 0.00 0.01  
51 3 4 0.638 0.518 0.347 73.44 65.63 0.08 0.27 0.64 0.01  
52 5 5 0.674 0.592 0.259 72.57 66.59 0.02 0.24 0.04 0.03 0.67  
53 4 5 0.766 0.707 0.294 72.38 64.85 0.14 0.01 0.01 0.77 0.07  
54 4 5 0.539 0.424 0.290 73.53 67.22 0.06 0.06 0.30 0.54 0.04  
55 1 5 0.688 0.610 0.284 72.69 66.05 0.69 0.01 0.04 0.26 0.00  
56 2 5 0.688 0.610 0.221 72.23 67.07 0.03 0.69 0.26 0.01 0.01  
57 1 5 0.979 0.973 0.176 70.90 57.67 0.98 0.01 0.00 0.01 0.00  
58 3 5 0.468 0.335 0.050 71.20 70.11 0.23 0.15 0.47 0.03 0.12  
59 3 5 0.887 0.858 0.499 72.55 55.50 0.01 0.02 0.89 0.05 0.02  
60 3 5 0.702 0.628 0.283 72.62 65.90 0.07 0.03 0.70 0.01 0.18  
61 1 5 0.652 0.566 0.531 74.82 62.73 0.65 0.21 0.02 0.11 0.01  
62 4 5 0.837 0.796 0.202 71.58 65.65 0.04 0.04 0.06 0.84 0.02  
63 1 5 0.730 0.663 0.213 72.02 66.82 0.73 0.03 0.22 0.00 0.02  
64 3 5 0.738 0.672 0.305 72.59 65.08 0.05 0.07 0.74 0.11 0.04  
65 2 5 0.851 0.814 0.417 72.51 59.81 0.01 0.85 0.04 0.06 0.02  
66 2 5 0.823 0.778 0.225 71.75 65.36 0.03 0.82 0.06 0.03 0.06  
67 1 4 0.652 0.537 0.462 74.27 63.76 0.65 0.21 0.04 0.09  
68 3 5 0.844 0.805 0.284 71.94 63.45 0.09 0.03 0.84 0.00 0.04  
69 5 5 0.872 0.840 0.404 72.29 59.17 0.04 0.01 0.04 0.04 0.87  
70 3 5 0.943 0.929 0.235 71.24 60.25 0.01 0.01 0.94 0.02 0.02  
71 1 4 0.993 0.991 0.215 70.81 43.00 0.99 0.00 0.00 0.00  
72 5 5 0.773 0.716 0.145 71.47 67.72 0.09 0.10 0.01 0.02 0.77  
73 2 5 0.560 0.450 0.197 72.51 68.21 0.12 0.56 0.23 0.04 0.06  
74 2 5 0.603 0.504 0.335 73.56 66.14 0.05 0.60 0.14 0.01 0.19  
75 1 5 0.652 0.566 0.345 73.35 65.49 0.65 0.15 0.08 0.01 0.11  
76 4 5 0.759 0.699 0.283 72.35 65.18 0.00 0.04 0.17 0.76 0.03  
77 4 5 0.844 0.805 0.207 71.58 65.41 0.05 0.02 0.05 0.84 0.04  
78 3 5 0.489 0.362 0.423 75.30 66.13 0.07 0.40 0.49 0.00 0.04  
79 1 5 0.681 0.601 0.328 73.05 65.42 0.68 0.01 0.24 0.01 0.06  
80 5 5 0.887 0.858 0.375 72.07 59.25 0.01 0.09 0.02 0.00 0.89  
81 1 5 0.709 0.637 0.145 71.62 68.17 0.71 0.06 0.01 0.07 0.14  
82 3 5 0.809 0.761 0.384 72.64 62.07 0.03 0.04 0.81 0.06 0.07  
83 1 5 0.340 0.176 0.228 74.06 68.84 0.34 0.45 0.14 0.02 0.04  
84 4 5 0.291 0.113 0.067 71.76 70.15 0.04 0.01 0.23 0.29 0.43  
85 1 5 0.418 0.273 0.311 74.59 67.76 0.42 0.09 0.04 0.07 0.38  
86 4 5 0.709 0.637 0.398 73.38 63.88 0.01 0.13 0.03 0.71 0.11  
87 1 5 0.730 0.663 0.130 71.48 68.29 0.73 0.01 0.22 0.04 0.00  
88 2 5 0.851 0.814 0.373 72.31 60.95 0.04 0.85 0.09 0.00 0.01  
89 2 4 0.887 0.849 0.150 71.20 66.06 0.11 0.89 0.00 0.00  
90 4 5 0.957 0.947 0.291 71.28 55.67 0.01 0.01 0.01 0.96 0.01  
91 1 5 0.532 0.415 0.189 72.53 68.44 0.53 0.04 0.23 0.06 0.12  
92 2 4 0.461 0.281 0.240 73.43 68.21 0.15 0.46 0.23 0.16  
93 5 5 0.617 0.521 0.473 74.66 64.11 0.13 0.04 0.12 0.09 0.62  
94 3 5 0.553 0.441 0.235 72.91 67.78 0.17 0.01 0.55 0.04 0.23  
95 3 4 0.908 0.877 0.283 71.59 61.00 0.00 0.05 0.91 0.04  
96 5 5 0.057 -.179 -.056 68.13 70.77 0.01 0.53 0.01 0.38 0.06  
97 5 5 0.369 0.211 -.057 69.81 71.09 0.01 0.01 0.02 0.60 0.37  
98 2 5 0.823 0.778 0.295 72.10 63.72 0.04 0.82 0.05 0.04 0.06  
99 4 5 0.461 0.326 0.339 74.58 67.22 0.12 0.01 0.35 0.46 0.04  
100 2 5 0.688 0.610 0.331 73.03 65.30 0.18 0.69 0.04 0.04 0.00

This question was skipped

## 5. Statistics Results of the whole exam

Mean Score of the candidates	=	70.41135
Number of questions included	=	98
Standard deviation total scores	=	10.81244
Mean Difficulty	=	.7184831
Kuder Richardson 20	=	.8647135
Item-test-correlation on 5% niveau	=	.1650618
Signal/Noise Ratio	=	6.39172
Standard error	=	3.976957

## 6. Distribution of questions over the ETRN-fields\*

1. Vascular Neurology	25
2. Cognitive impairment	10
3. Epilepsy and paroxysmal disorders	5
4. Headache and facial pain	13
5. Immune mediated diseases	18
6. Neurological infections	4
7. Movement disorders	14
8. Neuro-emergency and intensive care	7
9. Neuro-trauma	3
10. Neurological complications of non-neurological disease	1
11. Neuromuscular diseases	15
12. Neuro-oncology	4
13. Neuro-ophthalmology and Neuro-otology	7
14. Neuropsychiatry	2
15. Neuro-rehabilitation	3
16. Pain	2
17. Disturbances of CSF	1
18. Sleep-wake disorders	3
19. Spinal cord and root diseases	9
20. Autonomic diseases en neuro-urology (not in ETRN)	6
• Clinical diagnosis	48
• Treatment	50
• Genetics	5
• Imaging	15
• Neurophysiology	1
• Palliative	6
• Laboratory	7
• Pathophysiology	3
• Epidemiology	1

\* Some questions belong to >1 field, therefore the total numbers do not equal 100

## 7. Participants

	2019	2021	2022		2019	2021	2022
Austria	1	6	1	Azerbaijan			1
Belgium	16	29	16	Bahrein	1		1
Croatia		1	2	Canada			1
Denmark	4	3	3	Egypt	4	18	21
France	7	3		India	9	34	31
Germany	6	11	12	Iran			1
Greece	1		2	Iraq	3	4	
Iceland		1		Jordan	1	1	
Ireland	1	1	2	Kuwait	1		2
Italy	23	21	22	Lebanon	1	2	
Lithuania	1			Libya			1
Malta			2	Malaysia	1	3	1
Poland		2	1	Malta		1	
Portugal	3	2	1	Nepal			1
Romania	2	1		Oman	1	1	
Russia	1	1	1	Pakistan		6	9
Slovenia	1		1	Qatar	1	2	
Spain	1	1		Saudi Arabia	9	11	4
Sweden	1	2	1	Somalia			1
Switzerland		2	2	Sri Lanka		1	
Turkey	7	9	5	Sudan		1	
United Kingdom	5	6	3	Trinidad			1
				UAE		5	3
				United States	2	3	1
				Yemen			1
				Zimbabwe		2	
	-----				-----		
	75	106	77		34	94	81

## 8. Time frames for the exams.

The global time schedule for the **oral examination** globally was the following

- 5 minutes presentation of the **public health or ethics essay**
- 10 minutes discussion
- 5 minutes presentation of the **critical appraisal of a topic (CAT)**
- 10 minutes discussion
- 10 minutes presentation of the **clinical case**
- 10 minutes discussion
- 10 minutes final judgment by the examiners and entering marks

The **written exam** consisted of three sections

### Section I

40 Multiple Choice Questions (MCQs), closed book

**Login 09:15** - End ultimately 10:45 - Time available: 60 minutes

40 closed-book MCQs. These questions were derived from the European Guidelines from 2016-2021 which can be found on the website. Candidates are allowed to use a dictionary to translate from English into their own language but no other books and no further papers at all.

### Section II

30 complex and scenario related MCQs, open book

**Login 11:15** - End ultimately 13:15 - Time available: 90 minutes

30 open book MCQs.

All types of paper evidence are allowed. No questions from the Guidelines were included. Most of these questions were multi-stage, i.e., a description of a clinical case is given followed by questions on diagnostic or therapeutic topics.

### Section III

30 complex and scenario related MCQs, open book

**Login 13:45** – End ultimately 15:45 - Time available 90 minutes

See section II



## 9. Results per candidate

W = Written

O = Oral

T = Total (.7 \* W + .3 \* O)

55 = passing limit

Number

Candidate W O T

0000002	67	81	71
0000003	68	79	71
0000005	60	85	67
0000006	47	72	54
0000007	39	62	46
0000008	67	59	64
0000009	47	69	53
0000010	53	81	61
0000012	72	89	77
0000013	43	50	44
0000014	84	86	84
0000015	80	68	76
0000016	71	58	67
0000017	64	56	61
0000018	77	81	78
0000019	72	76	73
0000020	84	48	73
0000021	79	74	77
0000022	62	86	69
0000023	59	64	60
0000024	52	51	51
0000025	61	71	64
0000032	77	77	77
0000033	66	76	69
0000036	87	88	87
0000037	76	97	82
0000038	50	59	52
0000041	83	98	87
0000042	81	75	79
0000043	45	48	45
0000044	65	87	71
0000045	50	53	50
0000046	53	57	54
0000047	83	51	73
0000048	79	89	81
0000049	68	79	71
0000050	79	74	77
0000051	72	89	77
0000052	81	97	85
0000053	64	91	72
0000054	76	74	75
0000055	81	95	85
0000056	68	72	69
0000057	54	67	57
0000058	76	95	81

0000059 86 94 88  
0000060 55 78 62  
0000061 73 89 77  
0000062 76 94 81  
0000063 81 74 79  
0000064 83 74 80  
0000065 39 44 40 !!  
0000066 75 90 79  
0000067 76 63 72  
0000068 61 50 57  
0000069 53 72 58  
0000070 58 88 66  
0000071 62 76 66  
0000072 60 87 68  
0000073 58 85 65  
0000074 81 89 83  
0000075 42 70 50 !!  
0000077 36 72 46 !!  
0000078 52 90 63  
0000081 74 98 81  
0000082 69 72 69  
0000085 60 53 57  
0000086 61 71 64  
0000087 76 88 79  
0000088 76 80 77  
0000089 72 84 75  
0000091 62 66 63  
0000094 53 41 49 !!  
0000095 67 82 71  
0000096 72 87 76  
0000097 60 78 65  
0000098 43 73 51 !!  
0000103 58 81 64  
0000105 71 86 75  
0000106 74 91 79  
0000107 82 88 83  
0000108 75 89 79  
0000109 67 78 70  
0000111 77 89 80  
0000112 62 84 68  
0000113 67 57 64  
0000114 74 85 77  
0000115 58 99 70  
0000116 65 85 70  
0000117 67 96 75  
0000120 68 81 71  
0000122 79 83 80  
0000123 67 71 68  
0000124 53 51 52 !!  
0000126 36 59 42 !!  
0000127 58 46 54 !!  
0000128 66 87 72  
0000129 88 96 90  
0000130 74 100 81  
0000131 80 99 85  
0000132 84 98 88  
0000133 52 93 64

0000134	57	53	55
0000135	61	100	72
0000136	73	100	81
0000137	57	96	68
0000138	59	100	71
0000139	66	56	62
0000140	61	81	66
0000141	45	81	55
0000142	82	88	83
0000144	60	76	64
0000146	72	70	71
0000147	79	72	77
0000150	69	49	62
0000153	53	60	55
0000154	55	55	55
0000156	73	63	70

17 candidates failed for the combined result (marked with !!)

23 failed for the written

13 failed for the orals

29 failed for at least one of both