European Board Examination in Neurological Surgery

- Diagnosis and treatment of vertigo and dizziness : Interdisciplinary guidance paper for clinical practice
- Burden of disease scenarios by state in the USA, 2022-50: a forecasting analysis for the Global Burden of Disease Study 2021
- Iatrogenic nerve injury during upper limb surgery (excluding the hand)
- Genomic analysis of intracranial and subcortical brain volumes yields polygenic scores accounting for variation across ancestries
- Effects of Catheter-Based Renal Denervation in Hypertension: A Systematic Review and Meta-Analysis
- Association of Body Mass Index and Parkinson Disease: A Bidirectional Mendelian Randomization Study
- What is associated with painful polyneuropathy? A cross-sectional analysis of symptoms and signs in patients with painful and painless polyneuropathy
- Effect of Alcohol-Mediated Renal Denervation on Blood Pressure in the Presence of Antihypertensive Medications: Primary Results From the TARGET BP I Randomized Clinical Trial

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Stengel et al. aimed to explore the accuracy of AI in the written part of the European Board Examination in Neurological Surgery.

Eighty-six representative single best answer (SBA) questions, included at least ten times in prior EANS board exams, were selected by the current EANS board exam committee. The questions' content was classified as 75 text-based (TB) and 11 image-based (IB) and their structure was 50 interpretation-weighted, 30 theory-based, and 6 true-or-false. Questions were tested with ChatGPT 3.5, Bing, and Bard. The AI and participant results were statistically analyzed through ANOVA tests with Stata SE 15 (StataCorp, College Station, TX). P-values of <0.05 were considered as statistically significant.

The Bard LLM achieved the highest accuracy with 62% correct questions overall and 69% excluding IB, outperforming human exam participants 59% ($p = 0.67$) and 59% ($p = 0.42$), respectively. All LLMs scored highest in theory-based questions, excluding IB questions (Chat-GPT: 79%; Bing: 83%; Bard: 86%) and significantly better than the human exam participants (60%; $p = 0.03$). AI could not answer any IB question correctly.

AI passed the written EANS board exam based on representative SBA questions and achieved results close to or even better than the human exam participants. The results raise several ethical and practical implications, which may impact the current concept for the written EANS board exam [1)].

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see Neurosurgical Training in Europe.

In October 2015 during the meeting in Madrid, the EANS and UEMS Section of Neurosurgery decided to form the European Board of Neurological Surgery (EBNS) and transform the existing exam into the European Board Examination in Neurological Surgery to further increase its importance and general recognition. The successful candidates of both parts I and II will be appointed as Fellow of European

Board of Neurological Surgery (FEBNS).

The European Board Examination in Neurological Surgery consists of two parts: Part I (written multiple choice questions) and Part II (oral examination).

Oral assessments following completion of the EANS training course was first introduced in 1983 (Ljubljana). The concern for a more formal approach to an examination led in 1992 to the creation of Joint EANS/UEMS Examination Committee and introduction of the European Examination in Neurosurgery. Candidates who successfully passed both parts I and II of this examination received European Diploma in Neurosurgery.

Written Part

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Part I examination (written MCQ)

The Part I examination is a written, multiple choice exam consisting of 150 questions to be answered in three hours. The questions cover neurosurgery, neuroanatomy, neuropathophysiology, neuropathology, neurology, neuroradiology, fundamental clinical skills and other disciplines deemed suitable and important. The European Board has prepared the examination with the assistance of a professional testing organisation, which also carries out the analysis.

**The best candidate each year will be awarded a prize - one year free EANS membership and €200 for purchase of any neurosurgery-related book(s) of the winner's choice.

Requirements to take part in the Part I Examination:

Who can take the exam: The Part I Examination is open to all residents in accredited neurosurgical programs in Europe, and to all neurosurgeons with a licence to practice neurosurgery. Candidates from non-European/non-EANS countries are very welcome to sit the exam after they have applied for

International membership of EANS.

When you should take the exam: Those who are in specialist training to become a neurosurgeon should not take the examination before their third year of training, because of the level of the examination, which is to be comparable to the level of the Primary Examination of the American Board of Neurosurgery. The part I examination is compulsory for all Trainees in the last year of EANS Training Courses unless they have sat it before.

How to apply: Along with the application form, scanned copies of the candidate's passport, medical degree and a short CV signed by candidate's chief must be submitted.

Examination fee: to be paid prior to sitting the exam, is: - €100 for Trainees in an official European training program (with proof), - €200 for Trainees from non-European training programs, - €200 for neurosurgeons who have completed their training Those trainees attending the EANS Training Courses pay a sum of €25 Euros per course included within the course registration fee, to cover the cost of the examination.

Those who take the examination agree that they are bound by the Board's rulings regarding credentials and regarding the examination scores.

Re-examinaton - Part I: Candidates who fail or pass may take the examination as often as desired for either certification or self-assessment.

Cancellation policy: Due to a very high number of last minute cancellations the following cancellation policy has been introduced.

Cancellation up to 2 weeks prior to the exam - full refund or possibilty to “forward” the registration and payment towards following exam part I.

Cancellation less than 2 weeks prior to the exam - no refund (unless in exceptionally extenuating circumstances).

Part II (Oral) examination

The Oral Examination is the second and final of the European Board Examination in Neurological Surgery. Successful candidates will be appointed as Fellow of the Board of European Neurological Surgery.

Whilst Fellowship of European Board of Neurological Surgery certifies that the fellow has achieved a good level in the theory and practice of neurosurgery, it does not constitute a license to practise neurosurgery in any European country.

The Part II examination is a clinical problem solving and patient management test. It is not a theoretical examination, like the Part I examination.

Case histories are given, and where appropriate neuroimaging and other visual aids are shown to augment the presentation and development of cases.

Candidates explain verbally how they would proceed to evaluate or manage the cases and to plan

and perform the proposed operations, if indicated. The examination, in the English language, consists of three parts, each lasting 30 minutes. 5-8 cases will be discussed during each part.

Each of the three sessions is conducted in an interview setting with two examiners, experienced neurosurgeons from a European country. During these three sessions the candidate will thus meet six different European examiners, each of whom will give an independent score. One session is dedicated to an oral examination on operative neurosurgery of brain and skull. The other session covers operative neurosurgery of spine and cord. In the third session the topics to be discussed will be those that could not be adequately covered in the first two sessions.

The final, combined result will be available by mail within 14 days after the examination.

A candidate who receives a passing grade for this examination will be granted Fellow of the European Board of Neurological Surgery (FEBNS).

If the Board finds that the quality of the best candidate's performance justifies this, he or she will be awarded the Braakman prize. Winner of the Braakman prize will receive three years Individual Membership of the EANS, a voucher of €200 for purchase of any neurosurgery-related books and an invitation to attend the following EANS annual congress where the award will be officially presented (the registration fee and accommodation will be covered by EANS).

Requirements to take part in the Oral Examination

Individual member of the EANS.

Evidence that the primary European Examination in neurosurgery has been passed (place and date will be required). Please note that candidates are required to enrol and sit part II exam within 4 years of passing part I exam.

Licence to practice neurosurgery, a copy of this licence must be forwarded for inspection. (UK candidates are are allowed to sit the exam in their final year of neurosurgical training if their training expires before the next year's exam, so the expected qualification date is required instead of the license)

A logbook of operations summary - please note that a full neurosurgical experience summary is required (ie. from the beginning of training till present). A template can be downloaded here. Please note that lobgooks submitted in another format will not be accepted.

Examination fee of €500 payable online or by credit card or by bank transfer - bank details will be given on the invoice that will be sent automatically by email.

The European Board makes the final decision regarding a candidate's eligibility for the Oral Examination and potential certification after considering all available information pertaining to the entire process of certification.

The next Oral examination will take place in Prague, Czech Republic on 10th and 11th March 2017.

If you wish to sit next part II exam, you can pre-register your interest with Petra Koubova. The applications will open in September 2016.

Please note that the number of candidates is limited. If you want to attend the exam, submit your application in timely manner. If the capacity of the exam is full, the applications will be closed without

further notice.

If you wish to obtain more information please contact Petra Koubova.

Re-examination – Part II

Candidates who do not attain the standard required to pass the oral examination may retake this section within the next 3 years without having to retake the written section.

For re-application, an updated logbook summary and a new examination fee payment will be required.

There is currently no possibility of re-taking this examination for the purpose of self-certification.

Information for successful part I and II exams candidates prior to 2016

During their meeting in Athens in September 2016, the EANS Board and the Examination Board have agreed to award the FEBNS certificate to all candidates, who have previously received the European Diploma in Neurosurgery.

The FEBNS certificate will be issued in PDF upon request and provision of a copy of the Diploma. In case an original hardcopy is required, it is also possible, but please note that there is an administrative fee of €25 applicable to cover associated costs. There will also be some delay in provision of the hardcopy, because it will take some time to obtain the original signatures. If you wish to obtain the FEBNS certificate or for any queries please contact info@eans.org.

However, there are neurosurgical societies in Europe which do not require their neurosurgical candidates to take part in the final examination as proposed by the EANS. In contrast, those candidates are tested by means of state-specific oral examination only.

The written EANS exam consists of approximately 200 multiple choice questions in English covering neurosurgery, neuroanatomy, neuropathophysiology, neuropathology, neurology, neuroradiology, fundamental clinical skills, and other disciplines as deemed suitable and important. The examination takes 3 h and is administered annually. The oral examination is a clinical problem-solving and patient management test. Case histories are given and candidates explain sequential steps in the management of the cases and the plan and performance of proposed operations, if indicated. The oral examination is held in English and consists of three parts (3 h in total), with about five to eight cases per hour. After passing the second exam, the candidate will be granted with the European Diploma in Neurosurgery; however, up to now, it does not constitute a license to practice neurosurgery in any European country [3)].

Stienen et al. shows that residents' satisfaction with the quality of theoretical training correlates with higher scores on the European Board Examination in Neurosurgery [4)].

Even though it would have been interesting to examine what effect year of residency or English proficiency of those taking the exam have on the score, this study highlights some important points

for training of our future colleagues.

The question arises as to whether the residents are more satisfied because they have developed greater knowledge, or whether their knowledge is greater as a result of a more satisfying training? Indeed, the data presented could indicate that those satisfied by their training are more intrinsically motivated, might be more motivated to studying, and will subsequently do better on tests. Intrinsic motivation has been defined as: “the doing of an activity for its inherent satisfaction rather than for some separable consequence”.

It is the result of satisfaction of three basic needs: having autonomy, feeling competent to perform tasks and having relatedness, and with support of significant others [5].

The European Board Examination in Neurosurgery only tests for one aspect of neurosurgery: theoretical knowledge. Other competences, such as technical skills, non-technical skills (leadership, decision-making, team performance, time management), justified confidence, and attitude are not tested. Indeed, the test scores, including that of the second part of the exam, which aims to test more clinical decision-making/solving of clinical cases, did not correlate with residents satisfaction with practical training.

Interestingly, the authors found no difference in performance on the theoretical test between men and women. As expected, intellectual capacity is not gender specific. The authors correctly point out that circumstances during residency are still not equal for both sexes. Whereas we do not think this might have a tremendous impact on their satisfaction with theoretical training, we think it will influence satisfaction with other aspects of residency.

The working time regulations have been subject of much debate. Even though many have argued that the regulations have a negative impact on residents knowledge, this study clearly shows that working longer hours does not result in higher tests scores. This could indicate that residents who are well rested and satisfied will be more inclined to spend extra time studying, time that would otherwise not necessarily be spent on activities that foster learning, like administrative duties. It is important to realize that simply spending more hours in a hospital will not make for better neurosurgeons.

However, using those hours to create an environment that fosters intrinsic motivation, for instance by theoretical teaching integrated in daily practice, will be an efficient way to train our future happy, skilled, and smart neurosurgeons [6].

Books

Comprehensive Neurosurgery Board Review by JS Citow

Self Assessment

http://neurosurgic.com/index.php?option=com_content&view=section&layout=blog&id=21&Itemid=444

[1] [2]
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5)

Dec EL, Ryan RM (2008) Self-determination theory: a macro theory of human motivation, development and health. Can Psychol 49:182–185
6)

Broekman ML, Peerdeman S. Are happy residents better residents? Acta Neurochir (Wien). 2016 Oct;158(10):1835-6. doi: 10.1007/s00701-016-2918-x. Epub 2016 Aug 17. PubMed PMID: 27531177.