Course Prefix and Number: EMS 141  
Credits: 2

Course Title: Cardiovascular Care

Course Description: Focuses on assessment and management of cardiac-related emergencies. Covers basic dysrhythmia recognition and relates it to overall cardiac patient care. Prerequisites: EMS 121, EMS 123, EMS 125, EMS 126, EMS 127, EMS 128. Corequisite: EMS 142. Lecture 2 hours per week.

General Course Purpose: The purpose of this course is to teach the student principles of assessment and management of cardiac emergencies and to teach basic EKG recognition.

Course Prerequisites and Co-requisites:
Prerequisites: EMS 121, EMS 123, EMS 125, EMS 126, EMS 127, EMS 128  
Corequisite: EMS 142

Student Learning Outcomes:
Upon completing the course, the student will be able to
a. Apply fundamental knowledge of anatomy and physiology of the cardiovascular system;
b. Identify the components and steps used in EKG interpretation;
c. Interpret basic EKG rhythms including variations in sinus, atrial, junctional, ventricular, and heart blocks;
d. Identify the correct pharmacological intervention for the cardiovascular patient based on patient presentation;
e. Differentiate various types of cardiovascular disorders; and
f. Apply fundamental knowledge to provide basic and selected advanced emergency care and transportation based on assessment findings for an acutely ill patient complaining of a cardiac-related emergency.

Major Topics to Be Included:

a. Anatomy of the Cardiovascular System Review
   - Cardiac layers
   - Cardiac chambers, valves, and cordae tendineae
   - Myocardial blood supply
   - Conduction system
   - Vascular system

b. Physiology of the Cardiovascular System
   - Cardiac cycle
   - Cardiac output
   - Electrophysiology
c. Assessment of the cardiovascular system
   - Primary survey for cardiovascular assessment
   - History and physical/sample format specific to the cardiovascular patient
   - Secondary survey for cardiovascular assessment

d. Electrocardiographic (ECG) monitoring
   - Electrophysiology and wave forms related to cardiac events
   - Leads and electrodes—preparation and placement
   - Standardization
   - Wave form analysis
   - Lead systems and heart surfaces
   - 12 lead monitoring

e. Identification of Types of Rhythms
   - Sinus rhythms
   - Atrial rhythms
   - Junctional rhythms
   - Tachycardic rhythms
   - Bradycardic rhythms
   - Heart blocks
   - Pulseless rhythms

f. Management of the patient with arrhythmia
   - Symptomatic and asymptomatic patients
   - Non-invasive interventions
   - Pharmacological interventions
   - Electrotheraphy interventions

g. Cardiovascular specific pharmacology
   - Gases
   - Sympathomimetic
   - Anticholinergic
   - Antiarrhythmic
   - Beta blocker
   - Vasopressor
   - Calcium channel blocker
   - Purine nucleoside
   - Platelet aggregate inhibitor
   - Alkalinizing agents
   - Cardiac glycoside
   - Narcotic/analgesic
   - Diuretic
   - Nitrate
   - Antihypertensive
h. Pathophysiological principles to the assessment of a patient with cardiovascular diseases
   • Acute coronary syndrome
   • Acute myocardial infarction/angina
   • Non-traumatic cardiac tamponade
   • Hypertensive emergencies
   • Cardiogenic shock
   • Cardiac arrest
   • Vascular disorders
   • Aortic aneurism/dissection
   • Infectious diseases of the heart
   • Cardiac myopathy
   • Specific hypertensive emergencies
   • Congenital abnormalities and age-related concerns

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