

Clinical Indications & Triage of Transthoracic Echocardiography **- OUTPATIENT Requests - Clinical Guideline**

CG-CLIN/1939/23 (2)

These guidelines are based on expert clinical opinion and evidence where appropriate literature exists.

All outpatient echocardiogram requests should be requested via the electronic requesting system.

Individual patient scenarios and local practice pathways remain an equally significant factor in triage. Triage of inpatient and emergency/critical care patient should therefore be facilitated by the referrer by providing the specific, appropriate clinical information within the request.

Accurate triage is an effective tool to release resources to patients who need it. This document is provided as a guide and a focus for discussion amongst local teams, not as a protocol. Effective triage depends on the clinical information received from the referrer together with, where relevant, the predicted rate of progression of previously established pathology. Where incomplete clinical information has been provided by the referrer it is advised that the request is returned to allow for further clarification.

Recommendations for TTE are categorised as being:

- 'Not indicated' - transthoracic echo is unlikely to routinely provide useful information.
- 'Routine' - routine TTE is deemed appropriate, timeframe will depend upon the waiting list at the time.
- 'Urgent' - TTE should be prioritised (if relevant) within 2 weeks.

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OUTPATIENT INDICATIONS

1. SUSPECTED HEART FAILURE

1.1 URGENT

- Significantly raised NT-pro-BNP, >2,000ng/l with heart failure symptoms.
- Clinical suspicion of pericardial effusion.

1.2 ROUTINE

- Minor radiographic cardiomegaly in the absence of symptoms or signs of heart failure.
- Clinical or radiographic signs of heart failure (e.g. peripheral oedema, bilateral pleural effusions).
- NT-pro-BNP 400-2000ng/l.
- Unexplained shortness of breath in the absence of clinical signs of heart failure if the ECG and/or chest X-ray is abnormal.
- Persistent hypotension of unknown cause.
- Suspected cardiomyopathy based on abnormal examination, ECG, or family history in first degree relative.
- Assessment of neuromuscular diseases associated with cardiac manifestations, (e.g. muscular dystrophies, Friedreich's ataxia or mitochondrial myopathies).
- Patients in new atrial fibrillation (ventricular heart rate should be well controlled).

1.3 NOT INDICATED

- NT-pro-BNP <400ng/l.
- Assessment of patients with peripheral oedema but normal jugular venous pressure and no evidence of cardiac disease (e.g. asymptomatic individual with a normal 12 lead ECG).
- Patients in atrial fibrillation if an uncontrolled ventricular rate (unless class 3 or 4 heart failure symptoms).

2. HEART MURMUR

2.1 URGENT

- Murmur in the presence of class 3 or 4 heart failure symptoms or syncope.

2.2 ROUTINE

- Assessment of an innocent (i.e. physiological/flow) murmur diagnosed by a competent clinician.
- Murmur in the presence of cardiac or respiratory symptoms.
- Murmur in an asymptomatic individual in whom clinical features or other investigation suggest structural heart disease.

2.3 NOT INDICATED

- Unchanged murmur in an asymptomatic individual with a previous normal echo.

3. AORTOPATHY

3.1 ROUTINE

- Assessment of suspected or proven genetic disorders in which aortic pathology may be a feature, (e.g. Marfan Syndrome).
- Diagnosis and periodic assessment of aortic aneurysm, dilatation of the aorta and previous surgical repair of the aorta.

3.2 NOT INDICATED

- Patients with terminal illness whose management would not be affected by identification of any change in echocardiographic appearance.

4. PALPITATIONS AND PRE-SYNCOPE/SYNCOPE

4.1 URGENT

- Syncope in a patient with clinically suspected structural heart disease
- Exertional syncope

4.2 ROUTINE

- Clinical suspicion of structural heart disease in proven arrhythmia.
- Routine assessment of ventricular function to assist with the calculation of risk of sudden cardiac death post-myocardial infarction or following a documented ventricular arrhythmia.
- Evaluation of left ventricular function prior to initiating certain anti-arrhythmic medications (e.g. flecainide).
- Syncope in a patient with a high-risk occupation (e.g. pilot, bus driver).
- Assessment of patients without clinical suspicion of structural heart disease who have an arrhythmia commonly associated with structural heart disease (e.g. ventricular tachycardia).

4.3 NOT INDICATED

- Palpitations without ECG proof of arrhythmia or clinical suspicion of structural heart disease on examination by an experienced clinician
- Low burden (<1%) or isolated ventricular ectopy in the absence of a clinical suspicion of structural heart disease (1-10% - clinical decision)
- Classic neuro-cardiogenic syncope

5. SUSPECTED CARDIAC MASS/POSSIBLE CARDIAC CAUSE OF SYSTEMIC-CIRCULATION EMBOLISM

5.1 URGENT

- Cross-sectional imaging or clinical findings suggesting an intracardiac mass (if possible left atrial appendage thrombus then TOE preferable).
- Known primary malignancies where echocardiographic surveillance for cardiac involvement forms part of the normal staging process (e.g. renal cell carcinoma).
- Embolic event in the presence of clinical or ECG suspicion of significant left ventricular impairment.

5.2 ROUTINE

- Patients in whom echocardiography will not affect the decision to commence anticoagulation (e.g. patients in atrial fibrillation with cerebrovascular event and no suspicion of structural heart disease).
- Patients in with abnormalities that may indicate the heart as a source of emboli and where an echo will change the treatment plan. If inpatient treatment likely, change the request to an inpatient request (refer to inpatient criteria).
- Periodic repeat assessment following removal of a cardiac mass or tumour (usually annual review will suffice after an initial post-op scan).

5.3 NOT INDICATED

- Patients with terminal illness whose management would not be affected by identification of any echocardiographic abnormalities.

6. HYPERTENSION AND SUSPECTED LEFT VENTRICULAR HYPERTROPHY

6.1 ROUTINE

- Routine assessment of any patient with essential hypertension.
- Routine assessment of asymptomatic patients with an established genetic or infiltrative cause of left ventricular hypertrophy.
- Repeat assessment for left ventricular mass regression (CMR may be preferable).
- Suspected left ventricular dysfunction.
- Evaluation of clinically suspected aortic coarctation (e.g. hypertension in the young).
- Elevated blood pressure with concerns for end organ damage.

6.2 NOT INDICATED

- Repeat assessment of left ventricular function in asymptomatic patients

7. PULMONARY DISEASE

7.1 ROUTINE

- Lung disease combined with a clinical suspicion of right ventricular failure (e.g. peripheral oedema, raised jugular venous pressure).
- Following pulmonary embolism when clinical concern for right ventricular impairment and/or presence of developing pulmonary hypertension.
- Evaluation for suspected or established pulmonary hypertension.
- Patients with unexplained persistent or positional oxygen desaturation (consider bubble-contrast echocardiography to evaluate for a right to left shunt)

7.2 PLANNED - IN 3 MONTHS

- Evaluation of response to treatment of pulmonary hypertension and pulmonary embolism.

7.3 NOT INDICATED

- Prior echo <12 months previous with no observed pulmonary hypertension features.
- Lung disease with no clinical suspicion of cardiac involvement or pulmonary hypertension.

8. ESTABLISHED CARDIOMYOPATHY

8.1 URGENT

- New onset class 3 or 4 heart failure symptoms.

8.2 ROUTINE

- Repeat assessment in documented cardiomyopathy where the result may change management or following procedures that may improve ventricular function.
- Repeat assessment in documented cardiomyopathy where there has been a change in clinical status.

8.3 NOT INDICATED

- Patients with terminal illness whose management would not be affected by identification of any change in echo appearance.
- Routine repeat assessment in clinically stable patients in whom no change in management is contemplated.

9. SUSPECTED PERICARDIAL DISEASE

9.1 URGENT

- Clinically suspected pericarditis, pericardial effusion, or pericardial constriction.
- Periodic repeat assessment of a moderate or large pericardial effusion.
- Repeat assessment of small pericardial effusion with a change in clinical status.
- Clinical suspicion of cardiac tamponade (especially if predisposing factors are present, e.g. known malignancy, suspected myo-pericarditis, recent cardiac surgery).

9.2 NOT INDICATED

- Repeat assessment of a small pericardial effusion without clinical change.
- Follow-up studies in patients with a terminal illness whose management would not be affected by identification of any echocardiographic abnormalities.

10. BEFORE CARIOVERSION IN PATIENTS WITH ATRIAL FIBRILLATION

10.1 ROUTINE

- To guide decision-making regarding DC cardioversion in a patient with no recent echo study (i.e. within the last 12 months).
- To guide decision making regarding DC cardioversion in a patient with a recent echo study but with a change in clinical cardiovascular status since it was performed.

10.2 NOT INDICATED

- Patients requiring emergency cardioversion.
- Patients on long-term anti-coagulation at a therapeutic level with no clinical suspicion of structural heart disease.
- Patients on long-term anti-coagulation at a therapeutic level with established structural heart disease but no recent clinical change.

11. PRE-OPERATIVE ECHOCARDIOGRAPHY FOR ELECTIVE AND SEMI-URGENT NON-CARDIAC SURGERY

11.1 INDICATED

Please refer to specific pre-operative echocardiography guidelines.

11.2 NOT INDICATED

- Known ventricular or valvular dysfunction by previous echocardiogram dated within 12 months.
- AF without signs of congestive cardiac failure or murmur.
- Referral based on age or frailty only.

References

Clinical Indications and Triage of Echocardiography Out-patient requests (excluding the follow-up of established valve disease). BSE. 2021. Tom Ingram, Claire Colebourn, Daniel Augustine, Sadie Bennett, Keith Pearce, Sarah Ritzmann, Martin Stout.

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