Max QRS = 3 small squares ECG Interpretation P-Wave T-Wave Depolarization of **1) RHYTHM:** Ventricular atria in response regular, regularly irregular, irregularly irregular repolarization to SA node triggering. PR = 1 big square **2) RATE:** Q/RVoltage tachy or brady 4) CARDIAC AXIS DEVIATION: Time S greater than R in lead I = RIGHT AXISS greater than R in lead II = LEFT AXIS PR Interval ST Segment QRS Complex Delay of AV node Beginning of Depolarization of Lead I . to allow filling of ventricle ventricles, triggers All limb leads ventricles. repolarization, main pumping should be flat. contractions. Lead II isoelectric Lead II looks from the aVL Right superior Normal Left axis Right axis Indeterminate NORMAL DIRECTION 30° Right axis deviation deviation axis deviation -30°to +90° II, III, aVF → inf. view -30°to -90° +90° to +150° +150° to +270° superior-V1. V2 = Rt Heart 3) P wave = atria depolarising QRS in lead I is should be 1 P for every QRS: smaller and in lead II **V3**, **V4** = **Septum** Normal is bigger on inspiration How many Ps per QRS? Right + 30° V5. V6 = Lt Heart How long is the PQ interval? irregular P with irregular rhythm QRS = AF + 120 Evolution of an infarct: + 90' absent P with wide QRS = Ventricular Tachy Ш $ST \rightarrow Q$ wave 12hrs later $\rightarrow T$ inversion absent P with narrow QRS = Junctional Tachy continuos undulating sawtooth baseline P = Atrial Flutter P is the HEART BLOCK WAVE continuos with 2P per 1 QRS = Atrial Tachy with block P is also the ENLARGED ATRIUM WAVE bifid Long P waves = LA enlargement Q is the INFARCT WAVE peaked tall P waves = RA enlargement QRS is the CARDIAC AXIS COMPASS normal rate, 2Ps per QRS = second degree block ST is the ISCHAEMIA SEGMENT Progressive PQ lengthening = second degree block T is the HYPERKALEMIA WAVE Long PQ interval = first degree block U wave is the HYPOKALEMIA WAVE Ps don't match to QRS, very brady = complete block Long P = LAH; RSR = RBBB; No P wave but a solitary QRS = ventricular extrasystole ST Depression = Demand ischaemia 4) Q wave = septum depolarising or hole in conduction pattern HOW BIG? Normal unless large, Big Q wave = Infarct in the direction of THAT LEAD 5) QRS =ventricles depolarising; **RBBB** HOW BIG? Normal under 25mm, HOW WIDE? Hyperkalemia, BBB The higher the Ca++ **DEFORMED ORS?** The shorter the QT Huge tall QRS = LV hypertrophy Weak little QRS = old infarcted muscle RSR pattern ("M") in V1 = Right Bundle Branch Block I BBB SRS pattern ("W") in V1= Left Bundle Branch Block A "Delta" wave (gently up-sloping R) = = Wolff-Parkinson-White Syndrome 6) ST SEGMENT: DEPRESSED OR ELEVATED? Biggest ST points to the lesion V6 Depressed = demand ischaemia, elevated = supply ischaemia Down-sloping ST = Digoxin therapy CONCAVE ST elevation in all leads, with elevated PR in aVR → pericarditis delta wave secondary ST-T 7) T wave =ventricles repolarising change INVERTED?? WITH "U" WAVE??? inverted = infarct in last 24 - 48 hrs: without Q waves = Subendocardial infarct continuously painlessly inverted = LV hypertrophy with U wave = HYPOKALEMIA wide QRS

Tall T waves, Wide QRS, no ST segment = HYPERKALEMIA

just a little bump on the end of the T wave = HYPOKALEMIA →

9) U wave

Wolff-Parkinson-White syndrome