Outline of Instruction

Division: Health Sciences
Area: Respiratory Therapy

Course Number: RTH 120
Course Name: Respiratory Care Techniques III

Prerequisite: RTH 110 - Respiratory Care Techniques II

Corequisite:

Hours Required: Class: 58  Lab: 36  Credits: 5

Course Description/Purpose

Mechanical ventilation topics are continued in this classroom and laboratory course. Topics presented include volume pre-set and pressure pre-set ventilator equipment and application techniques and basic ventilation management of adult and neonatal patients.

Major Units

1. Basic Volume Pre-set Ventilator Management
2. CDP/Ventilator Discontinuance
3. Advanced Mechanical Ventilation Modalities
4. Non-critical Care Uses of Pressure Pre-set Ventilation Equipment and Techniques
5. Pediatric/Neonatal Ventilation

Laboratory Assignments:

1. Ventilator Theory: Control and Assist/Control Operational Modes and CLT studies
2. Ventilator Theory: Intermittent Mandatory Ventilation Mode
3. Ventilator Theory: CPAP and PEEP Therapy
4. Modern Ventilators I: Volume Control & Graphics
5. Modern Ventilators II: Pressure Control & Monitoring Patient Spontaneous Mechanics
6. Modern Ventilators III: MAP and WOB Management
7. Hospital Based NPPV Equipment: IPPB and BiLevel Ventilators
8. Home Based Ventilators: Continuous PPV and BiLevel Ventilators
9. Equipment of Neonatal and Pediatric Respiratory Care
Student learning will be assessed by a variety of methods, including, but not limited to, quizzes and tests, laboratory exercises and examinations, computerized clinical simulations, homework assignments, and instructor observations.

**Cognitive**

Each student will be expected to:

- list the physiologic effects of and the indications, contraindications, and hazards for mechanical positive pressure ventilation.
- classify common mechanical ventilators according to structural and functional features.
- discuss the interrelationships between pressure, gas flow, time, and volume as relates to various types of mechanical ventilators.
- describe theory of operation and appropriate application of ancillary ventilator equipment.
- define, compare, and contrast the terms and acronyms for common forms of continuous distending pressure therapy, and volume control and pressure control ventilation modes.
- define, state the desired effects of, and list indications/contraindications for the following ventilator modes: assist, assist/control, control, IMV (and SIMV), CPAP, and PEEP.
- define, state the desired effects of, and list indications/contraindications for the following advanced ventilator operational modes: PSV, PCV, MMV (and EMMV), APRV, rise time %, and inverse I:E ratio mode.
- list and describe basic techniques of ventilator management as applied to pathologies commonly associated with ventilator dependent patients.
- recognize the general purposes of cardiopulmonary drugs routinely used in the care of ventilator dependent, critical care patients.
- demonstrate and discuss equipment use and techniques of neonatal-pediatric ventilation.

**Performance**

Each student will be expected to:

- discuss and demonstrate various techniques of ventilator set up, management, and discontinuance.
- establish all common basic ventilator modes (assist, assist/control, control, IMV–open and closed reservoir systems–and CPAP/PEEP) on the Bennett MA-1 trainer ventilator.
- perform calculations associated with ventilator management including prediction of minute ventilation changes needed to achieve a desired ventilatory outcomes, prediction of F\(\text{O}_2\) changes needed to achieve a targeted oxygenation status.
- perform calculations of compliance (dynamic and static), airway resistance, and corrected tidal volumes and minute ventilation for simulated ventilator patients.
- demonstrate ventilator maintenance and troubleshooting skills.
- establish all common basic ventilator modes (both volume and pressure control related) on modern adult critical care ventilators.