Is population coronary heart disease risk screening justified? A discussion of the National Service Framework for coronary heart disease (Standard 4)

Andrew Rouse and Peymané Adab

SUMMARY
Standard 4 of the National Service Framework (NSF) for coronary heart disease (CHD) describes population cardiovascular risk screening at primary care level. General practitioners (GPs) are expected to deliver this standard and have their performance monitored as part of their clinical governance programme. Although CHD is an important preventable health problem in the United Kingdom (UK), the effectiveness of primary prevention screening programmes are minimal, even within clinical trial settings, and their cost-effectiveness is not clear. The National Screening Committee has identified clear standards for establishing a screening programme in the UK and the activities described in Standard 4 do not fulfil many of these criteria. Specifically, there are no plans for central organisation and co-ordination, no agreed quality assurance standards, and no uniform system for performance management. The clinical, social, and ethical acceptability of the interventions mandated have not been established, and GPs are left to consider how to redirect resources to achieve the standard. We argue that the benefits of population cardiovascular screening must be established through properly conducted trials and, if a programme is introduced, adequate resources and management structures must first be identified.

Keywords: risk screening; coronary heart disease; risk factors.

Introduction

The National Service Framework (NSF) for coronary heart disease (CHD) purports to establish clear standards for the prevention and treatment of CHD that will lead to major improvements in quality and access. These are worthy objectives, particularly as CHD is a major cause of morbidity and mortality in the United Kingdom (UK). The NSF is part of the quality framework within the government’s modernisation programme and is intended to specify effective interventions and models of care. There is an expectation that standards will be delivered and monitored, and as such, the NSF is more than a mere set of guidelines.

General practitioners (GPs) are required to lead and deliver on two standards in the NSF, namely, Standards 3 and 4. We believe that Standard 4 advocates proactive practice-based CHD risk factor screening, and argue that without considering the accepted principles of screening, it is likely to be a futile and costly exercise.

Screening: ‘benefit or bane’?

Standard 4 of the NSF for CHD states:

‘General practitioners and primary healthcare teams should identify all people at significant risk of cardiovascular disease but who have not yet developed symptoms and offer them appropriate advice and treatment to reduce their risks.’

These activities are to be offered systematically using a risk assessment tool, and with practice-agreed plans and protocols for identifying, treating, and following up patients. There is an expectation for the development of practice registers and a system for patient recall. The aim is to reduce the risk of death, heart attack, heart failure, or other manifestation of CHD in the target population. The initial target group for this standard focuses on people who have no clinical evidence of CHD but whose risk of CHD events is greater than 30% over 10 years. Those identified are to be offered advice on smoking cessation and lifestyle modifications where necessary, advice and treatment for blood pressure over 140/85, and drug treatment if they have a serum cholesterol level over 5 mmol/l.

The UK’s National Screening Committee defines screening as:

‘... the systematic application of a test or inquiry, to identify individuals at sufficient risk of a specific disorder to warrant further investigation or direct preventive action,'
Population screening began in the early 20th century, with the aim of improving the health of British children, and thus ensure the fitness of future army recruits. It was promoted as a means of reducing the burden of disease. Mass screening programmes were introduced; however, disappointment soon set in when it was found that these did not always lead to a reduction in mortality. In 1968, Wilson and Jungner published the first set of criteria for screening. This was followed 20 years later by Holland’s thorough analysis of the scientific and practical aspects of screening, which provided convincing evidence that screening programmes were likely to be ineffective and costly liabilities unless they conformed to specified criteria. The UK’s cervical screening programme is one example of a policy that failed to achieve the expected reductions in mortality in its early years, mainly because it was not set up within a nationally organised co-ordinated system. Despite huge investment over many years, it is also an example of a screening programme that is frequently in the news because of concerns over quality and untoward incidents.

The National Screening Committee (NSC) was established in the UK in 1997 and has built on Wilson and Jungner’s classic criteria to develop standards for appraising a screening programme (Box 1). Standard 4 of the NSF does not refer to these criteria or acknowledge that it is promoting a national screening programme operated by individual general practices. Nor does it discuss the fact that cardiovascular risk screening in primary care was introduced in the 1990s and was considered as being futile even then.

A plan for managing the screening programme
To be effective, screening must be comprehensive and systematic. Experience from the NHS cervical cancer screening programme demonstrated that lack of organisation, accountability, and commitment, were responsible for its initial failure. It is therefore surprising, and unfortunate, that Standard 4 makes no mention of appointing individuals in each health district to be responsible and accountable for the screening programme.

One of the fundamental prerequisites for the success of a screening programme is the need for a computerised database holding accurate and continually updated information, to enable the correct target population to be invited for screening and follow-up. That Standard 4 recommends the ad hoc development of practice registers is, therefore, a likely step towards failure. Development of these registers is also dependent on the level of organisation within general practices. Practices with poor organisation are less likely to identify people at risk and this process could therefore contribute to increasing health inequities.

Agreed quality assurance standards
The importance of national standards, mechanisms for qual-
ity assurance (QA), and a designated local programme co-
ordinator were all emphasised during the recent enquiry into
untoward events within the cervical screening programme at
Kent and Canterbury Hospitals NHS Trust.31 Quality assur-
ance requires consistency, standardisation, and account-
ability. The key criteria for QA includes explicit quality stan-
daards, monitoring systems (to allow performance to be com-
pared with those standards), and clear lines of managerial
authority.2 The NSF suggests that there should be local pro-
tocols for the investigation, recording, and treatment offered
to the target population, which should be agreed at primary
care or district-wide level. There are approximately 10 000
general practices and 500 primary care groups in the UK,
which makes this recommendation managerially difficult to
monitor.

A plan for monitoring the programme
If a government agency advises asymptomatic people to
enter a screening programme then there is a clear responsi-
ability for that agency to monitor and ensure the effectiveness
of that programme. Yet Standard 4 makes no provision for a
uniform system of performance management, information
collection, record linkage, or for the QA of the many other
aspects of screening. In fact, Standard 4 admits that there
will be differences in the quality of information available for
audit.

Evidence of clinical, social, and ethical accept-
ability of the programme
Screening stands apart from traditional medicine in that it
offers a procedure, with the possibility of subsequent inves-
tigation and treatment, to apparently healthy people who
have not been seeking medical attention. In contrast with
most services in the NHS, which are patient-initiated,
screening is provider-initiated and therefore there is addi-
tional social and ethical responsibility to ensure that the
potential benefits outweigh the risks. No screening pro-
grame is free of harm. People identified as being at risk will
be labelled as such, and this may result in social and psy-
chological harm.22

The benefits of all the recommended interventions in
Standard 4 are not clear. A systematic review of interven-
tions for the primary prevention of CHD concluded that infor-
mation and advice offered to healthy people is not particu-
larly effective in changing behaviour and reducing the risk of
clinical events.23 Treatment with antihypertensive and cho-
esterol-lowering drugs, although effective in a clearly
defined target group, also has disadvantages. There has
been no assessment of whether these potential ‘treatment
harms’ will outweigh the potential benefits gained, particu-
larly for those at a lower initial level of risk.

Unlike many other screening programmes, Standard 4
seeks to identify persons as ‘at risk’ or ‘not at risk’, using a
relatively arbitrary 10-year event risk cut-off of 30%. Currently
available risk assessment methods have not been validated
by comparing risk prediction based on their algorithm with
the occurrence of coronary events. Consequently, there is
much discrepancy in the people identified using the various
risk assessment tools.24,25 Our current understanding of the
aetiology of CHD does not allow accurate prediction of coro-
nary events based on risk factors and using any threshold
will inevitably misclassify certain individuals, resulting in
both under- and over-treatment. Furthermore, there is
increasing evidence of patients’ interest to be involved in
decision-making about their treatment.26 Patients’ prefer-
ences often disagree with recommendations based on
guidelines. While any individual may regard a given thresh-
old as either too high or too low, using patient preferences
generally results in more conservative decisions regarding
treatment.27,28 There is some suggestion that the 30% threshold used in Standard 4 would be unacceptable to the
public, and to health professionals.29,30

Adequate staffing and facilities
All authorities on screening agree that screening pro-
grames should not be established unless adequate
resources are committed and that they do not increase the
workload of existing medical services.9 Arrangements sug-
gested in Standard 4 that GPs re-direct resources from lower
priority activities are therefore in conflict with this principle.

Discussion
The objectives set out in the NSF are laudable. The rela-
tively high prevalence of the major risk factors for CHD
mean there is likely to be a significant number of people at
high risk. However, there is no clear evidence that popula-
tion cardiovascular risk screening for primary prevention as
proposed in Standard 4 would be beneficial or cost-effective.
Furthermore, when we consider the important criteria for
any screening programme, the NSF standard does not ful-
fill these. The likely effectiveness of the programme is there-
fore, at best, doubtful. This does not mean that GPs should
not be offering opportunistic health promotion interven-
tions, such as giving advice on smoking cessation, weight
control, or measuring blood pressure in older individuals
who arrive for consultation. Nor does it detract from the
important role of primary care in the secondary prevention
of CHD.

We believe that the primary care screening activities rec-
commended by Standard 4 of the NSF will not be effective.
They do not meet the well established criteria for a screen-
ing programme, including the need for ensuring adequate
structure, co-ordination, management, and appropriate
resources. The government should heed the lessons of his-
tory and review Standard 4 with consideration of the well
known principles of screening. Ideally, before establishing a
screening programme, a randomised controlled trial should
be performed to determine whether such screening is likely
to reduce morbidity and mortality associated with CHD and,
if so, at what cost. Only then can this activity be convincingly
accepted as a ‘high priority’ and of ‘high value.’

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