

### Presented by

#### **Lisa M. Soltis, MSN, APRN, PCCN, CCRN-CSC, CCNS, FCCM**

Lisa brings over 15 years of critical care experience to her lectures. She earned her BA from Western Michigan University, her BSN from the University of North Carolina-Charlotte, and her MSN from Duke University School of Nursing as an Adult Critical Care Clinical Nurse Specialist. She is a member of the American Association of Critical Care Nurses, National Association of Clinical Nurse Specialists and the Society of Critical Care Medicine, where she is also an instructor for the Fundamentals of Critical Care Support course. She currently serves on the Advanced Practice Nursing & Practice Development board for SCCM and is a member of the Advanced Practice Continuing Education workgroup and CMC®/CSC® Board of Appeals for the AACN.

Her experience includes Trauma/Surgical Critical Care and over 12 years of Cardio-Thoracic Critical Care. She served for 2½ years as the Manager/Clinical Educator for the Cardio-Thoracic/Transplant Critical Care unit at Duke University and currently works as the Cardiovascular/Critical Care Clinical Nurse Specialist for WakeMed Health & Hospitals in Raleigh, NC. Lisa became passionate about teaching during her experience at Duke, and loves to help other nurses achieve their professional goals.

She has presented numerous educational seminars across the US and Canada on a variety of topics related to critical care. She also presented at the National Teaching Institute for the AACN in 2010, 2011 and 2012.

### **15.75 Contact Hours | Course Length: 939 minutes**

### **Program Description**

The purpose of this program is to provide a basic overview of common complications encountered in the critical care environment. We will discuss clinical assessment findings, as well as various etiologies that contribute to these. This course will discuss the spectrum of chest pain, causes, and treatment. We will provide an in-depth review of Acute Coronary Syndromes, recognition of ischemia vs. infarction, as well as treatment modalities for each. We will also review the various types of heart failure, differentiating between systolic and diastolic dysfunction, as well as treatment recommendations. As the number of patients diagnosed with heart failure continues to rise, we will also see an increase in comorbidities with our patients. Increased recognition and awareness of the pathophysiological processes are essential in providing safe, comprehensive care in today's healthcare environment.

This course will also discuss pulmonary assessment skills, as well as a thorough review of arterial blood gas analysis and interpretation. Renal failure will also be reviewed; discussing the incidence and causes of both acute and chronic renal failure. We will end the course with a review of current data related to patients with sepsis, recognition, and discussion of early goal directed therapy. Emphasis will be placed upon early recognition and initiation of recommended protocols to improve patient outcomes.

### **Program Learning Outcomes**

*This program prepares the learner to:*

1. Compare and contrast the differences between NSTEMI and STEMI evaluation and treatment.
2. Verbalize the differences in pathophysiology, diagnosis, and management of systolic and diastolic heart failure. Compare and contrast the differences in managing acute decompensated versus chronic heart failure.
3. Adequately interpret six arterial blood gases (ABGs), and describe the ABG changes associated with acute respiratory failure.
4. Describe the pathophysiologic changes, presentations, and at least three treatments each for chronic bronchitis, emphysema, severe asthma, pneumonia and ARDS.
5. Verbalize basic management of patients requiring ventilator support, including review of various ventilator modes and their purpose.

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6. List at least three causes, three diagnostic tests, and three treatments of the following types of acute renal failure (ARF): Pre-renal, intrinsic renal and post-obstructive uropathy.
7. List at least two functions of the following areas of the brain: frontal, temporal, parietal and occipital lobes; cerebrum and cerebellum; pons and medulla.
8. Compare and contrast the pathophysiology, presentation and treatments of epidural v. subdural hematomas.
9. List at least three presenting signs and symptoms of ischemic and hemorrhagic stroke.
10. Describe the different etiologies of sepsis versus systemic inflammatory response syndrome (SIRS), and how both can lead to multiple organ dysfunction (MODS).
11. Describe the interplay between the sympathetic nervous system, renin-angiotensin-aldosterone system and the hypothalamic-pituitary-adrenal axis during the response to physiologic stressors.
12. Discuss common electrolyte disorders encountered in the critical care environment, presenting symptoms and treatment required to correct such imbalances.
13. Discuss advanced hemodynamic monitoring techniques, interpretation of various waveforms and pharmacological management of hemodynamic parameters.

## Topics Covered

### 1 Chest Pain: When to Worry, Part I

110 minutes

#### Module Description

In this module we will review basic cardiac anatomy and physiology, focusing on the structures of the heart and how they ensure appropriate functioning of the cardiac system. We will review the various valves and discuss how valvular disorders can affect cardiac output, cardiac workload, and overall perfusion. We will also discuss the pathological changes that occur when a patient experiences chest pain associated with Acute Coronary Syndromes, as well as the appropriate measures for treatment. 12-lead ECG analysis and interpretation will be discussed.

#### Module Learning Outcomes

*This module prepares the learner to:*

1. Review basic cardiac physiology, with special emphasis on the structures and valves of the heart and how they can affect blood flow throughout the heart.
2. Compare and contrast the differences between NSTEMI and STEMI evaluation and treatment.
3. Describe current diagnostic and laboratory findings associated with Acute Coronary Syndromes
4. Discuss the pathological changes that occur within the cardiac vascular system that contribute to Acute Coronary Syndromes and appropriate treatment recommendations from the American Heart Association.

### 2 Chest Pain: When to Worry, Part II

56 minutes

#### Module Description

In this module we will review basic cardiac anatomy and physiology, focusing on the structures of the heart and how they ensure appropriate functioning of the cardiac system. We will review common complications encountered after experiencing an acute MI, recognition of symptoms, and patient management of these complications. We will also discuss other causes of chest pain, not related to the coronary vascular system, including chest trauma, and aortic aneurysms and dissections.

#### Module Learning Outcomes

*This module prepares the learner to:*

1. Review basic cardiac physiology, with special emphasis on the structures and valves of the heart.
2. Discuss clinical presentation of papillary muscle rupture, septal rupture and ventricular wall rupture that may occur after experiencing an acute MI. Treatment options will also be discussed.
3. Discuss chest trauma and its complications and treatment.
4. Review recognition and treatment of aortic aneurysms and aortic dissections.

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### 3 Acute and Chronic Heart Failure: The Epidemic

48 minutes

#### Module Description

In this module we will discuss the pathological changes that occur with both diastolic and systolic heart failure as well as the appropriate measures for treatment. Physical assessment findings will be reviewed. Pharmacological management and mechanical treatment options will be presented as well.

#### Module Learning Outcomes

*This module prepares the learner to:*

1. Verbalize the differences in pathophysiology, diagnosis, and management of systolic and diastolic heart failure. Compare and contrast the differences in managing acute decompensated versus chronic heart failure.
2. Describe the interplay between the sympathetic nervous system, renin-angiotensin-aldosterone system, and the hypothalamic-pituitary-adrenal axis during the response to physiologic stressors.
3. Discuss alternative treatment modalities for advanced heart failure, including intra-aortic balloon pump therapy, ventricular assist devices, and transplantation.

### 4 Pulmonary Anatomy and Assessment

61 minutes

#### Module Description

In this module we will review the normal structures found within the respiratory system. We will describe the differences between ventilation and oxygenation. Interpretation of arterial blood gases will be reviewed including physiological states that can lead to ABG abnormalities. Chest X-ray interpretation will also be discussed.

#### Module Learning Outcomes

*This module prepares the learner to:*

1. Review the basic anatomy and physiology of the pulmonary system, describing the normal assessment findings associated with appropriate respiratory function.
2. Adequately interpret six arterial blood gases (ABGs), and describe the ABG changes associated with acute respiratory failure.
3. Describe normal chest X-ray assessment interpretation, and identification of abnormal findings.

### 5 The Patient with Shortness of Breath

71 minutes

#### Module Description

This module will discuss the patient who is experiencing acute shortness of breath. Discussion will focus on acute respiratory failure, causes, assessment and treatment. Etiologies that will be discussed will include Acute Respiratory Distress Syndrome (ARDS) as well as pulmonary embolism, COPD, emphysema and chronic bronchitis.

#### Module Learning Outcomes

*This module prepares the learner to:*

1. Describe the pathophysiologic changes, presentations, and at least three treatments each for chronic bronchitis, emphysema, severe asthma, pneumonia and ARDS.
2. Discuss predisposing conditions that lead to the development of a pulmonary embolus. Review of the clinical assessment and treatment will be discussed in addition to prevention of this complication.

### 6 Recognizing Renal Failure

44 minutes

#### Module Description

This module will review common causes of renal failure encountered in the acute care setting. Etiologies will be discussed to help differentiate between pre-renal, intrinsic, and post-renal uropathies. Various diagnostic and treatment modalities will be reviewed in addition to discussing the RIFLE classification of renal failure. Hemodialysis and continuous renal replacement therapies will also be described.

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### **Module Learning Outcomes**

*This module prepares the learner to:*

1. List at least three causes of acute renal failure seen with patients in the acute care setting.
2. Review diagnostic tests and treatments of the following types of acute renal failure (ARF):  
Pre-renal, intrinsic and post-obstructive uropathies including the RIFLE criteria.
3. Discuss alternative therapies for acute renal failure including continuous renal replacement therapy.

## **7 Neuro Complications: Acute Change in Level of Consciousness**

**137 minutes**

### **Module Description**

The neurological system is very complex. This module will review the anatomy and physiology of the neurological system, including basic assessment findings. We will discuss the types of closed head injuries that can occur and the assessment/treatment for each. Principles of monitoring and managing increased intracranial pressures will also be described in detail. Both hemorrhagic and ischemic stroke management will be discussed as well as diagnostic findings for each. Delirium and behavior management will also be reviewed.

### **Module Learning Outcomes**

*This module prepares the learner to:*

1. List at least two functions of the following areas of the brain: frontal, temporal, parietal and occipital lobes; cerebrum and cerebellum; pons and medulla.
2. Compare and contrast the pathophysiology, presentation and treatments of epidural vs. subdural hematomas.
3. List at least three presenting signs and symptoms of ischemic and hemorrhagic stroke.
4. Discuss the differences between delirium and dementia as well as suggested treatment recommendations.

## **8 Interpreting Lab Values**

**43 minutes**

### **Module Description**

This module will review basic laboratory interpretation of the components of the complete blood count, including review of the various types of white blood cells and their function. We will also discuss common electrolyte abnormalities, clinical presentation, and treatment.

### **Module Learning Outcomes**

*This module prepares the learner to:*

1. Describe the normal ranges for a complete blood count, including interpretation of the results and what the clinical impact may be.
2. Discuss common electrolyte disorders encountered in the critical care environment, presenting symptoms, and treatment required to correct such imbalances.

## **9 Interpreting Hemodynamic Parameters**

**99 minutes**

### **Module Description**

In this module, we will discuss important principles related to fluid management and vasopressor therapies used in the acute care and critical care setting. Manipulating the cardiac output, preload and afterload will be discussed including pharmacological effects of various medications. We will also discuss advanced hemodynamic monitoring, waveform analysis, and interpretation of the data. Appropriate correlation of all data points in relation to the clinical presentation is vital to ensure accurate interpretation of the data collected.

### **Module Learning Outcomes**

*This module prepares the learner to:*

1. Discuss fluid and vasopressor management of acutely ill patients, describing pharmacological effects of various medications used.
2. Discuss advanced hemodynamic monitoring techniques, interpretation of various waveforms, and management of hemodynamic parameters.

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## 10 Troubleshooting Ventilators

58 minutes

### Module Description

This module will discuss basic ventilator parameters and what they mean. We will review clinical indications that would require mechanical ventilator support, as well as review various modes of ventilation. Discussion of managing these modes will also be reviewed.

### Module Learning Outcomes

*This module prepares the learner to:*

1. Describe indications for mechanical ventilator support, including ventilator failure and oxygenation failure states.
2. Discuss various ventilator parameters, and describe which parameters are associated with the different types of ventilator modes.
3. Discuss management of potential complications associated with mechanical ventilation.

## 11 Shock States

70 minutes

### 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.

## 12 Tissue Oxygenation

67 minutes

### 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 the 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 SVO<sub>2</sub> monitoring in determining adequacy of tissue oxygenation.
4. State the normal SVO<sub>2</sub> and identify possible causes of low SVO<sub>2</sub>.

## 13 Sepsis

75 minutes

### Module Description

Surviving sepsis guidelines and the Surviving Sepsis Campaign have 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.

# Accreditation

## RN/LPN/LVN/Other: 15.75 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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