

Reducing the impact of vascular disease: the proposed Vascular Risk Programme for risk assessment and management

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Introduction

Vascular disease (which includes coronary heart disease, stroke, diabetes and chronic kidney disease) currently affects more than four million people in England.¹ It causes 170,000 deaths a year in England (36% of all deaths), is responsible for one-fifth of all hospital admissions and is the largest single cause of long-term ill health and disability. In view of its high prevalence and costs, in April 2008 the Department of Health announced plans to introduce a comprehensive vascular risk assessment and management programme, based on recommendations by the National Screening Committee, for all people aged 40 to 74 years.¹ The programme is set for a roll-out in 2009–2010, is estimated to cost around £250 million per year and aims to shift the emphasis to primary prevention of vascular disease. What will it mean for general practice?

Since the implementation of the National Service Frameworks there have already been significant improvements with a 40% reduction in cardiovascular deaths in people under 75 years since 1996.¹ The reasons for this decline are complex but include improvements in diet, smoking cessation and secondary prevention strategies. However, most cardiovascular events are caused by low grades of stenosis.²

The risk factors for vascular disease are well documented. Having one vascular condition increases the likelihood of an individual suffering others, and they often co-exist. The prevalence of vascular disease



increases with age, progresses faster in men than women, in those with a family history of vascular disease, in certain ethnic groups such as south Asians and people from socio-economically deprived backgrounds.¹ Nevertheless, the rate at which vascular disease progresses is determined by a number of modifiable factors such as smoking, diet, physical inactivity, hypertension, hyperlipidaemia, dysglycaemia and obesity. This common set of risk factors underlie all types of vascular disease – heart disease, stroke, diabetes and renal disease, supporting a shared vascular risk screening programme for preventing and managing risk in all of these conditions (Figure 1).

The Department of Health has examined how a comprehensive vascular risk assessment and management programme could work in practice, including modelling of clinical and cost-effectiveness of implementation of the programme.^{1,3} The

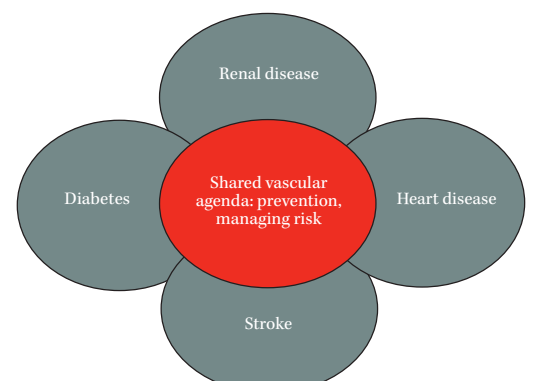
conclusion from this initial phase of modelling work is that a systematic, integrated approach to assessing risk of vascular diseases for everyone between 40 and 74 gave the most health benefit. A risk assessment would be followed by the offer of personalised advice and treatment providing an individually tailored management programme to help people manage their risk more cost-effectively.

The key aims of the programme include earlier detection of people at high vascular risk; prevention of diabetes; reduction of premature mortality and increased life expectancy; and reduction of inequalities, including socio-economic, ethnic and gender inequalities.¹ It is estimated that the programme has the potential to eventually prevent 9,500 heart attacks and strokes, with 2,000 lives saved each year. The programme would also prevent 4,000 people per year from developing diabetes and allow for the

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Figure 1. The shared agenda for vascular disease



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earlier detection and management of at least 25,000 cases of diabetes and kidney disease per year.¹

*The Handbook for Vascular Risk Assessment, Risk Reduction and Risk Management*⁴ commissioned by the UK National Screening Committee was published just prior to the Department of Health's *Putting Prevention First* document. The *Handbook* outlines the evidence for a co-ordinated vascular disease control programme, suggests a delivery strategy and provides examples, tools and resources that can be used by health professionals implementing the Vascular Risk Programme. The *Handbook* gives a comprehensive overview of methods for vascular risk assessment. Currently the strongest evidence is for screening for people at risk of developing diabetes or cardiovascular disease.

Preventing type 2 diabetes

The most robust and consistent evidence base is for prevention of type 2 diabetes in people identified as having impaired glucose tolerance (IGT). A recent systematic review and meta-analysis⁵ of intervention trials for prevention of type 2 diabetes found both lifestyle and pharmacological interventions significantly reduced the risk of type 2 diabetes in people with IGT. The increasing evidence base for effective primary prevention of type 2 diabetes⁵ has led to increasing interest in screening, early detection and risk reduction intervention. Despite the lack of randomised trial evidence and long-term outcomes for the effectiveness of screening for type 2 diabetes, screening for diabetes in high-risk populations has been recommended by Diabetes UK, the American Diabetes Association and the Australian Diabetes

Association⁶⁻⁸ although some general guidance has recently been issued by the National Screening Committee.³

Despite the recommendations, there is currently no systematic or structured screening policy for type 2 diabetes in the United Kingdom. One approach would be to screen only for type 2 diabetes, which would allow for early diagnosis and treatment. This might be important as early detection and treatment could prevent future associated microvascular and macrovascular complications. An estimated 50% of people with diabetes are currently undiagnosed⁹ and at presentation around 20–30% have already developed complications.¹⁰

An alternative screening approach would be to lower the threshold of the screening test and to screen for IGT and type 2 diabetes together. As well as allowing for earlier diagnosis of type 2 diabetes, the screening programme would identify people with IGT. A recent cost-effective modelling analysis of screening for diabetes and its precursor-IGT, has demonstrated that within a UK setting a programme that targets diabetes and IGT is more cost-effective than no screening or screening for diabetes alone.¹¹ The *Handbook* gives clear recommendations on methods for screening for people with undetected diabetes and those at high risk of developing diabetes. One suggestion is for patient self-assessment using the FINDRISC score for identifying people with and at risk of developing type 2 diabetes.^{12,13}

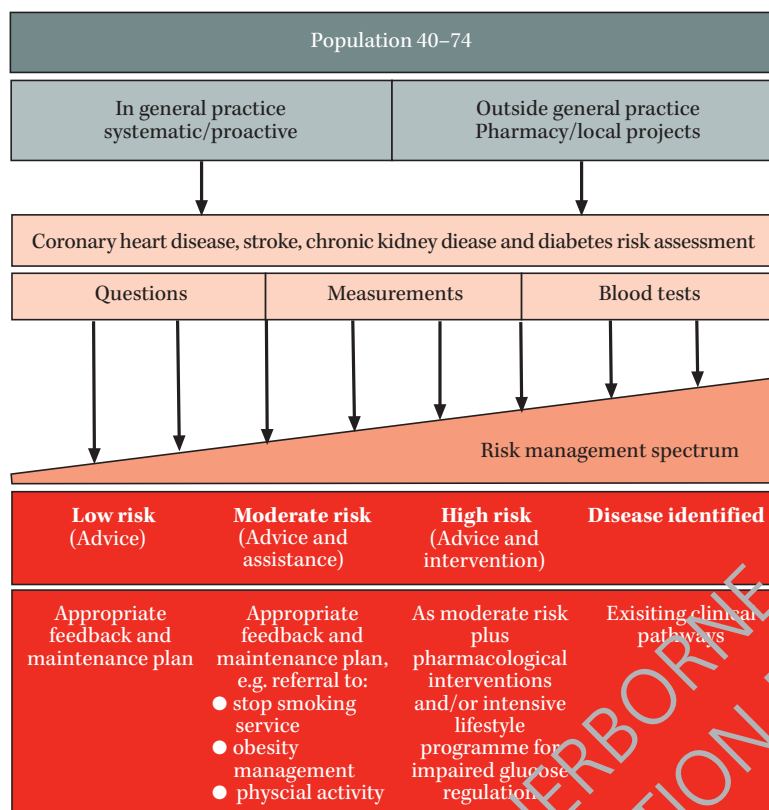
Identifying people at future risk of CVD

Another key recommendation in the Vascular Risk Assessment programme is for early detection of people at future risk of cardiovascular disease. Risk assessment involves identifying and recording of cardiovascular risk factors. Identification of people at high cardiovascular risk is conducted using various computer templates to estimate CVD risk based on the Framingham Study.¹⁴ These estimate total risk of developing CVD based on five key risk factors including age, sex, smoking status, systolic blood pressure and ratio of total cholesterol to HDL cholesterol. Some tools also require assessment for left ventricular hypertrophy.

The estimate is a probability of developing CVD over the next 10 years and is therefore referred to as the total CVD risk. Current definitions state that a total CVD risk of over 20% is defined as “high risk”, and all those at high risk will require lifestyle intervention and advice and medication. There are a number of other risk assessment methods that can be used. These

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Figure 2. Vascular risk assessment programme



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include the New Zealand risk calculator, the Heart Score, the Sheffield Risk Table, the ETHRISK and others.¹⁵⁻¹⁹ The latest JBS guidance also continues to recommend the Framingham-based algorithm.²⁰

A number of risk factors are not included in the Framingham-based Risk Score including factors such as ethnicity, socio-economic deprivation, family history of cardiovascular disease or body mass index. There have been criticisms of the Framingham Risk Score including its tendency to incorrectly estimate risk in certain populations.²¹ QRISK was therefore recently developed using data from UK practices contributing to the QRESEARCH Database.²¹ In addition to conventional CVD risk scores it also used BMI, family history of CVD in first-degree relatives, Townsend deprivation score and current prescription of at least one antihypertensive agent. When applied to a validation cohort of 0.61 million subjects, the QRISK was better calibrated to a UK population. QRISK has highlighted the need for a considered approach outside of the conventional risk factors in any future development of a comprehensive cardiovascular risk assessment.

Communicating risk to patients

A clear risk communication and management plan will need to be implemented once people have been identified as having diabetes or at increased risk of diabetes or cardiovascular disease. Risk communication is defined as 'the open, two-way exchange of information and opinion about risk, leading to better decisions about clinical management.'²² Discussing risk with patients in the clinical consultation has become increasingly important. Patients who are informed and involved in decisions about their own care are more likely to adhere to their chosen treatment plan.²³ Patients' values and preferences vary widely, as do their attitudes to risk.

The key aim is to enable individuals to take responsibility for looking after their own health and take steps to prevent vascular disease, within a programme supported by healthcare professionals.¹ A two-way exchange of information is therefore important to explore the patient's personal beliefs to facilitate treatment decisions. It is increasingly apparent that most risk factors have a continuous relationship to risk of CVD and therefore it is important to move away from using a "presence or absence" concept when talking to our patients, but to talk in terms of a 'sliding scale' of risk and risk reduction. Although some research has looked at issues of risk communication in the areas of cardiovascular disease²⁴ there is still much to be learned.

It therefore seems reasonable to ensure that systems are developed to clearly communicate risk to patients and to engage them in prioritising them and implementing the changes that they wish to make in order to reduce their own individual risk. Structured education programmes such as the DESMOND Programme (Diabetes Education Self-Management Ongoing and Newly Diagnosed)²⁵ include a health profile in which patients assess their own risk and then develop action plans to address this. This is important as a strong predictor of a patient's readiness for medical treatment and preventive behaviour is their perceived vulnerability to disease, as they will be asked to take medicines and change their lifestyle when breaching a certain threshold for CVD risk.

Reducing population risk

An effective strategy to reduce population risk needs to both reduce overall population risk (by reducing smoking rates, changing diets and increasing physical activity) – "shifting the curve" – and identify individuals

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interventions**
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at increased risk who could benefit from specific individual interventions. There is now a comprehensive set of guidance for assessment and management of overall cardiovascular disease and its risk factors in the general population^{20,26-28} by means of lifestyle and pharmacological interventions.

Suggestions for interventions are documented in the *Handbook*⁴ however, specific interventions will depend on the available skills and resources within localities (see Figure 2). For those at low risk, this might be no more than general advice on how to stay healthy. Others at moderate risk may be recommended a weight management programme, stop smoking service, or a brief intervention to increase levels of physical activity. Those at highest risk might also require medication with statins or blood pressure treatment, or an intensive lifestyle management programme for those identified with impaired glucose regulation. A few may need further assessment that would require referral to a hospital consultant.

There is now, therefore, going to be a shift of emphasis on primary prevention to prevent or delay the occurrence of cardiovascular disease among asymptomatic individuals. Some vascular assessment is already occurring in the community, including in general practices and in some pharmacies. However, the vascular programme aims to coordinate vascular screening for all individuals at five-yearly intervals. Implementation of a comprehensive national risk assessment and management programme could significantly increase access to preventive interventions, and could significantly reduce health inequalities.

Reducing inequalities

The Vascular Risk Assessment and Management Programme is an ambitious attempt to reduce cardiovascular disease and inequalities. Primary Care Trusts (PCTs) and general practices will need to review their current activity of risk assessment and management in their locality as well as assess both the potential resource implications and potential benefits of additional activity. The additional benefit will depend on the extent to which these activities are already underway and this will vary between practices and PCTs.

Any risk reduction programme needs a robust strategy for evaluation and audit and computer suppliers will need to start developing templates for quality assessment. There is already some screening occurring in primary care, including in pharmacies. A

Table 1. The Vascular Risk Programme: the figures³

Modelling the impact if every patient aged 40 to 74 years was offered vascular screening every five years, based on a typical GP practice with 5,600 people on its list:

- This would result in an estimated 330 additional vascular checks per year
- Of those who attend for screening, an estimated 65% would be eligible for one or more of the lifestyle interventions
- Around 20% would require statins and/or antihypertensives in their first round of tests.

challenge will be for avoidance of duplication of efforts and identifying systems for sharing of data between different providers. Standardisation of risk factor data collection is a priority and it is often collected without any communication as to the reasons why this has been done. However, the act of doing so can be regarded by some patients as proof that they are receiving good care.

The impact at an individual practice level depends on many factors that are still to be decided in the Vascular Risk Programme, including the funding allocations for implementation of the programme (see Table 1).

Conclusions

The Vascular Risk Programme stresses the importance of offering a structured screening strategy in a wide range of settings to achieve the aim of reducing cases and complications of vascular disease in addition to increasing health equalities. For successful implementation, the programme will need to be integrated into the existing model of health care. It is envisaged that PCTs will be responsible for commissioning this service following acceptance of the guidance by national bodies. Whether PCTs will commission the programme remains to be seen. The modelling work is continuing to establish the details of how best to deliver the programme to achieve the greatest health benefit while ensuring value for money.

Conflict of interest

KK, SH and MJD have received grants from the Department of Health and Programme Grants from NIHR to conduct research in early identification and prevention of diabetes and cardiovascular disease. They are co-authors of *The Handbook for Vascular Risk Assessment, Risk Reduction and Risk Management*.

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