

# Got Rhythm?

ECG FUNDAMENTALS



**SIMSUITE**<sup>®</sup>  
MEDICAL SIMULATION CORPORATION

# ECG Fundamentals

## Course Objectives

Upon completion of this course, the participant should be able to:

- Identify the anatomical location and function of the dominant and escape pacemakers of the heart.
- Follow routine steps of rhythm recognition, including identification of regular and irregular components of the ECG.
- Demonstrate understanding of the various methods for calculating heart rate.
- Understand and identify characteristics of atrial dysrhythmias, ventricular dysrhythmias, and heart blocks.
- Understand potential causes for various dysrhythmias.
- Determine the pharmacologic therapy for treating dysrhythmias.

## Course Description

This course is an introduction to ECG recognition and is designed for all healthcare providers interested in increasing their competence and confidence® in the management of cardiac dysrhythmias. Participants may include registered nurses and technologists who monitor patients with cardiac disorders throughout the hospital and Emergency Management Teams (EMT) who manage cardiac dysrhythmias in the field. The course includes the following:

- Pre-test
- Review of the normal heart conduction system and Normal Sinus Rhythm
- Four content areas:
  - ◆ Basic ECG Rhythm Recognition
  - ◆ Atrial and Junctional Dysrhythmias
  - ◆ Ventricular Dysrhythmias
  - ◆ Heart Blocks
- Each dysrhythmia content area includes comprehensive descriptions of each abnormal rhythm including the following components:
  - ◆ Definition
  - ◆ ECG tracings
  - ◆ Hemodynamic effects of the dysrhythmia
  - ◆ Causes
  - ◆ Treatment algorithms and drug references
  - ◆ Mechanism (physiology behind the dysrhythmia)
- Post-test

## Benefits

- Online convenience and flexibility: available anytime, anywhere
- Self-paced learning
- Consistent training

- Guideline driven
- Supplement staff orientation programs and continuing education
- Integration into Quality Improvement Programs

## Clinical Applicability

An electrocardiogram (ECG) is a noninvasive clinical tool that records the electrical activity of the heart. ECGs rapidly provide clinicians with information to help identify and treat a variety of patient conditions. Most importantly, ECGs assist in the diagnosis of cardiac dysrhythmias (abnormal heart rhythms), which could be lethal if left untreated.

The first step in developing competence and confidence with ECG interpretation begins with a solid understanding of the basic ECG elements and how they relate to the conduction and pumping of the heart. The first component of this course provides the novice with an opportunity to master the basic concepts.

The next step in developing competence and confidence with ECG interpretation is understanding and identifying dysrhythmias. Dysrhythmias are abnormal heart rhythms caused by a disruption of the normal electrical conduction system of the heart.<sup>1</sup> Some dysrhythmias are harmless and cause no signs or symptoms, while other dysrhythmias can be life threatening. Atrial fibrillation (A Fib) is a common abnormal heart rhythm arising from the atria (upper chambers) of the heart and may not be very serious. However, some people with A Fib may be at increased risk for stroke, heart failure, or heart muscle disease. Over two million people in the U.S. have A Fib, and about 160,000 new cases are diagnosed each year.<sup>2</sup> A more serious consequence of a dysrhythmia is sudden cardiac death (SCD), or cardiac arrest, in which the heart abruptly stops working. It is responsible for half of all heart disease deaths. The most common cause of cardiac arrest is ventricular fibrillation (VF), in which the ventricles (lower chambers of the heart) begin to quiver instead of contract, and they can no longer pump blood to the rest of the body. It is estimated that more than 70% of VF victims die before reaching the hospital. Knowing the signs and symptoms of impending lethal dysrhythmias could prevent adverse events from occurring, and knowing how to handle them when they do occur could mean the difference between life and death.

References:

<sup>1</sup>AllRefer.com Web site: <http://health.allrefer.com/health/arrhythmias-info.html>

<sup>2</sup>Heart Rhythm Society Web site: [www.hrspatients.org/patients/heart\\_disorders/atrial\\_fibrillation/default.asp](http://www.hrspatients.org/patients/heart_disorders/atrial_fibrillation/default.asp)

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