

## Examination for the International Certification in Neurosonology

The aim of international certification is to elevate the level of quality of diagnostic Neurosonology by awarding those who proved to be able to teach this method in theory and practice.

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### 1. Conditions of Participation

The examinee has to be a board certified physician and member of the ESNCH or NSRG. Theoretical and practical knowledge and experience is mandatory as well as sufficient knowledge in English language and ultrasound terminology.

#### 1.1 General Structure

The process of certification has two components

- Multiple choice test (MC-test)
- Practical examination ("hands on")

Full certification needs both components. It is possible to pass only the theoretical part (MC-test), but for the practical test the MC-test is a precondition either beforehand or in parallel at the same meeting.

### 2. Multiple Choice (MC) Test

#### 2.1 General Considerations and Responsibilities

The international commission of certification has organized the MC test.

The certification process requires the following:

- A local organizer and a member of the commission who is responsible for the correct implementation of the certification process. The local organizer cannot be both a member of the commission and the local organizer at the same time. There must be two separate responsible people present to administer the examination.
- The questions are created, collected and administered by the members of the commission.
- The questions and correct answers are not available publicly. All questions for the MC test will be incorporated in a central collection of registered and approved questions.

#### 2.2 Questions

40 questions should be given to the participants. They relate to neurovascular examinations including the following topics:

- Anatomy
- Pathophysiology and hemodynamics
- Physics and instrumentation
- Diagnostic criteria and interpretation of tests

2.2.1 Choice of 4 answers, only one is correct

2.2.2 The threshold to pass the exam is 75% correct answers (30 of 40 questions)

### 3. Practical Examination

The participant should be able to use extracranial and transcranial colour duplex sonography in addition to Doppler sonography.

The examinee will be confronted with one of two possible tasks depending on the decision of the local organizer of the test:

A - Unilateral examination of a subject without major pathology, without transmission problems of the skull:

The examinee must image and document the following arteries of one side, including angle correction for velocity measurements (where applicable):

- Supratrochlear A. (branch of the ophthalmic artery) (CW)
- ICA at the origin and 2-3 cm downstream (Colour Duplex)
- VA (V3, V2 or V0/1) (Colour Duplex)
- MCA (PW or Colour Duplex)

B - Examination of a patient with well-defined pathology. The test should focus on to the pathology.

#### 3.1 Details of the Practical Examination

3.1.1 Allotted time for the practical test not more than 30 min. Each applicant will perform the exam under supervision of two members of the international certification committee (or nominated examiners of equal experience). Not more than 1 examiner should be from the same country as the examinee.

3.1.2 The applicant can familiarize with the devices beforehand and will be given technical support during the exam.

3.1.3 In case of stenosis the participant has to classify the finding into degree of disease (verbal description): low, moderate, severe, near occlusive, total occlusion.

3.1.4 The participant has to present the criteria he is applying for quantification of the neurosonologic test including ECST or NASCET criteria referring to the angiogram.

#### 3.1.5 Criterion to pass should be that the participant:

In case of examining a patient

- Describes the finding without misclassifying of more than one degree (as described above) of stenosis
- Classifies correctly in occlusion versus stenosis.

In case of examining a subject:

- Is able to differentiate and document correctly the above mentioned arteries in the allotted time.

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#### **4. Example of a Test-Question**

What are the characteristics of power Doppler?

- A.) highly depends on angle correction
- B.) direction of blood flow is not coded
- C.) not suitable for detection of low flow
- D.) depends mainly on Doppler shift frequency

#### **5. Suggested Literature**

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