

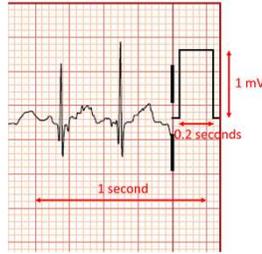
# AN APPROACH TO PEDIATRIC ECGs



Refer to age and gender normative ECG data by Rinjbeek et al (2001)

## 1. ID / Calibration

- ID (Patient, age, date)
- Calibration



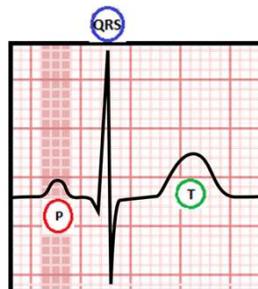
## 2. Rate

- Count off Method
- R-R distance
  - $60 \div \text{measured RR (sec)}$
- 6/10 sec rule
  - Full R-R segments in 6 sec X 10. (X 6 if 10 sec)
- ECG Ruler



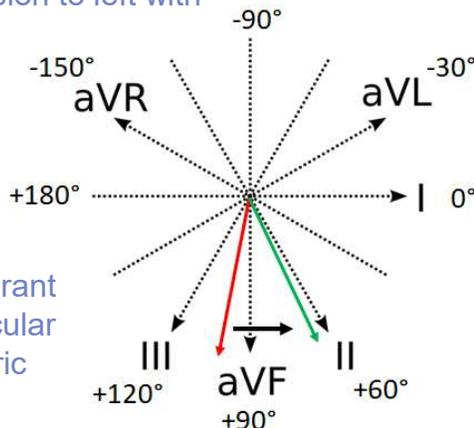
## 3. Rhythm

- QRS after every P
- P before every QRS
- P axis between 0 and +90
  - Upright P waves in I, II, aVF
  - Negative P waves in aVR



## 4. Axis

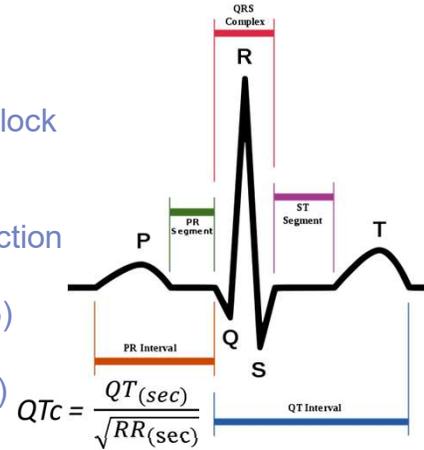
- Right axis dominance at birth
- Gradual progression to left with age



- Use I and aVF to localize the quadrant
- Axis is perpendicular to most iso-electric lead

## 5. Intervals

- PR Interval (II)
  - Prolonged: heart block
  - Shortened: WPW
- QRS Duration (V5)
  - Prolonged: Conduction delay
- QTc Interval (II or V5)
  - $<0.44 \text{ sec}$
  - $<0.47 \text{ sec (infancy)}$



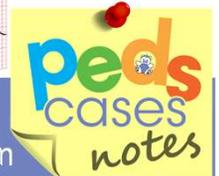
## 6. Voltages

- Right Atrial Hypertrophy
  - P waves  $>3\text{mm}$  in any lead
- Left Atrial Hypertrophy
  - P waves  $>0.10 \text{ sec}$  in any lead ( $>0.08 \text{ sec}$  in infants)
  - Broad notched P waves
  - Biphasic P wave in V1
- Ventricular Hypertrophy Criteria:
  - Precordial leads reflecting the hypertrophied ventricle show:
    - Abnormally large QRS complexes
    - Abnormal R/S wave ratio
    - QRS axis deviation

## 7. Repolarization

Normal changes:

- Inverted T waves in V1, V2, V4R from day 7 to 8-10 years old
- ST elevation/ depression
  - 1mm in limb leads
  - 1-2mm in precordial leads
- Early Repolarization if:
  - ST elevation/depression concordant with the T wave
  - Large symmetrical T waves
  - J waves



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