

## ECG Rhythm Study Guide for CORE Advanced

### Normal Sinus Rhythm: Non-shockable



Looking at the ECG you'll see that:

- Rhythm - Regular
- Rate - 60 to 100 bpm
- QRS Duration - Normal
- P Wave - Visible before each QRS complex
- P-R Interval - Normal (<5 small Squares. Anything above and this would be 1st degree block)
- Indicates that the electrical signal is generated by the sinus node and travelling in a normal fashion in the heart

### Sinus Tachycardia: Non-shockable



An excessive heart rate above 100 beats per minute (BPM) which originates from the SA node. Causes include stress, fright, illness, and exercise. Not usually a surprise if it is triggered in response to regulatory changes e.g. shock. But if there is no apparent trigger then medications may be required to suppress the rhythm.

Looking at the ECG you'll see that:

- Rhythm - Regular
- Rate - More than 100 beats per minute
- QRS Duration - Normal
- P Wave - Visible before each QRS complex
- P-R Interval - Normal
- The impulse generating the heart beats are normal, but they are occurring at a faster pace than normal. Seen during exercise

### **Sinus Bradycardia: Non-shockable**



A heart rate less than 60 beats per minute (BPM). This in a healthy athletic person may be 'normal', but other causes may be due to increased vagal tone from, hypoglycaemia and brain injury with increased intracranial pressure (ICP) as examples.

Looking at the ECG you'll see that:

- Rhythm - Regular
- Rate - less than 60 beats per minute
- QRS Duration - Normal
- P Wave - Visible before each QRS complex
- P-R Interval - Normal
- Usually benign and often caused by patients on beta blockers

### **Asystole: Non-shockable**



A state of no cardiac electrical activity, as such no contractions of the myocardium and no cardiac output or blood flow are present.

Looking at the ECG you'll see that:

- Rhythm - Flat
- Rate - 0 Beats per minute
- QRS Duration - None
- P Wave - None
- Carry out CPR!!

## Narrow Complex Tachycardia: Non-shockable



A narrow complex tachycardia or atrial tachycardia which originates in the 'atria' but is not under direct control from the SA node. SVT can occur in all age groups.

Looking at the ECG you'll see that:

- Rhythm - Regular
- Rate - 140-220 beats per minute
- QRS Duration - Usually normal
- P Wave - Often buried in preceding T wave
- P-R Interval - Depends on site of supraventricular pacemaker
- Impulses stimulating the heart are not being generated by the sinus node, but instead are coming from a collection of tissue around and involving the atrioventricular (AV) node

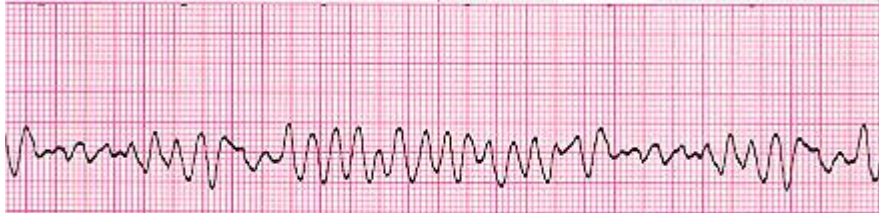
## Ventricular Tachycardia (VT): Shockable



Looking at the ECG you'll see that:

- Rhythm - Regular
- Rate - 180-190 Beats per minute
- QRS Duration - Prolonged
- P Wave - Not seen
- Results from abnormal tissues in the ventricles generating a rapid and irregular heart rhythm. Poor cardiac output is usually associated with this rhythm thus causing the patient to go into cardiac arrest. Shock this rhythm if the patient is unconscious and without a pulse

## Ventricular Fibrillation (VF): Shockable



Disorganised electrical signals cause the ventricles to quiver instead of contract in a rhythmic fashion. A patient will be unconscious as blood is not pumped to the brain. Immediate treatment by defibrillation is indicated. This condition may occur during or after a myocardial infarct.

Looking at the ECG you'll see that:

- Rhythm - Irregular
- Rate - 300+, disorganised
- QRS Duration - Not recognisable
- P Wave - Not seen
- This patient needs to be defibrillated!! QUICKLY