

## **Respiratory Associates of Texas**

**www.respiratoryassociates.com**

### **2010 Self-Directed Continuing Education Courses**

#### **Advanced Assessment Techniques in Critical Care (1 H)**

This lesson includes advanced assessment techniques use by respiratory therapists for critical care patients. Specifically, we explain procedures for monitoring and optimizing ventilatory mechanics; such as PEEP and tidal volume. Also, we display and explain common ventilator wave form abnormalities and the significance of end-tidal CO<sub>2</sub> values.

Learning objectives:

- Explain techniques for measuring and optimizing ventilatory mechanics.
- Interpret common ventilator wave form abnormalities.
- Explain the significance of end-tidal CO<sub>2</sub> measurements.

#### **Ethical and Legal Issues in Clinical Practice: Medical Devices (1 H)**

This lesson describes the legal and ethical issues pertaining to medical devices. The lesson addresses the sources of standards for care and the regulation of medical devices. Also, we describe the obligations of practitioners with respect to usage of medical devices. The lesson presents scenarios to exemplify and discuss hazardous medical device situations.

Learning objectives:

- Explain the ethical and legal responsibilities of respiratory care personnel in adhering to regulations and preventing adverse events involving medical devices.
- Discuss the ethical implications of examples of medical device adverse events

#### **Lung Clearance and Expansion Techniques (2 H)**

This lesson describes the physiology and pathophysiology of mucociliary transport. Then, we describe both the pharmacologic and non-pharmacologic techniques for mucokinesis, including the evidence base for each. The non-pharmacologic techniques include chest physiotherapy, directed cough, vibratory positive expiratory pressure (PEP) and high-frequency percussion. We also explain the mechanisms for developing atelectasis and describe techniques for preventing and treating atelectasis, including the current evidence base. These techniques include incentive spirometry, chest physiotherapy, vibratory PEP and continuous positive airway pressure.

Learning objective:

- Describe current information on techniques used for lung clearance and expansion.

### **Noninvasive Ventilation (2 H)**

This lesson explains strategies for mechanical ventilation that are applied without a tracheal tube. We examine the rationale, indications, complications and techniques for both negative and positive pressure noninvasive ventilation, including iron lungs and cuirass ventilators, as well as state-of-the-art devices for noninvasive positive pressure ventilation. The lesson describes findings from research that pertain to noninvasive ventilation.

Learning objective:

- Explain the rationale, indications, complications and clinical applications of both positive pressure and negative pressure noninvasive ventilation techniques.

### **Neuromuscular Conditions (2 H)**

This lesson is a survey of common neuromuscular conditions that affect both adult and pediatric patients. For the selected conditions, the lesson details the epidemiology, pathophysiology, manifestations, diagnosis and management. These conditions include myasthenia gravis, Guillain Barre syndrome, amyotrophic lateral sclerosis, muscular dystrophy, spinal muscle atrophy and critical illness polyneuropathy and myopathy.

Learning objective:

- Describe the pathophysiology, manifestations, diagnosis and management for the following conditions:
  - myasthenia gravis
  - Guillain Barre syndrome
  - amyotrophic lateral sclerosis
  - muscular dystrophy
  - spinal muscle atrophy
  - critical illness polyneuropathy and myopathy

### **Preventing Clinical Errors: Part One (1 H)**

This lesson focuses on preventing errors in the clinical setting. It describes the occurrence and importance of clinical errors, as well as their categories. Then, the lesson uses the multifactorial and Swiss cheese constructs to explain error causation and propagation. We identify specific types of errors that occur in respiratory care practice, explaining their causes and enablers, as well as potential preventive measures. Also, we identify barriers to error prevention and the measures that can be taken at agency, institutional, departmental and individual levels to prevent clinical errors.

Learning objectives:

- Describe errors that occur in respiratory care practice, their underlying causes and contributing factors.
- Explain mechanisms by which healthcare organizations and practitioners can minimize clinical errors.

### **Preventing Clinical Errors: Part Two – Devices (1 H)**

This lesson focuses on clinical errors that are associated with medical devices, specifically those used in respiratory care practice. The lesson uses the multifactorial view of device-associated adverse events and root cause analysis for identification of contributing factors. We identify device defects, including deficient human engineering and explain the role of device misuse in adverse events. The lesson includes scenarios that depict adverse events associated with respiratory care devices, including causes, contributing factors and preventive measures. Furthermore, we describe strategies to minimize adverse events, including the responsibilities of both management and staff in this effort.

Learning objectives:

- Discuss examples of medical device errors, their causes and enabling factors, as well as how the errors might have been prevented.
- Explain the responsibilities of respiratory care managers and practitioners in preventing errors associated with medical devices.

### **Respiratory Care Emergency Preparedness for Mass Casualty Events (2 H)**

This lesson describes the circumstances associated with mass casualty events, including disasters that are both natural and man-made. The lesson describes febrile respiratory illnesses, including bioterrorist threats, their etiologies, manifestations, management and preventive measures. The preventive measures include personal protective equipment and environmental controls. The lesson details chemical injuries from various types of agents, as well as the causes, manifestations, management and personal protection. Furthermore, we describe radiation and blast injuries, including their types, manifestations and management. We also discuss the types of natural disasters and describe the types of injuries expected in their aftermath and additional problems associated with transportation and supplies. The lesson explains the concept, surge capacity, as well as how the components of surge capacity adjust for mass casualty situations. We explain the importance of respiratory care to mass casualty events and describe specific strategies and equipment pertaining to delivery of that care in a mass casualty event. This description includes the Strategic National Stockpile System and Project Xtreme.

Learning objectives:

- Describe the healthcare situations and extended requirements associated with:
  - febrile respiratory illness; e.g., pandemic influenza, bioterrorism
  - natural disasters
  - man-made disasters
- Explain strategies to utilize in preparing for and responding to mass casualty events.