My approach to assessing CHD risk

The calculation of coronary heart disease (CHD) risk occurs in everyday general practice in the management of patients with hypertension and/or diabetes – these patients belong to pre-identified groups already thought to be at increased CHD risk. The obligations of Standard 4 of the *National Service Framework for Coronary Heart Disease* have given fresh impetus to the need for estimating CHD risk in primary prevention, although no definite milestones were attached to the implementation of this standard.[1]

Within both my own practice and also the local Primary Trust, a computer-based risk calculator was disseminated to all general practitioners, with paper-based tables made available for non-computerised practices (these have since been incorporated into current editions of the *BNF*). The computer-based calculator is based on the Framingham equation and has the added advantage of presenting CHD risk in graphical format – a 'risk bar' increases in slide rule fashion, first turning yellow and then red as the CHD risk rises towards and into 'high risk' (i.e. above 30% over 10 years).

CHD risk scoring is currently carried out opportunistically and few patients initially present with a complete data set.[2] Many patients with hypertension or diabetes (40% of whom will be hypertensive at diagnosis) are often already taking some form of therapy and as pre-treatment values are those that should be used,[3] a search through the patient notes is required to identify the level of blood pressure (or cholesterol) prior to initiation of treatment. Quite often contemporaneous values for blood pressure, cholesterol or high density lipoprotein are unavailable and values from differing time periods have to be used. In practice, different clinicians tend to select slightly different values.

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In clinical practice the majority of patients who are hypertensive without established CHD do not currently have ECGs performed – this is due to the resource implications with respect to practice nurse time. This leads to a lack of determination as to whether left ventricular hypertrophy (a strong independent predictor for CHD) is present.

Where smoking status is considered, my practice is to not categorise a patient who has given up smoking as an ex-smoker until they have given up for 10 years (although I am aware most of the excess risk falls off in the first few years[4]).

Ethnic minorities

CHD risk calculation in patients from South East Asia can be problematic as these patients suffer up to 51% excess CHD mortality[1] – applying the Framingham equations can underestimate their risk because these data included few people from ethnic groups drawn from this region. In the past my empirical approach has been to multiply the final risk to 1.5 in accordance with the excess mortality; now a recent amendment to the guidance issued in using the coronary risk prediction charts ('Manchester Charts') also officially recommends using a multiple of 1.4 to 1.5.

Applying a multiple of 1.5 in calculating CHD risk in the relevant ethnic minorities will mean that a threshold of 20% could trigger statin treatment, rather than the 30% level applied across the rest of the population. Furthermore, as ethnic minority patients may have a family history of CHD, by virtue of their parents' increased risk, the application of another multiple of 1.5 will in the case of some individuals mean that the threshold for initiating statins could be further reduced to 14%.

In her review 'Drawbacks and benefits of cardiovascular risk tools' (see pages 155–8), Dr Penny Lockwood highlights diabetics as another group for whom CHD calculation is imprecise.[5] This is because the Framingham data comprised only a small number of diabetics. Lockwood recommends that clinicians particularly look at the nature of the equations the tools are based on, the end points the calculator attempts to estimate and the applicability of the tool to the population in question. She also mentions the importance of the sensitivity of the tool in question. The sensitivity of the original Sheffield tables is reported to be as low as 40% and there have been cases in this country where the Framingham equations have been found not to

identify some patients with an absolute CHD risk greater than 3% per year. In light of these observations the presentation of CHD risk to 1 decimal point when using a computer-based CHD risk calculator probably creates a false impression of accuracy.

Computer-based risk calculators are able to estimate a risk score based on both systolic and diastolic blood pressures. My practice is to select the result that represents the higher risk score, which I may then use to inform my management in any of three ways:

- Initiation of statin therapy where CHD risk > 30% (or 15% in the case of type 2 diabetics[6])
- Initiation of aspirin therapy in controlled hypertensives with a risk score > 15%
- Aggressive multiple risk factor intervention in all those at 'high' risk.

One of the problems in matching scores against thresholds for initiating therapy occurs when a patient's score falls short of a threshold by a small margin. Given that increasing age will potentially trigger treatment in an individual who is unlikely to implement conservative measures, I often commence treatment there and then. Real life practicalities, such as patients becoming lost to follow-up and the shortcomings of opportunistic screening methods, underscore the rationale behind this.

I sometimes use the risk calculator to demonstrate to patients how risk falls with decreasing levels of risk factors. Although the Joint British Societies do not advocate this,[3] this has considerable educational value and also helps to highlight 'response efficacy' – an important factor in encouraging patients to adopt risk-modifying behaviour.[7]

My overall impression of CHD risk calculators from having used them in practice is that they provide considerable utility but the benefits are currently tempered by shortcomings inherent in both their design and application. Therefore, I view current CHD risk calculators as approximate tools that should be used to inform the clinical decision-making process rather than completely replace it.

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