

## **ESVS Certificate of Competences in Vascular Ultrasound**

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The certification exam consists of two parts.

### **Written Exam**

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The test focuses on:

- Physics, Hemodynamics and Technology
- US instrumentation

It consists of 50 multiple-choice questions with one correct answer per five provided responses. (60 minutes).

The exam will be done on computers connected to the Wifi network of the venue.

### **Theoretical curriculum**

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#### **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

## Practical Exam

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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 femoral 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