

Critical Care Academic Half Day Seminar Series

Topic: Respiratory Dysfunction/Mechanical Ventilation

Royal College Objectives:

The adult critical care medicine resident must be able to:

- determine the presence of respiratory failure, provide for its emergency support and have a plan of action to subsequently investigate and manage problems.

Demonstrate knowledge of:

- normal anatomy of the respiratory system
- physiology of the gas exchange unit, lung and chest wall mechanics, airway dynamics
- chest imaging of the ICU patient
- the control of respiration
- pathophysiology of disease states leading to respiratory failure
- principles and theory of mechanical ventilation and other methods of respiratory support
- respiratory problems and their management following surgical interventions

Core Competencies:

- ventilation by bag and mask
- application of conventional positive pressure mechanical ventilation
- application of non-invasive ventilation
- advanced ventilation strategies
- measurement and interpretation of pulmonary mechanics during mechanical ventilation
- application of an end-tidal CO₂ detector post-intubation
- application of capnography
- application of a pulse oximetry
- ventilation weaning techniques
- special gas admixture administration (heliox, NO)
- fiberoptic bronchoscopy in the intubated patient
- thoracentesis
- thoracostomy tube insertion

TOPIC
<i>Respiratory Physiology Part I</i> <ul style="list-style-type: none">▪ Oxygen saturation▪ Blood gases
<i>Respiratory Physiology Part II</i> <ul style="list-style-type: none">▪ Hypoxemic Respiratory Failure
<i>Airway Management</i>
<i>Hemoptysis</i>
<i>Hypercarbic Respiratory Failure</i>
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Non-Invasive Positive Pressure Ventilation

Mechanical Ventilation Part III :

- Acute Lung Injury
 - ARDS
 - VILI
- Specific Patient Populations
- COPD
 - Asthma
 - Obese/Pregnant
 - Brain Injured

Placing a patient on the ventilator

- Ventilator Waveforms
- Interpretation

Mechanical Ventilation Part IV :

- Ventilator induced lung injury
- VAP

Mechanical Ventilation Part V :

- Different modes of ventilation
- HFO
 - APRV
 - PAV

Mechanical Ventilation Part VI :

- Liberation from the Ventilator
- Weaning