



Preoperative Echocardiography - Are we still requesting too many scans?



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Introduction:

Preoperative assessment aims to optimise patients prior to elective surgery. In our modern NHS environment of increasing comorbidities and bed pressures this is crucial to improve peri- and post-operative outcomes.

In University Hospital Ayr the majority of our elective patients are examined in the preoperative clinic by a nurse trained in cardiorespiratory examination. This is in advance of their operative date so that relevant examination findings are discovered and the appropriate investigations can be carried out and acted upon in good time.

Our echocardiography department is under constant pressure of workload and the question had been posed whether we were requesting unnecessary examinations to be conducted as per the British Society for Echocardiography (BSE) guidelines[1][2][3].

Method:

We audited the number of echocardiograms performed in a six month period retrospectively from January 2017 to June 2017. Using the online 'Clinical Portal' and 'Echo PAC' systems in conjunction with requesting certain patients' physical notes we determined the outcome of each examination.

The outcome was noted whether ventricular or valvular and the severity of the abnormality classified by the echo technician.

With respect to the impact of these abnormalities on anaesthetic practice we also audited whether finding the abnormality resulted in any further investigation or impact on the patient's perioperative care.

British Society of Echocardiography Guidelines for Preoperative Echo:

- Documented Ischaemic Heart Disease with reduced functional capacity (<4 METS)
- Unexplained Shortness of Breath
- If ECG and/or CXR is abnormal
- Murmur in presence of cardiac or respiratory symptoms
- Murmur in asymptomatic individuals in whom clinical features suggest severe structural heart disease
- Not to repeat previous assessment with no clinical change in functional status in past 12 months

Results:

Over our six month period we found that 109 patients were sent for echocardiography; however only 103 were included in analysis as 5 patients were lost to follow up.

The majority of patients were examined due to a new murmur (36.89%), a known murmur (26.21%), a rhythm abnormality (19.42%), previous History of IHD/None (9.71%) and Symptomatic chest pain/Shortness of Breath (7.77%). The results of these echocardiograms can be seen in Table 1.

Ultimately 91 procedures went ahead as planned with additional investigation and cardiology follow-up for the 8 severe patients of which 3 declined their planned procedures.

Discussion:

From our data we can conclude that the majority (~75%) of our patients are being scanned with largely normal or un concerning results. The echocardiography performed in certain cases of severe abnormalities did dramatically affect the surgical and anaesthetic outcome but only in a minority of patients (<5%). While echocardiography is paramount in the peri-operative management of deteriorating cardiovascular disease our preliminary findings in this pilot study suggest that in cases of mild, asymptomatic murmurs in the absence of progressing symptoms or evidence of structural cardiovascular abnormalities an echocardiogram would be of little prognostic value as suggested by BSE guidelines.

Future work will involve using the BNP biomarker to guide our referral practices according to correctly followed BSE guidelines.

References:

1. British Society of Echocardiography. Clinical indications for echocardiography. [Last accessed Sept. 2019]. Available from <https://www.bsecho.org/indications-for-echocardiography/>
2. Shim CY. Preoperative cardiac evaluation with transthoracic echocardiography before non-cardiac surgery. *Korean J Anesthesiol.* 2017;70(4):390-397.
3. Barber, R.L. and Fletcher, S.N., 2014. A review of echocardiography in anaesthetic and peri-operative practice. Part 1: impact and utility. *Anaesthesia*, 69(7), pp.764-776.

Echo Result (ventricular/valvular)	Number (percentage)
Normal/Mild	78 (75.73%)
Mild-Moderate/Moderate	17 (16.5%)
Severe	8 (7.77%)

Table 1: Severity of Echo result

Ventricular and valvular abnormalities added together and expressed as a percentage of total according to severity of finding and thus impact on anaesthetic care.