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Abstract

Ultrasonography is a fundamental tool in every day Emergency Medicine and Critical Care clinical practice. The skills to handle this tool in 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 happens with every technological advancement, clinicians should combine knowledge gained from special treatment with the skills to gain the most benefit. Thus, the potential for specific education on the 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 by an integrated approach to 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, and guide the weaning process. In the present manual, the first chapter is dedicated to the basics of ultrasonography. The rest four chapters refer to the basic pathological conditions of the lung that a critical care/respiratory physician should be able to identify. In detail, the second chapter concerns the evaluation of pathologies in the pleural cavity and, the 3rd covers pathologies of the lung parenchyma. The fourth chapter is dedicated to the evaluation of the diaphragm, while the fifth chapter entails the comprehensive evaluation of patients with different clinical scenarios, where the reader can identify the clinical applications of lung ultrasonography.

