

RSPT 61A: ADULT MECHANICAL VENTILATION

Foothill College Course Outline of Record

Heading	Value
Units:	4
Hours:	3 lecture, 3 laboratory per week (72 total per quarter)
Prerequisite:	RSPT 50C and 51C.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	CSU
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

Student Learning Outcomes

- Apply the principles of oxygen delivery and arterial blood gas analysis to patient case scenarios to determine appropriate ventilator therapy.
- Identifies ventilator waveforms and suggests ventilator setting modifications.

Description

Develops and enhances the concepts and skills essential to meet the needs of patients placed on invasive and non-invasive ventilation. Overview of modes of ventilation, humidification and medication delivery. Includes laboratory exercises of commonly used ventilators and patient-ventilator simulations. For continuing education purposes, new ventilators and state-of-the-art theories on ventilation will be presented based upon current research. Intended for students in the Respiratory Therapy Program; enrollment is limited to students accepted in the program.

Course Objectives

The student will be able to:

- Apply the principles of oxygen delivery and arterial blood gas analysis to patient case scenarios to determine appropriate ventilator therapy.
- Set up a mechanical ventilator (Trilogy, Servo u, Servo i, Pulmonetics LTV1200 and Drager V500).
- Check ventilator settings on a mechanical ventilator.
- Suggest changes in ventilator parameters based on patient data.
- Recognize ventilator malfunction, given patient simulations.
- Change ventilator circuits.
- Explain when to use the various modes of ventilation.
- Perform calculations, e.g., Raw, Cst, Ti, I:E, Flow, Vt, ventilator settings.
- Compare and contrast pressure control and volume control ventilation.
- Identify ventilator waveforms and suggest ventilator setting modifications.
- Identify capnographic waveforms and suggest appropriate treatment.
- Using spontaneous breathing trials, recommend weaning techniques.
- Suggest ventilator settings to decrease work of breathing.

Course Content

- Recommend initial ventilator settings
 - FiO₂
 - Mode

- Tidal volume
- Rate
- I time
- Peep
- Pressure support
- Flow
- Back up apnea parameters
- Correctly set up and initiate mechanical ventilators
 - PB7200
 - PB840
 - Servo i
 - Drager XL
 - Pulmonetics LTV1200
- Perform a routine ventilator system check
 - Record
 - Mode
 - FiO₂
 - Tidal volume set and spontaneous
 - Set and total rate
 - Minute volume
 - Peak inspiratory pressure
 - Plateau pressure
 - Mean airway pressure
 - Peep
 - Pressure support
 - Flow
 - I time
 - I:E ratio
 - Mechanics
 - Alarm settings
 - Back up apnea parameters
 - Humidification
 - Suggest changes based on:
 - ABG results
 - Waveforms
 - Mechanics
 - Patient dyssynchrony
 - Parameter changes
 - Troubleshoot ventilator
 - Leak recognition
 - Kinked tubing
 - Disconnection
 - Change ventilator circuits
 - 2 person method
 - Criteria for changing circuit
 - Modes of ventilation
 - Weaning modes
 - Volume modes
 - Pressure control modes
 - APRV
 - HFOV
 - IRV
 - Calculations
 - Cs
 - I:E ratio
 - Raw
 - Compare and contrast between:
 - Pressure control
 - Assist control
 - SIMV
 - Waveform interpretation
 - Scalars

- 2. Loops
- K. Capnography
 - 1. Waveforms
 - 2. Troubleshooting
- L. Spontaneous weaning trials
 - 1. RSBI
 - 2. MIF/VC
 - 3. PF ratio
 - 4. T-piece trials
- M. Adjustments to decrease WOB
 - 1. Sensitivity
 - 2. Ramp
 - 3. Flow adjustments
 - 4. Mode changes
 - 5. ATC

Discipline(s)

Respiratory Technologies

Lab Content

- A. Ventilator set up
 - 1. Initial settings
 - 2. Completion of a ventilator check
- B. Management of ventilator settings
 - 1. Troubleshooting according to different patient scenarios
- C. Set: alarms and sensitivity accordingly

Special Facilities and/or Equipment

- A. Calculator, watch with second hand, scissors.
- B. Ventilators; compressed gas source.
- C. PC computer and projection monitor.

Method(s) of Evaluation

Methods of evaluation may include the following:

- A. Exams.
- B. Laboratory competency check-offs.
- C. Comprehensive final exam.
- D. Laboratory final exam.

Method(s) of Instruction

- A. Lecture presentations and classroom discussion on the topic of mechanical ventilation.
- B. In-class demonstration and practical application of the different modes of ventilation.

Representative Text(s) and Other Materials

Kacmarek, Stoller, and Heuer. [Egan's Fundamentals of Respiratory Care](#). 11th ed. Mosby, 2017. ISBN: 9780323341363

Pilbeam, Cairo. [Mechanical Ventilation: Physiology and Clinical Application](#). 6th ed. Mosby, 2016. ISBN: 9780323320092

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

- A. Reading assignments in the required texts.