EDITORIAL

Screening for cardiovascular disease: concerns with a Norwegian proposal

Current cardiovascular disease (CVD) screening programmes are based on offering preventive medication, such as statins and blood pressure-lowering agents, to people deemed to be at high risk of a future cardiovascular event. In England and Wales, for example, the 'Health Checks' programme[1] offers preventive medication to everyone aged 75 or over and to anyone aged 40–74 who has a ten-year risk of a cardiovascular disease event of 20% or more, based on the Framingham risk equations.[2,3]

An alternative strategy has been proposed by Norheim and colleagues from Norway.[4] It is proposed that people should be offered preventive treatment if they have a ten-year risk of death due to CVD of 1% or greater at age 40–49, 5% or greater at age 50–59, and 10% or greater at age 60 and over. The reasoning behind this strategy is that younger people will lose more years of life if they die from cardiovascular causes, and so should qualify for preventive treatment at lower risk.

The proposed strategy has a poorer screening performance and cost-effectiveness compared to using age alone, because age is the main determinant of cardiovascular risk. This is shown in Table 1. These results were derived by analysing a simulated population based on the population of England, and assuming that the SCORE cardiovascular risk algorithm[5] accurately predicts the risk of death due to CVD. The SCORE algorithm is similar to the NORRISK algorithm[4,6] used to develop the proposed strategy for Norway (SCORE was used here because there were computational difficulties in implementing NORRISK). Details of the simulation methodology have been described elsewhere.[7]

Table 1 shows the proportion of people aged 40–90 who would be offered treatment, the proportion of years of life lost due to CVD deaths among those classified as screen positive in the absence of screening and treatment, and the cost per year of life gained through the use of screening and preventive medication, assuming that a year of preventive treatment costs £200 and each screening assessment costs £100. The table shows that the Norwegian strategy detects less than half of years of life lost (43%) from CVD in the 40–90 age group, about the same as using a single age cut-off of 73 years, and requires offering preventive treatment to more people (20% vs. 18%). It is thus less cost-effective than using a single age cut-off. Offering preventive treatment to everyone aged 55 or over, without risk assessment, identifies more years of life lost than the proposed Norwegian strategy (91% vs. 43%) and is as cost-effective.

The proposed strategy is needlessly complex and does not identify the majority of future CVD deaths or years of life lost due to CVD. Although targeting preventive treatment to younger people who stand to gain more years of life has intuitive appeal, most of the burden of CVD lies in older people (97% of deaths and 91% of years of life lost due to CVD deaths occur in people aged 55 or over). Concentrating on identifying the small number of people with an elevated risk of CVD among a low-risk population is not an efficient use of resources.

Cardiovascular disease is the most common cause of morbidity and mortality in the world and the medications that can prevent it are cheap, safe and effective. These preventive medications should therefore be offered as widely as possible and in as simple a fashion as possible. Varying the risk cut-off according to age as proposed by Norheim *et al.*

Table 1 Screening performance and cost-effectiveness of strategies for offering preventive treatment according to definition of high-risk (screen-positive) group

Definition of high-risk (screen-positive) group	Years of life lost due to CVD death aged 40–90 in screen-positive group (%)	People aged 40–90 offered treatment (%)	Cost per year of life gained using screening and preventive medication*
Proposed Norwegian strategy	43	20	£3,600
Age alone to be equivalent to Norwegian strategy			
Aged 73 and over	43	18	£2,800
Age alone (for comparison)			
Aged 70 and over	54	23	£2,900
Aged 65 and over	71	32	£3,000
Aged 60 and over	82	44	£3,300
Aged 55 and over	91	57	£3,700

*If preventive treatment costs £200 per year and a risk assessment costs £100

creates complexity without benefit. Offering treatment to everyone over a specified age (which could be set younger for people with certain conditions such as diabetes) avoids biasing screening against older people because it regards a year of life gained without a CVD event to be of the same value whatever a person's age. It is both simple and fair. It is also a cost-effective means of preventing cardiovascular disease that avoids the need for repeated medical assessments of risk.

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