EKG CURRICULUM

Association of Program Directors in Internal Medicine Evaluation Task Force

EDUCATIONAL PURPOSE AND GOALS
Cardiac disease is a major health problem that internists will come in contact with on a daily basis. Part of evaluating cardiac disease rests upon interpretation of EKGs. This EKG curriculum is designed to identify those EKG findings that residents are required to recognize in order to become competent interpreters of EKGs. These required findings are based on the consensus statement issued jointly by the AHA, ACC, and ACP-SGIM and published in the December 2001 issue of the Journal of the American College of Cardiology.

By the completion of their residency training, residents will be expected to show competency in interpretation of EKGs as required by the RRC.

COMPETENCIES FOR THE CURRICULUM
Using the above reference as a guide, the Evaluation Task Force has identified typical EKG findings that graduating Internal Medicine residents must be able to identify to show competency in EKG interpretation. In addition, the Task Force has identified an additional group of findings that graduating residents in Internal Medicine should be able to identify by the end of their training.

PGY 1 residents MUST be able to identify the following EKG findings and features:

1) General Features
   a) Normal EKGs
   b) Normal variants
   c) Incorrect electrode placement
   d) Motion artifact

2) Atrial Rhythms
   a) Sinus Rhythm
   b) Sinus Bradycardia (<60)
   c) Sinus Tachycardia (>100)
   d) Atrial Premature Complexes
   e) Multifocal Atrial Tachycardia
   f) Supraventricular Tachycardia
   g) Atrial Flutter
   h) Atrial Fibrillation

3) AV Junctional Rhythms
   a) AV Junctional Rhythm

4) Ventricular Rhythms
a) Ventricular Premature Complexes (uniform and multiform)  
b) Ventricular Tachycardia (>3 consecutive complexes)  
c) Ventricular Fibrillation  
d) Torsades de pointes

5) AV Conduction Abnormalities  
a) AV dissociation  
b) AV Block, 1°  
c) AV Block, 2°--Mobitz type I (Wenckebach)  
d) AV Block, 2°--Mobitz type II  
e) AV Block, 3°  
f) Wolff-Parkinson-White Pattern

6) Intraventricular Conduction Disturbances  
a) Right Bundle Branch Block, Incomplete  
b) Right Bundle Branch Block, Complete  
c) Left Bundle Branch Block, Complete

7) P Wave Abnormalities  
a) Right Atrial Enlargement/abnormality  
b) Left Atrial Enlargement/abnormality

8) Abnormalities of QRS Voltage or Axis  
a) Low Voltage, Limb Leads Only  
b) Low Voltage, Limb and Precordial Leads  
c) Left Axis Deviation  
d) Right Axis Deviation

9) Ventricular Hypertrophy  
a) LVH by Voltage Only  
b) LVH by Voltage and ST-T segment Abnormalities  
c) RVH

10) Myocardial Infarction (Acute vs Old/Age Indeterminate)  
a) Anterior  
b) Septal
c) Lateral

d) Inferior

e) Posterior

11) ST, T, U Wave Abnormalities
   a) ST and/or T Wave Abnormalities Suggesting Myocardial Ischemia
   b) ST and/or T Wave Abnormalities Suggesting Myocardial Injury
   c) ST and/or T Wave Abnormalities Suggesting Acute Pericarditis
   d) Prolonged QT Interval

12) Suggested or Probable Clinical Disorders
   a) Hyperkalemia
   b) Chronic Lung Disease
   c) Acute Cor Pulmonale
   d) Pulmonary Embolism
   e) Acute Pericarditis
   f) Coronary Artery Disease
   g) Effects of Digitalis

13) Myocardial Infarction Scenarios
   a) RV infarct
   b) LBBB

14) ST, T, U Wave Abnormalities
   a) Early Repolarization, normal variant

15) Pacemaker rhythm - identify

PGY-2 and 3 residents **MUST** be able to identify all those features required of PGY-1 residents and the following EKG findings and features:

1) Atrial Rhythms
   a) Sinus Arrhythmia
   b) Sinus Pause
   c) Atrial Tachycardia
   d) Ectopic Atrial focus
   e) Paroxysmal Supraventricular Tachycardia
f) Wandering Atrial Pacemaker

2) AV Junctional Rhythms
   a) Accelerated AV Junctional Rhythm

3) Ventricular Rhythms
   a) Ventricular Bigeminy
   b) AIVR

4) Conduction Abnormalities
   a) AV Block, 2:1
   b) AV Block, variable
   c) Short PR interval (normal QRS) – not WPW

5) Intraventricular Conduction Disturbances
   a) Left Anterior Fascicular Block
   b) Left Posterior Fascicular Block
   c) Nonspecific Intraventricular Conduction Disturbance
   d) Supraventricular Arrhythmia with Aberrant Intraventricular Conduction

6) Abnormalities of QRS Voltage or Axis
   a) Pericardial Effusion with Electrical Alternans

7) ST, T, U Wave Abnormalities
   a) Prominent U Waves
   b) ST and/or T Wave Abnormalities Suggesting Ventricular Aneurysm
   c) ST and/or T Wave Abnormalities Secondary to Hypertrophy or IVCD
   d) Evolution of Pericarditis

8) AV Junctional Rhythms
   a) AV Junctional Escape Complexes

9) Ventricular Hypertrophy
   a) Combined Ventricular Hypertrophy

10) ST, T, U Wave Abnormalities
a) Nonspecific ST and or T Wave Abnormalities

11) Suggested or Probable Clinical Disorders
   a) Hypokalemia
   b) Evolution of hyperkalemia
   c) Hypercalcemia
   d) ASD, Primum
   e) ASD, Secundum
   f) Hypothermia