**Basic ultrasound in anaesthesia and critical care**

**Learning objectives:**
Prior to the course, participants will be offered appropriate e-learning modules to prepare for and obtain maximum benefit from the hands-on teaching sessions. During the course, groups of 5 participants will follow a single track consisting of 4 successive ultrasound workstations, that cover the following learning objectives:

- **Workstation 1. Transthoracic echocardiography:** To reliably produce standard images of the heart in volunteers and to understand the underlying anatomy.
- **Workstation 2. Transesophageal echocardiography (simulator):** To reliably produce standard images of the heart in a dedicated simulator and to understand the underlying anatomy.
- **Workstation 3. Vascular access:** To utilise ultrasound guidance for cannulation of the subclavian vein (CVCs), the upper brachial veins (midline catheters) and peripheral veins by means of out-of-plane methods and in-plane ultrasound methods (dynamic needle tip tracking). Use Ultrasound to rule-out/diagnose Deep Venous Thrombosis.
- **Workstation 4. Lung ultrasound:** To understand the basic principles of lung ultrasound and identify pathologies including pneumothorax, pleural effusion, interstitial syndrome and consolidated lung/pneumonia/atelectasis.

The specific sequence of ultrasound stations will vary among groups as they rotate from one station to another. Workstations 1, 3 and 4 will use human models, whereas workstation 2 will use an advanced echo simulator.

**Target audience:** Physicians in anaesthesia or critical care who are interested in learning basic ultrasound use or those who started using ultrasound but would benefit from hands-on practice, guided and supervised by experts in the field.

**Chairs:**
Patrick Wouters (Gent, Belgium)
Peter Juhl-Olsen (Aarhus, Denmark)

**Introduction**
08:30 - 08:40

**Workstation 1. Transthoracic echocardiography**
08:40 - 09:30

**Workstation 2. Transesophageal echocardiography (simulator)**
09:30 - 10:20

**Coffee break**
10:20 - 10:40

**Workstation 3. Vascular access**
10:40 - 11:30

**Workstation 4. Lung ultrasound**
11:30 - 12:20

**Evaluation and final words**
12:20 - 12:30

**Instructors:**
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