

## **Echocardiography for hemodynamic monitoring in human critical care**

Critical care ultrasonography - and particularly critical care echocardiography (CCE) - have become important pillars of critical care practice in human medicine, as illustrated by their widespread use, the growing amount of scientific publications, recent international guidelines (A. Levitov et al. in *Critical Care Medicine* 2016) and numerous national or international CCE certifications (as for instance the *European Diploma in Advanced Critical Care EchoCardiography*, EDEC).

This lecture will describe the advantages and drawbacks of CCE, in comparison of the others hemodynamic monitoring tools; the key factors in deciding between transthoracic or transesophageal echocardiography and how simple eye-balling can already answer to the majority of the critical care clinical questions, without advanced knowledge in ultrasonography; how CCE helps caring for critical care patients in circulatory and/or respiratory failure as well as assessing fluid responsiveness or mechanical ventilation complications. Finally, it will dig deeper in how echocardiography helps even during cardiac arrest, where it plays a role in the evaluation of the resuscitation effectiveness and gives information about prognosis or the needs for extra-corporeal life support (ECLS) procedure.