

CONTENTS

January 2017 / VOLUME 62 / NUMBER 1

FOR INFORMATION, CONTACT:

AARC Membership and Other AARC Services

American Association for
Respiratory Care
9425 N MacArthur Blvd, Suite 100
Irving, TX 75063-4706
(972) 243-2272 • Fax (972) 484-2720
<http://www.aarc.org>

Credentialing Organization for RRT, CRT

National Board for
Respiratory Care
18000 W 105th St
Olathe KS 66061
(913) 895-4900 • Fax (913) 895-4650
<http://www.nbrcc.org>

Accreditation of Education Programs

Commission on Accreditation for
Respiratory Care
1248 Harwood Rd
Bedford TX 76021-4244
(817) 283-2835 • Fax (817) 354-8519
<http://www.coarc.com>

Grants, Scholarships, Community Projects

American Respiratory
Care Foundation
9425 N MacArthur, Blvd, Suite 100
Irving, TX 75063-4706
(972) 243-2272 • Fax (972) 484-2720
<http://www.arcfoundation.org>

RESPIRATORY CARE

A Monthly Science Journal
Established in 1956

The Official Journal of the
American Association for
Respiratory Care



EDITOR'S COMMENTARY

Commentary on the January 2017 Issue **i**

EDITOR'S CHOICE

A Respiratory Therapist Disease Management Program for Subjects
Hospitalized With COPD

by *Patty C Silver, Marin H Kollef, Darnetta Clinkscale, Peggy Watts, Robin Kidder,
Brittany Eads, Debbie Bennett, Carolyn Lora, and Michael Quartaro—St. Louis, Missouri* **1**

ORIGINAL RESEARCH

Performance of Leak Compensation in All-Age ICU Ventilators During
Volume-Targeted Neonatal Ventilation: A Lung Model Study

by *Taiga Itagaki, Desmond J Bennett, Christopher T Chenelle, Daniel F Fisher, and
Robert M Kacmarek—Boston, Massachusetts* **10**

Effects of Leak Compensation on Patient-Ventilator Synchrony During
Premature/Neonatal Invasive and Noninvasive Ventilation: A Lung
Model Study

by *Taiga Itagaki, Christopher T Chenelle, Desmond J Bennett, Daniel F Fisher, and
Robert M Kacmarek—Boston, Massachusetts* **22**

Performance of the New Turbine Mid-Level Critical Care Ventilators

by *Carlos Delgado, Jose E Romero, Jaume Puig, Ana Izquierdo, Carlos Ferrando,
F Javier Belda, and Marina Soro—Valencia, Spain* **34**

Economics of Home Monitoring for Apnea in Late Preterm Infants

by *Brian L Montenegro, Michael Amberson, Lauren Veit—Boston, Massachusetts
Christina Freiburger—Chestnut Hill, Massachusetts
Dmitry Dukhovny—Portland, Oregon
and Lawrence M Rhein—Worcester, Massachusetts* **42**

Pediatric Prolonged Mechanical Ventilation: Considerations for
Definitional Criteria

by *Michaël Sauthier, Philippe Jouvét—Québec, Canada
and Louise Rose—Ontario, Canada* **49**

Long-Term Management for Ventilator-Assisted Children in Hong Kong:
2 Decades' Experience

by *Shuk-Kuen Chau, Ada Wing-Yan Yung, and So-Lun Lee—Pokfulam, Hong Kong* **54**

Reliability of Vibrating Mesh Technology

by *Ashwin A Gowda, Ann D Cuccia, and Gerald C Smaldone—Stony Brook, New York* **65**

Redesign of an Open-System Oxygen Face Mask With Mainstream
Capnometer for Children

by *Natalie Napolitano, Akira Nishisaki, Hayley S Buffman, Jessica Leffelman,
Matthew R Maltese, and Vinay M Nadkarni—Philadelphia, Pennsylvania* **70**

A Comparison of Different Techniques for Interfacing Capnography With
Adult and Pediatric Supplemental Oxygen Masks

by *Justin S Phillips, Lance P Pangilinan, Earl R E Mangalindan, Joseph L Booze, and
Richard H Kallet—San Francisco, California* **78**

Deep Breathing Improves End-Tidal Carbon Dioxide Monitoring of an
Oxygen Nasal Cannula-Based Capnometry Device in Subjects Extubated
After Abdominal Surgery

by *Shunsuke Takaki, Kenji Mizutani, Moeka Fukuchi, Tasuku Yoshida, Masahumi Idei,
Yuko Matsuda, Yoshikazu Yamaguchi, Tetsuya Miyashita, Takeshi Nomura,
Osamu Yamaguchi, and Takahisa Goto—Kanagawa, Japan* **86**

Comparing the Effects of Two Different Levels of Hyperoxygenation on
Gas Exchange During Open Endotracheal Suctioning: A Randomized
Crossover Study

by *Jacqueline Rodrigues de Freitas Vianna, Valéria Amorim Pires Di Lorenzo,
Miléa Mara Lourenço da Silva Simões, and Maurício Jamami—São Paulo, Brazil* **92**

CONTENTS

CONTINUED...

Performance of the PneuX System: A Bench Study Comparison With 4 Other Endotracheal Tube Cuffs <i>by Christopher T Chenelle, Taiga Itagaki, Daniel F Fisher, Lorenzo Berra, and Robert M Kacmarek—Boston, Massachusetts</i>	102
REVIEWS	
Past and Present ARDS Mortality Rates: A Systematic Review <i>by Jan Máca, Ondřej Jor, Peter Sklienka, Filip Burša, Michal Burda, Vladimír Janout, Pavel Ševčík—Ostrava, Czech Republic and Michal Holub—Prague, Czech Republic</i>	113
High-Flow Nasal Cannula in Critically Ill Subjects With or at Risk for Respiratory Failure: A Systematic Review and Meta-Analysis <i>by Wagner Luis Nedel, Caroline Deutschendorf, and Edison Moraes Rodrigues Filho—Porto Alegre, Brazil</i>	123
EDITORIALS	
Prevention of COPD Readmissions: A Work in Progress <i>by Stephen Derdak—Lackland Air Force Base, Texas</i>	133
Leak Compensation Algorithms: The Key Remedy to Noninvasive Ventilation Failure? <i>by Alban De Luca, Fatimata S Sall, and Abdo Khoury—Besançon, France</i>	135

