



CLINICAL UPDATE

How valuable is cardiac ultrasound?



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Cardiac ultrasound provides rapid high-resolution imaging of the heart in real time, demonstrating the physiology of the heart in normal, and pathological conditions.

Transthoracic echocardiography (TTE) measures chamber sizes and reveals ventricular and valvular function. Filling pressures and patient volume status can also be assessed.

Advances in imaging quality, digital acquisition, portability, superior frame rate and relatively inexpensive cost when compared to CT, nuclear medicine and cardiac MRI have resulted in echocardiography's continued and expanding use.

Transthoracic echocardiography applications in general practice.

1. Investigation of dyspnoea

Dyspnoea is often a multifactorial complaint. Increasing age and co-morbidities increase co-existent cardiac disease.

Contributors to dyspnoea detected by echo include impaired systolic and diastolic dysfunction, valvular dysfunction (i.e. aortic stenosis, aortic and mitral regurgitation), and infiltrative cardiomyopathies. Echo is pivotal in the detection of cardiac contributors, and in guiding appropriate management.

2. Left Ventricular ejection fraction (LVEF) dependent therapies

Implantable cardiac defibrillator (ICD): LVEF \leq to 35% for primary prevention on optimal medical therapy (OMT).

Cardiac resynchronisation therapy (CRT): LVEF $<$ 35% and left bundle branch block (LBBB) on OMT.

Entresto - new heart failure pharmacologic combination Valsartan and sacubutril, shown to improve mortality, reducing hospitalisations and symptoms in class 2-4 heart failure compared to ACE inhibitors. LVEF \leq 40% on OMT.

Eplerenone - a mineralocorticoid inhibitor, improves survival post myocardial infarction, LVEF \leq 40%.

3. Valvular follow-up
Moderate-severe native valvular disease. Generally, a yearly echocardiogram is performed in moderate-severe native valvular disease, where an intervention may be considered (i.e. valvular replacement or repair).

Prosthetic valves. A baseline TTE should be performed around 4 weeks to assess mechanical and bioprosthetic valves when anaemia and postoperative changes in physiology have resolved.

In the absence of a change of clinical status, the American society of echocardiography do not recommend routine follow up for mechanical valves.

For bioprosthetic valves (usually a stented tissue valve of bovine pericardium), routine yearly echocardiograms are not indicated until five years, as the valves are not expected to fail within this time. More frequent checks are of course indicated with changing clinical status.

4. Dilated ascending aorta and bicuspid valves.

Patients with an ascending aorta greater than 4.0cm should be assessed by a cardiologist.

All patients with a bicuspid valve should be assessed by a cardiologist due to the coexisting aortopathy and risk of aortic dissection.

First degree relatives of patients with aortic dissection, aortic dilatation or bicuspid aortic valve, should also be evaluated with an echocardiogram due to familial clustering.

5. Family screening

Echocardiography is useful to identify and exclude morphological changes of Hypertrophic cardiomyopathy, dilated cardiomyopathy, Marfan's syndrome and bicuspid aortic valve.

6. Other conditions for routine echocardiography (2-5 yearly)

Hypertension: LA dilatation, aortic dilatation, LV concentric hypertrophy.

Pulmonary hypertension: Diagnosis, monitoring, right heart function assessment.

Renal dysfunction: hypertensive changes, coexistent valvular and coronary disease, filling status.

Systemic conditions: Amyloid, SLE, vasculitides, severe pulmonary disease (right heart). ●

ED. The sophistication of echocardiography is growing, putting it far beyond defining valvular heart disease.

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