

Exercise ECG

The exercise ECG is an ECG recording made with the patient undergoing a graduated, treadmill exercise test, (e.g. Bruce protocol), with continuous 12-lead ECG monitoring its indications include:

- Suspicion of IHD
- Assessment of cardiac function / exercise tolerance
- Prognosis following MI (worse if positive)
- Assessment of treatment e.g. following angioplasty
- Assessment of exercise-induced arrhythmia

There are contraindications:

- Unstable angina
- Recent MI
- Severe aortic stenosis
- Uncontrolled hypertension

A positive test is identified by:

- Chest pain, syncope or severe breathlessness
- ST segment depression or elevation by > 1mm
- Pathological arrhythmias

24-hour ambulatory ECG recording

Used for paroxysmal (intermittent) arrhythmias

Many patients will not have symptoms during monitoring, some will have a normal ECG during symptoms.

Event Recorders

Patient activated ECG recording for paroxysmal, asymptomatic arrhythmias

Echocardiography

Ultrasound, non-invasive

Used to assess:

- Heart function e.g. to determine LV function
- Areas of hypokinesia, e.g. following MI
- LV aneurysm
- Mural thrombus
- Hypertrophy (much more sensitive than ECG)
- Valve function and disease severity
- Congenital heart disease (e.g. HOCM – Hypertrophic Obstructive Cardiomyopathy)
- Endocarditis – vegetations on valves
- Pericardial effusion

Trans-oesophageal echo (TOE) sometimes used when better resolution required e.g. to exclude endocarditic vegetations

Nuclear imaging e.g. Thallium scan

- Radionuclide tracers, non-invasive
- Assesses myocardial perfusion at rest and stress to show ischaemia and infarcts.

Thallium-201 and technetium-99 used as tracers

Cardiac catheterisation

- Catheterisation usually starts at the femoral artery (and sometimes vein), with catheters manipulated into the heart and vessels

It is used for:

- Sampling blood for oxygen levels
- Angiography, using a radiopaque dye
- Angioplasty, with stents to open stenosis

Complications:

- Haemorrhage
- Allergic reaction to dye
- Myocardial Infarction
- Stroke
- Arrhythmias
- Cardiac tamponade
- Infection
- Dissection / thrombosis

Electrophysiological studies

- Used to assess arrhythmias e.g. locating and ablating aberrant pathways