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<th><strong>Title:</strong></th>
<th>Echocardiography in the Preoperative Assessment Clinic</th>
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**Guidelines for ordering echocardiograms in pre-op assessment in Craigavon Hospital**

**Background**

Clinical evidence showing appropriate use of echocardiography in pre-op assessment for non-cardiac surgery is scanty. The resting echocardiogram has relatively weak evidence in predicting post-operative outcomes even in patients with active cardiac conditions and poor functional status. Pre-op cardiac evaluation should do more than just provide medical clearance for surgery. Rather, it should fortify informed clinical judgement in terms of existing cardiac status and assist the anaesthetic team with the management of cardiac issues that may influence short or long-term cardiac outcomes. Few prospective and retrospective studies validate a positive correlation between LV dysfunction and post-operative morbidity and mortality. Any degree of LV dysfunction has been found to be associated with perioperative myocardial infarction or cardiogenic pulmonary oedema.

Pre-operative echocardiography in a targeted population influences peri-operative management including the anaesthesia technique. This information is based largely on expert opinion and retrospective review. A large population based retrospective cohort review in which 15% of patients underwent echocardiography found this investigation was not associated with improved outcomes or shorter hospital stays in major non-cardiac surgery. This suggests that there is improper use of this very common pre-operative test. Conclusive studies for assessing the relationship between pre-operative echocardiography and post-operative outcome may have major clinical and logistical concerns, including the ethical issues of a control group. Until there is robust evidence concerning appropriate use of pre-operative echo, guidelines will have to be based on collective expert opinion and experience.

**Purpose of guideline**

The purpose of this guideline is to ensure a targeted approach to the ordering of this investigation, to avoid using it as part of a routine screening protocol, and to ensure consistency across all patients coming through the pre-op process.

**The Purpose of the investigation in the context of pre-op**

1. In suspected valvular pathology, especially aortic and mitral stenosis, the severity may not correlate with clinical findings and will have significant potential for perioperative morbidity.
2. The echo will give some indication of left ventricular and right ventricular function but this does not always correlate well with functional capacity or outcome.
3. An ejection fraction of less that 50% is abnormal and is compatible with a diagnosis of systolic heart failure. However, two thirds of patients over the age of 80 with heart failure will have diastolic dysfunction and a normal LV ejection fraction.
4. Heart failure (either systolic or diastolic dysfunction) is a major perioperative risk factor. The presence of heart failure doubles the risk of dying after major surgery.

The following patients should have a pre-op echocardiogram

1. A patient with a newly diagnosed murmur and with any or all of:
   a. poor functional capacity
   b. syncope or dizzy spells
   c. angina.
2. A patient with a known aortic or mitral stenosis and a significant change in symptoms since their last echocardiogram.
3. A patient with a best Duke Activity Questionnaire score below 5.5 not due to mobility issues and a raised BNP
4. A patient with known ischaemic heart disease in whom LV function has not been previously assessed and who has a best Duke Activity Questionnaire score below 5.5 not due to mobility issues and a raised BNP.
5. A patient with major ECG changes compared to previous recordings held in the notes (and hopefully eventually on sentinel), such as LBBB, RBBB major ST changes or Q waves that have not been assessed by a cardiologist.
6. A patient with known heart failure with a significant change in symptoms and an increase in BNP.
7. New onset AF where their surgery is urgent and will precede their referral to the next arrhythmia clinic.
8. A patient with LBBB or RBBB (Not incomplete RBBB) that has not been previously identified.

Dr N. Rutherford-Jones

Pre-op Anaesthetic Lead