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Right Bundle Branch Block

• Criteria:

AHA Criteria for RBBB (2009):

(MANDATORY #1-3. #4 is conditional)

1. QRS > 120 ms in adults (>100 ms in children 4-16yo, and > 90 ms <4yo

2. Leads V1 or V2:
   • rsr′, rsR′, or rSR′ pattern
     ▪ The R or r deflection is usually wider than the initial R wave.
     ▪ A wide and notched R wave pattern may be seen in lead V1 and/or V2.

3. Leads 1 and V6:
   ▪ S > R in duration OR >40 ms in leads I and V6 in adults.

4. R-wave Peak Time
   (When a pure dominant R wave with or without a notch is present in V1)
   ▪ Normal in V5/6, but >50 ms in V1

AHA Criteria for Incomplete RBBB (2009):

1. Same criteria as RBBB except:
   QRS 110–120ms (adults)


Left Bundle Branch Block

AHA 2009 Guidelines for Left Bundle Branch Block:

1. QRS ≥ 120ms in adults (>100ms children 4-16, >90ms children <4yo)
2. Lateral Leads (I, aVL, V5, V6)
   a.) Broad notched/slurred R-wave in LATERAL leads (I, aVL, V5, V6)
       (Sometimes V5-6 can have RS pattern, due to displaced transition of QRS)
   b.) Absent q-waves in LATERAL LEADS (I, V5, V6) (aVL may have q)
   c.) R-wave peak-time WIDE in LATERAL > 60ms in V5-6 (Normal in V1-3)
3. ST and T-waves usually opposite direction of QRS
   - Positive concordance can be normal (Positive T-wave in leads with upright QRS)
   - NOTE: Negative concordance is abnormal. (Depressed ST or T-waves in leads with negative QRS)
4. Axis Deviation can be RIGHT, LEFT, or SUPERIOR

Note: Usually lateral Q-waves represent fast (L--->R) septal depolarization (which is reversed in a LBBB)
Incomplete Left Bundle Branch Block

AHA Criteria for Incomplete RBBB
1. QRS 110 - 119ms (90 - 100ms in children 8-16yo, and 80-90ms in children <8yo)
2. LVH Criteria Met
3. R-wave Peak Time > 60ms
4. No Q-waves in lateral leads: I, V5, and V6


- Example of Incomplete LBBB:
Left Anterior Fascicular Block

AHA 2009 Guidelines for Left Anterior Fascicular Block

1. Left Axis Deviation (-45° and -90°)
2. qR pattern in lead aVL.
3. R-peak time in lead aVL ≥45 ms.
4. QRS < 120 ms.

Do not apply to patients with congenital heart disease with LAD since infancy.
Left Posterior Fascicular Block Criteria (AHA 2009)

1. Axis 90° to 180°
   (children up to 16 have more rightward axis, this criterion should only be applied to them when a distinct rightward change in axis is documented)
2. rS pattern in leads I and aVL.
3. qR pattern in leads III and aVF.
4. QRS duration < 120 ms
Nonspecific Intraventricular Conduction Delay

**Nonspecific or Unspecified Intraventricular Conduction Disturbance DEFINITION:**

- QRS > 110ms
- Does not meet criteria for LBBB or RBBB
  OR
  - Limb leads have LBBB pattern and precordial limbs have RBBB pattern (or vice versa)

**Reference:** Surawicz (2009) "AHA/ACCF/HRS Recommendations for the Standardization and Interpretation of the Electrocardiogram", *JACC*, 53(11)