

# CONTENTS

April 2022 / VOLUME 67 / NUMBER 4

## 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  
10801 Mastin St, Suite 300  
Overland Park, KS 66210  
(913) 895-4900 • Fax (913) 712-9283  
<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 April 2022 Issue **i**

## EDITOR'S CHOICE

Global and Regional Tidal Volume Distribution in Spontaneously Breathing Mechanically Ventilated Children **383**  
*by Jiefta van Dijk, Alette A Koopman, Robert GT Blokpoel, Sandra Dijkstra, Johannes GM Burgerhof, Martin CJ Kneyber—Groningen, the Netherlands and Dick G Markhorst—Amsterdam, the Netherlands*

## ORIGINAL RESEARCH

Efficacy of Various Mitigation Devices in Reducing Fugitive Emissions from Nebulizers **394**  
*by Lauren J Harnois, Amnah A Alolaiwat, James B Fink, Jie Li—Chicago, Illinois Guoqiang Jing—Shandong, China and Rajiv Dhand—South Knoxville, Tennessee*

Mitigating Fugitive Aerosols During Aerosol Delivery via High-Flow Nasal Cannula Devices **404**  
*by Jie Li, Amnah A Alolaiwat, Lauren J Harnois, James B Fink—Chicago, Illinois and Rajiv Dhand—South Knoxville, Tennessee*

Aerosol Delivery via Continuous High-Frequency Oscillation During Mechanical Ventilation **415**  
*by Ahmad A Elshafei, James B Fink, and Jie Li—Chicago, Illinois*

Effect of Vibrating Mesh Nebulizer Aerosol Technology on the In Vitro Activity of Ribavirin Against Respiratory Syncytial Virus **421**  
*by Brian K Walsh—Aurora, Colorado and Yingguang Liu—Lynchburg, Virginia*

Verification of Assayed Blood Gas Quality Control Ranges **428**  
*by Jeffrey M Haynes and Robert G Fishwick—Manchester, New Hampshire*

Effects of Inhaled Salbutamol on Transient Tachypnea of the Newborn **433**  
*by Behnaz Basiri, Mohammad Kazem Sabzehei, Farzaneh Esna Ashari—Hamadan, Iran and Nishteman Sadeghi—Sanandaj, Iran*

Clinical Implications of Bronchodilator Testing: Diagnosing and Differentiating COPD and Asthma-COPD Overlap **440**  
*by Srinadh Annangi—Lexington, Kentucky and Angel O Coz-Yataco—Cleveland, Ohio*

Bi-level Positive Airway Pressure Versus Nasal CPAP for the Prevention of Extubation Failure in Infants After Cardiac Surgery **448**  
*by Yi-Rong Zheng, Wen-Hao Lin, Shi-Hao Lin, Ning Xu, Hua Cao, and Qiang Chen—Fuzhou, China*

Diaphragm Ultrasonography to Predict Noninvasive Respiratory Treatment Failure in Infants With Severe Bronchiolitis **455**  
*by Ana Gómez-Zamora, Diego Rodríguez-Álvarez, Iria Durán-Lorenzo, Cristina Schüffelmann, Miguel Rodríguez-Rubio, and Paloma Dorao Martínez-Romillo—Madrid, Spain*

Outcomes of Pediatric Titration Sleep Studies Following Empirical Use of Positive Airway Pressure and the Effect on Adherence to Therapy **464**  
*by L Denise Willis, Beverly J Spray, April Scribner, Kristi Pruss, and Supriya Jambhekar—Little Rock, Arkansas*

# CONTENTS

CONTINUED...

## SYSTEMATIC REVIEW

---

- Effect of Prone Positioning on Clinical Outcomes of Non-Intubated Subjects With COVID-19 **471**  
*by Azizullah Beran, Mohammed Mhanna, Omar Srour, Hazem Ayesh, Omar Sajdeya, Sami Ghazaleh, Asmaa Mhanna, Dana Ghazaleh, Waleed Khokher, Aadil Maqsood, and Ragheb Assaly—Toledo, Ohio*

## NARRATIVE REVIEW

---

- Intravascular Gas Exchange: Physiology, Literature Review, and Current Efforts **480**  
*by Tobias L Straube, Stewart Farling, Marc A Deshusses, Bruce Klitzman, Travis P Vesel—Durham, North Carolina and Ira M Cheifetz—Cleveland, Ohio*

## EDITORIALS

---

- Electrical Impedance Tomography in Mechanically Ventilated Children: Will It Impact Clinical Care? **494**  
*by John T Gallagher, Kevin L Ives, and Ira M Cheifetz—Cleveland, Ohio*

- Questions About Fugitive Aerosols: The Answer Is PPE **496**  
*by Shirley Quach—Hamilton, Canada*

## CORRESPONDENCE

---

- Awake Prone Position During Noninvasive Ventilation in COVID-19: Doubts Need Addressal **500**  
*by Giuseppe Fiorentino—Naples, Italy  
Vijay Hadda—New Delhi, India  
Mariano Mazza—Caserta, Italy  
and Antonio M Esquinas—Murcia, Spain*

- In Response **501**  
*by Vanessa M Oliveira—Porto Alegre, Brazil*