# Intervals and normal values

● Draft — pending owner review

## ECG PAPER AND CALIBRATION

| | |
|---|---|
| **Small box** | 1 mm = 40 ms = 0.1 mV |
| **Large box** | 5 mm = 200 ms = 0.5 mV |
| **Standard speed** | 25 mm/s |
| **Standard gain** | 10 mm/mV |
| **One second** | 5 large boxes |

## WORKING OUT THE HEART RATE

| | |
|---|---|
| **Normal** | 60–100/min |
| **Bradycardia** | < 60/min |
| **Tachycardia** | > 100/min |
| **Sequence** | 300 · 150 · 100 · 75 · 60 · 50 |

## THE INTERVALS: PR, QRS AND QT

| | |
|---|---|
| **PR** | 120–200 ms (3–5 small boxes) |
| **QRS** | < 120 ms (< 3 small boxes) |
| **QTc, men** | Prolonged above 450 ms |
| **QTc, women** | Prolonged above 460–470 ms |
| **QTc** | > 500 ms: high risk of torsades |

## CORRECTING THE QT FOR RATE (QTC)

| | |
|---|---|
| **Bazett** | QTc = QT / √RR |
| **Fridericia** | QTc = QT / ∛RR |
| **Prolonged** | > 450 ms men, > 460–470 ms women |
| **High risk** | > 500 ms |
| **Short** | < 340–360 ms |

## THE P WAVE

| | |
|---|---|
| **Duration** | < 120 ms |
| **Height in II** | < 2.5 mm |
| **Axis** | 0° to +75° |
| **aVR** | Inverted |

## HOW TO MEASURE

| | |
|---|---|
| **PR interval** | From the start of the P wave to the start of the QRS. Normal: 120 to 200 ms. |
| **QRS duration** | From the first deflection of the QRS to the J point, where the ST segment begins. Normal: under 120 ms. |
| **QTc** | Measure the QT (start of the QRS to the end of the T wave) and the RR interval, then correct for rate: QTc = QT / ∛RR, with RR in seconds (Fridericia). Normal: under 450 ms (men) or 460 ms (women). |

## CHILDREN DRAFT

| | |
|---|---|
| **Newborn** | Rate about 90–160/min; axis about +30° to +180° |
| **1–12 months** | Rate about 100–160/min; axis about +10° to +120° |
| **1–5 years** | Rate about 80–140/min; axis about 0° to +110° |
| **6–12 years** | Rate about 65–120/min; axis about −15° to +110° |
| **Adolescent** | Close to adult values |
| **T in V1** | Upright in the first days; inverted from about 1 week until adolescence |
| **Values** | Approximate: use a validated age-specific table |