

Certificate of Competences in Vascular Ultrasound

Background

Ultrasound is one of the cornerstones in modern non-invasive diagnosis of vascular diseases. Vascular ultrasound is performed by numerous professionals with various background across Europe e.g. technician, nurse, general practitioner, angiologist, radiologist or vascular surgeon and may be influenced by the country or institution where you are being based.

The ESVS Academy is committed to improve, enhance and expand the knowledge and quality of performance in vascular ultrasound by organizing basic hands-on workshops in Barcelona and Copenhagen. Because of this experience, there is an increased need to certify those who meet the minimum requirements to perform basic vascular ultrasound.

Aims

The objective of the ESVS Certificate of Competences in Vascular Ultrasound (ESVS-CCVUS) is to certify the holder who has the knowledge and practical skills to perform high-quality ultrasound examinations of arteries and veins.

This certification system may

- Encourage the recognition of a professional qualification
- Standardize the diagnostic criteria and methodology used in Vascular Ultrasound
- Assist the development of educational programs
- Promote creation of working positions with a specific profile

Scope

This certificate may be obtained by any individual who has an active certification or licence in a health-related field, that demonstrates adequate training and is able to pass the theoretical and practical exam.

To qualify for the Certificate of Competences in Vascular Ultrasound, candidates should submit a log book to provide an overview of the number of supervised and independent examinations performed. (appendix 1)

To facilitate access to the certification process, two levels of certification could be obtained, depending on the complexity of the examinations performed.

- **Basic :**
 - Carotid duplex
 - Aortic aneurysm screening
 - Lower limb venous
 - Aorto-iliac arterial mapping
 - Femoro-popliteal arterial mapping

- **Advanced :**
 - Lower limbs arterial mapping
 - Visceral duplex
 - Vascular access assessment
 - Aortic endograft follow up

Method

The certification exam consists of two parts.

The first part is a theoretical test with focus on:

- Physics, Hemodynamics and Technology (appendix 2)
- US instrumentation

The second part is a practical exam in which two examiners evaluate the applicant's practical skills according to an objective scoring system. (appendix 3)

After successfully passing the two parts of the exam, the candidate will obtain the "***Certification of Competences in Vascular Ultrasound (ESVS-CCVUS)***" granted by ESVS.

The certification is valid for a period of five years that can be renewed. Recertification will ensure that individuals holding Vascular Ultrasound Certification continue to demonstrate the knowledge and core clinical skills in their practice.

Appendix 1 – Minimum training requirements

Practical training prior to the certification process should involve different types of arterial and venous examinations and pathologies (e.g. carotid, lower limb venous, peripheral arteries etc). A log-book listing the types of examinations undertaken independently or supervised should be kept. The minimum number of supervised examinations that have to be performed prior to apply for certification are:

- Carotid duplex: 20
- Aortic aneurysm screening: 20
- Lower limb venous: 20
- Aorto-iliac mapping: 20
- Femoro-popliteal arterial mapping: 20

Having performed the minimum number of examinations listed above does not guarantee that the applicant will pass the exam.

Appendix 2 - Theoretical curriculum

Hemodynamics

- Basic arterial hemodynamics
- Basic venous hemodynamics

Physics and Instrumentation

- The basic components of an ultrasound system
- The different types of transducers and applicability
- Transmitting and receiving ultrasound
- An understanding of the frequencies used in medical ultrasound and the effect on image quality and penetration
- The interaction of ultrasound with tissue including biological effects
- The safety of ultrasound
- The basic principles of Doppler ultrasound including colour flow
- The recognition and explanation of common artefacts
- Image recording systems and documentation
- Patient information and preparation
- Indications for examinations
- Pros and cons of vascular ultrasound compared to other imaging modalities
- Scanning techniques including the use of spectral Doppler and colour Doppler

Administration

- Image recording
- Image storing and filing
- Reporting
- Medico-legal aspects – outlining the responsibility to practice within specific levels of competence

Appendix 3 - Skills that should be demonstrated in the Basic practical exam

Certification Candidates should be able to:

Carotid arteries:

- Perform a complete ultrasound examination of the carotid axis
- Diagnose patency, occlusion, stenosis, reverse flow and steal in the carotid and vertebral vessels.

Abdominal Aorta:

- Perform a complete ultrasound examination of the abdominal aorta
- Distinguish between a normal and aneurysmal abdominal aorta and measure the diameter of the aorta in several planes.
- Demonstrate the principles on how to distinguish between a suprarenal and infrarenal aneurysm.
- Recognise and assess aortic occlusion.

Lower limb venous:

- Perform a complete ultrasound examination of common iliac/ external iliac all the way down to the popliteal vein.
- Perform compression and augmentation of the femoro-popliteal segment.
- Recognise acute femoro-popliteal venous thrombosis
- Identify the long and short saphenous vein and the saphenofemoral and saphenopopliteal junctions
- Diagnose and locate superficial venous reflux

Aorto-iliac mapping and femoropopliteal arterial segment:

- Perform continuous wave hand-held Doppler and segmental pressures (ABPI)
- Perform ultrasound examination of the external iliac.
- Evaluate flow profile of external iliac artery.
- Recognise and diagnose patency, stenosis and occlusions of the femoropopliteal segment