An eLearning Orientation Program

Program Description
What is NEXT?

It serves as an orientation for new or transferring staff or a review of critical care concepts for anyone working in ICU. The course utilizes the synergy model and evidence-based practice guidelines from AACN (American Association of Critical Care Nurses), SCCM (Society of Critical Care Medicine) and IHI (Institute for Health Improvement). Best practices will be emphasized in modules that review anatomy, physiology, assessment and common pathophysiologic disorders. Each module will have a competency-based evaluation of the student’s progress. Elevate your professional standards to achieve a healthy work environment and improved patient outcomes.

NEXT brings you the same great benefits and features offered by all of our eLearning courses. NEXT is easy to use and combines video, audio and PowerPoint presentations to simulate the experience of attending a live seminar, appealing to all learning styles. Flexible purchasing options allow you to select specific topic modules such as ECG or stroke.

Program Learning Outcomes
This program prepares the learner to:
1. Discuss and define the hospital’s mission of care for the critically ill adult.
2. Incorporate principles of critical care nursing, the synergy model and evidence-based practice to provide a healthy work environment and improve patient outcomes.
3. Analyze common critical care health problems and their treatment modalities.
4. List, discuss and utilize treatment modalities to prevent complications of critical illness.

91 Contact Hours | Total Video Presentations: 99

Presented by
- Pam Allen, MSN/Ed., RN
  Alumnus CCRN
- Mary Ann “Cammy” House-Fancher, MSN, ACNP, CCRN-CMC, PCCN
- Beth Martin, MSN, RN, CCRN, CNRN
- Kendra Menzies Kent, MS, RN-BC, CCRN, CNRN, SCRN
- Lisa M. Soltis, MSN, APRN, PCCN, CCRN-CSC, CCNS, FCCM
- Kelly Thompson-Brazill, MSN, ACNP, RN, CCRN-CSC, PCCN, FCCM
- Cyndi Zarbano, MSN, RN, CCRN, CMSRN, CLNC, NLCP

Presenter biographies can be viewed at www.MedEdSeminars.net
A. Introduction to Critical Care Nursing

2 Presentations | 127 minutes | 2 Contact Hours

Presenter: Mary Ann “Cammy” House-Fancher, MSN, ACNP, CCRN-CMC, PCCN

Module Description
This introduction begins a comprehensive review of the core concepts required by the bedside critical care nurse. The focus of this module is to prepare the novice critical care nurse to provide patient-centered, quality care in the complex environment of the intensive care unit. Presentations correlate evidence-based practice guidelines, the “Institute of Health’s Improvement” Initiatives to “Save 100,000 Lives” and “Do No Harm” and AACN’s concepts of a healthy work environment.

Module Learning Outcomes
This module prepares the learner to:
1. Incorporate principles of critical care nursing, the synergy model and evidence-based practice to provide a healthy work environment and improve patient outcomes.
2. Analyze common critical care health problems and their treatment modalities.
3. List, discuss and utilize treatment modalities to prevent complications of critical illness.
4. Improve communication and collaboration with peers and colleagues responsible for patient care.

B. Critical Care Pharmacology

3 Presentations | 153 minutes | 2.75 Contact Hours

Presenter: Lisa M. Soltis, MSN, APRN, PCCN, CCRN-CSC, CCNS, FCCM

1. Novel Oral Anticoagulants

Module Description
This module will review the physiological effects of hemostasis and coagulation, including a review of the coagulation cascade and coagulation studies. The module will also address the major classes of antiplatelet and anticoagulation therapy, including indications and side effects of the most commonly used anticoagulants and antiplatelet medications.

Module Learning Outcomes
This module prepares the learner to:
1. Describe the stages of coagulation and the physiologic effects of the endothelium.
2. Identify the coagulation studies commonly used to measure the effects of the anticoagulation factors, and discuss what portion of the cascade they measure.
3. Identify the different types of antiplatelet agents, and discuss how they inhibit platelet aggregation.
4. Describe the differences between the anticoagulants, and identify monitoring of each anticoagulant.

2. CV Pharmacology

Module Description
This module will review the physiology and effects of the cardiac and vascular receptors. It will also address the different pharmacological agents that increase or decrease the heart rate and contractility. The module will also include different classes of antiarrhythmic medications and cardiovascular drugs that improve preload, afterload and contractility.

Module Learning Outcomes
This module prepares the learner to:
1. State the effect of the beta and alpha receptors in the heart and vasculature.
2. Identify the different medications that are used to increase and decrease heart rate, and describe the physiological benefits.
3. Discuss contractility issues, and identify pharmacological management of decrease contractility.
4. Discuss the different classes of the antiarrhythmic medications, and identify the effect and side effect of each class.
3. **Titration and Hemodynamics**

   **Module Description**
   This module will review physiological effects of the neuroendocrine system, including the sympathetic nervous system, renin-angiotensin and hypothalamic-pituitary-adrenal (HPA) axis. It discusses the hemodynamic component, including preload, afterload and contractility and the cardiovascular drugs that affect each component.

   **Module Learning Outcomes**
   *This module prepares the learner to:*
   1. Discuss the effects of the renin-angiotensin system, sympathetic nervous system and the HPA axis, and identify medications that limit the adverse effects of each system.
   2. Describe preload and the effects on the cardiac output, and discuss use of cardiovascular drugs that may be used to optimize the preload.
   3. Identify the definition of afterload, and describe pharmacological management of lowering and increasing the afterload to improve hemodynamics.
   4. Discuss the indications of medications to increase or decrease contractility.
   5. Identify common indications and side effects of cardiovascular medications.

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C. **Cardiovascular**

10 Presentations | 766 minutes | 13 Contact Hours

**Presenter:** Mary Ann “Cammy” House-Fancher, MSN, ACNP, CCRN-CMC, PCCN
Lisa M. Soltis, MSN, APRN, PCCN, CCRN-CSC, CCNS, FCCM

1. **Anatomy and Physiology**

   **Module Description**
   This module begins the section on nursing care of the patient with cardiovascular dysfunction. A review of cardiac anatomy and physiology is discussed with a focus on how perfusion is maintained.

   **Module Learning Outcomes**
   *This module prepares the learner to:*
   1. Discuss the anatomy and function of the normal artery.
   2. Describe the endothelial layer of the artery and its importance in vascular competence.
   3. Discuss inflammation as it relates to cardiac function.
   4. List and describe the coronary arteries.
   5. Define the major determinants of ventricular function.
   6. Describe the cardiac conduction system.
   7. Define autonomic and endocrine cardiac function.

2. **Assessment**

   **Module Description**
   This cardiac module reviews the basic cardiac assessment format for the critically ill patient. Tools of inspection, palpation and auscultation are reviewed. Heart sounds are reviewed.

   **Module Learning Outcomes**
   *This module prepares the learner to:*
   1. Perform a routine cardiac examination on the critically ill patient.
   2. List the techniques involved in the routine cardiac examination.
   3. List the differences between the carotid and the jugular vein pulsation.
   4. Discuss the vascular examination.
### 3. Hemodynamics

**Module Description**
This cardiac module explains the concepts of hemodynamics: the movement of blood through the chambers of the heart, great vessels and capillary beds. Normal pressures, oxygenation and monitoring are discussed.

**Module Learning Outcomes**
*This module prepares the learner to:*
1. Discuss the normal movement of blood through the heart and great vessels.
2. List the pressures within the chambers of the heart and great vessels.
3. Describe oxygen delivery and consumption.
4. Discuss the significance of mixed venous saturations.

### 4. Intra-Aortic Balloon Pump (IABP)

**Module Description**
This portion of the cardiac section reviews the indications and use of the IABP in the critically ill cardiac patient. Nursing care of the patient with the IABP is described.

**Module Learning Outcomes**
*This module prepares the learner to:*
1. Discuss the indications for the use of intra-aortic balloon pump therapy.
2. Define preload, afterload and contractility.
3. Discuss the primary and secondary effects of the IABP.
4. Discuss complications of the IABP.

### 5. Acute Coronary Syndrome (ACS)

**Module Description**
This module is designed to review coronary artery disease, the nation’s largest cause of mortality. The disease process, pathophysiology, American Heart Association and American College of Cardiology (AHH/ACC) guidelines, diagnosis, treatment and nursing care are described in detail. The focus remains on prevention and detection of complications in this population of critically ill patients.

**Module Learning Outcomes**
*This module prepares the learner to:*
1. Define coronary artery disease.
2. Discuss the pathophysiology of the development of the disease.
3. Define metabolic syndrome.
4. Discuss the clinical presentation of stable angina, unstable angina and acute myocardial infarction.
5. Define a care plan for the patient with right ventricular acute myocardial infarction.
6. Discuss the differential diagnosis of chest pain.
7. Discuss the outcome criteria for CAD.
8. Discuss the treatment of CAD with antiplatelet therapy.
9. Describe the pharmacological treatment of CAD.

### 6. New AHA Guidelines, Definitions

**Module Description**
This module will review the definitions of the various types of heart failure.

**Module Learning Outcomes**
*This module prepares the learner to:*
1. Compare and contrast the differences between systolic and diastolic heart failure.
2. Describe the levels of heart failure and common treatment modalities for each.
7. **Medical Management of Heart Failure**  

**Module Description**  
This module will review the complications associated with heart failure. Discussion will include the various differences found between systolic and diastolic dysfunction and treatment options for patients with heart failure.

**Module Learning Outcomes**  
*This module prepares the learner to:*  
1. Describe the pathological differences between systolic and diastolic heart failure.  
2. List common medications used in the treatment of heart failure and their purpose.

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8. **Medical Management of Advanced Heart Failure**  

**Module Description**  
This module will review the treatment and management of advanced heart failure. Unfortunately, as the disease progresses, treatment options become limited. Discussion will include a brief review of mechanical circulatory support for patients with advanced heart failure, as well as treatments for structural heart abnormalities.

**Module Learning Outcomes**  
*This module prepares the learner to:*  
1. Discuss 2 treatment options for management of fluid overload during acute exacerbation of pulmonary edema.  
2. Describe mechanical circulatory support options for a patient with advanced heart failure  
3. Describe how patients with structural heart disorders have similar symptoms to advanced heart failure.

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9. **Coronary Artery Bypass Surgery (CABG)**  

**Module Description**  
This module is designed to review the surgical treatment of CAD. Preoperative care, surgical techniques, postoperative care and nursing care of this type of patient are detailed; drugs used in the treatment of CAD are also reviewed. Postoperative goals are discussed in detail.

**Module Learning Outcomes**  
*This module prepares the learner to:*  
1. Discuss the treatment modalities for CAD.  
2. Discuss the indications for CABG.  
3. Describe the risks of the surgical procedure.  
4. Define the preoperative and perioperative periods and assess interventions for the postoperative period.  
5. Describe postoperative complications and the nursing care of those complications.

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10. **Valvular Disease**  

**Module Description**  
This cardiac module reviews valvular disease with an emphasis on nursing care of the patient with heart failure. Aortic stenosis and insufficiency along with mitral stenosis and insufficiency will be discussed.

**Module Learning Outcomes**  
*This module prepares the learner to:*  
1. Discuss the anatomy and basic physiology of the cardiac valves.  
2. Discuss mitral stenosis and regurgitation: assessment, medical and surgical interventions, postoperative care.  
3. Discuss aortic stenosis and regurgitation: assessment, medical and surgical interventions, postoperative care.  
4. Describe the postoperative complications associated with valve repair/replacement.
D. ECG Interpretation: Rhythms and 12 Leads

15 Presentations | 573 minutes | 10 Contact Hours

Presenter: Pam Allen, MSN/Ed., RN
Alumnus CCRN

Rhythms Section

1. Electrophysiology and Conduction System

Module Description
This module is designed to explain the foundations for ECG interpretation and to enable the learner to better understand the genesis of cardiac arrhythmias. Each phase of the action potential will be discussed along with relationships to the components of ECG waveforms.

Module Learning Outcomes
This module prepares the learner to:
1. Name the 4 properties of cardiac tissue.
2. List the ions involved in the cardiac action potential.
3. Outline the ionic activity during the 4 stages of the action potential.
4. Define depolarization, repolarization and terms associated with refractory periods
5. Identify the components of the conduction system.

2. Electrocardiographic Components

Module Description
This module will discuss the waveforms comprising the electrocardiogram. Each component will be addressed separately and in detail outlining the normal configurations as seen in standard monitoring leads.

Module Learning Outcomes
This module prepares the learner to:
1. List the components of the normal electrocardiogram.
2. State the normal measurement values for ECG graph paper.
3. Discuss the normal configurations for the P wave, QRS complex, ST segment, T and U waves as seen in Leads 2 and V1.

3. Intervals, Rates and a Systematic Approach to Analysis

Module Description
This module will discuss the proper method of determining intervals and heart rates as well as how to apply a systematic approach to analyzing rhythm strips.

Module Learning Outcomes
This module prepares the learner to:
1. Identify normal intervals for the PR segment, QRS interval and QT interval.
2. List three different methods to determine heart rate.
3. Outline a systematic approach to interpreting rhythm strips.

4. Sinus Mechanisms

Module Description
This module will discuss rhythms that originate in the sinus node. The mechanisms of normal sinus rhythms and sinus arrhythmias are also discussed along with the ECG criteria for each.

(continued)
Module Learning Outcomes
This module prepares the learner to:
1. Identify a normal sinus rhythm.
2. List the ECG criteria for sinus arrhythmia, sinus bradycardia and tachycardia.
3. Distinguish between sinus arrest and sinus block.
4. Outline the various manifestations of sick sinus syndrome.

5. Atrial Rhythms
45 minutes | 0.75 Contact Hours

Module Description
This lecture will discuss, in detail, the mechanisms responsible for specific atrial rhythms. Etiological factors and the ECG criteria of each type of atrial arrhythmia will be outlined with opportunities for the learner to test his or her interpretive skills.

Module Learning Outcomes
This module prepares the learner to:
1. List the mechanism responsible for the different types of atrial arrhythmias.
2. Name the causes of the various types of atrial arrhythmias.
3. List the ECG criteria for arrhythmias originating in the atria.

6. Junctional Rhythms
27 minutes | 0.5 Contact Hours

Module Description
This module will provide the learner with the ECG criteria necessary to accurately identify arrhythmias originating from the AV junction. Numerous rhythm strips are incorporated throughout the module to test interpretive skills.

Module Learning Outcomes
This module prepares the learner to:
1. Discuss the mechanism of rhythms originating in the AV junction.
2. Identify the ECG criteria associated with junctional rhythms.

7. AV Nodal Blocks
29 minutes | 0.5 Contact Hours

Module Description
This module begins with a review of the anatomical locations for AV nodal blocks. The ECG criteria is outlined for first-, second- and third-degree heart block with an emphasis placed on the 2 types of second-degree block. Sample tracings are provided to allow the learner to practice interpretive skills.

Module Learning Outcomes
This module prepares the learner to:
1. Identify anatomical locations and etiologies for AV block.
2. List the ECG criteria for first-, second- and third-degree AV block.
3. Distinguish between second-degree type 1 and second-degree type 2 AV block.

8. Ventricular Rhythms
33 minutes | 0.5 Contact Hours

Module Description
This module will begin with a discussion of the causes of ventricular ectopy followed by the different manifestations and ECG criteria. The optimum lead selection for rapid and accurate interpretation will also be included.

Module Learning Outcomes
This module prepares the learner to:
1. Discuss the mechanism of rhythms originating in the ventricles.
2. Identify the best leads to use for optimum identification of ventricular ectopy.
3. List the ECG criteria for premature ventricular beats, VT, VF and torsades de pointes.
4. Describe the characteristics of Brugada syndrome.
9. **Fundamentals of the 12-Lead ECG**

   **Module Description**
   This module discusses the principles of the lead systems followed by a detailed explanation of each of the standard 12-leads and proper placement for optimum recordings. The normal waveforms and morphology of each lead are also discussed. A systematic approach to analyzing a 12-lead is provided along with practice strips.

   **Module Learning Outcomes**
   *This module prepares the learner to:*
   1. Outline the 3 principles of lead systems.
   2. List each of the 12-leads and proper placement.
   3. Identify the normal morphologies for each lead.
   4. Describe a systematic approach to analyzing the 12-lead.

10. **Determining Electrical Axis**

    **Module Description**
    This module will provide the learner with concepts of electrical axis along with the steps to determine the quadrants and degrees of the axis. Practice 12-leads will be provided at the end of the module.

    **Module Learning Outcomes**
    *This module prepares the learner to:*
    1. List the factors that alter electrical axis.
    2. List the steps to determine axis quadrants.
    3. List the steps to determine the degrees of axis.

11. **Acute Coronary Syndromes**

    **Module Description**
    This module will begin with an explanation of ST-segment myocardial infarction (STEMI), non-ST-segment elevation myocardial infarction (NSTEMI) and unstable angina. The current guidelines for STEMI will be discussed followed by the detailed ECG morphologies and the outlining of lead groups for localizing the infarction.

    **Module Learning Outcomes**
    *This module prepares the learner to:*
    1. Distinguish between STEMI, NSTEMI and unstable angina.
    2. List the current guidelines for the identification of STEMI.
    3. Identify lead groups to localize a myocardial infarction.

12. **Bundle Branch Blocks and Hemiblocks**

    **Module Description**
    This module will review the anatomical features of bundle branches and outline the ECG criteria for left versus right bundle branch block. The mechanisms and ECG criteria for left anterior and left posterior fascicular blocks will also be discussed. The learner will have the opportunity to test his or her interpretive skills with sample ECG tracings.

    **Module Learning Outcomes**
    *This module prepares the learner to:*
    1. List the leads that are optimum for identifying intraventricular conduction defects.
    2. State the ECG criteria for left and right bundle branch block.
    3. State the ECG criteria for left anterior and left posterior fascicular blocks.
13. **Distinguishing Wide QRS Tachycardias**

**Module Description**
This module will begin with the different mechanisms that can produce a wide-complex tachycardia. Numerous clues and criteria will be provided to assist the learner in distinguishing between a ventricular tachycardia and a supraventricular tachycardia with a bundle-branch pattern. Practice 12-leads are included.

**Module Learning Outcomes**
*This module prepares the learner to:*
1. Describe the mechanisms that produce a wide-complex tachycardia.
2. List clues found on the 12-Lead ECG that assist in distinguishing a ventricular tachycardia from a supraventricular tachycardia with a bundle-branch pattern.

14. **Wolff-Parkinson-White Syndrome**

**Module Description**
This module begins with an explanation of preexcitation syndromes and their influences on the 12-Lead ECG. The focus of this module will be on the type of preexcitation syndrome that produces the ECG changes associated with Wolff-Parkinson-White (W-P-W) syndrome. The tachycardias associated with W-P-W and their management are also included in this discussion.

**Module Learning Outcomes**
*This module prepares the learner to:*
1. Define preexcitation syndrome and its etiologies.
2. List the ECG criteria for W-P-W.
3. List the types of tachycardias associated for W-P-W and management strategies for each.

15. **Myocardial Infarction Mimicry**

**Module Description**
Many abnormalities found on the 12-lead electrocardiogram have changes that can mimic a myocardial infarction. This lecture will present selected abnormalities and identify the features that distinguish their changes from those of myocardial infarctions.

**Module Learning Outcomes**
*This module prepares the learner to:*
1. Distinguish primary ST-segment changes from secondary ST-segment changes.
2. List 3 abnormal 12-Lead ECGs that may mimic a myocardial infarction.
3. Outline the distinguishing features of those abnormal ECGs and those of a myocardial infarction.

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**E. Pulmonary**

9 Presentations | 449 minutes | 7.5 Contact Hours

**Presenters:**
- Mary Ann “Cammy” House-Fancher, MSN, ACNP, CCRN-CMC, PCCN
- Lisa M. Soltis, MSN, APRN, PCCN, CCRN-CSC, CCNS, FCCM

1. **Anatomy and Physiology**

**Module Description**
This introduction to pulmonary nursing care of the critically ill patient begins with a review of structure and function with a focus on clinical assessment. Oxygenation and ventilation is discussed in detail as well as monitoring techniques utilized in the critical care environment.

**Module Learning Outcomes**
*This module prepares the learner to:*
1. Define the lungs as a unit of respiration.
2. List the muscles of ventilation and the alveolar capillary membrane unit.
3. Define and discuss pulmonary circulation and the homodynamic of the lung.
3. ABG Capnography

Module Description
This module reviews the findings of an arterial blood gas (ABG), including interpretation of oxygenation, ventilation and acid-base balance. It discusses utilizing the ABG to determine presence of VQ mismatches, including a shunt and dead space. The module provides physiology of compensation for metabolic or respiratory derangements.

Module Learning Outcomes
This module prepares the learner to:
1. Determine the differences between PaO2 and SaO2, and describe the utilization of an arterial blood gas to identify shunt or dead space abnormalities.
2. Discuss the use of an arterial blood gas and base deficit to assist with determination of the degree of hypovolemia and perfusion abnormalities following significant blood loss.
3. Compare and contrast an arterial blood gas to a mixed venous and a venous blood gas.
4. Describe the use of pH, PaCO2 and bicarbonate levels in determining the presence of an acid-base imbalance and potential cause.
5. Identify an arterial blood gas that is uncompensated, partially compensated and fully compensated.

4. Acute Respiratory Failure (ARF)

Module Description
This pulmonary module reviews acute respiratory failure. Included in the review are the goals of management and prevention of pneumonia as well as concepts of ventilator associated pneumonia and acute respiratory failure.

Module Learning Outcomes
This module prepares the learner to:
1. List and discuss the results of abnormalities in ventilation, perfusion or compliance.
2. Discuss the common causes of acute respiratory failure.
3. Discuss and describe the nursing care of the patient with acute respiratory failure.
4. Discuss the ventilator bundle.

5. Mechanical Ventilation, Part 1

Module Description
This module introduces the concept of noninvasive mechanical ventilation and provides information regarding the advantages, disadvantages, indications and contraindications. The module also discusses the different types of noninvasive mechanical ventilation and introduces invasive mechanical ventilation, including the nurse's role in assessing patients on mechanical ventilation.

Module Learning Outcomes
This module prepares the learner to:
1. State the indications and contraindications for noninvasive mechanical ventilation.
2. Identify the different masks used to provide noninvasive ventilation, and discuss the advantages and disadvantages of each type of mask.
3. Discuss the potential risks of using noninvasive ventilation, and discuss assessment and management of the potential complications.
4. Discuss the ventilator bundle.

(continued)
6. Mechanical Ventilation, Part 2

Module Description
This module presents the different modes of mechanical ventilation, including the newer modes used primarily with acute respiratory distress syndrome (ARDS). This module also reviews the complications of mechanical ventilation and reviews complications specific to each mode of ventilation. This module discusses the issues of weaning from mechanical ventilation, including: failure to wean, different weaning techniques and utilizing the ABCDE bundle for weaning.

Module Learning Outcomes
This module prepares the learner to:
1. Describe the advantages between volume control and pressure control mode, and identify advantages and disadvantages of both modes of ventilation.
2. Discuss the use of the newer modes of ventilation, including high frequency ventilation and ECMO.
3. Identify signs of a failure to wean from the mechanical ventilation, and discuss different techniques to wean.
4. Identify the components and purpose of the ABCDE bundle in weaning patients from ventilation, and discuss the utilization of the ABCDE bundle at the bedside.

7. Acute Lung Injury and Acute Respiratory Distress Syndrome

Module Description
This module reviews the pathophysiology of acute lung injury and acute respiratory distress syndrome (ARDS). The module reviews the physiology of a shunt and includes the alveolar changes occurring in ARDS. It addresses the clinical presentation and ventilator support of patients with ARDS. The module also discusses nonventilator management of ARDS patients.

Module Learning Outcomes
This module prepares the learner to:
1. Describe the pathophysiologic changes and presentation of ARDS, including etiologies.
2. Verbalize basic management of patients diagnosed with ARDS, and review various ventilator modes and their purpose.
3. Discuss the nonventilator management of patients with acute lung injury and ARDS.

8. Pulmonary Embolism

Module Description
This module discusses the complex pathophysiology of pulmonary embolism. A primary focus is on prevention, identification and treatment.

Module Learning Outcomes
This module prepares the learner to:
1. Describe the pathophysiology of pulmonary emboli.
2. Describe the clinical presentation of pulmonary emboli.
3. List the possible complications of pulmonary emboli.
4. List and discuss nursing interventions in the treatment and prevention of pulmonary emboli.
## F. Neurovascular

26 Presentations | 1, 681 minutes | 28 Contact Hours

**Presenters:** Beth Martin, MSN, RN, CCRN, CNRN
Kendra Menzies Kent, MS, RN-BC, CCRN, CNRN, SCRN

### The Neuro Patient

<table>
<thead>
<tr>
<th>Module</th>
<th>Title</th>
<th>Duration</th>
<th>Contact Hours</th>
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<tbody>
<tr>
<td>1.</td>
<td>Anatomy and Physiology</td>
<td>62 minutes</td>
<td>1 Contact Hour</td>
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<tr>
<td><strong>Module Learning Outcomes</strong></td>
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</tbody>
</table>
*This module prepares the learner to:*  
1. Accurately identify the functions of each lobe of the cerebral hemispheres, cerebellum and brain stem.  
2. Describe physiologic properties of the cerebrovascular circulation and intracranial pressure. |
| 2. | Assessment | 61 minutes | 1 Contact Hour |
| **Module Learning Outcomes** |  
*This module prepares the learner to:*  
1. Describe techniques used in the neurological assessment of the conscious or unconscious patient.  
2. Identify assessment findings that indicate neurologic dysfunction. |
| 3. | Traumatic Brain Injury | 65 minutes | 1 Contact Hour |
| **Module Learning Outcomes** |  
*This module prepares the learner to:*  
1. List common traumatic brain injuries.  
2. Describe management strategies for mild, moderate and severe traumatic brain injury. |
| 4. | Spinal Cord Injury | 54 minutes | 1 Contact Hour |
| **Module Learning Outcomes** |  
*This module prepares the learner to:*  
1. Outline the findings associated with various spinal cord injury syndromes.  
2. Select management strategies for the patient with traumatic cervical spinal cord injury. |
| 5. | Cerebrovascular, Part I: Strokes | 68 minutes | 1 Contact Hour |
| **Module Learning Outcomes** |  
*This module prepares the learner to:*  
1. Describe appropriate management strategies for the patient with ischemic or hemorrhagic stroke.  
2. Develop a nursing plan of care for the patient who has experienced a stroke. |
| 6. | Cerebrovascular, Part II: Aneurysms | 48 minutes | 1 Contact Hour |
| **Module Learning Outcomes** |  
*This module prepares the learner to:*  
1. Discuss the assessment and management of cerebral aneurysms.  
2. Development a plan of care for the management of complications after subarachnoid hemorrhage. |
| 7. | Seizures and Infectious Diseases | 39 minutes | 0.75 Contact Hours |
| **Module Learning Outcomes** |  
*This module prepares the learner to:*  
1. Identify management strategies for patients with seizure disorders.  
2. Differentiate management of meningitis, brain abscess and encephalitis. |
8. Neurovascular Anatomy and Diagnostic Imaging

Module Description
This lecture provides the nurse with a review of the neurovascular anatomy. It includes a basic discussion and review of angiograms of the neurovascular system.

Module Learning Outcomes
This module prepares the learner to:
1. Identify the arteries in the Circle of Willis and state area of perfusion for each major cerebral artery.
2. List the purposes of an arteriogram and describe the different components of an arteriogram.

9. Stroke Assessment: Specific to Patient Population

Module Description
Advanced discussion regarding the identification of symptoms of neurological abnormalities depending upon area of brain involved in the stroke. It includes assessments specific to each area of the brain.

Module Learning Outcomes
This module prepares the learner to:
1. Discuss the assessment of the different types of strokes (such as anterior, middle, posterior).
2. Describe the dominant hemisphere and discuss the different types of aphasia.

10. Hemorrhagic Strokes

Module Description
Hemorrhagic strokes include discussion of the different types of hemorrhagic strokes including hypertensive, anticoagulated, intraparenchymal, subarachnoid bleeds. The subarachnoid hemorrhage reviews aneurysms and vasospasms.

Module Learning Outcomes
This module prepares the learner to:
1. State the most common symptoms of a subarachnoid hemorrhage and identify the timing of the two most serious complications: rebleeds and vasospasms.
2. Discuss management issues of hypertension in hemorrhagic strokes.

11. Thrombotic Ischemic Strokes

Module Description
Provide information on the risk factors, presentation and physiology of thrombotic strokes. It includes discussion of the ischemic stroke guidelines.

Module Learning Outcomes
This module prepares the learner to:
1. Identify the risk factors for both a thrombotic and embolic ischemic stroke.
2. Discuss the prevention of an ischemic stroke in people without a prior stroke and in patients with a history of a prior stroke.
3. Review the ischemic stroke guidelines.

12. Cardioembolic Strokes

Module Description
The topic provides information on cardioembolic strokes in regards to etiology, prevention and management guidelines. It also addresses the management of atrial fibrillation.

Module Learning Outcomes
This module prepares the learner to:
1. Identify the common etiology and risk factors for cardioembolic strokes.
2. Discuss management issues of atrial fibrillation and reoccurrence of cardioembolic strokes.
13. Interventional Radiology  

Module Description  
Interventional radiology is becoming a more common management of the different strokes and the basics are addressed in this topic. It reviews the indications and techniques used in interventional radiology.

Module Learning Outcomes  
This module prepares the learner to:  
1. Identify the common neurological disorders managed with interventional radiology.  
2. Discuss the pre and post procedural care of a patient undergoing interventional radiology.

14. Rehabilitation Issues of Strokes  

Module Description  
This presentation is for acute care nurses with the focus to understand some of the rehabilitation issues the stroke patient will encounter once they are transferred. It will prepare the nurse caring for a stroke patient to begin some rehabilitation interventions prior to the transfer.

Module Learning Outcomes  
This module prepares the learner to:  
1. Discuss the rehabilitation issues commonly addressed in a stroke patient.  
2. Identify two common complications which may occur during stroke rehabilitation.

15. When to Feed: Dysphagia After Stroke  

Module Description  
The purpose of this topic is to provide the neuroscience nurse with the knowledge needed to care for stroke patients with dysphagia. This course will review the anatomy and physiology of a swallow, signs of swallow dysfunction, diagnostic work-up and management of dysphagia. This course also includes a discussion on a swallow screen and beside swallow evaluation. Upon completion of this course, you will be better prepared for evaluating stroke patients for swallow deficits.

Module Learning Outcomes  
This module prepares the learner to:  
1. Differentiate between aspiration and penetration.  
2. Discuss the complications of dysphagia.  
3. Identify the three phases of a swallow and state the cranial nerves involved in eating.  
4. State the physical signs of a swallowing abnormality.  
5. Describe the purpose of a bedside swallow and discuss the role of the speech pathologists.  
6. Discuss the differences between compensatory maneuvers and rehabilitative therapy for a swallow.

16. Primary and Secondary Stroke Prevention  

Module Description  
The intent of this topic is to provide the participant with the knowledge needed to educate their patients regarding the risk factors for a stroke and prevention of a stroke. The course addresses the prevention of both a primary stroke and prevention from a recurrent stroke (secondary stroke). The risks, both modifiable and nonmodifiable, will be presented as well. Upon completion of the course, you will be better prepared to talk with your patients and their families regarding stroke risks and prevention of strokes.

Module Learning Outcomes  
This module prepares the learner to:  
1. Discuss the issues regarding development and use of a risk assessment tool for strokes.  
2. List the nonmodifiable risk factors of a stroke.  
3. List and discuss the modifiable risk factors of a stroke.  
4. Differentiate between primary and secondary strokes.  
5. Discuss management of the following: hypertension, diabetes, dyslipidemia.  
6. Describe the diet, nutrition and exercise recommendations.  
7. State the ASA recommendations for CEA or CAS on primary and secondary stroke prevention with carotid artery stenosis.  
8. Discuss the use of ASA in primary and secondary prevention.
17. Rehabilitation: Begins in Acute Care Setting

Module Description
If rehabilitation for stroke patients begins after the patient is transferred to a rehabilitation facility, multiple complications and delays in therapies can negatively affect the patient’s outcomes. Nurses working in acute care settings should be familiar with basic rehabilitation principles that may be initiated early. This session will provide the acute care nurse with information needed to initiate the rehabilitation process early and prevent complications that may delay transfers and discharges.

Module Learning Outcomes
This module prepares the learner to:
1. Discuss the goals of rehabilitation.
2. Describe the positioning of a stroke patient with a hemiparesis/paralysis in the following positions: affected side, unaffected side, back and chair.
3. List 2 ways to lower the risk of falls in stroke patients.
4. Discuss the emotional impact of aphasia and communication abnormalities.

18. Diabetes Update: Stroke Patients

Module Description
Frequently, the stroke patients you are caring for will also have a history of diabetes. The intent of this course is to provide the participants with a review of diabetes in order to care for the stroke patients with diabetes. The course is also designed to provide the participant with updated information regarding the diagnosis, management and prevention of complications in diabetes. The course will review the basic principles of type 1 and type 2 diabetes, oral hypoglycemic medications, insulin and the new insulin analogs and prevention guidelines for CVD. Upon completion of this review, you will be better prepared to manage the diabetes in stroke patients.

Module Learning Outcomes
This module prepares the learner to:
1. Identify the differences between diabetes type 1 (DMT1) and diabetes type 2 (DMT2).
2. State the criteria for diagnosing DM in adult (nonpregnant) patient.
3. Describe the use of A1C in the diagnosis and management of diabetic patient.
4. Discuss the advantages of the new insulin analogs.
5. Discuss the guidelines for the primary prevention of CVD in diabetic patients with low, intermediate and high risk for CVD.

19. Anticoagulation and Medication Management for the Stroke Patient

Module Description
The purpose of this module is to provide the participants with the knowledge to care for stroke patients on anticoagulation and antiplatelet therapy. It will include a review of the different anticoagulants such as warfarin, heparin, low molecular weight heparin and direct thrombin inhibitors. The course will also review the different antiplatelet medications including aspirin, clopidogrel and phosphodiesterase inhibitors. The review of medications will also include tPA and statins. Upon completion of this module, you will be better prepared to administer and monitor the anticoagulation and antiplatelet therapy in stroke patients.

Module Learning Outcomes
This module prepares the learner to:
1. Describe the normal clotting physiology and discuss the stages in which each anticoagulant works.
2. Discuss the recommendations for both primary and secondary stroke prevention in thrombotic and cardioembolic strokes.
3. Identify the common risks, complications and monitoring of the following pharmacological agents: ASA, heparin, LMWH, warfarin, direct thrombin inhibitors and antiplatelet drugs.
4. Discuss the indications for the coagulation studies: PT with INR, APTT, anti-factor Xa, TT.
20. Strokes: Patient Education

Module Description
This course is designed to provide education to health professionals working with and teaching stroke patients. It provides information on the Stroke Performance Measures, which includes personal risk factors, signs and symptoms, stroke prevention, medication education and stroke follow-up. Other stroke education may include information on the areas within the acute care facilities, definitions of strokes, complications of strokes, rehabilitation and home safety. Stroke education is a very important part of managing stroke patients and needs to be initiated early.

Module Learning Outcomes
This module prepares the learner to:
1. Identify the 5 stroke performance measures for stroke education and discuss the importance of each in managing the patients and families.
2. Discuss guidelines for development of patient educational material and identify 2 teaching strategies to improve patient education.
3. Describe educational pathways, which can be developed to assist the nurse with a guide and timeline for stroke education.
4. Discuss discharge issues and describe interventions to improve home safety.

21. Interventional Procedures

Module Description
This module is designed to provide the participants with knowledge regarding the currently available interventional procedures for neurological patients including ischemic strokes and aneurysm management in subarachnoid hemorrhage patients. It includes the preprocedural care and the postprocedural care of a patient undergoing an interventional procedure. This module will review the current research on effectiveness of each of these procedures as well as the potential complications. Upon completion of this module, you will have a better understanding of the interventional procedures and be better prepared to care for the neurological patient post interventional procedure.

Module Learning Outcomes
This module prepares the learner to:
1. Identify the common neurological disorders, which can be managed with an interventional procedure.
2. Discuss the postprocedural assessment, monitoring and care required on a patient following an interventional procedure.

22. Stroke Management

Module Description
This module is designed to provide the nurse and other healthcare providers with the knowledge to care for the acute stroke patient. The course addresses the prehospital care and the need to rapidly identify signs of strokes. It addresses the use of telemedicine for care of strokes in smaller, nonstroke center hospitals. This module includes the management of strokes in the emergency department, including recognition, diagnostics and acute management of strokes. Once the patient is stabilized in the emergency department, the module then covers the acute care in the ICU and the med-surg areas. The acute management of stroke patients includes assessments, diagnostics, medical interventions and follow-up.

Module Learning Outcomes
This module prepares the learner to:
1. Discuss the different options for the use of telemedicine and support of smaller hospitals by stroke centers.
2. Describe the role of the EMS system in early recognition and rapid transport to designated stroke centers.
23. **Palliative Care in Acute Care Setting**

**Module Description**
This module will provide the nurse caring for patients at the end of life with information about the care of the patient and the family. The module reviews the concepts of palliative care and the holistic aspects at the end of life. It focuses on acute severe strokes and the initiation of palliative care in the acute care facility.

**Module Learning Outcomes**
- Define palliative care and discuss the holistic concept at the end of life.
- Identify common issues in initiating palliative care.
- Discuss the use of palliative care in strokes and identify examples of acute stroke situations, which may require palliative care.
- Identify common complications of strokes and discuss pain management at the end of life.

24. **Intracranial Pressure Monitoring**

**Module Description**
This module will provide relative information for nurses caring for neurological injured patients requiring intracranial pressure monitoring. The course provides an overview of the physiology of increased intracranial pressure (ICP) and the purpose of monitoring the pressure. It will provide advantages and disadvantages for the different types of ICP monitors. It addresses management of the ICP monitor.

**Module Learning Outcomes**
- Discuss the physiology of an increasing intracranial pressure and identify compensatory mechanisms.
- Identify the different types of ICP monitors and discuss the advantages and disadvantages of each.
- Describe a normal ICP waveform and identify changes that indicate a decrease in cranial compliance.

25. **Therapeutic Hypothermia in Stroke Patients**

**Module Description**
This module is designed to provide nurses caring for stroke patients current information regarding the use of therapeutic hypothermia and prophylactic normothermia. This module presents some of the available data on the effectiveness and safety of therapeutic hypothermia. It also discusses the clinical issues for inducing hypothermia, including the methods of induction, the phases of therapeutic hypothermia and potential complications. It provides information on the management of shivering during therapeutic hypothermia.

**Module Learning Outcomes**
- Discuss the indications for therapeutic hypothermia and identify the potential role for stroke patients.
- Identify the three phases of therapeutic hypothermia and describe the nursing role in each phase.
- Discuss different methods of cooling a patient and present the advantages and disadvantages of each.
- State the complications of shivering during therapeutic hypothermia and identify interventions used.

26. **Cerebral Vasospasm**

This module provides information to the critical care nurse regarding a high-risk complication of a subarachnoid hemorrhage, vasospasm. This complication has a high morbidity and high mortality, which requires nurses to be familiar with the identification of onset of vasospasms and how to manage these patients. Early recognition and management may improve outcomes.

**Module Learning Outcomes**
- Discuss the pathophysiology of vasospasms and identify common theories.
- Describe the clinical presentation of vasospasm and discuss the timing issues.
- Identify both invasive and noninvasive diagnostic techniques to diagnose vasospasms.
- Describe the popular treatment of triple H therapy and nimodipine.
- Discuss newer therapies and research on both prevention and treatment of vasospasms.
G. Renal

3 Presentations | 122 minutes | 2 Contact Hours

Presenter: Lisa M. Soltis, MSN, APRN, PCCN, CCRN-CSC, CCNS, FCCM
Mary Ann "Cammy" House-Fancher, MSN, ACNP, CCRN-CMC, PCCN

1. Renal Function 46 minutes | 0.5 Contact Hours

Module Description
This section of the renal module is designed to review the basic anatomy and physiology of the kidney. The focus of the module is to prepare the critical care nurse to assess and trac renal function in the complexly ill patient.

Module Learning Outcomes
This module prepares the learner to:
1. Identify the gross anatomy of the renal system including the major blood supply.
2. List and discuss the major functions of the renal system.
3. Discuss the properties of filtration, reabsorption and excretion.
4. Define acute kidney injury according to the RIFLE criteria.
5. Discuss strategies to prevent acute kidney injury.

2. Acute Kidney Injury, Part 1 38 minutes | 0.75 Contact Hours

Module Description
This lesson in the renal module will review acute kidney injury and failure in critically ill patients. Review of basic renal function and renal diagnostics test will be discussed. RIFLE criteria for scoring the severity of kidney dysfunction are reviewed. Primary etiologies for the development of AKI are discussed as well as management of the patient experiencing kidney injury.

Module Learning Outcomes
This module prepares the learner to:
1. Describe the renal anatomy and physiology.
2. Review the major functions of the renal system.
3. Describe the classifications of AKI and assessment finding associated with each stage.

3. Acute Kidney Injury, Part 2 38 minutes | 0.75 Contact Hours

Module Description
This lesson in the renal module will review acute kidney injury and failure in critically ill patients. Primary etiologies for the development of acute tubular necrosis are discussed as well as management of the patient experiencing chronic or end-stage kidney failure. This lesson will also review the various types of therapy of AKI and chronic renal failure as well as the different types of dialysis available.

Module Learning Outcomes
This module prepares the learner to:
1. Describe the etiology of acute tubular necrosis.
2. Discuss common diagnostic findings associated with acute tubular necrosis.
1. Anatomy, Physiology and Assessment

Module Description
This module is designed for the review of the entire gastrointestinal tract. Structure and function of the system will be reviewed with a focus on interventions for the critical care nurse to prevent complications of critical illness as well as developing strategies to deal with acute pathophysiology.

Module Learning Outcomes
This module prepares the learner to:
1. Label and list the entire gastrointestinal system.
2. Discuss the purpose of the gastrointestinal system.
3. Discuss the upper gastrointestinal tract, structure and function.
4. Discuss the lower gastrointestinal tract, structure and function.
5. List and describe the functions of the gastrointestinal accessory organs.
6. List and describe the diagnostic tests that may be done to review the gastrointestinal functions.
7. Discuss the development of a nutritional intervention and plan for the critically ill patient.

2. Pathophysiology

Module Description
This module of gastrointestinal (GI) pathophysiology continues the evaluation of the critically ill patient with GI dysfunction. The assessment of the patient with GI dysfunction is reviewed, the diagnostic tools to evaluate the patient are reviewed, and treatment strategies and interventions for prevention are discussed.

Module Learning Outcomes
This module prepares the learner to:
1. Discuss the factors involved in the genesis of GI bleeding.
2. List and discuss nursing interventions for the patient with active GI bleeding.
3. Describe esophageal varies and the pathophysiology of portal hypertension.
4. Describe the patient with intestinal infarction: presentation, assessment, diagnostic criteria and treatment strategies.
5. Define intra-abdominal hypertension.

3. Acute Pancreatitis

Module Description
This module will review management of the patient with acute pancreatitis. The lesson describes risk factors, etiologies, pathophysiology, signs and symptoms of pancreatitis. Diagnostic findings will also be discussed as well as patient management priorities.

Module Learning Outcomes
This module prepares the learner to:
1. Describe risk factors for acute pancreatitis.
2. Identify signs and symptoms of acute pancreatitis.
3. Discuss treatment modalities for patients with acute pancreatitis.
4. Hepatic Failure

Module Description
The complexity of the liver is vast, as it performs more than 800 defined functions. Alterations in liver functions can lead to a myriad of problems affecting multiple body systems. This module will describe normal liver function, common etiologies and causes of liver dysfunction and management of common complications associated with liver failure.

Module Learning Outcomes
This module prepares the learner to:
1. Describe the physiology of the liver and normal liver function.
2. Discuss common etiologies and contributing factors to developing hepatic failure.

5. Acute GI Bleeds

Module Description
This module will review management of the patient with an acute gastrointestinal bleeding event. The lesson describes risk factors, etiologies, pathophysiology, signs and symptoms of various types of GI bleeding. Diagnostic findings will also be discussed as well as patient management priorities.

Module Learning Outcomes
This module prepares the learner to:
1. Discuss common etiologies and contributing factors to developing a GI bleed.
2. Describe diagnosis and treatment of upper and lower GI bleeds.
3. Describe other abnormalities of the GI systems, including small-bowel obstruction and bowel infarctions.

I. Endocrine

4 Presentations | 134 minutes | 2 Contact Hours

Presenter: Lisa M. Soltis, MSN, APRN, PCCN, CCRN-CSC, CCNS, FCCM
Kelly Thompson-Brazill, MSN, ACNP, RN, CCRN-CSC, PCCN, FCCM

1. Anatomy and Physiology

Module Description
This portion of the endocrine module discusses the integration of the neurologic and endocrine systems. It describes the major glands and hormones involved with physiologic homeostasis. It discusses the importance of both negative and positive feedback loops. It discusses hormone release and transport. Finally, it compares a variety of hormones necessary during critical illness.

Module Learning Outcomes
This module prepares the learner to:
1. Describe the relationship between the hypothalamus, pituitary gland and hormone production.
2. Compare and contrast the differences between protein-bound and unbound hormones.
3. Verbalize how positive feedback loops lead to increased hormone production.
4. Verbalize how negative feedback loops lead to decreased hormone production.
2. Assessment  

Module Description  
This section details a generalized approach to the subjective and objective portions of the examination of patients with suspected endocrine disorders.  

Module Learning Outcomes  
This module prepares the learner to:  
1. Verbalize the difference between primary and secondary adrenal insufficiency.  
2. Describe general examination findings that are found in patients with various endocrine disorders.

3. Hypo- and Hyperglycemic States  

Module Description  
This module will review two major endocrine emergencies related to diabetes mellitus, diabetic ketoacidosis (DKA) and hyperosmolar hyperglycemic syndrome (HHS). This session will highlight diagnosis and management of each of these disorders, as well as review electrolyte abnormalities commonly seen with these conditions.  

Module Learning Outcomes  
This module prepares the learner to:  
1. Differentiate the pathophysiology and diagnosis between diabetic ketoacidosis and hyperosmolar hyperglycemic syndrome.  
2. Compare the treatment regimen for diabetic ketoacidosis to hyperosmolar hyperglycemic syndrome.

4. Disorders of Antidiuretic Hormone & Fluid Balance  

Module Description  
This module is a continuation of the previous lesson, with the primary focus on endocrine emergencies. This lesson will highlight disorders related to the secretion of antidiuretic hormone leading to fluid balance disorders, such as diabetes insipidus and syndrome of inappropriate antidiuretic hormone secretion (SIADH). Other topics include critical-illness- related cortisol insufficiency and other endocrine disorders associated with severe sepsis.  

Module Learning Outcomes  
This module prepares the learner to:  
1. Verbalize the difference between primary and secondary adrenal insufficiency.  
2. Describe the pathophysiology of critical-illness-related cortisol insufficiency.  
3. Discuss presentation and management of diabetes insipidus.

J. Hematology  

3 Presentations | 145 minutes | 2.5 Contact Hours  

Presenter: Mary Ann “Cammy” House-Fancher, MSN, ACNP, CCRN-CMC, PCCN  

1. Introduction to Hematology  

Module Description  
This module on hematology is designed to review the basic functions of the innate immune system, the normal clotting mechanisms and the DIC and HIT pathophysiologies. The focus is the nursing assessment of the immune-compromised patient and the patient with bleeding abnormalities.  

Module Learning Outcomes  
This module prepares the learner to:  
1. Discuss the vital functions of the blood and hematological system.  
2. Review and discuss the Innate and Acquired Immune System.  
3. Evaluate the coagulation cascade.  
4. Discuss the immediate inflammatory response to acute illness.  
5. Discuss the significance of the systemic inflammatory response and its sequelae.
2. Heparin Induced Thrombocytopenia (HIT)  

Module Description  
The second module of hematology covers the syndrome of Heparin Induced Thrombocytopenia (HIT). The focus is platelet function and the sequence of events that may occur when the patient becomes allergic to heparin. Nursing assessment and interventions of therapy are included.

Module Learning Outcomes  
This module prepares the learner to:  
1. Discuss the clinical significance of HIT in the critical care area.  
2. Review the role of the platelet.  
3. Discuss the definitions of HIT, HAT and the incidence of these syndromes.  
4. List and detail the clinical presentation of the patient with HIT.  
5. List the types of diagnosis testing available.  
6. Discuss the treatment modalities available.

3. Disseminated Intravascular Coagulation (DIC)  

Module Description  
The hematology module is continued with this section on coagulation abnormalities. The focus is the patient with a bleeding disorder, DIC; identification, diagnosis and treatment. Nursing care of the bleeding patient is discussed.

Module Learning Outcomes  
This module prepares the learner to:  
1. Discuss the incidence, as well as the factors that may trigger DIC.  
2. List and discuss the clinical presentation of the patient with DIC or coagulopathy.  
3. List and discuss the laboratory findings in DIC.  
4. Describe the medical management of the bleeding patient.  
5. Describe blood product utilization in the critical care environment.  
6. List and discuss the indications for use of factor 7a.

K. Shock  

3 Presentations | 213 minutes | 3.75 Contact Hours  
Presenter: Lisa M. Soltis, MSN, APRN, PCCN, CCRN-CSC, CCNS, FCCM

1. Shock States  

Module Description  
Shock is a term used to include multiple situations and disease processes that result in tissue hypoperfusion. This module will identify the different types of shock and discuss the etiology, presentation and management of each.

Module Learning Outcomes  
This module prepares the learner to:  
1. Discuss the pathophysiology associated with various shock states.  
2. Discuss hemodynamic findings and variations found between the different shock states.  
3. Review components of oxygen delivery and extraction through the use of tissue-oxygenation monitoring.

2. Tissue Oxygenation  

Module Description  
Tissue oxygenation is important in all types of shock, and the ICU nurse should understand the concept and be able to improve both the delivery and the demand. This module will address the concept of tissue oxygenation and discuss issues of improving oxygen delivery and lowering the oxygen demand to improve tissue oxygenation.

Module Learning Outcomes  
This module prepares the learner to:  
1. Discuss the relationship between oxygen delivery and oxygen consumption.  
2. State the three determinants of oxygen delivery and identify interventions to improve delivery.  
3. Describe the role of SVO2 monitoring in determining adequacy of tissue oxygenation.  
4. State the normal SVO2 and identify possible causes of low SVO2.
### 3. Sepsis

**Module Description**
Surviving sepsis guidelines and the Surviving Sepsis Campaign has been shown to improve outcomes in sepsis. This module will discuss the sepsis process, techniques to prevent sepsis and rapid recognition and treatment guidelines for sepsis.

**Module Learning Outcomes**
*This module prepares the learner to:
1. Discuss the new surviving sepsis guidelines and care recommendations from the Surviving Sepsis Campaign.
2. Discuss research findings that support the recommended changes in patient management with severe sepsis.
3. Describe the initial sepsis bundles.

### L. Pain Management Essentials

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<tr>
<th>8 Presentations</th>
<th>422 minutes</th>
<th>7.5 Contact Hours</th>
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**Presenter:** Kendra Menzies Kent, MS, RN-BC, CCRN, CNRN, SCRN  
Lisa M. Soltis, MSN, APRN, PCCN, CCRN-CSC, CCNS, FCCM

#### 1. Painful Perceptions: What is Pain?

**Module Description**
This lecture is designed to review some of the physiological differences among individuals as well as the physiological aspects of pain. It addresses the anatomy and physiology of pain transmission throughout the body.

**Module Learning Outcomes**
*This module prepares the learner to:
1. Discuss the different responses of individuals to pain and describe the emotional effect on the pain response.
2. State the pain pathways from the peripheral through the spinal cord to the brain and describe the physiology of pain transmission.
3. Discuss the physiological effects of pain on the different body systems.

#### 2. Pain Assessment

**Module Description**
Pain assessment involves subjective as well as objective data. The common issues experienced by nurses in pain assessment are discussed, and guidelines are provided. Pain assessment techniques, including the PQRST, are reviewed with clinical examples.

**Module Learning Outcomes**
*This module prepares the learner to:
1. Discuss the issues of using self report versus behavioral responses and vital signs in the assessment of pain.
2. State the components of the PQRST system that are used in pain assessment, and describe the application at the bedside.
3. Describe the different pain assessment tools available for use in the acute care setting.

#### 3. The A’s of Pain: Analgesics (Part 1)

**Module Description**
This module will review pain assessment, pharmacological management of pain and issues with pain management in critically ill patients. The session will also address sedation assessment tools and a discussion of the utilization of neuromuscular blocking agents on ventilated patients.

**Module Learning Outcomes**
*This module prepares the learner to:
1. Discuss the use of a behavioral pain assessment tool in critically ill patients unable to provide a self-report.
2. Identify sources of pain in critically ill patients and discuss the pharmacological management of pain.
3. Discuss sedation scales used in assessment of sedation levels, and identify differences of anxiety.
4. Identify indications for use of neuromuscular blocking agents in mechanically ventilated critically ill patients.
4. The A’s of Pain: Anxiolytics (Part 2) 37 minutes | 0.75 Contact Hours

**Module Description**
This module will review sedation with analgesia and the use of sedatives in critically ill patients. The session will address indications, levels of sedation, sedation medications and common adverse effects of the sedation medications. It also addresses adverse effects of delirium and the use of the ABCD bundle for weaning from mechanical ventilation.

**Module Learning Outcomes**
This module prepares the learner to:
1. Discuss the purpose of sedation, and describe the different levels of sedation based upon the patient’s ability to maintain airway.
2. Identify the differences of the benzodiazepines, and discuss the synergistic effect of sedation medications.
3. Describe the potential extrapyramidal effects and neuroleptic malignant syndrome of haloperidol (Haldol).
4. Discuss the use of propofol (Diprivan), dexmedetomidine (Precedex) and ketamine (Ketalar) in sedation.

5. Acute and Chronic Drug Abuse 56 minutes | 1 Contact Hour

**Module Description**
Patients with history of drug abuse can develop multiple, life threatening complications in the acute care setting. Identifying patients with drug abuse and preventing complications is important in preventing complications. This lecture discusses the issues of addiction versus physiologic dependence. It addresses issues of preventing acute withdrawal syndromes in both the acute and chronic drug abuse/use situations.

**Module Learning Outcomes**
This module prepares the learner to:
1. Compare and contrast the differences between addiction and physiologic dependence.
2. Discuss the common issues for managing pain in a patient with a chronic substance abuse and identify management plans for these patients.
3. Identify the symptoms of intoxication and overdose with specific addicting medications.

6. Neuropathic Pain: Special Populations 33 minutes | 0.5 Contact Hours

**Module Description**
Neuropathic pain is difficult to manage and requires adjunctive therapy in addition to typical analgesics. This lecture discusses the physiology and assessment of neuropathic pain. The current guideline for managing neuropathic pain is reviewed.

**Module Learning Outcomes**
This module prepares the learner to:
1. Describe the physiology of neuropathic pain and state common causes of neuropathic pain.
2. Discuss the different assessment used with neuropathic pain and review the psychological factors of neuropathic pain.
3. State the flow of the algorithm recommended in the management of neuropathic pain.

7. Pain, Agitation and Delirium 65 minutes | 1 Contact Hour

**Module Description**
This module will review sedation and the role of sedation in managing delirium. It addresses the ABCDE bundle for critically ill patients. This includes awakening and breathing trials coordinated with respiratory therapists for ventilated patients, delirium assessment and management and early mobility.

**Module Learning Outcomes**
This module prepares the learner to:
1. Discuss the purpose of sedation in managing the syndrome of delirium, and describe potential long-term complications of sedation.
2. Describe the ABC component of the ABCDE bundle in ventilated patients, and discuss the role of the nurse in coordinating care with the respiratory therapist.
3. Identify commonly used delirium assessment tools, and discuss management in critically ill patients.
4. Discuss the benefit of early mobility, including passive and active range of motion, in critically ill patients.
M. Conquering Lab Interpretation

9 Presentations | 375 minutes | 6.75 Contact Hours
Presenter: Cyndi Zarbano, MSN, RN, CCRN, CMSRN, CLNC, NLCP

1. Why are Labs so Important? & CBC with Differential

Module Description
In a world of ever-spiraling healthcare costs, never has it been more important to understand lab findings and expenses related to those tests. One of the most common tests is the complete blood count (CBC) and, when appropriate, the differential. This section will also discuss the hemoglobin A1c test.

Module Learning Outcomes
This module prepares the learner to:
1. List five causes of abnormal findings in the white blood cell counts.
2. Understand the differential and the clues it offers related to health status.
3. Identify the current standard for transfusing a patient based on hemoglobin levels.

2. Basic Metabolic Panel & Renal Labs

Module Description
The basic metabolic panel (BMP) gives a lot of basic clues to glucose level, kidney function, electrolytes and acid-base balance. This module will also discuss how labs can help determine the causes of acute renal failure, how each cause is decided and treatment interventions. Finally, common electrolyte abnormalities and interventions to treat will also be covered.

Module Learning Outcomes
This module prepares the learner to:
1. Compare and contrast prerenal, intrinsic and postobstructive causes of acute renal failure.
2. Calculate the corrected calcium and relate how it differs from a serum calcium level.
3. Classify changes found on the ECG related to hyper- and hypokalemia.

3. Comprehensive Metabolic Panel & Liver Function

Module Description
The comprehensive metabolic panel (CMP) is the basic metabolic panel (BMP) plus liver function tests. This module will discuss the liver, how lab findings become clues to abnormal function and common complications related to liver dysfunction: jaundice, ascites and hepatic encephalopathy.

Module Learning Outcomes
This module prepares the learner to:
1. Identify lab findings related to liver dysfunction and determine how the direct and indirect bilirubin can give us clues to where the dysfunction is occurring.
2. Recognize common complications with severe liver dysfunction and their causes and treatments.
4. Cardiac Labs

Module Description
Understand laboratory findings related to cardiac panels, as well as ECG clues, while also differentiating between acute coronary syndrome (ACS) and acute myocardial infarction (AMI).

Module Learning Outcomes
This module prepares the learner to:
1. Discuss the difference between a STEMI and NSTEMI along with bare metal stents (BMS) as opposed to drug-eluding stents (DES).
2. Interpret ECG changes in ischemia and myocardial infarction and understand how to recognize an old infarct.
3. Review cardiac panels and the clues they hold.

5. Pulmonary Labs: ABG, MVBG, VBG & D-dimer

Module Description
Review the three types of potential blood gases (arterial, mixed-venous and venous samples), when each is the right choice and how each is interpreted. Reading ABGs can be difficult, so a simple tool that can be used as a template will be discussed, along with the D-dimer as it relates to a pulmonary embolism.

Module Learning Outcomes
This module prepares the learner to:
1. List when the arterial blood gas (ABG), mixed-venous blood gas (MVBG) and venous blood gas (VBG) are each the appropriate test to select.
2. Interpret ABGs using a simple tool and recognize the most common causes for abnormal findings.
3. Recognize when D-dimers are most helpful in predicting a pulmonary embolism.

6. Labs in Sepsis

Module Description
Sepsis is the leading cause of noncardiac-related deaths in intensive-care settings. We will evaluate how systemic inflammation can become self-propagating and how labs not only can help us identify sepsis, but can also guide our treatment of this ominous diagnosis.

Module Learning Outcomes
This module prepares the learner to:
1. Identify the role of the procalcitonin in sepsis.
2. Understand the Gram stain/antibiotic susceptibility testing (AST) and how the two drive antibiotic therapy.

7. Neurology: Meningitis, Encephalitis, Lumbar & Thyroid

Module Description
Understanding the lumbar puncture is our focus in this module: how we perform the procedure, how we read it and what the resulting interventions are. This module will also discuss thyroid function, exploring how abnormal findings in the hormones related to the hypothalamic-pituitary access (TRH and TSH) and thyroid (T3/T4) guide the treatment plan.

Module Learning Outcomes
This module prepares the learner to:
1. Differentiate the findings and pathophysiology of bacterial meningitis, viral meningitis and viral encephalitis.
2. Identify how the treatment plan is driven by the cause.
3. Recognize the collaborative relationship of the hypothalamus and the pituitary gland in thyroid function.
4. List the hormones related to each of the above.
5. Interpret thyroid function tests.
8. Coag & DIC Panels

Module Description
Coagulation panels help us assess clotting ability of common anticoagulants given to our patients. But adding other tests to the coag panel can also assess for life-threatening complications and disseminating intravascular coagulation (DIC).

Module Learning Outcomes
This module prepares the learner to:
1. Analyze which parts of a classic coagulation panel are impacted by commonly used medications.
2. Plan and prioritize interventions as they relate to DIC.
3. Review reversal agents used in bleeding related to medications and the blood product of choice for bleeding related to DIC.

9. Diabetic Ketoacidosis, HHS & Urinalysis

Module Description
DKA and HHS are two hyperglycemic states that share many similarities, but also many differences. This module will discuss those differences and how nurses fear complications that can kill patients under their care. Urinalysis (UA) is such a commonly sent test, but it has a great deal of variation on how it is interpreted by healthcare providers. Learn common guidelines for how to determine whether the patient has a urinary tract infection.

Module Learning Outcomes
This module prepares the learner to:
1. Compare and contrast presentation and lab findings for DKA and HHS.
2. Differentiate between life-threatening complications that can kill patients with either DKA or HHS.
3. Recognize the difference in symptoms related to urinary tract infections (UTIs) based on age.
4. Identify the most important finding when deciding whether a UTI is present.
Accreditation

RN/LPN/LVN/Other: 91 Contact Hours

MED-ED, Inc. is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center’s Commission on Accreditation (ANCC).

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If your profession is not listed, we suggest contacting your board to determine your continuing education requirements and ask about reciprocal approval. Many boards will approve this seminar based on the accreditation of the boards listed here.

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