What is an arrhythmia?

• A change from the normal sequence of electrical impulses i.e. abnormal beats
• The electrical impulses may happen too fast, too slow, or erratically – causing the heart to beat too fast, too slowly, or erratically
• When the heart doesn't beat normally, it may not pump blood as effectively and so may cause symptoms
• Range from completely harmless to life-threatening
Normal “Sinus” rhythm
The ECG
Bradycardia

- Bradycardia is when the heart rate is slow <60bpm
- Heart Block – when conduction signals pass weakly from the atria to ventricles or completely fails to transmit
Tachycardia

- Tachycardia is when the heart rate is fast >100bpm
- Can occur in the atria, ventricles or as a circuit between both
- Focal
- Re-entry
Fibrillation

• The rapid, irregular, and unsynchronized contraction of muscle fibers
• Can occur in the atria or ventricles
Ventricular Fibrillation (VF)

- Erratic signals cause the ventricles to quiver
- The heart cannot pump blood and “cardiac arrest” will follow with collapse and sudden death unless this is immediately corrected
Atrial Fibrillation

- The commonest arrhythmia
- Increasingly so with age
- The atria fibrillate and send irregular and usually more rapid impulses to the ventricles causing an irregular and fast pulse
- Symptoms vary with some people being free of any symptoms whilst others may have very limiting symptoms such as palpitations, tiredness and breathlessness
Fibrillation
Diagnosis

• Symptoms
• ECGs
• ECG monitors
  – AKA Holters/ambulatory ECG’s/wearable ECGs
• Implanted devices
Arrhythmias - Conclusion

• Can be fast, slow or irregular
• Can occur if:-
  – The heart's natural pacemaker develops an abnormal rate or rhythm
  – The normal conduction pathway is interrupted
  – Another part of the heart takes over as pacemaker
• Can involve the atria, ventricles or both
• Range greatly
  – asymptomatic to severe symptoms and,
  – not harmful to life-threatening