Managing risk factors

Coronary heart disease and cerebrovascular disease are the two main forms of cardiovascular disease.[1] In 2003 there was a total of 58,420 deaths in Scotland. Cardiovascular disease accounted for 38% and cancer for 26%. This article discusses management of cardiovascular risk factors and looks at how initiatives such as the *Keep Well* programme in Scotland can help.

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In recent years there has been significant improvements in the implementation of both primary and secondary prevention approaches and a substantial investment in clinical treatments for cardiovascular disease.

The principal aim of primary prevention is to decrease the risk of developing symptomatic disease in individuals and populations. Behaviour, and therefore exposure to the key risk factors, does not occur in a vacuum, but is influenced by our psychological health, the social environment within which we live and work, the wider determinants of health such as income, employment, housing, education and the physical environment.[2]

Risk factors

The INTERHEART study[3] assessed the importance of risk factors for coronary heart disease worldwide. Nine measured and potentially modifiable risk factors accounted for more than 90% of the proportion of the risk for myocardial infarction. Smoking, history of hypertension or diabetes, waist hip ratio, dietary pattern, physical activity, alcohol consumption, blood apo lipoproteins and psychosocial factors were identified as the key risk factors.

Worldwide the two most important modifiable cardiovascular risk factors are smoking and abnormal lipids. Hypertension, diabetes, psychosocial factors and abdominal obesity are the next most important but their relative effects vary in different parts of the world.

Risk factors are not unique to cardiovascular disease and therefore interventions aimed at reducing these risk factors are likely to reduce the burden of numerous other common conditions including head and neck cancers, lung cancer, and chronic obstructive pulmonary disease.

In Scotland, it has been estimated that changes in the three main risk factors (smoking, cholesterol and blood pressure) accounted for about 50% of the mortality reductions observed between 1975 and 1994, 10% was attributable to other risk factors and 40% to clinical treatments.[4]

The Quality and Outcomes Framework

The Quality and Outcomes Framework was introduced into primary care in the UK in April 2004. The original aims of the framework were to reward the quality of care delivered in general practice, to help recruitment and retention, and to reward practices for the delivery of high quality care. The framework currently includes 1000 points in four domains: clinical care, organisation, patient experience and additional services. Average achievement has consistently been over 90% with a mean score of 96·8% in 2007–08. Framework payments can make up about 30% of a practice's income.

For secondary prevention of coronary heart disease there are a number of indicators relating to measuring and controlling blood pressure and cholesterol. There are also indicators relating to the prescribing of aspirin, β-blockers, angiotensin-converting-enzyme inhibitors and angiotensin II receptor blockers. With regard to primary prevention, smoking status is sought for patients over 15 years and a blood pressure of patients aged 45 years and over is recorded every 5 years. Similarly a practice is required to produce a register of patients aged over 16 years with a BMI greater than or equal to 30 in the previous 15 months. This is important as the high levels of obesity are translating into higher levels of diabetes mellitus—itself, a major risk factor for cardiovascular disease.

Clearly the ability of the NHS to meet future demand

at the point of need will be severely challenged unless more is done from the viewpoint of primary prevention. Yet in many areas the focus of NHS spend is heavily weighted to treatment rather than prevention. Whilst we, as health professionals, are clear about what needs to be done (ie, reducing smoking, improving diet and levels of physical activity) it is less clear how we achieve this.

Risk estimation

The main purpose of risk estimation in people with no signs or symptoms of cardiovascular disease is to enable the targeting of primary prevention of cardiovascular disease towards the subpopulation at highest risk. However cardiovascular risk estimation has serious limitations. As discussed, cardiovascular disease risk is created by a composite of several risk factors and some risk factors are more important than others, therefore, statistical prediction models are needed to calculate an individual's risk of cardiovascular disease.

Various tools, derived from large cardiovascular epidemiological studies have been developed. Typically they use age, sex, blood pressure, cholesterol, history of diabetes, smoking status and family history to calculate a probability (% chance) of developing cardiovascular disease over the next 10 years. However risk-based estimates calculated from large population studies lack precision when applied to individuals; most individuals in the highest risk group will not develop the disease (eg, a risk of 30% means that over the next 10 years 30 out of 100 people of similar age, gender and risk factor profile will experience a cardiovascular disease event— but critically the remaining 70 people will not).

Additionally, most cases of cardiovascular disease actually occur in the vast majority of the population who are not in the highest risk category. Intervention studies have shown that while relative risk reduction may remain broadly constant, absolute risk reduction varies considerably because it is a function of the initial level of baseline risk.

Delivery of care

Cardiovascular disease risk rises in a linear fashion as risk factor levels progressively accumulate. There is no true "biological threshold" above which risk increases dramatically. Consequently any threshold selected as a basis for intervention is arbitrary based on a combination of scientific evidence and practical considerations in relation to the delivery of care, such as:

- Costs involved in identifying those individuals and managing that level of risk in individuals
- Societal views about medicalising people above a level of risk
- The number of people identified at risk at that threshold.

The future

Using data drawn from recent UK epidemiological studies, the Health Development Agency (now NICE)[5] estimate the following:

- If prescribing were increased so that 80% of eligible patients received appropriate medications, this would result in approximately 20,000 fewer deaths each year in the UK
- Modestly reducing average cholesterol levels in the UK from 5·5 to 5·2mmol/l (as has already been achieved in several other countries) would prevent approximately 25,000 deaths each year
- Reducing smoking to USA levels would prevent approximately 17,000 deaths
- Adding the reduction of cholesterol and smoking to small reductions in population blood pressure, about 50,000 fewer deaths would occur annually in England (equating to a halving of current CHD mortality).

Keep Well

Within Scotland *Keep Well* was launched in 2006 to pilot anticipatory care on a large scale in disadvantaged areas across Scotland with the aim of reducing cardiovascular disease and its risk factors among 45–64 year olds. The policy underpinning *Keep Well* originated from *Delivering for Health*—the Scottish Executive's 2005 action plan for the NHS in Scotland.[6] This policy contained a strong focus on individual health improvement delivered primarily by health services, representing a considerable step change from the broader based social inclusion and community development approaches of the preceding years.

In 2000, the Scottish Executive had launched *Have a Heart Paisley*, with the primary aim of reducing coronary heart disease risk and associated health inequality in Paisley. It comprised a multi-faceted programme of 17 projects (healthy eating, physical activity, smoking cessation, enhanced health care services, community based heart health promoters and over 140 funded community capacity building projects). Despite involving over 6,000 participants in mainly disadvantaged areas, there was no evidence that the intervention had achieved a shift in total coronary heart disease risk or changed behaviours at a population level, although there was some evidence of change in risk status within individuals who participated in the programme.[7]

Keep Well was designed around the hypothesis that enhancing primary care capacity in the least advantaged localities of Scotland (including South West Glasgow) would reduce cardiovascular disease risk factors and resultant mortality within 5–10 years. It was established in South West Glasgow in April 2008 focusing on the most deprived practices in the area. A wide range of individualised health improvement interventions is on offer, including alcohol, employability, healthy eating, weight management and physical activity, literacy and learning, mental health and well-being and money advice. Community health outreach workers work alongside the practices to encourage the patients to attend for screening and to access the range of health improvement interventions on offer. For patients with more complex needs, a health-case manager provides more intensive support. Additional pharmacy capacity supports an enhanced smoking cessation service and a long-term medicines service.

An external national evaluation is being done of Wave 1 pilots due to end in 2010. Considerable debate has been engendered about the relative emphasis on individual versus population approaches to primary prevention and their collective emphasis compared with secondary prevention.

Conclusion

Cardiovascular disease remains the UK's biggest killer. Clearly when patients do develop cardiovascular disease we need to optimise the management of their risk factors, not only with appropriate pharmacotherapy but also lifestyle changes in partnership with the patient. Prevention is clearly the optimum goal and as acknowledged previously we need to better understand the "how". A partnership approach between the health professional and the patient to a shared agenda will be critical to this.

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