Strategic challenges in the prevention of cardiovascular disease

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DECLARATIONS

Competing interests

KCRP and PL are on the Steering Committee of the Cardiovascular Coalition of Organisations which have an interest in prevention of cardiovascular disease and are also Board members of the National Heart Forum. KCRP, RkD and RM are Board members of the South Asian Health Foundation which advises on Primary Prevention Strategies. KCRP and RM are also involved in NICE Guidelines focusing on cardiovascular disease.

Funding

None

Ethical approval

Not applicable

The momentum for strategies to prevent cardiovascular disease is gathering pace in an attempt to reduce health inequalities not only in the UK but globally. The medical profession as well as governments are realizing that prevention is not only better than cure, but in most cases, more cost-effective than dealing with consequent morbidity and mortality. Modelling data suggests that in the last two decades of the 20th century, the UK experienced almost 70,000 fewer myocardial infarcts than predicted,¹ the majority of which was driven by primary prevention, with smoking cessation accounting for 41% of the decline.

Coordination of strategy

The challenge now is to supplement the excellent achievements in treatment of coronary disease with structured primary prevention strategies to deliver the first two chapters of the National Service Framework for Coronary Heart disease.² Coordinated, sustainable and evidence-based primary prevention is essential to best use the limited fiscal and manpower resources of the UK health economy. To avoid fragmentation and duplication of effort, strategies spanning the primary and secondary care interface are vital. And in order to provide a holistic package of care, coordination between government departments, voluntary and statutory sectors is critical.

The early years

In order to stem the rising tide of inter-generational risk factors, prevention must commence early in life, perhaps even pre-conception, with dietary and lifestyle advice to potential mothers. There are data to support intrauterine

growth retardation as a risk factor for later cardiovascular disease.³ The high incidence of childhood obesity and impaired glucose tolerance in children from south Asian ethnic groups is alarming.⁴ The false and damaging perception that 'plump is plush' and a marker of affluence and nourishment in south Asian communities needs to be urgently addressed. Customized growth charts accurately reflecting variations in normal growth patterns between ethnic groups should be advocated in today's multiethnic society in order to combat some of the drivers to childhood obesity: underweight in one population group may be normal for another.⁵

The early years are opportunities for lifestyle advice on diet and physical activity. Achievements such as the ban on advertising of unhealthy foods and promotion of food labelling are a step in the right direction but by no means grounds for complacency. There is still much to be done for effective childhood cardiovascular disease prevention.

Risk assessment

For adults, local economies must decide just how comprehensive a strategy is affordable and ensure adoption of strategies based upon local health inequalities. A long term, sustainable vision is essential to reduce inequalities from cardiovascular disease over the coming generations.

Formal risk assessment holds the key to targeted intervention. Overall cardiovascular risk must drive intervention rather than arbitrary thresholds of continuous variables. For example, a 25-year-old woman with a total cholesterol of 6 mM and no other risk factors should not receive statin therapy, yet it might be appropriate for a 60-year-old hypertensive, smoking, obese male

Guarantor

KCRP

ContributorshipAll authors
contributed equally**Acknowledgements**

None

with a total cholesterol of 4 mM and high-density lipoprotein (HDL) of 1 mM to receive statin therapy as part of a regimen to reduce cardiovascular risk. A single threshold or defined target is not appropriate for all and despite various bodies advocating specific numerical targets for total cholesterol, there are some patients for whom one should strive for a more aggressive reduction in lipid parameters to reduce cardiovascular risk, yet others in whom it would be justified not to meet such stringent targets.⁶ A health economy must attempt to bring individuals below an acceptable level of cardiovascular risk rather than strive to achieve the same arbitrary risk factor level. Clinicians must decide the most appropriate and cost effective means to reach that defined target of risk reduction, accepting that drugs in isolation are no substitute for holistic cardiovascular risk reduction. Reducing risk for individuals will translate into reduced population risk.⁷

How should cardiovascular risk be assessed, accepting that one size does not fit all? Framingham based risk assessment models are appropriate for many population groups, but are clearly inappropriate for ethnic groups such as south Asians.⁸ Is there scope for more refined models of risk assessment, or is there a need to produce a more accurate, tailored risk assessment tool for our own UK population by establishment of a true cohort study with multi-ethnic representation? Local implementation teams have wrestled with strategies to implement cardiovascular primary prevention since inception of the National Service Framework in 2000, but with limited progress and isolated success stories. To delay implementation of a strategy in the absence of a perfect risk assessment tool for our diverse population would serve to exacerbate health inequalities.

Should screening and intervention be opportunistic or targeted? There are already models such as Euroaction,⁹ validated in efficacy, which might deliver some aspects of cardiovascular risk reduction. A tiered model might enable local needs to be assessed in the most cost-effective manner. Whilst the entire population should receive lifestyle advice (i.e. smoking cessation, diet and physical activity), it would be cost-ineffective to screen the entire population for specific risk factors such as dyslipidaemia. High-risk populations should be targeted for selective risk factors – for example, Bangladeshi communities for oral tobacco consumption, African-Caribbean populations for hypertension or south Asian populations for diabetes mellitus, on the basis of high prevalence

in these communities. However, at what age should individuals be screened? Is it sensible to screen later in life, when the disease might have progressed – with consequent subclinical end organ damage – or should one advocate early screening for those at high risk? This is an issue for a National Screening Programme to address.¹ For the general practitioner, in possession of disease-specific registers for diabetes, dyslipidaemia, smoking, hypertension, etc., formal cardiovascular risk assessment of patients from these registers would be prudent.

Acute sector opportunities for primary prevention

What duties reside in secondary care? Would screening and risk reduction of first-degree relatives of those presenting with premature myocardial infarction or acute coronary syndromes avoid the coronary care admissions of tomorrow? There are data to suggest that the risk factor profiles of first-degree relatives are similar to those of the index patient, and targeted screening and intervention of these relatives is therefore simple and feasible.¹⁰

Time for coordinated, cost-effective prevention strategies

It is now time for the health economy to coordinate and cost-effectively deliver cardiovascular risk reduction programmes such as those identified by the updated European Guidelines¹¹ by virtue of effective primary prevention strategies. There are several unresolved strategic issues, however, which need to be addressed with a level of urgency and transparency: the optimum balance of investment in primary prevention with children and young people and adults, the optimum balance between whole population measures and targeted prevention, and the coordinated prevention of risk factors to several chronic diseases.

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