

## Debate & Analysis

# Detecting heart valve disease:

can we do better?

### BACKGROUND

It is not widely known that valve disease is as common as heart failure, with a prevalence of 2.5% in the general population and over 10% in those aged >75.<sup>1</sup> There are many well-established national programmes for heart failure yet none exist for valve disease, which can justifiably be regarded as the 'next cardiac epidemic waiting to happen'.<sup>2</sup>

There are many limitations in our care for heart valve disease. Most patients are still cared for by general physicians or GPs without specialist expertise despite management decisions becoming increasingly complex.<sup>3</sup> One-half of patients throughout Europe receive surgery too late.<sup>4</sup> The situation is particularly poor for older people, at least 30% of whom are not referred even when clinically indicated.<sup>3</sup> There is unacceptable variation in access to aortic valve surgery in the UK,<sup>5</sup> particularly in London where Camden has observed activity 47% above age-predicted rates and Brent has activity 40% below age-predicted rates.

These limitations have led to a call for specialist valve clinics.<sup>3,6</sup> These are expected to improve the assessment of valve disease and the timing of surgery, and to ensure referral to an appropriately qualified and experienced surgeon or interventional cardiologist. However, unless valve disease is detected more frequently in the community these improvements in secondary or tertiary care will be ineffective.

### BARRIERS TO DETECTION IN THE COMMUNITY

Murmurs are a clue to the diagnosis but are unreliable because they may be physiological or may disappear in severe valve disease as heart failure develops. Furthermore, GPs in the UK are less likely than their colleagues in France to auscultate

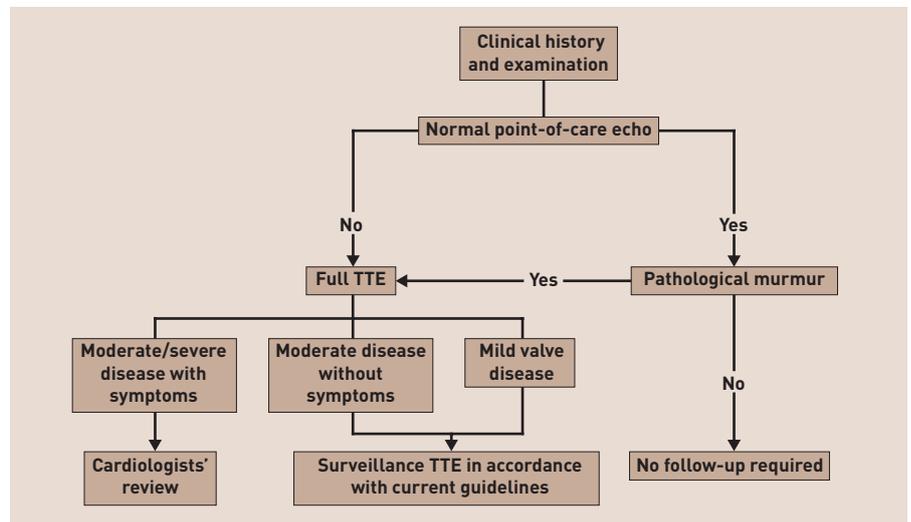


Figure 1. Proposed clinic structure using point-of-care scans in the evaluation of patients with suspected heart valve disease. TTE = transthoracic echocardiogram.

either routinely or if the patient reports a potential cardiac symptom.<sup>7</sup> About one-half of echocardiograms indicated for murmur are normal,<sup>7</sup> but the yield of valve disease is increased by about 50% by extending the indications for echocardiography beyond murmur alone (Box 1).

Echocardiography is the key to detection but it remains a relatively scarce resource. A study takes 45 minutes and usually involves a visit to the hospital. The uptake of open-access echocardiography varies between practices, by a factor of over 150 in one audit.<sup>8</sup> GPs recognise that interpretation of open-access reports is difficult,<sup>9</sup> meaning that, unless strong systems are in place, the diagnosis of valve disease may not be 'flagged' and an appropriate referral to specialist clinics may be missed.

### HOW CAN CARDIAC ULTRASOUND BE DELIVERED BETTER IN THE COMMUNITY?

The challenge is both to deliver echocardiography to more patients and to focus studies on those most likely to have valve disease. It has been suggested<sup>10</sup> that a brief point-of-care scan can be used to

pre-screen the need for a more extensive transthoracic study. These scans take about 10 minutes and can be performed using a hand-held device allowing near-patient testing anywhere in the community. They are best regarded as an extension of the clinical examination and are increasingly used in the acute setting<sup>11</sup> to aid immediate management and to triage the urgency with which a full scan is required.

We have recently developed a model with a point-of-care scan and auscultation as screening steps (Figure 1) to identify patients referred for open-access echocardiography having a high likelihood of heart valve disease. Auscultation ensures that uncommon pathologies associated with murmurs such as coarctation and muscular ventricular septal defects are not missed, because these would not be detected by a point-of-care scan. In a pilot of 75 patients, no patient with a normal point-of-care scan and normal auscultation subsequently had an abnormal transthoracic echocardiogram (TTE). But who should run such a clinic? Sonographers' career structure is now expanding and clinical examination skills including auscultation are within the

#### Box 1. Indications for echocardiography to detect valve disease

- Pathological murmur
- Exertional breathlessness or chest pain
- COPD with disproportionate breathlessness
- Atrial fibrillation
- First-degree relative with bicuspid aortic valve
- Originating from a country with a high prevalence of rheumatic disease
- Age >75 years

*"One-half of patients across Europe receive surgery too late."*

*“The challenge is both to deliver echocardiography to more patients and to focus studies on those most likely to have valve disease.”*

### Box 2. Standards required of a community echo service

- Run by sonographer with appropriate qualification and experience (currently at least level 7 in the future consultant clinical scientists)
- Report and interpretation provided
- Quality control
- Expert back-up for opinion on echo
- Ability to refer patients with significant structural disease to specialist valve and heart failure clinics
- Convenient (based at the surgery or geographically close with good public transport links)
- Availability is maximised

syllabus of the new consultant clinical scientist role currently being developed by the Department of Health. A screening service such as is suggested here is consistent with the extended clinical role expected of this discipline. This means that, in the future, cardiologists will be freed to concentrate on creating management plans for patients in whom valve disease has been identified in scientist-led diagnostic clinics.

Models for delivering echocardiography including point-of-care and full transthoracic studies will vary according to local resources although some basic standards are essential (Box 2). A sonographer-led clinic, at its most simple, is an open-access service incorporating a clinical response framed within a protocol agreed by cardiologists and GPs. The sonographer can direct normal scans back to the GP for reassurance, those with moderate or severe disease can be referred directly to a specialist valve clinic, and those with mild disease requiring follow-up can be seen every 3–5 years as indicated by guidelines. This type of clinic could be conducted in the community either in larger practices or multispecialty community providers.<sup>12</sup>

### CONCLUSION

Valve disease is much more common than appreciated and often undetected. Standard echocardiography is expensive, has a low yield of abnormalities, and is not

widely available. We suggest that clinical scientist-led diagnostic clinics including screening with auscultation and point-of-care scans will allow better focusing of transthoracic echocardiography and will improve the management of patients with heart valve disease. These clinics could be based at large community centres with strong links to specialist services based at the nearest hospital.

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