

International Certification in Neurosonology

We are pleased to announce that the examinations for the International Certification in Neurosonology by the Neurosonology Specialty Group (NSG) (<https://nsg-wfn.org/>) of the World Federation of Neurology (WFN).

The examinations will be held from 8:30am to 1:00pm on Friday 12 September 2025 in Kobe, Japan during the Asia Pacific Stroke Conference 2025 - the exact venue will be confirmed soon.

Conditions of Participation

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 and proficiently execute this method in theory and practice.

The following should be the standard format of the certification in Neurosonology:

1. Conditions of participation

The examinee has to be board certified physician and member of the NSG or ESNCH. Theoretical and practical knowledge and experience is mandatory.

2. General structure

The process of certification has two components:

1. Multiple choice test (MC-test)
2. Hands-on examination

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.

3. Multiple Choice (MC) Test

3.1. General considerations and responsibilities

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.

3.2. Questions

3.2.1. 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

3.2.2. Choice of 4 answers, only one is correct

3.2.3. The threshold to pass the exam at the level of NSG/ESNCH Expert in Neurosonology is 75 % correct answers (30 of 40 questions)

3.2.4. Candidates that have between 60% and 72,5% correct answers (24 to 29) will pass the exam at the level of NSG/ESNCH Certified Neurosonologist.

4. Hands-on Examination

In the practical examination, the participant should be able to use extracranial colour duplex sonography, and either transcranial colour duplex sonography or Doppler sonography.

The allotted time for the practical test is no more than 30 minutes.

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 one examiner should be from the same country as the examinee.

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

Detailed features of the practical examination can be consulted [here](#).

<https://esnch.org/wp-content/uploads/2023/06/Practical-Examination-Features-Update-June-2023.pdf>

Detailed procedures and evaluations of the practical examination can be consulted [here](#).

<https://esnch.org/wp-content/uploads/2023/06/Practical-Examination-Procedures-and-Evaluation-Update-June-2023.pdf>

For queries, please contact Dr N V Ramani - ramani_nv@rafflesmedical.com

We look forward to seeing you at the Examinations

Prof Fabienne Perren, Chairwoman, Neurosonology Specialty Group (NSG) of the World Federation of Neurology.

Prof. Dr. Eva Bartels, Chair, International Certification Commission

Dr N Venketasubramanian Ramani, Co-convener of APSC 2025

Recommended Reading:

1. Understanding Ultrasound Physics. Sidney K. Edelman. E.S.P.Ultrasound 2012
2. Sonography Principles and Instruments. Frederick W.Kremkau. Elsevier 2010
3. Cerebrovascular Ultrasound in Stroke Prevention and Treatment. Andrei V. Alexandrov (Ed.). Blackwell Publishing Ltd 2011

4. Neurosonology. Charles H. Tegeler, Viken L. Babikian, Camilo R. Gomez (Eds.). Mosby 1995
5. Atlas of Neurosonology. Ekaterina Titianova, Kurt Niederkorn, Emilia Christova (Eds).
6. Cerebrovascular Ultrasound: Theory, Practice and Future Developments. M. G. Hennerici, Stephen P. Meairs and M. Hennerici. Cambridge University Press 2001
7. Neurosonology and neuroimaging of stroke. M. Valdueza, St. J. Schreiber, J.E. Roehl, R. Klingenberg. Thieme 2008
8. Ultrasound Diagnosis of Cerebrovascular Disease: Doppler sonography of the extra- and intracranial arteries. Duplex-sonography. G. M. von Reutern, H.J. Buedingen, Thieme 1993
9. Doppler Ultrasound, Physics, Instrumentation and Signal Processing. D.H. Evans, W. N, Mc Dicken. Wiley 2000
10. New Trends in Neurosonology and Cerebral Hemodynamics – an Update. Eva Bartels, Susanne Bartels, Holger Poppert (Eds.) Perspectives in Medicine. Elsevier 2011 <https://www.sciencedirect.com/journal/perspectives-in-medicine/vol/1>
11. Manual of Neurosonology. László Csiba, Claudio Baracchini (Eds.). Cambridge University Press 2016
12. Color-Coded Duplex Ultrasonography of the Cerebral Vessels. Atlas and Manual. Eva Bartels, Schattauer 2018
13. Transcranial and Cervical Ultrasound in Stroke. Vosko M.R., Newell D.W., Alexandrov A.V. In: Caplan L.R., Biller J., Leary M.C., Lo E.H., Thomas A.J., Yenari M., Zhang J.H., (Eds.). Primer on Cerebrovascular Diseases. Academic Press 2017
14. Neurosonology in Critical Care: Monitoring the Neurological Impact of the Critical Pathology. Camilo N. Rodríguez, Claudio Baracchini, Jorge H. Mejia-Mantilla, Marek Czosnyka, Jose I Suarez, László Csiba, Corina Puppo, Eva Bartels (Eds.). Springer International Publishing 2021

<https://nsg-wfn.org/education/internationalcertification/internat-certification-guidelines.html>