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Abstract

Ultrasonography is a fundamental tool in every day clinical practice in Emergency Medicine and Critical Care. The skills in order to handle this tool in the critical care patients at its best should be obtained after standardized education. The advantages of Critical Care Ultrasonography have long been identified, as it can answer clinical questions and guide management (diagnostics, invasive procedures, monitoring). As it happens with every technological advancement, in order to gain the most benefit clinicians should combine knowledge gained from special treatment, with the skills. Thus, the potential for specific education on acquisition and interpretation of ultrasonographic images from every organ of the human body should be provided to every Critical Care physician. Moreover, every educational program should be accompanied with an integrated approach of theoretical education on ultrasonography. The present manual aims at providing the basic theoretical knowledge on ultrasonography, so that Critical Care Ultrasound can become a prerequisite examination, combined with clinical evaluation of the patients, to reach the diagnosis and monitor the efficacy of

treatments followed. Special attention should be paid in the hemodynamic evaluation of the patients, as hemodynamic instability and its treatment are everyday problems that critical care doctors must deal with. Therefore, using critical care ultrasonography, the physician should be able to differentiate shock (obstructive, cardiogenic, distributive, hypovolemic), manipulate ventilator settings, guide the weaning process. In the present manual, the first three chapters are dedicated to the basics in ultrasonography and the principles of echocardiographic image acquisition in transthoracic and transesophageal echocardiography. The rest seven chapters refer to the basic pathological conditions of the heart that a critical care doctor should be able to identify. Chapters 11 and 12 concern lung ultrasonography and transcranial ultrasound, that represent fundamental skills for the physicians dealing with critical care patients in the Intensive Care Unit and the Emergency Department, as they can substitute chest x-rays and computed tomography scans, preventing the patients from being exposed to unnecessary radiation and reducing unnecessary patient transfer.