

# MODULE 1

## CARDIAC ARREST AND ADVANCED CARDIAC LIFE SUPPORT

BY KRISTEN A. HESCH, PHARM.D., BCPS

Reviewed by William Z. Marcus, Pharm.D., BCPS; and Mirembé Reed, Pharm.D., BCPS

### LEARNING OBJECTIVES

1. Distinguish the major changes in the most recent treatment guidelines for adult advanced cardiac life support (ACLS) in emergency cardiovascular care.
2. Design a patient-specific treatment plan for the prevention of cardiac arrest based on the most recent treatment guidelines.
3. Analyze the role of cardiopulmonary resuscitation techniques, electrical devices, vascular access, drug delivery, and drugs to improve the return of spontaneous circulation (ROSC) and survival in sudden cardiac arrest.
4. Design a pharmacotherapy treatment plan for the individual patient with pulseless ventricular tachycardia, ventricular fibrillation, pulseless electrical activity, or asystole.
5. Describe the role of hypothermia in post-cardiac arrest care to optimize survival and neurologic recovery.
6. Justify a pharmacotherapy treatment plan for patients with cardiac arrest arrhythmias, including monitoring to assess efficacy as well as potential adverse drug effects.

## ACUTE MANAGEMENT OF BURN INJURY

BY CLAIRE V. MURPHY, PHARM.D., BCPS

Reviewed by Said M. Sultan, Pharm.D., BCPS; and Natasa Stevkovic, Pharm.D., BCPS

### LEARNING OBJECTIVES

1. Evaluate the metabolic changes associated with burn injury including the differences in the ebb and flow phases of injury.
2. Classify severity of burn injury based on burn size and depth, and identify key risk factors associated with morbidity and mortality.
3. Develop a fluid resuscitation plan for a patient with burn injury including weighing the risks and benefits of crystalloid, colloid, and hypertonic saline based strategies.
4. Construct a plan for assessment and treatment of burn injury within the emergency setting, including

- establishing management of inhalation injury and tetanus as appropriate.
5. Distinguish between the nonpharmacologic and pharmacologic options for metabolic modulation in burn injury including early excision and closure, oxandrolone, and propranolol.
  6. Justify a dosing regimen for select agents based on predicted pharmacokinetic and pharmacodynamic alterations caused by physiologic changes observed after burn injury.

## **ANTIBIOTIC USE IN PATIENTS RECEIVING CRRT**

BY KATHRYN A. CONNOR, PHARM.D., BCPS, BCNSP

Reviewed by David F. Volles, Pharm.D., BCPS; and Stephanie Nichols, Pharm.D., BCPS

### **LEARNING OBJECTIVES**

1. Evaluate a patient for the presence and severity of acute kidney injury.
2. Analyze parameters and the use of different modalities of continuous renal replacement therapy (CRRT).
3. Develop a pharmacotherapy plan for a patient on CRRT by applying principles of pharmacokinetics, pharmacodynamics, drug removal, and drug dosing.
4. Distinguish potential therapeutic outcomes of given pharmacotherapy plans for a critically ill patient on CRRT.
5. Assess quality and appropriateness of available evidence and resources, as well as deficiencies in the literature, when designing a drug regimen for a patient on CRRT.

## **OFF-LABEL DRUG USE IN THE ICU**

BY ISHAQLAT, PHARM.D., FCCM, FCCP, BCPS; AND MITCHELL J. DALEY, PHARM.D., BCPS

Reviewed by Russel J. Roberts, Pharm.D.; Michael J. Remkus, Pharm.D., BCPS; and Theresa T. Phung, Pharm.D., BCPS

### **LEARNING OBJECTIVES**

1. Assess the gaps in the existing drug development and approval process by the Food and Drug Administration for critically ill patients.
2. Demonstrate an understanding of the incidence and prevalence of off-label drug use in the intensive care unit (ICU).
3. Evaluate unique factors of critically ill patients and evolving practice innovations that contribute to suboptimal patient outcomes when using drugs off-label.

4. Identify common factors that contribute to off-label drugs use in the ICU.
5. Assess barriers to drug development for critically ill patients.
6. Devise a rationalized approach to assessing evidenced-based guideline recommendations for off-label drug use when applying to clinical practice.