

Symposium

Introduction

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Advances in Evidence-Based Pulmonary Care

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Pulmonary care involves the basic quality of being able to breathe: the process of moving air in and out of the lungs. Whether breathing is supported by a ventilator, measured by end-tidal capnography, optimized with prone positioning, enhanced using pleural chest tubes, or improved by preventing tracheostomy device-related pressure ulcers, a knowledgeable team who uses evidence-based practice provides the best pulmonary care for patients. Advanced practice nurses are integral as drivers of that practice, as evidenced by articles in this Pulmonary Care Symposium.

Ventilator Technology

The use of positive pressure ventilation is nearly 70 years old and has undergone many changes since the 1950s.¹ The paradigm has changed from controlled ventilation to partial ventilator support, improving the interaction between the patient's breathing and the ventilator-delivered breaths. Improvements in ventilator technology have led to the development of new modes, including machine learning, that allow the patient's ventilation needs to drive delivery.¹ Gallagher's first article in the symposium highlights newer technology for alternative ventilator modes and contributes to our understanding of advanced ventilator modes. This understanding is essential to providing optimal ventilator support while preventing patient harm or ventilator-induced lung injury.

End-Tidal Capnography

Monitors that measure end-tidal capnography have been available for almost 70 years.² End-tidal capnography is used to assess ventilation and enable clinicians to identify patients earlier who are at risk for respiratory compromise, are experiencing partial or complete airway obstruction, or are experiencing hypoventilation. Gallagher's review of capnography is an important discussion of the growth of the technology and waveform assessment as well as the current standard of care for its use in specific patient populations.

Adult Respiratory Distress Syndrome

Adult respiratory distress syndrome (ARDS) has a long history; it first was discussed in the literature in 1967.³ The care of patients with ARDS is primarily supportive to prevent additional injury; no single pharmacologic therapy has been found to decrease the ARDS-related mortality rate effectively.⁴ In their

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article, Mitchell and Seckel discuss several recommended ventilatory modalities, including prone positioning, for use in patients with ARDS. Nursing staff are directly involved in repositioning patients from supine to prone position by performing the procedure, maintaining patient safety, and preventing additional harm. As the authors discuss in their article, safely turning critically ill patients with ARDS from supine to the prone position is an advanced skill that requires teamwork and expertise.

Tracheostomy Care and Pleural Chest Tubes

Tracheostomy care and pleural chest tubes have historical roots; however, new evidence-based practices must be considered in both areas of pulmonary care. Although tracheostomy has been used for more than 2000 years to manage upper respiratory obstruction, since the 1960s, the procedure has been used more commonly for the treatment of lower airway obstruction and in mechanical ventilation.⁵ In their article, Dixon et al describe one health care facility's story of developing a bundled interdisciplinary approach to prevent tracheostomy device-related pressure injuries. Preventing such injuries is fundamental to nursing practice and patient safety.

Pleural chest tubes also have a long history of use.⁶ Important evidence-based considerations exist for the placement and

management of tunneled pleural chest tubes in patients with end-stage diseases to enable symptom management and improved quality of life. Miller et al describe the implementation of best practices for the management of recurrent pleural effusions using a team approach that led to improved patient outcomes at one facility.

Summary

Together, the articles in this pulmonary care symposium provide some of the latest evidence to inform nursing care of patients with respiratory illnesses and conditions, as well as to provide ideas for implementing practice changes to optimize patient outcomes.

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