

## Transthoracic Echocardiography - Guidelines on Referral - Full Clinical Guideline

Ref No: CG-T/2014/007

### Purpose

To provide guidance for staff requesting echocardiograms on inpatients and outpatients. *ICM should be routinely checked for previous studies before requesting any investigations.*

### 1. Assessment of LV Function or Heart Failure

The commonest reason for echocardiography. Echo gives a good but subjective assessment of LV systolic function and can give clues as to the aetiology of systolic dysfunction.

- Suspected heart failure – echocardiography is the first line test following a clinical assessment including chest radiograph and electrocardiography. Repeated echo studies are **not** always needed after a diagnosis is made.
- If the Pt has suspected heart failure and BNP level of 400 pg/ml (116 pmol/litre) or am NT pro BNP level above 2000 pg/ml (236 pmol/litre) echo within 2 weeks
- BNP level between 100 and 400 pg/ml (29-116 pmol/litre) or an NTproBNP level between 400 and 2000 pg/ml (47 – 236 pmol/litre) echo within 6 weeks therefore please request as OP

*Be aware that high levels can have causes other than heart failure, including left ventricular hypertrophy, ischaemia, tachycardia, right ventricular overload, hypoxia (including pulmonary embolism), GFR less than 6- ml/minute, sepsis, COPD, diabetes, age greater than 70 and liver cirrhosis.*

- Patients with severe LV systolic impairment do **not** need serial or repeat echocardiography unless new physical findings are evident (new murmur, suspected tamponade etc).
- Reversible left ventricular systolic dysfunction can rarely occur and if heart failure responds dramatically to treatment a further assessment of left ventricular function by echocardiography is reasonable after a period of at least 6 months.
- The requirement for In patient echocardiography post MI is at the discretion of the Consultant Cardiologist in charge of the patient. MI patients should be considered for echo assessment of left ventricular function after approx. 6 weeks after the myocardial infarction if the presence of LV impairment with alter patient management or prognosis.
- Myocardial infarct patients with significant complications will require emergency echocardiography (same day) - i.e. suspected ventricular septal rupture, papillary muscle rupture, pericardial effusion etc.

## 2. Assessment of Cardiac Murmur

This will be the second commonest indication for echocardiography. In patients where the nature of the cardiac murmur is uncertain, or definition of the cause of the murmur will influence management, then an echocardiogram is indicated. Serial assessment of cardiac valvular lesions is **only** required in patients who would be candidates for surgical treatment.

- Murmurs are not uncommon in the elderly and do not need investigation unless it will alter the management of the patient
- Fall/Collapse is not an indication for an echo.

## 3. Assessment of Suspected Infective Endocarditis

Echocardiography is a very useful investigation for patients with suspected infective endocarditis

Do not request trans-thoracic echocardiography for patients with low clinical suspicion, e.g. negative blood cultures with pyrexia but no murmur; or low modified Duke score; alternative septic source where sepsis settles with antibiotic treatment- discuss with on-call cardiology registrar in cases of doubt

If blood culture grows organism likely to be associated with endocarditis such as viridans *streptococci*, *staphylococcus aureus*, *enterococci* and if there is no obvious superficial focus ( e.g. cellulitis or wound infection for *staphylococcus aureus*) then consultant microbiologists advice clinicians to look for clinical symptoms and signs of infective endocarditis and if suspected to get echocardiography done. As yield with trans-thoracic echocardiography is low, trans-oesophageal echocardiogram is suggested for prosthetic heart valves. Doctors requesting echocardiography should give appropriate clinical details why they are requesting an echocardiogram.

## 4. Atrial Fibrillation

An echocardiogram is considered part of the routine investigational work-up of a patient with atrial fibrillation. It allows assessment of atrial size and ventricular function, which will influence management decisions.

Routine O/P unless anticoagulation is contraindicated

## 5. Suspected Acute Thoracic Aortic Dissection

Transthoracic echocardiography is **not** the investigation of choice with suspected aortic dissection and should **not** be requested. In such patients a CT or MRI scan of the aorta is indicated as a matter of urgency. If neither test is available then transoesophageal echocardiography can be considered

Transthoracic echocardiography is **only** indicated if the patient is suspected of having a specific complication of aortic dissection such as pericardial tamponade or severe aortic regurgitation.

6. **Suspected Pulmonary Embolism**

Transthoracic echocardiography is **not** a useful investigation in most patients with suspected acute minor pulmonary embolism. However, in shocked patients with suspected pulmonary embolism echocardiography can be extremely useful. This would be the **only** specific indication.

Echocardiograms are usually performed 3 months after proven pulmonary embolism to assess for pulmonary hypertension.

7. **Suspected Pericardial Disease**

Echocardiography is investigation of choice for suspected pericardial effusion. It is also indicated in cases of suspected constrictive pericarditis. Please note, however, that the diagnosis of pericardial constriction can be difficult on echocardiography and further evaluation may be required.

8. **Evaluation of Stroke or TIA or Peripheral Arterial Embolism**

Echocardiography does not need to be routinely requested in patients who have had a stroke, TIA or arterial embolism unless there is the presence of other factors such as a cardiac murmur, myocardial infarction, AF, unexplained event at a young age or other reasons to suspect intracavity cardiac thrombus or masses.

The diagnostic yield of echo in such patients with no cardiac history, normal heart on CXR and in sinus rhythm is very low.

- Please assess patient for abnormalities that may indicate the heart as a source of emboli and that an echo will change the treatment plan. If IP treatment likely to change request as IP if not request as OP.

9. **Assessment of pulmonary hypertension**

Echocardiography can be used to obtain an estimation of systolic pulmonary artery pressure.

10. **Transoesophageal Echo**

The guidance for referrals for this procedure are to be covered in a separate document.

11. **“Out of Hours” Service**

If an urgent Transthoracic echo is required out of hours please discuss with the on call cardiology consultant, and only in the event of a clinical emergency and after the appropriate senior medical review the technician can be contacted once cardiology approval has been obtained.

**References**

ACC/AHA/ASE 2003 guidelines update for the clinical application of echocardiography.  
Circulation 2003; 108: 1146-1162.

**Documentation Controls**

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