SHAREABLE PDF

ERS statement on chest imaging in acute respiratory failure

Davide Chiumello[1,2], Giuseppe Francesco Sferrazza Papa[3], Antonio Artigas[4,5], Belaid Bouhemad[6], Aleksandar Grgic[7], Leo Heunks[8], Klaus Markstaller[9], Giulia M. Pellegrino[2,3], Lara Pisani[10], David Rigau[11], Marcus J. Schultz[12], Giovanni Sotgiu[13], Peter Spieth[14,15], Maurizio Zompatori[16] and Paolo Navalesi[17]

Affiliations: [1]SC Anestesia e Rianimazione, Ospedale San Paolo – Polo Universitario, ASST Santi Paolo e Carlo, Milan, Italy. [2]Dipartimento di Scienze della Salute, Centro Ricerca Coordinata di Insufficienza Respiratoria, Università degli Studi di Milano, Milan, Italy. [3]Casa di Cura del Policlinico, Dipartimento di Scienze Neuroriabilitative, Milan, Italy. [4]Corporacion Sanitaria, Universitaria Parc Tauli, CIBER de Enfermedades Respiratorias Autonomous University of Barcelona, Sabadell, Spain. [5]Intensive Care Dept, University Hospitals Sagrado Corazon – General de Cataluna, Quiron Salud, Barcelona-Sant Cugat del Valles, Spain. [6]Service d'Anesthésie – Réanimation, Université Bourgogne – Franche Comtè, Incumr 866L, Dijon, France. [7]Dept of Nuclear Medicine, Saarland University Medical Center, Homburg, Germany. [8]Dept of Intensive Care Medicine, Amsterdam UMC, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands. [9]Dept of Anesthesia, General Intensive Care Medicine and Pain Therapy, Medical University of Vienna, Vienna, Austria. [10]Respiratory and Critical Care Unit, Alma Mater Studiorum, University of Bologna, Sant'Orsola Malpighi Hospital, Bologna, Italy. [11]Cochrane Iberoamerica, Barcelona, Spain. [12]Mahidol–Oxford Tropical Medicine Research Unit, Mahidol University, Bangkok, Thailand. [13]Clinical Epidemiology and Medical Statistics Unit, Dept of Clinical and Experimental Medicine, University of Sassari, Sassari, Italy. [14]Dept of Anesthesiology and Critical Care Medicine, University Hospital Carl Gustav Carus, Technische Universität Dresden, Dresden, Germany. [15]Center for Clinical Research and Management Education, Division of Health Care Sciences, Dresden International University, Dresden, Germany. [16]Multimedica IRCCS, S. Giuseppe Hospital, Milan, Italy. [17]Anaesthesia and Intensive Care, Department of Medical and Surgical Sciences, University of Magna Graecia, Catanzaro, Italy.

Correspondence: Davide Chiumello, SC Anestesia e Rianimazione, ASST Santi Paolo e Carlo, Via Di Rudinì, Milan, Italy. E-mail: davide.chiumello@unimi.it

@ERSpublications
A variety of chest imaging techniques are now available for assessing patients with acute respiratory failure. This statement highlights characteristics, clinical indications and limitations of each technique as a guide for patient management. http://bit.ly/2XxYOd7

Cite this article as: Chiumello D, Sferrazza Papa GF, Artigas A, *et al*. ERS statement on chest imaging in acute respiratory failure. *Eur Respir J* 2019; 54: 1900435 [https://doi.org/10.1183/13993003.00435-2019].

ABSTRACT Chest imaging in patients with acute respiratory failure plays an important role in diagnosing, monitoring and assessing the underlying disease. The available modalities range from plain chest X-ray to computed tomography, lung ultrasound, electrical impedance tomography and positron emission tomography. Surprisingly, there are presently no clear-cut recommendations for critical care physicians regarding indications for and limitations of these different techniques.

The purpose of the present European Respiratory Society (ERS) statement is to provide physicians with a comprehensive clinical review of chest imaging techniques for the assessment of patients with acute respiratory failure, based on the scientific evidence as identified by systematic searches. For each of these imaging techniques, the panel evaluated the following items: possible indications, technical aspects, qualitative and quantitative analysis of lung morphology and the potential interplay with mechanical ventilation. A systematic search of the literature was performed from inception to September 2018. A first

search provided 1833 references. After evaluating the full text and discussion among the committee, 135 references were used to prepare the current statement.

These chest imaging techniques allow a better assessment and understanding of the pathogenesis and pathophysiology of patients with acute respiratory failure, but have different indications and can provide additional information to each other.