A genetic diagnosis is of increasing importance in prevention of adverse events in patients with cardiovascular disease. For example, catecholaminergic polymorphic ventricular tachycardia type 1 (CPVT1) is usually due to a pathogenic variant in cardiac ryanodine receptor 2 (RYR2) and is inherited in a familial autosomal dominant pattern, but sporadic cases also have been reported. In this issue of Heart, Shimamoto and colleagues compared 24 probands with familial inheritance of CPVT1 to 58 patients with de novo variants. In both groups, almost ½ the probands presented with syncope or cardiac arrest before a genetic diagnosis was known. Symptom onset occurred earlier in those with a de novo variant compared with those with familial inheritance (figure 1). In addition, symptoms occurred in only 37.5% of genotype-positive parents versus 66.7% of siblings with the pathogenic variant. The authors conclude: ‘Because two-thirds of the genotype-positive parents were asymptomatic and inheritance could not be predicted by their symptoms, genetic screening of parents and siblings in all CPVT1 cases may enable early diagnosis and prophylactic therapeutic intervention to prevent sudden cardiac death.’

In the accompanying editorial, Postema and van der Werf point out that although CPVT is rare, with an estimated prevalence of 1 in 10,000 individuals, this arrhythmias syndrome is a cause of sudden cardiac death in children and young adults who are otherwise healthy (figure 2). They conclude that this study provides ‘new insights in CPVT showing that de novo pathogenic or likely pathogenic RYR2 variants are of very common occurrence in CPVT, often locate to the RYR2 C-terminus, and that these associate with a more malignant CPVT phenotype. In addition, this study once again shows that national and international collaborations are essential to perform valuable studies in such rare and malignant arrhythmia syndromes.’

In this issue of Heart, the joint British Societies guidelines for cardiac multidisciplinary team meetings (MDMs) are published online and accompanied by an summary editorial by Lindman and Goel. MDMs are recommended for patients being considered for myocardial revascularisation, aortic valve disease, mitral and tricuspid valve disease and endocarditis. Many patients can be rapidly triaged by the MDM but some will require detailed review. Ideally, MDMs should be virtual (or hybrid) to include all members of the team and allow participation by referring clinicians. The principles of patient-centred...
Heart Team Multidisciplinary Evaluation

<table>
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<tr>
<th>Myocardial Revascularisation</th>
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<td><strong>Rationale</strong></td>
<td><strong>Key Principles</strong></td>
<td><strong>Anticipated process variation</strong></td>
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<td>Rapid evolution of treatment options and guidelines</td>
<td>Single, disease-specific, point of entry rather than referral to an individual physician</td>
<td>The process by which key principles are implemented in different countries and regions will be influenced by resources and personnel available and healthcare system and policy</td>
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<td>Disease complexity and comorbid disease may influence treatment options and approach</td>
<td>All relevant expertise (transcatheter, surgical, cardiac imaging, clinical) informs the evaluation</td>
<td>Core members of the heart team may vary based on the availability of personnel and certain types of procedures</td>
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<td>Optimal treatment approach (transcatheater, surgical, hybrid) requires multidisciplinary expertise</td>
<td>Multidisciplinary meetings are the focal point of the review process</td>
<td>Whether and when (before or after an MDM) patients are seen in a joint clinic may depend on several factors</td>
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<td>Informed and shared decision making requires that the patient be informed with accurate and up-to-date information on treatment approaches and risks/benefits</td>
<td>Clear documentation of the decision-making process and rationale for it</td>
<td>How referring providers and/or centers are linked to tertiary centers for MDMs</td>
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<td>Joint clinics (staffed by cardiovascular and surgeon) can be very useful in the evaluation of patients</td>
<td>What testing is done at the referring versus tertiary center</td>
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<td>Flexibility in the review process is needed to accommodate review of elective and non-elective cases</td>
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<td>The patient must be informed of all treatment options with their goals and preferences elicited for shared decision making</td>
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**Figure 3** Overview of the British Societies’ recommendations for multidisciplinary Heart Team evaluation and meetings.

**Figure 4** Clinical input for physician estimation of pretest probability of obstructive coronary artery disease in patients with stable chest pain. BMI, body mass index.

**Figure 5** Algorithm for the management of heart failure patients. CRT, cardiac resynchronisation therapy.

Care and shared decision making are core to the MDM process, which should be documented in the medical record. As Lindman and Goel\(^5\) conclude: ‘With a multidisciplinary Heart Team evaluation now widely recommended and no longer a novel concept, the British working group has provided helpful guidance for how the Heart Team does its work. Other countries should follow suit in a way that incorporates regional particulars relevant to the optimal implementation of foundational principles (figure 3). And, in all locations, further studies and efforts are needed to refine, update and disseminate best practices in multidisciplinary Heart Team evaluation motivated by the overarching objective to treat the right patient at the right time with the right therapy.’

Adding to the evidence that aortic stenosis (AS) is more common than previously recognised, Stewart and colleagues\(^6\) report data from Australia on over 90,000 men and women with a mean age about 60 years who had two echocardiograms at least 2 years apart. Overall, 6.9% developed AS within 5 years. In addition, there was a higher risk of all-cause mortality with any degree of AS, ranging from 1.42-fold for mild AS to 2.27-fold for severe AS (median follow-up 7.7 years), emphasising the importance of periodic surveillance once AS is diagnosed.

Despite the wide-spread use of numeric scores to estimate risk in patients presenting with chest pain, we should not underestimate the value of physician judgement. In an analysis of 4533 patients from the PROMISE (Prospective Multi-center Imaging Study for Evaluation of Chest Pain) Trial, Fordyce and colleagues\(^7\) found that physician risk estimates correlated poorly with Diamond-Forrester and European Society of Cardiology (ESC) pretest probability (PTP) estimates. However, only the physician estimates were associated with a higher incidence of adverse cardiovascular outcomes. Villines and Weber\(^8\) suggest it is ‘time to move on from pretest probably scores for stable chest pain’ (figure 4). As they succinctly conclude: ‘In the future, it is likely that artificial intelligence will improve PTP estimates, harnessing the sizeable amount of clinical and imaging information available on many patients. For now, we believe that the field of cardiovascular medicine should consider moving beyond rigid pretest probability approaches that anchor primarily on age, sex and classifications of angina typicality and trust the power in physician judgement.’

The *Education in Heart* article\(^9\) in this issue provides an overview of cardiac resynchronisation therapy (CRT) including indications, effect on clinical outcomes, and optimisation of patient benefit. They conclude that although biventricular CRT provides benefit in heart failure patients with a wide QRS due to left bundle branch block, CRT has a less clear role with other QRS morphologies. Alternate approaches under investigation include delivering CRT via the His or left bundle to provide conduction system pacing.
Heartbeat

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