



SCST Diploma in ECG Interpretation preparation course

Syllabus

Lead systems

- Hexaxial reference system
- Wilson's central terminal
- Einthoven's triangle
- Derivations of standard 12 leads
- Significance of right leg (neutral) electrode

Normal features and basic measurements

- Relationship of the electrocardiogram to the electrical events of the heart
- Relationship of the electrical events to the mechanical events of the cardiac cycle
- Waveform components (P, Q, R, S, T and U)
- Definitions, measurement and normal ranges of heart rate, PR interval, QRS duration, QT interval and mean frontal plane axis
- Calculation of corrected QT interval (QTc) by Bazett's formula
- Appearance of the normal resting electrocardiogram including R wave progression in precordial leads
- Normal variants, including benign early repolarisation

Normal variations of the electrocardiogram in relation to:

- Age
- State of activity
- Body build
- Ethnic origin
- Athletic training

Rhythms arising from the sinus node

- Normal sinus rhythm
- Sinus arrhythmia
- Sinus tachycardia
- Sinus bradycardia

Supraventricular arrhythmias

- Atrial premature beats
- Wandering pacemaker
- Atrial tachycardia
- Atrial flutter

- Atrial fibrillation
- AV nodal re-entrant tachycardia
- AV re-entrant tachycardia
- Accelerated AV nodal (junctional) rhythm

Bradyarrhythmias and conduction abnormalities

- Sinus pauses, sino-atrial block and sinus arrest
- Left and right bundle branch block
- Left anterior and posterior fascicular block
- 1st degree AV block
- 2nd degree AV block: Mobitz I (Wenckebach), Mobitz II and 2:1 block
- High grade (advanced) AV block
- 3rd degree (complete) AV block
- Escape rhythms
- Ventricular standstill
- Aberrant conduction, including the Ashman phenomenon

Rhythms arising from the ventricles

- Ventricular premature beats
- Accelerated idioventricular rhythm
- Ventricular tachycardia, including idiopathic VTs
- Torsades de pointes
- Ventricular flutter
- Ventricular fibrillation

The electrocardiogram associated with an artificial cardiac pacemaker

- Identification of pacemaker stimulus on the electrocardiogram
- Unipolar and bipolar pacing
- VVI and DDD modes
- Differentiation between atrial and ventricular pacing
- Failure to sense
- Failure to capture

Electrocardiographic features of abnormal cardiac conditions, including

- Myocardial ischaemia
 - Stable angina
 - Unstable angina
 - Prinzmetal angina
- Myocardial infarction
 - NSTEMI
 - STEMI: evolutionary changes and localisation
 - Hyperacute changes
- Left ventricular hypertrophy
- Right ventricular hypertrophy
- Left atrial abnormality
- Right atrial abnormality
- Pericarditis, including large pericardial effusion
- Myocarditis
- Dextrocardia
- Massive pulmonary embolism

- Hypertrophic cardiomyopathy
- Dilated cardiomyopathy
- Arrhythmogenic RV cardiomyopathy
- Cardiac amyloidosis
- Ventricular pre-excitation/WPW syndrome, including pre-excited AF
- Atrial septal defect

Electrocardiographic features of abnormal metabolic, endocrine and electrolyte states

- Hypothermia
- Hypothyroidism
- Hyperthyroidism
- Hyperkalaemia
- Hypokalaemia
- Hyperventilation

Electrocardiographic features associated with drug administration

- Digitalis therapy and toxicity
- Beta-blocker therapy and overdose

Electrocardiographic features of ion 'channelopathies'

- Long QT syndrome
- Brugada syndrome
- 'Early repolarisation syndrome'

Electrocardiographic features associated with cerebrovascular, neuromuscular and neurological conditions

- Stroke
- Sub-arachnoid haemorrhage
- Muscular dystrophy and myotonic dystrophy
- Friedreich's ataxia

Artefact and error

- Transposed limb connections
- Transposed and incorrectly positioned chest electrodes
- Effect of filters
- Parkinsonian tremor
- Differentiation of AF and noise from somatic tremor