COLLEGEWIDE COURSE OUTLINE OF RECORD

RESP 208, CLINICAL APPLICATIONS AND CONCEPTS IN CRITICAL CARE III

COURSE TITLE: Clinical Applications and Concepts in Critical Care III
COURSE NUMBER: RESP 208
PREREQUISITES: Maintain required clinical and health documents. RESP 104, Concepts in Adult Critical Care; RESP 108, Clinical Applications in Advanced Assessment and Care of a Cardiopulmonary Patient, and RESP 201 Advanced Concepts in Cardiopulmonary Diagnostic Procedures and Program Chair Approval
COREQUISITES: RESP 201 Advanced Concepts in Cardiopulmonary Diagnostic Procedures
SCHOOL: Health Sciences
PROGRAM: Respiratory Therapy
CREDIT HOURS: 5
CONTACT HOURS: Clinical Applications: 25
DATE OF LAST REVISION: Fall, 2020
EFFECTIVE DATE OF THIS REVISION: Spring, 2021

CATALOG DESCRIPTION: Provides supervised experience in critical care intensive care units. Advanced patient assessment, including pulmonary mechanics, interpretation of laboratory data and radiography results will be covered. Students will be expected to initiate, maintain and manage an artificial airway, support a critically ill patient's oxygenation and ventilation status to include initiating and modifying ventilator settings. Utilizes disease protocols and evidence based medicine to modify respiratory care plans. Assemble, troubleshoot and perform QC on various hemoximetry and mechanical ventilators. Assists physician in selected procedures. Continued Certification in CPR is required.

MAJOR COURSE LEARNING OBJECTIVES FROM 2020 NBRC MATRIX: Upon successful completion of this course the student will be expected to:

1. Retain knowledge, skill and competency from pre-requisite courses
2. Evaluate data in the patient record:
    a. Blood gas analysis and/or hemoximetry (Co-oximetry) results
    b. Imaging study results (chest radiographs, CT scan, Ultrasonography and/or echocardiography, PET scan, Ventilation/Perfusion scan)
    c. Trends and monitoring
        i. Ventilator liberation parameters
        ii. Pulmonary mechanics
        iii. Cardiac evaluation / monitoring results (ECG, hemodynamic parameters)
    d. Determination of a patient's pathophysiological state
3. Perform clinical assessment by auscultation
    a. Breath sounds
    b. Heart sounds and rhythm
4. Perform clinical assessment by chest radiograph
    a. Quality of imaging (patient position, penetration, lung inflation)
    b. Presence and position of airways, lines and drains

c. Presence of foreign bodies
d. Heart size and position
e. Presence or change in cardiopulmonary abnormalities (pneumothorax, pleural effusion, consolidation, pulmonary edema, pulmonary artery size)
f. Presence or change in diaphragm, mediastinum or trachea

5. Perform procedures to gather
    a. Mechanics of spontaneous ventilation (tidal volume, minute volume, MIP, MEP, vital capacity)
    b. Blood gas sample collection
    c. Blood gas analysis and/or hemoximetry (co-oximetry)
    d. Cardiopulmonary calculations (PA-aO2, VD/VT, P/F, OI)
    e. Pulmonary compliance and airway resistance
    f. Plateau pressure
    g. Auto-PEEP determination
    h. Spontaneous breathing trial (SBT)
    i. Apnea test (brain death determination)
    j. Cuff management tracheal and laryngeal
6. Evaluate procedure results:
    a. Evaluate 12 lead ECG
    b. Mechanics of spontaneous ventilation (tidal volume, minute volume, MIP, MEP, vital capacity)
    c. Blood gas analysis / hemoximetry (co-oximetry)
    d. Cardiopulmonary calculations (PA-aO2, VD/VT, P/F, OI)
    e. Hemodynamic monitoring
    f. Pulmonary compliance and airways resistance
    g. Plateau pressure
    h. Auto-PEEP determination
    i. Cuff management tracheal and laryngeal
    j. Spirometry inside or outside a pulmonary function laboratory
    k. Lung volumes in a pulmonary function laboratory
7. Recommend diagnostic procedures
    a. Imaging studies
    b. Blood gas and/or hemoximetry (co-oximetry)
    c. ECG
8. Troubleshooting and assembling of equipment
    a. CPAP/NPPV with patient interfaces
    b. Mechanical ventilators
    c. Intubation equipment
    d. Artificial airways
    e. Blood analyzers (hemoximetry (co-oximetry), blood gas, point of care)
    f. Patient breathing circuits
9. Perform quality control procedures
    a. Blood analyzers (hemoximetry (co-oximetry), blood gas, point of care)
    b. Mechanical ventilators (Pretest, EST)
10. Maintain a patent airway and care for artificial airways
    a. Proper patient positioning

b. Recognition of a difficult airway
c. Establish and manage a patient's airway
    i. Nasopharyngeal
    ii. Oropharyngeal,
    iii. Esophagealtracheal tubes/supraglottic airways
    iv. Endotracheal tubes
    v. Tracheostomy tube
    vi. Laryngectomy tube
    vii. Devices to assist with intubation (endotracheal tube changer, video laryngoscopy)
d. Exchanging artificial airway
e. Maintaining protocols to prevent ventilator associated infections
f. Performing extubation

11. Support oxygenation and ventilation
    a. Minimizing hypoxemia via patient positioning and suctioning
    b. Initiating and adjusting mask or nasal CPAP
    c. Initiating and adjusting mechanical ventilation
        i. Continuous mechanical
        ii. Noninvasive ventilation
        iii. Alarms
    d. Recognizing and correcting patient ventilator dyssynchrony
    e. Utilizes ventilator graphics (waveforms, scales)
    f. Liberating patient from mechanical ventilation
12. Administers medications and specialty gases via endotracheal instillation
13. Ensures modifications are made to the respiratory care plan
    a. Terminates treatment based for life threatening adverse event
    b. Recommendation for changes
        i. Starting treatment based on patient response
        ii. Adjusting of electrolyte therapy
        iii. Insertion or change of artificial airway
        iv. Liberating from mechanical ventilation
        v. Extubation
        vi. Discontinuing treatment based on patient response
        vii. Consultation for a physician specialist
        viii. Changing patient position
        ix. Changing mechanical ventilation parameters and settings
14. Utilizes principles of evidence based medicine principles or clinical practice guidelines
    a. Classification of disease severity
    b. Recommendation for changes in a therapeutic plan when indicated
    c. Application of guidelines (ARDSNet, NAEEP, GOLD)
15. Assist a physician/provider in performing procedures
    a. Intubation
    b. Withdrawal of life support

COURSE CONTENT: Topical areas of study include –

Arterial blood gas sampling and analysis
Noninvasive monitoring of the cardiopulmonary system (ECG)
Managing patients in critical care
Establishment, maintenance of artificial airways
Applications and manipulations of invasive mechanical ventilation
Therapeutic modalities in critical care settings
Quality control procedures (ABG, POC, Mechanical Ventilators)
Advanced patient assessment, including interpretation of laboratory and clinical data and recommendations of appropriate therapeutic interventions

PROCEDURES:

1. Arterial Line ABGs
    a. Suggested that students continue ABG stick competency per semester in critical care
2. Assisting with Intubation
3. Mechanical Ventilation Initiation
4. Mechanical Ventilation Rounds
5. Mechanical Ventilation Circuit change
6. Non-Invasive Positive Pressure Ventilation (NPPV)
7. Ventilation Liberation Parameters
8. Adult Inline Suctioning
9. Adult Endotracheal Tube Care (Securing airway, Cuff management)
10. Adult Extubation
11. CXR for Tubes and Lines
12. Basic Interpretation of Waveform Graphics

    Total procedures: 12

HOW TO ACCESS THE IVY TECH COMMUNITY COLLEGE LIBRARY:

The Ivy Tech Library is available to students' on- and off-campus, offering full text journals and books and other resources essential for course assignments. Go to http://www.ivytech.edu/library/ and choose the link for your campus.

ACADEMIC HONESTY STATEMENT:

The College is committed to academic integrity in all its practices. The faculty value intellectual integrity and a high standard of academic conduct. Activities that violate academic integrity undermine the quality and diminish the value of educational achievement.

Cheating on papers, tests or other academic works is a violation of College rules. No student shall engage in behavior that, in the judgment of the instructor of the class, may be construed as cheating. This may include, but is not limited to, plagiarism or other forms of academic dishonesty such as the acquisition without permission of tests or other academic materials and/or distribution of these materials and other academic work. This includes students who aid and abet as well as those who attempt such behavior.

ATTENDANCE:

Students are expected to attend and participate regularly in class meetings, online learning activities and other activities assigned as a part of a course of instruction. Faculty are required to report student participation in compliance with institutional policies and federal financial aid guidelines. Faculty and staff shall be sensitive to students' religious beliefs and observances, including an expectation that instructors make reasonable arrangements when a student must miss an exam or other academic exercise due to their religious observance. When notified in advance, and when possible, faculty will make allowances for students to make up missed work.

COPYRIGHT STATEMENT:

Students shall adhere to the laws governing the use of copyrighted materials. They must ensure that their activities comply with fair use and in no way infringe on the copyright or other proprietary rights of others and that the materials used and developed at Ivy Tech Community College contain nothing unlawful, unethical, or libelous and do not constitute any violation of any right of privacy.

ADA STATEMENT:

Ivy Tech Community College seeks to provide reasonable accommodations for qualified individuals with documented disabilities. If you need an accommodation because of a documented disability, please contact the Office of Disability Support Services.

If you will require assistance during an emergency evacuation, notify your instructor immediately. Look for evacuation procedures posted in your classroom.

TITLE IX STATEMENT:

Ivy Tech Community College is committed to providing all members of the College community with a learning and work environment free from sexual harassment and assault. Ivy Tech students have options for getting help if they have experienced sexual assault, relationship violence, sexual harassment or stalking. This information can be found at https://www.ivytech.edu/prevent-sexual-violence/index.html.

If students write or speak about having survived sexual violence, including rape, sexual assault, dating violence, domestic violence, or stalking, federal law and Ivy Tech policies require that instructors share this information with the Campus Title IX Coordinator. The Campus Title IX Coordinator will contact students to let them know about accommodations and support services at the College and in the community as well as options for holding accountable the person who harmed them. When contacted, students are not required to speak with the Campus Title IX Coordinator.

If students do not want the Title IX Coordinator notified, instead of disclosing this information to their instructor, students can speak confidentially with certain individuals at the College or in the

community. A list of these individuals can be found at https://www.ivytech.edu/prevent-sexual-violence/index.html under Confidential Employees and/or Community Resources.