Course Prefix and Number: RSTH 221  
Credit Hours: 4

Course Title: Critical Care Concepts

Course Prerequisites: successful completion of prior Fall semester courses

Textbooks:
White, G; *Basic Clinical Lab Competencies in Respiratory Care*  Latest edition

Course Description:
Lecture/laboratory course continuing with principles of respiratory therapeutics and equipment utilized in the intensive care units. Content includes adult mechanical ventilators, ventilation techniques, critical care monitoring and assessment/care of the critically ill patient.

Learning Outcomes:

At the end of this course the student will

A. perform advanced, common respiratory care procedures and display minimum competency in the performance of these advanced, intensive care unit-level inpatient respiratory care modalities in implementation and management of mechanical ventilation as directed by a physician’s order;
B. apply critical thinking to prescribe appropriate respiratory care modalities based on patient assessment and diagnosis while proposing modifications as indicated; and
C. determine appropriateness of mechanical ventilator settings as indicated by patient assessment, diagnostic data, and American Association for Respiratory Care clinical practice guidelines.

To achieve the learning outcomes, the student will

1. describe and perform the typical sequence and format for assessing and recording the physical exam of the critically ill patient (A)
2. define and utilize common terms utilized during assessment and management of the critically ill patient (A)
3. review the available sites and demonstrate the technique for evaluation of vital signs (A)
4. define various types of respiratory failure in words and quantitatively with numerical values (A)
5. distinguish between the various means of initiating a breath during mechanical ventilation (A)
6. list and assemble equipment utilized for obtaining weaning parameters and performing extubation (A)
7. relate the importance of medical history to the physical exam of the critically ill patient (A, C)
8. identify and describe the function of the various parts and types of resuscitation equipment and perform techniques utilized during manual resuscitation (A, B)
9. identify factors that influence oxygen delivery during resuscitation and modify oxygen delivery to optimize patient response in the critically ill patient (A, B)
10. identify and describe the indications and hazards of artificial airways and perform appropriate selection and placement of each for various patient populations (A,B)
11. describe indications and hazards of extubation (A, B)
12. distinguish between various mechanisms that cause inspiration to terminate (A,C)
13. describe the various mechanisms used to manipulate the expiratory phase (A,C)
14. identify various types of mechanical ventilators and unique features of each (A,C)
15. describe causes, characteristics, and typical diseases associated with pulmonary symptoms of the critically ill patient (A,B,C)
16. review terms associated with pulmonary symptomology (A,B,C)
17. review normal values and causes for abnormal vital signs for adults, children, and infants (A,B,C)
18. describe the physiologic effects of altered metabolic states frequently found in the critically ill patient and its influence on respiration. (A,B,C)
19. discuss the cardiovascular and pulmonary significance of findings from examination of the critically ill patient (A,B,C)
20. review indications, hazards, interpretations, procedures, analysis, and equipment for arterial blood gas sampling (A,B,C)
21. discuss the various clinical causes of airway obstruction, identify signs of airway obstruction, recommend appropriate interventions, and mange airway obstruction utilizing various techniques (A,B,C)
22. list, measure, or calculate the parameters that would necessitate initiating or discontinuing mechanical ventilation (A,B,C)
23. distinguish among the various types of ventilation methodologies (A,B,C)
24. distinguish between volume and pressure- present ventilation as to parameters ordered and those best controlled by the practitioner during mechanical ventilation (A,B,C)
25. discuss the effects of lung mechanics during mechanical ventilation and the physiologic effects of mechanical ventilation. (A,B,C)
26. identify, interpret, and draw pressure, flow, and volume waveforms produced during the various modes of mechanical ventilation. (A,B,C)
27. discuss internal mechanisms of the mechanical ventilator to include maintenance and potential problems discussing various values (A,B,C)
28. discuss the setting of ventilator alarms and determining cause of sounding alarms (A,B,C)
29. calculate and interpret various intensive care related respiratory therapy formulas utilizing patient simulation data (A,B,C)
30. discuss the body’s compensatory mechanisms in response to disease or injury (A,B,C)
31. review the pathophysiology, identification, and management of respiratory failure (A,C)
32. select the appropriate ventilator, mode of ventilation, and ventilator settings based on scenarios of various disease processes or patient lung characteristics for age-specific patient populations (A,B,C)
33. discuss invasive and non-invasive methods to measure, monitor, and manipulate ventilation, oxygenation, and cardiopulmonary status (A,B,C)
34. develop a respiratory care plan for clinical scenarios to include respiratory treatments, initial vent settings, vent management strategies, and weaning procedures (A,B,C)
35. review the phases of the cough mechanism and the impact of diseases or injury on function (B)
36. review methods of obtaining for temperature and discuss optimal methods as it relates to the patient population, site availability, and accuracy (B)
37. describe the importance of and be able to monitor tracheal cuff pressure (A)
38. describe and be able to detect Auto-PEEP (B)
39. discuss the types of and describe speaking tubes and valves (A)
40. describe and be able to place a LMA, combitube (A)
41. describe infection control standards for suctioning devices, gas delivery, and diagnostic devices (A)
42. discuss vacuum systems, pumps, and chest tube (A)
43. describe and be able to follow an infection control and ventilator association pneumonia protocol (B)
44. perform QC procedure for ABG analyzers, co-oximeters, point of care analyzers, and mechanical ventilators (A)
45. demonstrate competency in the performance of:
   **ARTIFICIAL AIRWAY MAINTENANCE**
   a. Intubation
   b. Trach Care
   c. Extubation
   d. Securing and repositioning E-T Tube
   e. Cuff Management
   f. Oral Care
   **BLOOD GASES**
   a. A-Line Sampling
   **ADULT VENTILATORY MANAGEMENT**
   a. Non-Invasive Ventilation
   b. Routine Ventilator Check (adult)
   c. Adjusting Ventilation
   d. Weaning
   e. Ventilator Circuit Change
   f. Ventilator Set Up
   **CALCULATIONS**
   a. Compliance
   b. Airway Resistance
   c. PA-aO2
   d. Pa-vO2
   e. PAO2
   f. PaO2/FiO2
   g. Shunt
   h. Vd/Vt
   **ASSIST WITH PROCEDURE**
Course Requirements: To earn a grade of “C” or higher the student must earn 70% of the total points for the course and meet all of the following course requirements.

- minimum overall average of 70% in the course
- successful completion of the lab practicum with average of 70%
- successful performance of competencies in lab

Course Grading Scale:
A- 90% or more of total possible points and successful completion of the lab practicum with average of 70%, and successful performance of competencies
B- 80% or more of total possible points and successful completion of the lab practicum with average of 70%, and successful performance of competencies
C- 70% or more of total possible points and successful completion of the lab practicum with average of 70%, and successful performance of competencies
D- less than 70% of total possible points but not less than 60% of total possible points
F- less than 60% of total possible points

Attendance Policy: The college attendance policy, which is available at http://www.bpcc.edu/catalog/current/academicpolicies.html, allows that “more restrictive attendance requirements may apply to some specialized classes such as laboratory, activity, and clinical courses because of the nature of those courses.” The attendance policy of the Respiratory Therapy program is described in the Respiratory Therapy Clinical Handbook.

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Reviewed by T. Gilmore/May 2017