Acute Respiratory Distress Syndrome

Davide Chiumello
Editor

Acute Respiratory Distress Syndrome

Springer

Editor

Davide Chiumello
Director of Anaesthesia and Intensive Care
Services, ASST Santi Paolo e Carlo
Department of Scienze della Salute
University of Milan
Milan
Italy

ISBN 978-3-319-41850-6 ISBN 978-3-319-41852-0 (eBook)
DOI 10.1007/978-3-319-41852-0

Library of Congress Control Number: 2017934238

© Springer International Publishing Switzerland 2017

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Printed on acid-free paper

This Springer imprint is published by Springer Nature
The registered company is Springer International Publishing AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Contents

1 Acute Respiratory Distress Syndrome (ARDS): Definition, Incidence, and Outcome	1
Rémi Coudroy, Florence Boissier, and Arnaud W. Thille	
2 Pathophysiology of Acute Respiratory Distress Syndrome	15
Pedro Leme Silva and Patricia R.M. Rocco	
3 Ventilation Strategies: Tidal Volume and PEEP	29
Carmen Sílvia Valente Barbas	
4 Ventilation Strategies: High-Frequency Oscillatory Ventilation	41
Spyros D. Mentzelopoulos, George Karlis, Ioannis N. Pantazopoulos, and Charikleia Vrettou	
5 Ventilation Strategies: Recruitment Maneuvers	61
Lorenzo Ball and Paolo Pelosi	
6 Prone Position	73
Claude Guérin	
7 Partial or Total Extracorporeal Support	85
Nicolò Patroniti, Stefano Isgrò, and Michela Bombino	
8 Hemodynamic Monitoring and Fluid Management in ARDS	113
Dusan Hanidziar and Edward A. Bittner	
9 Weaning in ARDS	133
Ross Freebairn	
10 Lung Imaging in ARDS	155
Silvia Coppola, Sara Froio, and Davide Chiumello	
11 Acute Respiratory Distress Syndrome: Metabolic Support	173
Michele Umbrello, Danilo Radrizzani, and Gaetano Iapichino	

12	Pharmacological Interventions: Neuromuscular Blocking Agents	189
	Samuel Lehingue, Sami Hraiech, and Laurent Papazian	
13	Ventilator-Induced Lung Injury	201
	Michele Umbrello and Paolo Formenti	
14	Monitoring of Respiratory Mechanics	225
	Andrea Aliverti	
15	Noninvasive Ventilatory Support in Acute Respiratory Distress Syndrome	245
	Martin DRES and Laurent Brochard	
16	Interaction Between the Heart and Lungs	263
	Fabio Guarracino and Rubia Baldassarri	
17	Stem Cells and Their Immunomodulatory Potential for the Treatment of ARDS	273
	Claudia C. dos Santos	
18	Sedation	291
	Giovanni Mistraletti, Paolo Formenti, and Giovanni Sabbatini	
19	Acute Respiratory Distress Syndrome in Children	311
	Martin C.J. Kneyber	
20	Pulmonary Infections in Acute Respiratory Distress Syndrome	341
	Gianluigi Li Bassi, Tarek Sanussi, Paolo Pelosi, and Otavio Tavares Ranzani	