

# ECG interpretation



Western Health

- What is the **HR**?
  - Count number of QRS complexes in rhythm strip x 6
    - Normal 60-100 bpm
    - Tachycardia >100 bpm
    - Bradycardia <60 bpm

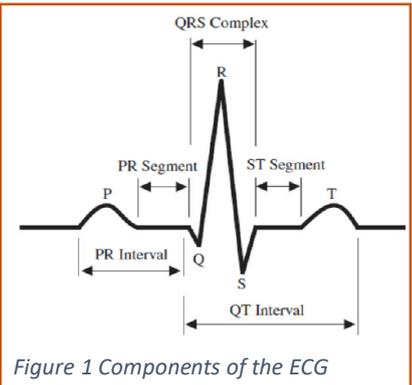


Figure 1 Components of the ECG

- What is the **Rhythm**?
  - Assess for P-waves
  - Relationship of P-wave to QRS complex
    - Sinus: a regular QRS complex follows each P-wave
    - Atrial fibrillation: no P waves present, irregular
    - First degree AV block: PR interval > 0.2s (200ms)
    - Second degree AV block:
      - Mobitz type 1: PR interval becomes progressively longer until a dropped QRS complex occurs after a P wave
      - Mobitz type 2: Constant PR intervals followed by one or more non-conducted P waves
    - Third degree AV block: P waves and QRS complexes occur independently of each other, but in regular intervals

- What is the **Axis** (table 1)?
  - Evaluate the QRS complex, is it positive or negative (figure 2)?

Table 1 Interpreting the axis

Axis	Lead		Degrees	Common causes
	I	aVF		
Normal	+	+	(-30°)–(+90°)	Normal axis
Left deviation	+	-	(-30°)–(-90°)	Normal variant, LVH, LBBB, LAFB, inferior MI
Right deviation	-	+	(+90°)–(+180°)	Normal variant, RVH, LPFB, lateral MI, RV strain, chronic lung disease
Extreme right	-	-	(-90°)–(-180°)	Severe RVH, lateral MI

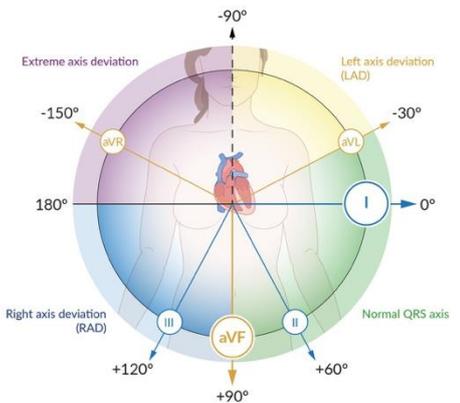


Figure 2 Cabrera circle: The electrical axis of the limb leads

- Evaluate the **QRS** complex
  - ≤ 100ms normal
  - 100-110ms incomplete bundle branch block
  - ≥ 110ms complete bundle branch block

Left bundle branch block (figure 3)

  - Features primarily seen in V5/V6
  - Prolonged QRS, rSR' formation in V5/V6 ("WilliamM")

Right bundle branch block (figure 3)

  - Features primarily seen in V1/V2
  - Prolonged QRS, rSR' formation in V1/V2, ("MorroW")



Figure 3 Top: LBBB, Bottom: RBBB

- Review the **ST segment**
  - Normal = isoelectric
  - Elevation = ≥ 0.1 mV (1 small square) in limb leads, ≥ 0.2 mV (2 small squares) in precordial leads
  - Vascular territories – localise the ischaemia (figure 4)
    - STEMI criteria: ST elevation in ≥ 2 anatomically contiguous leads (corresponding to specific artery) or, new LBBB with angina

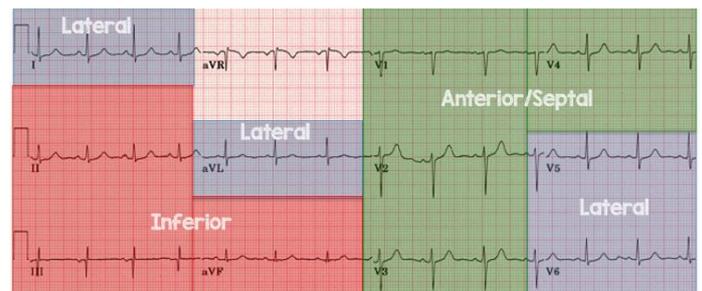


Figure 4 Vascular territories of the ECG

- Assess the **QT interval**
  - Normal from beginning of Q-wave to end of T-wave (350-440ms)
  - Prolonged: hypocalcemia, hypokalemia, drug side-effect (anti-arrhythmia, anti-depressant, phenothiazines), congenital