



## GP guide for the investigation of patients with cardiovascular problems

Echocardiography (Echo) is a key diagnostic tool in the diagnosis of heart failure and can determine the aetiology and help plan treatment for patients. Echo is also indicated for heart murmurs, atrial fibrillation and hypertension. 12-lead electrocardiogram (ECG) is also available to aid in the diagnosis, however normal ECG does not exclude serious cardiac disease.

Ambulatory ECG is available to assist in evaluating arrhythmias.

Ambulatory Blood Pressure monitoring is also available to assist in the assessment and management of patients with known or suspected disorders of blood pressure regulation.

### How do I refer a patient?

Fill out a physiological measurement request form which you can download from our website [www.inhealthgroup.com](http://www.inhealthgroup.com) or request via email to [info@inhealthgroup.com](mailto:info@inhealthgroup.com). Please specify the presenting complaint and relevant past medical history and medication on the form, and specify the investigation(s) required. Please return the completed form by fax to **0844 581 0305** or by secure email to [INL.inhealthreferrals@nhs.net](mailto:INL.inhealthreferrals@nhs.net). Once we have received the referral form we will contact your patient to book a suitable appointment time.

## Referral Guidelines

Presenting Complaint	Imaging Guidance
<b>Heart murmur/ suspected valve disease</b>	Echo is the current standard for detection and quantification of valvular heart disease. A resting 12-lead ECG should also be considered. Chest X-ray is useful as a baseline to identify any valvular calcification, cardiomegaly, and pulmonary vascular congestion or oedema.
<b>Symptoms of heart failure</b>	Echo should be carried out on all patients with suspected heart failure to exclude valve disease and assess systolic and diastolic function. 12-lead ECG and chest X-ray may be useful in evaluation of aggravating factors and alternative diagnoses.
<b>Suspected heart failure and previous myocardial infarction (MI) and/or high BNP levels</b>	Refer for Echo and make appointment for cardiological assessment with Echo report available.
<b>Suspected cardiomyopathy or left ventricular hypertrophy</b>	An Echo is indicated based on clinical findings or abnormal ECG or abnormal chest X-ray.
<b>Stable angina/ suspected Ischaemic heart disease</b>	All patients with suspected angina based on symptoms should have a resting 12-lead ECG to check for arrhythmias, signs of myocardial ischaemia and evidence of prior myocardial infarction. It should be emphasized that a normal resting ECG is not uncommon even in patients with acute/severe angina and does not exclude the diagnosis of ischaemia. Echo is indicated if on clinical examination there are any potential non-coronary causes of angina such as aortic stenosis, if LV dysfunction was suggested clinically, or if there is evidence of previous MI on ECG. Consider a chest X-ray only if other diagnoses such as pneumonia, pneumothorax or pulmonary oedema are suspected. Patients with chest pain at rest or on minimal exertion may have unstable angina and should be considered for hospital admission.
<b>Acute chest pain</b>	Consider an emergency admission if chest pain is severe, prolonged and experienced at the time of consultation. Refer for a resting 12-lead ECG as soon as possible, in parallel to referral for specialist/urgent assessment if indicated. It doesn't exclude an acute coronary syndrome even if the patient has a normal resting 12-lead ECG.
<b>Palpitations and other arrhythmias</b>	Initial investigation should include resting 12-lead ECG. If a cardiac cause is suspected, and symptoms present daily or almost daily, refer for ambulatory ECG monitoring.

## Atrial fibrillation/ flutter

A 12-lead resting ECG should be performed in patients - whether symptomatic or not - where atrial fibrillation is suspected because an irregular heartbeat has been detected.

If paroxysmal atrial fibrillation is suspected, but not detected by standard ECG recording, refer for ambulatory ECG monitoring.

### Consider Echo if:

- A baseline Echo is important for long-term management (such as in younger patients)
- For suspected underlying structural or functional heart disease (failure or murmur) that would influence management, such as choice of antiarrhythmic drug
- Needed to help with stratifying stroke risk for antithrombotic therapy, but only where clinical evidence is needed of LV dysfunction or valve disease

## Suspected hypertension/ hypotension

NICE guidance published in August 2011 indicates that if the first and second blood pressure measurements taken during a consultation are both 140/90 mmHg or higher, ambulatory blood pressure monitoring should be offered to confirm the diagnosis of hypertension.

Ambulatory blood pressure monitor should also be considered for difficult to manage cases such as:

- Unusual blood pressure variability
- Possible 'white-coat' hypertension
- Evaluation of nocturnal hypertension
- Determining the efficiency of drug treatment over 24 hours
- Diagnosis of hypertension in pregnancy
- Evaluation of postural or drug induced hypotension

**Note:** chest X-ray is rarely useful in patients with uncomplicated hypertension.

12-lead ECG is useful in assessing a patient's cardiovascular risk. Echo may be useful if there is mismatch between blood pressure levels and ECG appearances. Echo may also be useful in looking for hypertrophy that may not be evident on the ECG, or diastolic LV dysfunction that might prompt the need for therapy in borderline cases.

If the patient has unusual signs and symptoms, symptoms suggesting a secondary cause, or postural hypotension, refer for specialist assessment.

## Accelerated hypertension with signs of papilloedema and/or retinal haemorrhage, or suspected phaeochromocytoma

Refer immediately for urgent specialist assessment.

## Dizziness or fainting

If a cardiac cause is suspected, refer for resting 12-lead ECG.

# Recommendations for clinical review and specialist referral

Assistant Technical Officers and Cardiac Physiologists have access to a Senior Cardiac Physiologist or Consultant Cardiologist in interpreting complex findings. Depending on the reason for the request, certain findings might result in a recommendation for 'Urgent Cardiology Review' or 'Cardiology Review', 'Urgent Clinical Review' or 'Clinical Review'. This will be advised in the report. Clinical review may be carried out by a GP, GPwSI or Consultant Cardiologist. Cardiology review should always be to a Consultant Cardiologist.

Investigation	Recommendations for urgent findings
<b>Resting 12-lead ECG</b>	<p><b>Cardiology Review:</b></p> <ul style="list-style-type: none"> <li>Any significant abnormality, such as AF/Flutter, BBB, pathological Q waves, ST-T wave abnormalities</li> </ul> <p><b>Urgent Cardiology Review:</b></p> <ul style="list-style-type: none"> <li>ST segment elevation suggesting acute MI</li> <li>ST depression of over 1.5mm in any lead</li> <li>Marked bradycardia or pauses over 3 seconds</li> <li>AV dissociation or sustained 2<sup>nd</sup> degree AV block</li> <li>Arrhythmias such as VT or SVT</li> <li>Patient unwell at the time of the procedure and staff concerned</li> </ul>
<b>Echo</b>	<p><b>Urgent Cardiology Review:</b></p> <ul style="list-style-type: none"> <li>Post MI: ventricular septal rupture, severe MR or pseudo-aneurysm</li> <li>Aortic dissection</li> <li>Large pericardial effusion</li> <li>Cardiac mass (myxoma, thrombus, vegetation)</li> </ul>
<p><b>Emergencies:</b> If a patient during the test is found to have severe heart block or chest pain, an emergency referral to A&amp;E will be made and the referrer informed.</p>	
<b>24-hour ECG</b>	<p><b>Cardiology Review:</b></p> <ul style="list-style-type: none"> <li>Fairly Frequent ectopics (from either atrial or ventricular origin), AF/Flutter, BBB.</li> </ul> <p><b>Urgent Cardiology Review:</b></p> <ul style="list-style-type: none"> <li>Marked bradycardia &lt;30 bpm or pauses over 3 secs</li> <li>Evidence of Pacing failure</li> <li>AV dissociation or sustained 2<sup>nd</sup> degree AV block</li> <li>Arrhythmias such as VT or SVT</li> <li>WPW with sustained re-entry tachycardia</li> <li>Frequent ectopics (from either atrial or ventricular origin).</li> </ul>
<b>24-hour BP monitoring</b>	<p><b>Urgent specialist review:</b></p> <ul style="list-style-type: none"> <li>Repeated measurements in excess of 200 systolic or 110 diastolic</li> </ul>

## References

**National service framework** for coronary heart disease. Department of Health, 2000.

**NICE Clinical guideline 127** - Hypertension: management of hypertension in adults in primary care, 2011.

**NICE Clinical guideline 36** - Atrial fibrillation: the management of atrial fibrillation, 2006.

**NICE Clinical guideline 95** - Chest pain of recent onset, 2010.

**NICE Clinical guideline 108** - Chronic heart failure: management of chronic heart failure in adults in primary and secondary care, 2010.

**Guidelines** on the management of valvular disease. European Society of Cardiology, 2007.

**Referral Guidelines** - Making the best use of clinical radiology services. Royal College of Radiologists, 6th Edition, 2007.