

2.3 ELECTROCARDIOGRAM INTERPRETATION AND TELEMETRY MONITORING

Heart disease continues to be the leading cause of hospital admissions and mortality in the United States. The electrocardiogram (EKG), a graphical representation of cardiac electrical potentials, is a noninvasive, readily available diagnostic tool. It remains the most commonly used investigative modality for the initial evaluation of cardiovascular disease. EKG is also the cornerstone for assessing acute coronary syndrome and various cardiac arrhythmias, and the results may critically alter a patient's diagnosis, treatment, and prognosis. Hospitalists interpret EKG tracings expediently and apply the results to estimate risk, diagnose disease, and determine therapeutic needs of hospitalized patients. Continuous cardiac monitoring (telemetry) is another valuable diagnostic modality that is frequently used in the evaluation of hospitalized patients.

KNOWLEDGE

Hospitalists should be able to:

- Explain the anatomy and physiology of normal and pathologic cardiac tissues, including spatial relationships, vascular supply, automaticity, conduction, and autonomic innervations, and how these affect EKG interpretation.
- Compare the diagnostic utility of rhythm strips and continuous monitoring (telemetry) with that of standard 12-lead EKGs.
- Explain the indications for ordering a standard EKG, right-sided EKG, and telemetry monitoring.
- Describe the characteristics of electrocardiographic waveforms in different leads on an EKG tracing.
- Describe the relevant components of the EKG tracing.
- Explain the effect of cardiovascular, metabolic, toxic, and systemic disease processes on cardiac electrical potentials of the EKG.
- Explain the limitations of various EKG and telemetry findings, including computerized interpretations.

SKILLS

Hospitalists should be able to:

- Demonstrate correct lead placement.
- Accurately measure and interpret the atrial and ventricu-

lar rates, voltages, and intervals of EKG tracings.

- Recognize normal EKG findings, including variations associated with demographics, artifact, lead placement, and other technical problems.
- Recognize and categorize abnormal EKG findings, including abnormalities in cardiac tissue health, conduction, automaticity, anatomy, and manifestations of noncardiac disease.
- Identify paced rhythms and describe the limitations of related EKG interpretations.
- Synthesize EKG and telemetry data with other clinical information to risk stratify patients and develop a clinical plan.
- Determine the need for specialist intervention on the basis of urgency and patient risk.
- Communicate with patients and families to explain EKG results and how the findings influence the care plan.

ATTITUDES

Hospitalists should be able to:

- Prioritize prompt interpretation of EKGs.
- Recognize the value of comparing the current EKG with historical EKG tracings, when available.
- Adopt a standardized and consistent approach to interpreting EKG tracings and reviewing telemetry data.
- Consult and work collaboratively with cardiologists in interpreting complex EKG tracings and in ordering further diagnostic studies or procedures on the basis of EKG interpretation.

SYSTEM ORGANIZATION AND IMPROVEMENT

To improve quality and efficiency within their organizations, hospitalists should:

- Lead, coordinate, and/or participate in initiatives to optimize resource use, including the appropriate use and duration of telemetry monitoring.
- Lead, coordinate, and/or participate in efforts to expedite acquisition and interpretation of EKGs for hospitalized patients in a timely manner.