The contribution of health promotion to meeting health targets: questions of measurement, attribution and responsibility

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SUMMARY
Target-setting for health is now an accepted part of health policy and has been embodied in the recent health policy documents of many nations. All include a major role for health promotion. However, if health targets are to be reached, except by good fortune, progress towards them needs to be monitored (‘measurement’), the reasons for movement towards and away from them need to be understood (‘attribution’) and action taken by those responsible if monitoring implies they are likely to be missed (‘responsibility’). This paper asks whether these important conditions hold for target-setting in relation to health promotion. Health promotion monitoring frameworks certainly exist, but do we know enough about attribution or responsibility to take any necessary corrective action? Do we have the information and tools needed to reach the plethora of health targets set out in various World Health Organization (WHO) documents and their national counterparts? This paper concludes ‘no, not at the present time’. However, there is cause for optimism—in our view, the attribution problem in health promotion at the macro-level can certainly be tackled. A significant proportion of this paper is therefore devoted to discussing—with examples—some of the computer modelling and statistical techniques that, although relatively unexplored to date, offer great potential for attributing the contribution of health promotion to health targets. The paper focuses on the UK experience to illustrate the general points raised in these debates. Assigning responsibility for meeting health promotion and health targets is, however, likely to remain problematical.

Key words: attribution; health targets; measurement; responsibility

PREFACE
This paper grew from research commissioned in 1994 by the Health Education Authority (HEA) from the Centre for Health Economics (CHE) as part of a larger project monitoring the contribution of health promotion to the achievement of Health of the Nation targets. This larger project has since developed into the current HEA Targets programme. The views expressed here are not necessarily those of either institution.

INTRODUCTION
The use of target-setting for health has increased significantly since the World Health Organization (WHO) outlined its Health For All by the Year 2000 policy in 1977. Specific targets were set in 1985 (WHO, 1985) and a number of countries used this framework to set out national policies. The UK Department of Health followed suit in 1992 with the Health of the Nation initiative which implied a large role for health promotion and prevention in England—as did equivalent
documents for Wales and Scotland. However, despite this emphasis on target-setting, knowledge and expertise in target-setting in health promotion is lacking. As a UK health minister recently announced,

Education and persuasion are central to achieving the Health of the Nation targets . . . so it is important to establish what is effective in terms of health promotion and what isn’t. (Department of Health, 1995)

If general health targets are to be reached, except by good fortune, progress towards them needs to be monitored ('measurement'), the reasons for movement towards and away from them need to be understood ('attribution') and action must be taken to ensure that they are met if monitoring implies they are likely to be missed ('responsibility'). This paper discusses whether any of these three conditions hold for target-setting in relation to health promotion. Whilst monitoring frameworks exist, we question whether we currently know enough about attribution or responsibility to take any necessary corrective action. We conclude, perhaps pessimistically, 'no, not at the present time'. However, there is plenty of potential to start tackling the attribution problem in health promotion at the macro-level. Computer modelling and statistical techniques may be particularly useful, yet they remain relatively unexplored to date. An example of the potential for computer simulation is given in relation to Health of the Nation coronary heart disease (CHD) targets. Assigning responsibility for meeting health promotion and health targets is, however, likely to remain problematical.

HEALTH TARGET-SETTING

The WHO's Health for All by the Year 2000 marked the starting point for target-setting in health. In England this has had a significant impact, with the publication of the Health of the Nation White Paper (Department of Health, 1992).

KEY AREAS

| CHD and stroke | Cancers | Mental illness | HIV/AIDS and sexual health | Accidents |
---|---|---|---|---|
• To reduce death rates for both CHD and stroke in people under 65 by at least 40% by the year 2000 (baseline 1990)
• To reduce death rates for CHD in people aged 65-74 by at least 30% by the year 2000 (baseline 1990)
• To reduce death rates for stroke in people aged 65-74 by at least 40% by the year 2000 (baseline 1990)
• To reduce the death rate for breast cancer in the population invited by screening by at least 25% by the year 2000 (baseline 1990)
• To reduce the incidence of invasive cervical cancer by at least 20% by the year 2000 (baseline 1990)
• To reduce the death rate for lung cancer under the age of 75 by at least 30% in men and by at least 15% in women by the year 2010 (baseline 1990)
• To halve the year-on-year increase in the incidence of skin cancer by 2005
• To improve significantly the health and social functioning of mentally ill people
• To reduce the overall suicide rate by at least 15% by the year 2000 (baseline 1990)
• To reduce the suicide rate of severely mentally ill people by at least 33% by the year 2000 (baseline 1990)
• To reduce the incidence of gonorrhoea by at least 20% by 1995 (baseline 1990), as an indicator of HIV/AIDS trends
• To reduce by at least 50% the rate of conceptions amongst the under 16s by the year 2000 (baseline 1990)
• To reduce the death rate for accidents among children aged under 15 by at least 33% by 2005 (baseline 1990)
• To reduce the death rate for accidents among young people aged 15-24 by at least 25% by 2005 (baseline 1990)
• To reduce the death rate for accidents among people aged 65 and over by at least 33% by 2005 (baseline 1990)

MAIN TARGETS

RISK FACTOR TARGETS

| Smoking |
---|---|
• To reduce the prevalence of smoking to no more than 20% by the year 2000 in both men and women (reduction of a third) (baseline 1990)
• To reduce consumption of cigarettes by at least 40% by the year 2000 (baseline 1990)
• In addition to the overall reduction in prevalence at least 33% of women smokers to stop smoking at the start of their pregnancy by the year 2000
• To reduce smoking prevalence of 11-15 year olds by at least 11% by 1998 (baseline 1988)

| Diet and nutrition |
---|---|
• To reduce the average percentage of food energy derived by the population from saturated fatty acids by at least 35% by 2005 (to no more than 11% of food energy) (baseline 1990)
• To reduce the average percentage of food energy derived from total fat by the population by at least 12% by 2005 (to no more than 35% of total food energy) (baseline 1990)
• To reduce the proportion of men and women aged 16-64 who are obese by at least 25% and 33% respectively by 2005 (to no more than 6% of men and 8% of women) (baseline 1990)

Blood pressure

• To reduce mean systolic blood pressure in the population by at least 5mm Hg by 2007 (baseline to be derived from new national health survey)

HIV/AIDS

• To reduce the percentage of injecting drug users who report sharing injecting equipment in the last 4 weeks from 20% in 1990 to no more than 10% by 1997 and no more than 5% by 2000

Source: derived from Department of Health (1992)

Fig. 1: Health of the Nation targets.
which explicitly set quantitative targets for health in five key areas: CHD and stroke; cancers; mental illness; HIV/AIDS and sexual health; and accidents. Across these five areas there are two sorts of target: main (or outcome) targets and risk factor (or intermediate outcome) targets. These are set out in Figure 1.

The targets represent a commitment on the behalf of the government to deliver measurable changes in health over time. The main targets are defined in terms of mortality reductions or changes in incidence rates. In order to reach such targets, causal factors need to be identified and targets for them set. The associated risk-factor targets are meant to fulfil this role. Reductions in smoking rates, for example, are posited to contribute to reaching the cancer and CHD and stroke targets.

In order to assess movement towards Health of the Nation targets, a system of monitoring frameworks has been set up. The purpose is to provide information on both the main targets and risk factors through time. If either or both are heading in the wrong direction, or not moving fast enough towards the target, this is supposed to alert those with responsibility for the need to take corrective action. Just what this corrective action is, how it is implemented and who is supposed to undertake it remains unclear. These questions are more relevant to health promotion perhaps than to any other sector, since it is clear that the Health of the Nation document envisages a big role for health promotion and education in meeting the targets.

### THE CONTRIBUTION OF HEALTH PROMOTION TO HEALTH TARGETS

Can we measure health promotion's contribution to the Health of the Nation targets? In order to answer this question we first need a theoretical framework for health promotion's role. Figure 1 shows that change in *individual* risk factors is presumed to be the major route for reaching the main targets. Health education is crucial since it is seen as one of the major levers to bring about change in individual risk factors. This seems implicitly to rely on the knowledge, attitudes and beliefs (KAB) paradigm as a valid model of individual behaviour change. Individuals are assumed to change their behaviour in response to knowledge about the health consequences of their actions mediated through changing attitudes. Traditional health education is seen as the main means for bringing this about (Tolley, 1993).

However, this has been criticised by many as being too simplistic. The KAB paradigm understates the complex issues in behaviour change and underplays the role of other forms of health education and promotion. Tones (1990) has

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**Fig. 2: The theoretical contribution of health promotion to the Health of the Nation targets.**
argued that health education has a greater role in at least two respects: in raising awareness amongst those in political power of the wider socio-economic and environmental causes of ill-health; and in generating self-empowerment—many individuals simply do not have the capacity or ability to change their behaviour as costlessly as the KAB paradigm predicts. Health promotion is also about health protection (measures which are outside the control of individuals but not organised groups which affect health; for example, seat-belt legislation, occupational safety, food labelling initiatives, etc.) and disease prevention measures such as immunisation over which the individual does have some control. These three elements of health promotion have been brought together in Tannahill's model (Downie et al., 1991), which recognises the complex interrelationships between all these factors. The KAB paradigm takes no account of these wider social forces. We return to the implications of adopting the KAB model below.

To be fair, the Health of the Nation document also acknowledges the impact of community level factors and the contribution of healthy alliances to some extent. They could have an independent impact on the main targets, but also a contributory effect on individual-level risk factors. The general model of the contribution of health promotion which seems to be envisaged in the Health of the Nation is represented as Figure 2.

**A question of measurement**

One of the three key criteria for selecting the Health of the Nation key areas was that it should be possible to set objectives and targets, and monitor progress towards them. (Department of Health, 1992)

The Health Education Authority (HEA) in England has recognised this with its Targets programme. One of its major outputs has been the production of a list of 'health promotion indicators' which could be used as interim measures

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**Fig. 3:** Monitoring the contribution of health promotion to Health of the Nation targets. Source: derived from information contained in Morgan and Ford (1996).
of progress towards Health of the Nation targets. This has resulted in several documents, the latest of which provides a comprehensive list of over 100 suggested indicators in *Health of the Nation* and other key areas (Morgan and Ford, 1996).

Figure 3 shows a smoking example of the postulated relationship between the health promotion indicators, Health of the Nation risk factors and the main targets. For each main and risk-factor target, the HEA has derived general and specific policy objectives for health promotion and associated health promotion indicators (HPIs) to monitor progress towards them. The majority of the HPIs are quantifiable and available from a multitude of existing and planned surveys and other sources. This has been strengthened by a new annual survey of health knowledge, attitudes and behaviour for England, *Health in England 1995* (Bridgwood et al., 1996) which was specifically designed to generate the required data to enable tracking over time. The monitoring framework includes both individual and community level HPIs and so is flexible enough to include the conceptual model in Figure 2. For the first time, at a national level, available statistics have been collated and placed within a framework for monitoring movements towards health targets.

However, is it enough to measure the contribution of health promotion to the Health of the Nation targets? There are certainly those who think so judging by a recent speech by a UK health minister:

> The five key areas in Health of the Nation provide an obvious focus for health promotion and the provisions made for monitoring progress towards achieving targets offer an excellent opportunity of demonstrating effectiveness. (Department of Health, 1995)

At present, unfortunately, we believe this is too optimistic. If we are really serious about meeting the Health of the Nation targets, then a missing objective of selecting the key areas should have been that where monitoring shows the targets are unlikely to be met on current trends there should be effective known means to arrest those trends and responsibility for doing so assigned.

The monitoring framework set out above is a useful tool to check progress in health promotion. However, it is not sufficient, in its present descriptive state, to be able to do anything about getting back on track if progress on the targets stall. If the targets are to be met, two further conditions need to be fulfilled: we need to be able confidently to attribute the contribution of health promotion to meeting the targets; and we need to assign responsibility for meeting the targets to different health promotion organisations. Neither of these conditions is, we believe, met at the present time. However, there is cause for optimism, at least on the first count.

**A question of attribution**

It has been extremely difficult to determine attribution in health promotion. The essential problem is illustrated in Figure 4. Despite the impressive and useful paraphernalia of health promotion monitoring frameworks, we are not certain, except for specific well-known examples, of the link between changes in KAB and changes in behaviour or between behaviour change and final health outcomes. Given that we are not arrogant enough to assume that health promotion is the sole cause of behaviour change, there is uncertainty about its contribution. Similarly, any behaviour change brought about by health promotion will not be the sole factor in changing health outcomes.

![Fig. 4: Problems of attribution in health promotion.](image-url)
The link between health promotion and KAB is particularly difficult to establish and some may argue that, therefore, we would be better not to attempt to find the link. We believe that this is too pessimistic. However, health promotion is characterised by multiple agencies delivering multiple interventions in many different ways. It is therefore exceptionally difficult to undertake the ‘gold standard’ of medical evaluation, the randomised control trial (RCT) because of the complexity of delivery. This is confounded by the long lag between intervention and outcome in health promotion, and the obvious potential for contamination between intervention and controls, especially in media or population interventions. In practice we usually must revert to other, less experimental, forms of evaluation, such as pre–post sampling or cohort analysis (Braverman, 1989). Large community cardiovascular disease interventions such as the Stanford Five Cities Project in California (Farquhar et al., 1990) have used a number of study designs including mixed cohort-control analysis. Liedekerken et al. (1990) and Nutbeam et al. (1990) review and discuss the pitfalls and advantages of study designs used in health promotion in more depth.

Despite the difficulties we concur with a recent ministerial statement in the UK that stressed we should continue to invest in improving evaluation techniques—necessarily a long term strategy. (Department of Health, 1995)

We believe this to be true and discuss two of the most promising methods to firm up the links between HPIS and Health of the Nation targets below: computer simulation work and statistical techniques.

Computer simulations: a health promotion and CHD targets example

Computer simulation offers great potential for attributing health changes to behaviour change. ‘Prevent’ is one such software package—it simulates expected health benefits, in terms of mortality reduction and life years gained, from reducing the prevalence of risk factors in a population (Gunning-Schepers, 1989). Another model with much potential is the Population Health Model (POHEM) currently in use at Health Statistics Canada (Wolfson, 1994). A great advantage is that they can translate fairly widely known evidence about risk factors and health from micro-level trials and studies to a population basis, the level at which health targets are set.

‘Prevent’ and related models are based on conventional epidemiology and use known information on the links between diseases and risk factors. However, most epidemiological modelling is static. These models go further by introducing a time dimension. This is more realistic since it simulates the interaction between the effects of an intervention and future expected demographic changes in a population and the gradual reduction in excess risk after exposure to a risk factor has ceased. ‘Prevent’ also controls for the fact that a risk factor can affect more than one disease and that one disease may be affected by several risk factors. These innovations have three important implications for the results of simulations. First, health benefits from an intervention will be delayed. Second, results will be different because of the inclusion of demographic trends. Finally, overall estimates of health gain are likely to be higher than for simpler models because the same risk factor is associated with several diseases. ‘Prevent’ is consequently more realistic than many static epidemiological models. It goes without saying that the accuracy and relevance of any simulation depends on the validity of the underlying assumptions of the model, the reliability of the basic data and assumptions about the effectiveness of preventive interventions.

‘Prevent’ has been used for several analyses in the UK. Buck and Godfrey (1994) used it to translate the results of micro-level smoking cessation intervention studies to see what their impact would be in terms of national mortality and potential years of life gained if applied across the whole of England and Wales. Buck et al. (1996a) used it at the level of a typical UK District Health Authority (DHA) when looking at the costs and health benefits of CHD health promotion. An extension of this latter work explored the likely contribution to Health of the Nation targets of various CHD strategies.

Various CHD prevention programmes were explored based on the now-defunct GP health promotion bandings which came into effect in mid-1993. (This system essentially rewarded GPs with an annual fixed fee if they performed certain minimum levels of health promotion with their patients.) The six options in Table 1 were finally defined. They vary in their degree of targeting and the risk factors tackled. The risk-factor reductions assumed are unavoidably arbitrary in the absence of evaluations of the banding system. However, brief smoking cessation advice from a GP has been shown to lead to ~5% quit rates at 1 year, and
reinforcing that advice with more intensive advice and possible aids, as is practical with a smaller group of patients, can double this rate (Buck and Godfrey, 1994). The hypertension and cholesterol reductions are more speculative but work on the same assumption—targeting higher-risk patients implies more time for advice and possibly higher motivation to change lifestyles and thus higher success rates. All options are calculated assuming full compliance to the interventions, a strong assumption which is later relaxed.

Table 2 presents the final health outcomes to the year 2000 for a hypothetical representative health authority. (Results have also been produced for representative ‘fortunate’ and ‘unfortunate’ purchasers, based on known prevalences of risk factors in a northern and southern region of England. This showed how benefits could vary across geographic areas.) Each of options 1–6 were assumed to be implemented during 1993 only. No further intervention is assumed to take place between 1993 and the year 2000. This assumption is again relaxed later.

Table 2 shows that ~2.5% of the starting population of 500 000 in an average authority will die due to CHD in the 7 years from 1993. Prevent predicts that between 42 and 211 lives would be saved as a result of implementing options 1–6 in 1993. This corresponds to averting 0.3–1.6% of total CHD deaths to year 2000. The last two options, however, perform much better, saving 131 and 211 lives respectively. This arises because of the assumed impact of counselling (and possible drug treatment) on cholesterol levels. In conclusion, a purchaser responsible for a population of 500 000 implementing any of options 1–6 in 1993 will see a reduction in CHD deaths to the year 2000. However, the likely scale of CHD deaths averted to this date is small and is dependent on the initial risk-factor prevalence and option chosen. (In the long-run, however, the legacy of intensive health promotion

<table>
<thead>
<tr>
<th>Option</th>
<th>CHD mortality</th>
<th>Reduction in CHD mortality</th>
<th>Reduction in overall mortality</th>
<th>Actual years of life gained</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>12 907</td>
<td>42</td>
<td>45</td>
<td>140</td>
</tr>
<tr>
<td>2.</td>
<td>12 901</td>
<td>48</td>
<td>51</td>
<td>155</td>
</tr>
<tr>
<td>3.</td>
<td>12 888</td>
<td>61</td>
<td>69</td>
<td>234</td>
</tr>
<tr>
<td>4.</td>
<td>12 882</td>
<td>67</td>
<td>86</td>
<td>293</td>
</tr>
<tr>
<td>5.</td>
<td>12 818</td>
<td>131</td>
<td>129</td>
<td>444</td>
</tr>
<tr>
<td>6.</td>
<td>12 738</td>
<td>211</td>
<td>210</td>
<td>726</td>
</tr>
</tbody>
</table>
to the turn of the century will be rich. The majority of health gains will only become apparent well into the 21st century as lives are extended due to the change in lifestyles encouraged in the 1990s.) Table 3 shows how this information can be translated into useful predictions of how such behaviour changes are likely to contribute to the Health of the Nation targets.

Row A shows that options 1–6 were predicted to avert 0.3–1.6% of total CHD deaths. Given that the Health of the Nation targets are for around a 35% reduction in total CHD deaths by the turn of the century, under scenario A between 1 and 5% of the target would probably be met by these interventions. Scenario B is more realistic, it is extremely unlikely that any GP-based preventive intervention will be complied with completely. The arbitrary assumption that compliance rates drop to 50% reduces the proportion of the target achieved by half. (Assuming that the distribution of non-compliance is random across age, sex, risk factor and severity of risk factor. This is unlikely to be true, but is a crude working approximation. Research is needed to determine the predictors, if any, of non-compliance to health education and promotion interventions.) Scenario C is also more realistic than scenario A. Up to now, our results have been based on a discrete intervention taking place in 1993 only. Assuming that it is continuous implies fourfold averted CHD deaths, equivalent to 4–19% of the Health of the Nation CHD targets. Scenario D, the most realistic, combines the effects of non-compliance and continual interventions on behalf of GPs. Around 10% of the Health of the Nation targets could be achieved if option 6, targeted band 3 interventions or the equivalent, are carried out reasonably effectively by GPs to the year 2000.

In conclusion, under reasonable scenarios computer simulation shows how behaviour change can make an important contribution to the Health of the Nation targets. It is also clear, however, that GP health promotion alone will not meet those targets. Such models could also be used for other purposes. One possibility is to predict just what effect reaching the Health of the Nation risk-factor targets would actually have on the main targets. Another would be to assess what combinations and levels of risk-factor changes would be required in order to reach the main targets. This would place bounds around the possible contribution of health promotion and provide more precision for policy-makers.

**Statistical techniques: health promotion and behaviour change in a population**

Statistical modelling could be of use earlier in the chain in Figure 4. Current computer simulation techniques focus on the link between health behaviour and health outcomes, since there is much knowledge in this area from clinical trials and epidemiology. However, they have less to say about the prior link between health promotion and behaviour change.

Statistical techniques have been used in large community trials to assess the links between health promotion interventions and behaviour changes, and this has been helpful in determining attribution and feeding into the computer simulation models described above. [This is particularly so in the United States (Farquhar et al., 1990),

### Table 3: Proportion of CHD targets that could be met by CHD preventive interventions to year 2000 under plausible scenarios

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Total CHD deaths averted</th>
<th>Percentage of total CHD deaths</th>
<th>Percentage of CHD target(a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Full compliance, intervention in 1993 only</td>
<td>42–211</td>
<td>0.3–1.6</td>
<td>0.9–4.6</td>
</tr>
<tr>
<td>B. 50% compliance, intervention in 1993 only</td>
<td>21–105</td>
<td>0.15–0.8</td>
<td>0.45–2.3</td>
</tr>
<tr>
<td>C. Full compliance, intervention in all years to 2000</td>
<td>168–844(^b)</td>
<td>1.3–6.5</td>
<td>3.7–18.6</td>
</tr>
<tr>
<td>D. 50% compliance, intervention in all years to 2000</td>
<td>147–739</td>
<td>1.15–5.7</td>
<td>1.85–9.3</td>
</tr>
</tbody>
</table>

\(^a\) Targets taken as 35% reduction in total CHD deaths (mid-point of 40% target reduction in deaths below 65 years of age and 30% between 65 and 75).

\(^b\) The averted deaths in 1993 flow over 7 years, the gains from an intervention in 1994 will therefore flow over a 6-year period, etc. This implies total gains to 2000 from continuous interventions of \(X(1 + 6/7 + \ldots + 1/7) = 4X\), where \(X\) is the number of averted deaths in 1993.
Finland (Nissinen and Puska, 1991), Australia and several multi-country trials (Kornitzer and Rose, 1985).

The impact of tax changes on cigarette consumption has also been widely studied using statistical techniques (Townsend, 1996), as has the effect of the many health reports on smoking published in the 1950s and 1960s (Borren and Sutton, 1992). However, little has been carried out at a practical level showing how the everyday practice of health promotion changes behaviour. Yet there exist many techniques, particularly those dealing with production functions, which offer potential in this endeavour.

One possibility is to look at whether higher spending on health promotion is correlated with changing health behaviour in local or national populations. This could be assessed both longitudinally, through time, and across different areas of a country. In the UK, the Department of Health now collects data which break down spending on health promotion and education to District Health Authority (DHA) level over time. In addition, many districts now carry out health and lifestyle surveys of their population. Looking at correlations over time and across districts to see whether more intensive health promotion resourcing is associated with changes in behaviour is one way forward. However, such research would also need to control for HEA spending at a local level and other influences on behaviour—a major research effort. National surveys such as the General Household Survey (GHS) and Health in England 1995 (Bridgwood et al., 1996) provide more complete data but unfortunately at higher levels of aggregation. The data sources identified and catalogued by the HEA’s monitoring framework also provide a rich source of under-utilised information. In this and other ways statistical analysis offers the prospect of tracking the links between health promotion and behaviour change.

A fly in the ointment: is the KAB paradigm the right paradigm?

However, there is a fly in the ointment to this tale of relative optimism. The whole of the Health of the Nation enterprise at least is couched in terms of reductions in mortality or disease incidence and associated risk factors. This is in line with the traditional view of health education as epidemiologically based. Prevention of disease is the main focus and the achievement of mortality and morbidity reductions or targets are common measures of success. This approach emphasises the narrow medical definition of health as the absence of disease. Individuals are exposed to information which changes their knowledge, attitudes and beliefs, they then act upon this rationally by changing their lifestyles. This is the essence of the KAB paradigm. It emphasises personal responsibility and the belief that providing information on health behaviour risks is all that is required to change health behaviour.

To many, however, this is an unsophisticated and narrow view of health and health behaviour and it is explicitly rejected (see above references). Health is more than mortality and disease. More holistic definitions, such as that provided by the WHO, emphasise the wider aspects of health. The physical, mental and social health of an individual is a complex interaction between positive factors such as well-being and fitness, and negative factors such as disease, illness, deformity, injury, handicap, disability and unwanted states. The goal of health promotion is therefore ambitious:

Health promotion comprises efforts to enhance positive health and prevent ill-health, through the overlapping spheres of health education, prevention, and health protection. (Downie et al., 1991)

A further important parallel development is the increasing acceptance of ‘self-empowerment’ and ‘free choice’ as goals of health promotion. This view stems from the education literature and argues that health promotion should be concerned with developing rationality and freedom of choice within individuals. The primary aim is therefore to facilitate ‘free’ decision-making about health behaviour irrespective of the final decision itself. Self-empowerment can therefore conflict with more traditional views of health promotion, and the Health of the Nation targets, where a successful outcome is automatically defined as a ‘positive’ change in behaviour or health.

This, unsurprisingly, causes problems. Despite the emphasis on healthy alliances and holistic views of health in the text of The Health of the Nation, the targets themselves are predominantly cast in the KAB paradigm. The principal reason for this seems to be the readily available monitoring indicators, including health promotion as shown in the Targets programme. A further reason, perhaps, is political acceptability. A lay person is more likely to be impressed by a 25% fall in mortality from CHD to the year 2000 than a similar 25% increase in a ‘self-empowerment’ or
‘decision-making skills’ index. This should not deter those who dispute the validity of the KAB paradigm. Given that more generic and holistic measures of health are becoming available, particularly in population surveys, there seems no reason why statistical and other techniques should not be used to attribute changes in health promotion activity to changes in such indexes and the now commonly available generic health measures such as the quality-adjusted-life-year (QALY). The QALY is about to be introduced into population surveys such as the GHS and other surveys in the UK which also contain information on receipt of health promotion interventions. There is clearly a role for statistical analysis here. If health promotion is shown to be successful in improving health status, this could provide the ground to generate, in the long-term, a rethink of the whole health targets paradigm.

However, given that at present the KAB paradigm is in the ascendancy in terms of target-setting and that there are potential ways and means of sorting out attribution at the macro-level, are there the tools available to ensure that movements from health promotion targets are arrested? This is the question to which we now turn.

A question of responsibility
Solving the attributability of health promotion problem is not sufficient in the absence of overall responsibility for achieving change in terms of health targets. The final key question is therefore that of responsibility. What if the targets are not being met? What should be done about it and who should do it in terms of health promotion? First, we believe that health promotion can play an important role. The CHD example above shows that ~10% of the main target could probably be met by behaviour change caused by GP interventions. Statistical work may provide greater knowledge of just how effective health promotion is in changing behaviour. This is an important pre-condition for assigning responsibility for meeting targets.

However, unfortunately, we believe assigning responsibility will always remain exceptionally difficult in health promotion due to its multi-agency and multi-intervention characteristics. In England the HEA and its Scottish and Welsh equivalents could take the lead role, since they are the only national health promotion co-ordinating bodies. However, just how responsibility is devolved to the local level, as it must be, is not clear. The difficulties are further compounded when considering community-level interventions. Despite the emphasis on individual level risk factors, healthy alliances are also a major feature of the Health of the Nation initiative and draw upon the idea of collaborative health promotion at the community level. The Department of Health has embraced the building of health alliances, but just how are healthy alliances properly evaluated? What is the definition of success? Who takes responsibility if and when they fail? These are key issues which need to be addressed by proper research. The UK Department of Health has recognised this to some extent by releasing a tender in mid-1996 calling for evaluation of the whole Health of the Nation strategy, to include healthy alliances. The HEA has also recently commissioned work on evaluating healthy alliances.

Performance indicators (PIs) could offer some scope, but at present we are not too convinced of their usefulness (Buck et al., 1996b). The main problem is again how to assign responsibility. PIs do have potential in terms of internal performance: an assessment of the way in which health promotion agencies work, develop and deliver health promotion to target groups. There is an extensive literature on this in other areas of the NHS and government which could be usefully drawn upon (HM Treasury, 1992). However, in the past PIs have been rightly criticised for paying little attention to the outputs of organisations (Allen et al., 1987). In the case of health promotion targets, output is all about external performance. Without responsibility being assigned for meeting set output targets to specific agencies or organisations, or to reward or punish performance, it is not possible to have any degree of control over the outcomes from health promotion. The exception to this is perhaps in primary care, where responsibility for targets such as immunisation rates are clear and it is possible to create incentives and punishments. Old et al. (1994) discuss performance indicators in primary care in more depth.

CONCLUSION
Target-setting in health has become popular with many governments and health bodies, and health promotion is commonly viewed as one of the main routes to meeting these targets. However, it has been argued here that simply setting targets
is not enough. In order for them to be meaningful requires corrective action to be taken if they are not being met. This requires monitoring, knowledge about attribution, and responsibility for taking action. The first of these is being tackled by the HEA Targets programme. However, the second and third present sticky problems for health promotion. We have suggested that computer simulation models and statistical techniques may be a way forward in terms of attribution and have provided a worked example using a widely available software package. However, responsibility for meeting targets is a thornier problem still, and one which we feel still needs to be resolved. With this in mind we present in Table 4 a list of what we believe to be key research areas in this field.

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### REFERENCES


