

STEP-BY-STEP INTERPRETATION OF THE 12-LEAD ECG

<p>STEP ONE Analyze rhythm, PRI, QRS width and shape, QT interval</p>	<p>Lead II usually BEST lead.</p> <p>Each horizontal small block = .04 sec.</p> <p>Each vertical small block = .1 mV.</p> <p>NSR (PRI = .10-.20 sec, QRS = .04-.10 sec, QT = < 1/2 normal R-R interval)</p>	<p>A rhythm with a normally conducted QRS offers the best opportunity to analyze the ECG and compare it with normal standards.</p>
<p>STEP TWO Look for complete right bundle branch block and left bundle branch block in lead V1 & V2</p>	<p>RBBB: rSR' configuration or primarily positive QRS in V1 and V2 (may or may not increase the width of QRS > .10 sec. "Rabbit ears")</p> <p>LBBB: primarily negative QRS in V1 and V2 of greater than .12 sec. "Carrot-shaped"</p> <p>Repolarization changes in lead I and V6</p>	<p>If LBBB or RBBB is present, the ECG will be of little value in determining presence of an MI. Distorted ST segments, altered J points, widened QRS complexes and variations in T waves usually accompany LBBB or RBBB. Ventricular paced rhythms or ventricular-initiated rhythms, such as complete heart block, also make the ECG of little value in evaluating for MI. RBBB not usually associated with as severe disease as LBBB.</p>
<p>STEP THREE Look for partial left bundle branch block (left anterior hemiblock or left posterior hemiblock)</p>	<p>LAHB:</p> <ul style="list-style-type: none"> • Lead I + QRS • Lead II - QRS "Up, Down, Down" • Lead III - QRS <p>LPHB:</p> <ul style="list-style-type: none"> • Lead I - QRS • Lead II + QRS "Down, Up, Up" • Lead III + QRS 	<p>May indicate hypertensive cardiomyopathy, ventricular hypertrophy, MI, CAD, pulmonary emphysema, or myocarditis</p>
<p>STEP FOUR Evaluate for ventricular hypertrophy Examine the QRS in V1 & V5 or AVL or V5 & V6 for Left Ventricular Hypertrophy</p> <p>Examine the QRS in V1 or V1 & V6 for right ventricular hypertrophy</p>	<p>Signs of LVH:</p> <ul style="list-style-type: none"> • Voltage - S in V1 + R in V5 > 35mm or R in AVL > 11mm or R in V5 or V6 > 27mm • Repolarization changes in left heart leads (V3-V6, I and AVL) • LAD > 15 may be present • QRS width > .09 sec and intrinsicoid deflection in V5-V6 of .04 sec or more <p>Signs of RVH:</p> <ul style="list-style-type: none"> • Voltage - R wave > S in V1 or R wave in V1 + S in V6 > 11mm • Repolarization changes in right heart leads (V1-V3, III and AVF) • RAD may be present 	<p>Enlarged muscle mass resulting from hypertrophy increases voltage</p> <p>Criteria for LVH vary. Body habitus and conditions masking voltage of true electrical event (emphysema and pericardial effusion) may make it difficult to use ECG to determine LVH. Most often associated with hypertension, aortic valve dysfunction, and hypertrophic cardiomyopathy.</p> <p>The voltage associated with right ventricular depolarization accounts for about 5% of the QRS, so only the ECG leads closest to the right ventricle permit determination of abnormalities in that area. Most often associated with mitral stenosis, chronic cor pulmonale, and congenital heart disease.</p>

