CARDIOVASCULAR PREVENTION

IN PRIMARY CARE:

THE WAY FORWARDS?

NOVEMBER, 1994

KING'S FUND CENTRE

CARDIOVASCULAR PREVENTION IN PRIMARY CARE: THE WAY FORWARDS?

PROGRAMME

09.3O	Coffee and Registration *Chair Desmond Julian, National Forum for CHD Prevention*
10.00	Introduction - Where are we now? *Dr Alistair Cameron, NHSE*
10.10	The evidence for a population approach to uni and multifactorial interventions in primary care - Where do OXCHECK & the British Family Heart Studies fit? *Professor Klim McPherson, London School of Hygiene & Tropical Medicine*
10.30	Questions
10.35	The critiques-the responses of the 2 study groups led by *Dr Godfrey Fowler - OXCHECK* *Professor David Wood - British Family Heart Study*
11.05	Panel discussion involving morning speakers *Questions to be directed from the floor*
11.30	Coffee *Chair Margaret Buttigieg, Director of HVA*
11.45	The evidence for methods and models of behaviour change in primary care *Professor Marie Johnston, University of St Andrews*
12.05	Questions
12.15	The evidence for interventions in 'at risk' populations *Desmond Julian - National Forum for CHD Prevention*
12.30	Questions
12.40	Introducing screening programmes in primary care *Fedelma Winkler, Chief Executive, Kent FHSA*
12.55	Questions
13.05	LUNCH
14.00	Workshop Sessions
15.45	Tea
16.00	Feedback of key points *Chair Desmond Julian, National Forum for CHD Prevention*
16.45	*Summary and reflections on the Day* *Dr John Noakes, RCGP*
17.00	*Close*

AIM

The aim of the conference is to use the OXCHECK and British Family Heart studies as a springboard for the future, to critique them for their unique contribution to the current knowledge base, but to move on to draw out the lessons learned and to consider the current cumulative evidence on which to base policy and practice. Implicit in the aim is also to take stock of what we don't yet know and therefore to consider the research agenda and lay the foundations for the evidence based policy and practice of the future.

CONTENTS

(1) Critiques prepared for the conference

(2) Papers prepared for the conference

(3) Workshop Tasks & Allocations

(4) Participants List

(5) Map

(6) Expense Claim Form

CONTENTS

CRITIQUES

A series of critiques produced by organisations with an interest in the debate following the publication of the OXCHECK and British Family Heart Studies. They were prepared for the conference at the request of the King's Fund.

1. Effectiveness of Health Checks.

   Dr John Noakes on behalf of the RCGP. (Blue)

2. The RCN Response

   Jane Naish and Mark Jones, RCN. (pink)

3. Critique from health Visitors Association on Family Heart Study and OXCHECK study (1994).

   Sarah Cowley, King's College, London. (white)

4. Critique of OXCHECK and Family Heart Study key points produced on behalf of the Association of Primary Care Facilitators

   Collated by Janet Bailey (green)

5. Critique of FHS and OXCHECK for King's Fund Conference 7 November 1994.

   Produced by the Health promotion subgroup of the Public Health Network and submitted by Dr Kathie Binysh. (gold)

EFFECTIVENESS OF HEALTH CHECKS

1. The Oxcheck Study

2. The British Family Heart Study

Summary

Both studies involved people registered on General Practitioners lists for health check.

Recruitment was from a wide geographical with careful yet contrasting matching of controls. Numbers responding were high as was the attendance at one year.

The initiative was lead by practice nurses who had specific training.

Although capable of being applied to General Practice this was not the way General Practice has or does function. There appeared to be no evidence of team work or integration within the activity of the practice.

There was no evidence of local or public health campaign to match what was happening within the practices.

Results were available only for one year which could be considered a short period of time to change behavioural pattern.

Follow up methods in the studies were different but the results similar.

There was a lack of effectiveness in reducing smoking compared to previous doctor lead initiatives.

In the non-attendance group at one year there was a considerable proportion of smokers.

Reduction of cholesterol was small, particularly in men and the fall in the reduction was matched a degree of weight loss.

Although a reduction in blood pressure took place it was considered that "accommodation" was an important contributing component.

Disproportionately large numbers of people in the family heart study with low risk factors were in the group returning after one year. There was a higher proportion of people with raised blood pressure, cholesterol, diabetes and coronary heart disease in this group.

Some conclusions and observations can be made from these studies.

Bearing in mind the heavy investment in professional time for the small likely health gain, concentrating on high risk groups would probably be more effective.

The high prevalence of cardiovascular disease within the community together with the increasing workload of general practice would lend further weight to this selective approach.

Yet a population approach is important; activity at a practice level needs to be supported by a local and indeed a national public health campaign.

Dr J E Noakes

1. The Oxcheck Study

2. The British Family Heart Study

Introduction and Methods

Both these studies involved invitations being sent to people registered on doctors lists to attend for a health check. Invitations were offered to a cohort of people while measuring results against matching controls after one year.

In the Oxcheck the cohort of people were between the ages of 35 and 64 and in the Family Heart Study men aged 40 - 49 were targeted but other family members were also invited. It was assumed that if wives or partners attended they would have some positive impact on lifestyle behaviour. Only the men and women in that study were followed up.

Both initiatives were entirely practice nurse led who were given specific training in identifying risk factors and offering appropriate interventions.

There appeared to be no evidence of teamwork or integration of the activity within the work of the practice. Furthermore, there was no evidence of a local, district or, indeed, public health campaign to raise awareness of healthy living or lifestyle risk to match what was happening at the practices.

People came from a wide geographical area, considerable numbers were involved and there was careful matching of controls. In the case of the Family Heart Study there was matching between two practices within a town. In the intervention practices there was an internal control group. In the case of the Oxcheck scheme there was a rolling four year programme planned. Those entering the programme for the first time acted as controls for those being re-examined, having entered the scheme the previous year.

The initial response was 80% for Oxcheck and possibly 73% for the Family Heart Study.

The time spent by the nurse for the initial Oxcheck was 45-60 minutes, with 30 minutes for the annual examinations. In the Family Heart Study the initial interview was 1.5 hours but involved a family interview; no time was stated for the annual examination.

In both schemes intra-annual attendances took place in the intervention groups. In the Oxcheck set protocols for repeat measurement of high blood pressure and hyperlipidaemia were laid down. Otherwise, follow up was by mutual agreement by patient and nurse.

In the Family Heart Study a coronary risk score was constructed according to risk factors and evidence of any disease. People were told which level of distribution of risk for coronary heart disease they were in, related to others of the same age. The information was recorded in a booklet "Your Passport to Health" containing suitable lifestyle advice which the patient retained. Frequency of follow up was determined by the risk score; those in the upper quintile being offered two monthly follow up, those in the fourth quintile three months follow up and the interval extending with those in the bottom quintile had a yearly follow up. Others with single individual high risk factors were invited to attend monthly up to three months.

Results

Results assessing the change were available at the end of one year. This would be considered short span of time in behavioural terms for such a large group.

In the Oxcheck there was a small reduction in total cholesterol concentration in the intervention group - mainly in women. This was matched by a small decrease in the fat intake in that intervention group.

There was a small decrease in blood pressure but the significant component was thought could be the related to accommodation. This had been shown in previous trials and is commented on also in the Family Heart Study. In the year within the intervention group only 24 patients commenced hypotensive drugs and 41 commenced treatment for hyperlipidaemia.

The outcome for smoking was disappointing in that there was really no significant difference. This is in contrast to previous trials of doctor-led advice and advice followed by the use of nicotine patches.

In the Family Heart Study change in the intervention group was measured by a reduction in the coronary heart disease risk score. This was found to be of the order of 16%. The difference was most marked at the top end of risk. Furthermore, the component risk factors themselves did not contribute equally. The reduction of blood pressure amounted to about half the observed low risk, smoking a third and cholesterol a quarter.

However, it was felt there was considerable bias and that some of the lowering of blood pressure could be attributed to accommodation (acclimatization as observed in other trials and commented on in the Oxcheck study). On this basis it was felt that it would have only contributed to approximately half the observed reduction.

Of the smokers recruited a significant proportion did not return at one year (12% men, 15% women). It was also commented that there was the possibility of those returning under-reporting their smoking habits as this had been seen in other trials.

The small amount of cholesterol reduction was probably not open to bias and, like the Oxcheck study, was matched by a small weight loss.

Like the Oxcheck study there was a small reduction in cholesterol and blood pressure, but no reduction in smoking. Within the returning group there was a disproportionately large number of people with low risk factors and a higher proportion with diagnosed hypertension, raised blood cholesterol, diabetes and coronary heart disease.

Comments

The authors of the Family Heart Study draw some assumptions from the work they have carried out. Regarding workload they comment that the study represented about a sixth of the total average practice population eligible for the programme presumably meaning the health promotion component of the G.P. contract covering ages 16-74 and that if it were extended to the whole population it would require four full time nurses. A further assumption that it draws is that the real reduction of coronary risk is not 16% but, owing to the bias, was more likely to be 12%. This, if extrapolated to the whole population, would only produce an 8% impact on coronary heart disease and death.The F.H.S. author made the comment that it would probably be more sensible to focus on limited primary care resources on high risk patients such as those with hypertension, hyperlipidaemia, diabetes and established coronary heart disease and that primary care cannot alone provide a population approach to reducing coronary vascular risk and others need to contribute.

Comment from the Oxcheck authors was that there could very well be a danger in trying to change too many risk factors at once and, therefore, diluting important messages.

Concentrating on those with existing cardiovascular disease, bearing in mind the high prevalance of this group in the general population would probably be more effective.

Dr J E Noakes

25 August 1994
AJR/JNdoc1

We welcome the opportunity provided by the Oxcheck study to reiterate the value of nursing in primary health care and health promotion.

The conclusions of the study have been reported as indicative of the failure of practice nurses to achieve health gain. The fact of the matter, though, is that those nurses achieved a remarkable 12% reduction in coronary heart disease over a one year period. If the study had not restricted itself to a quantative analysis based upon the sole criteria of blood pressure measurement and hypertension, other positive outcomes of nursing intervention would no doubt have been detected, such as those concerned with interaction and communication.

Other studies (for example Stillwell, Drury, Greenfield and Hull 1987) have shown that nurses are adept in establishing rapport with their patients who subsequently use their consultation to consider a whole range of issues. Patients consistently report that a key benefit of consulting the nurse is the time and understanding given to them and the feeling of partnership in their health care.

Whilst we appreciate that it may be necessary to use an empirical study such as the Oxcheck trial, it must be emphasised that using only limited physiological criteria as a measure of success in terms of nursing input to health gain is not sufficient.

We would recommend that the OXCHECK study group consider the adoption of an alternative research method designed to identify the qualitative input of nursing care, rather than the biomedical approach they chose to use.

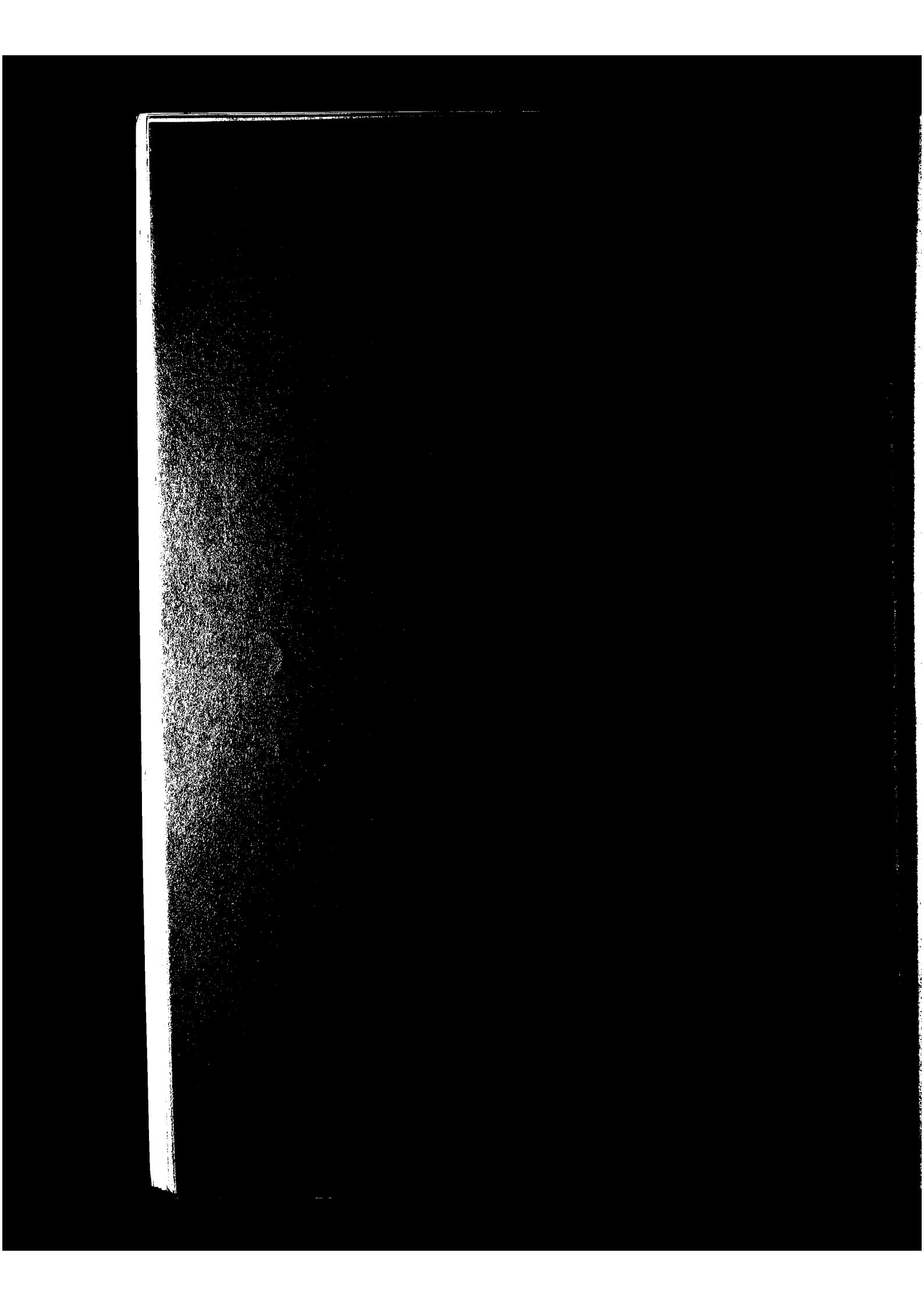
Research tools designed to examine nursing outcomes would, we are convinced, provide a totally different picture.

Jane Naish, Mark Jones.

Community Health Advisers
Royal College of Nursing.

Stillwell et al. (1987) A Nurse Practitioner in General Practice: Working Styles and Pattern of Consultation

Journal of the Royal College of General Practitioners. 37, 154-57.



CRITIQUE FROM HEALTH VISITORS' ASSOCIATION ON FAMILY HEART STUDY AND OXCHECK STUDY (1994)

prepared by Sarah Cowley, King's College, London,

(with support from Margaret Buttigieg, Director and members of the HVA Professional and General Purposes Sub-Committee)

These two studies (Muir et al 1994, Wood et al 1994) represent a welcome addition to the literature in evaluating approaches to health promotion. However, perhaps the biggest surprise about the rather unimpressive impact of the interventions, is that these results should be a surprise to anyone. The reaction of the media was to suggest that the results indicate that such interventions are pointless and as a result many have questioned the value of health promoting activities.

This critique will comment little on the methods used for the research, but will concentrate mainly on the methodology - that is, the entire system of philosophical assumptions which underpin the chosen approach - to explain both why the results might have been predicted, and to dispute the conclusions and proposals made in the final discussion.

Background to study

Both papers set the study in the context of the new contract for general practitioners but neither refer to any mainstream health promotion literature. A review of this would have revealed that the chosen interventions demonstrated features which have previously been tried and found wanting; (Tannahill (1992: 98) described them as 'state of the ark practice, not state of the art'. As well, the literature would have prepared the researchers for the low attendance by those most 'at risk' and warned of the likelihood of non-returners.

Risk factors

No attempt was made to explore the meaning of 'health' in the papers, or to justify the relevance of the intervention other than in respect of reducing risk factors. The underlying assumption is clearly that 'health' is viewed, not merely as an absence of disease, but as an absence of risk factors. The FHS Group note the importance attached to these in the 'Health of the Nation' strategy (DoH 1992), and state that the important question is whether intervention will result in a reduction of the risk factors.

For the target group, a more important question may be how relevant the risk factors seem to their own state of health, at the particular moment in time. This would be considered in an approach which took account of the need for an 'epidemiology of health' (Tannahill 1992) rather than a focus on actual or potential disease alone. Risk factors may describe different patterns of health problems, but they do not explain the causes of the different patterns, which are often connected to social inequalities (Nelhoff and Schneider 1993). Little is known about the natural history of disease, and research in the general population demonstrates that subjectively good health often co-exists with an objectively demonstrable pathology, which is sometimes quite severe (see Rijke 1993, for a review of such studies).

A large sample was selected according to age and gender in both the studies under review. However, although the Oxcheck group recorded the spread of social class, neither group made any attempt to explore the impact of this, or other potentially intervening variables such as income/poverty or caring responsibilities that are known to adversely influence the factors being targeted (see for example, Blackburn 1991, Graham 1987, 1993). Similarly ignored, were any positive, health-enhancing factors like social support or autonomy (House et al 1988, Rowe and Kahn 1987). These variables may well have outweighed the impact of the intervention.

Ethical issues

The risk factor approach emphasises the moral dimension of health, viewing illness as a kind of punishment for not following a 'proper' way of life (Nelhoff and Schneider 1993). It is closely linked to the 'traditional preventive' approach to health education which supports a paternalistic 'professional expert' view of health promotion (Downie et al 1990, Tones et al 1990). Linking preventive activities solely to disease rather than to health increases the

professionalisation and medicalisation of everyday life (Lafalle and Hiemstra 1990).

The use of a record entitled 'Your Passport to Health' (FHS Study) to record 'progress' seems especially likely to imply that people need to be supervised in living their own lives. It is reminiscent of an old-fashioned school report, and may thus infantilise the client group. Further, encouraging people to believe that following prescribed behaviours will guarantee health seems unethical. Conversely, implying that people cannot achieve health without medical approval, is more likely to impair rather than improve health in the long-term, by undermining autonomy and increasing dependence (Rijke 1993).

Within the present NHS market, we are all charged to measure outcomes. The approach of these studies is 'things measurable as hard data'. Thus a challenge has to be, exactly what sort of changes did the authors anticipate from a nursing intervention of this type, was it an appropriate type of intervention and indeed other than in studies of smoking cessation what evidence is there that GP interventions would be 'more successful'. Ethically, what is success anyway? Are we confusing overall cost-effectiveness with a type of intervention being 'more effective'.

Inequalities

The Oxcheck study permitted nurses to set priorities according to identified risk, and 'patients' were afforded a role in negotiating targets, but there appears little recognition of the need to empower the research subjects to take autonomous decisions about their own health. Scant detail was given in either paper about how the nurses had been trained and by whom; a heavy emphasis seems to have been placed on risk calculation and instruction. Despite wide use of the terms 'counselling' and 'choice', the attitude conveyed is one of professionally dominant 'sick-nursing' rather than 'health-nursing' (Macleod Clark 1993).

This approach would be particularly likely to further disadvantage people with less education, those from minority ethnic or the lower socio-economic groups, who are at greater statistical risk from heart disease and who were less likely to attend or return in these studies. Self-empowerment is viewed as a central concept in health promotion, because it can help such disadvantaged groups (Tones et al 1990, WHO 1984), whereas population based interventions focusing on single issues do not necessarily redress inequalities in health (Reading et al 1994).

Lifestyle

This term originally signified a concept which integrated social and cultural context, individual perceptions and subjectively determined actions into a single unified whole (Corell et al 1985). The usage in these papers has, instead, fractured the concept to indicate specific factors which make up one part of the way people live their lives. Fragmenting the context for health promotion in this way may set the scene for health-harming, professional-expert attitudes and victim blaming (Cowley, in press).

The inclusion of both partners in the FHS study is a positive feature in that it retains part of the socio-cultural context, and the longer timescale in the Oxcheck study is more realistic in considering changes over three years, rather than in the very short time frame of one year. However, neither paper recorded for how long dietary changes or smoking cessation had been sustained. No recognition is given to the complexities of achieving changes in lifestyle, or to the detailed literature about the stages and processes involved (Bandura 1977, Becker 1974, Procheska and Diclemente 1984).

Nurses views and activities relating to health promotion

Health Visitors are specifically trained in health promotion. A study by SPRU at York University (Atkin, Lunt, Parker and Hirst 1993) showed that only 3% of Practice Nurses were Health Visitors. Many Practice Nurses are aware that they lack knowledge in this area and require further education. The Atkin et al (1993) Study showed Practice Nurse involvement in 'general health promotion' to be around 90%. Further, as yet unpublished work by Atkin et al on Practice Nurses, shows the wide variation in meaning of health promotion to Practice Nurses and that for a large majority it consists of identifying a problem eg raised blood pressure and giving out

a leaflet. Other studies (Ross, Bower and Sibbald 1994) have shown the lack of knowledge of Practice Nurses in the area of health promotion and the wish of such nurses to receive more training both in how to promote health and how to organise clinics etc.

Conclusion

These studies were set up in the wake of a Government initiative which, essentially, prescribed the nature and form of the intervention, in terms of the 'Health of the Nation' strategy (DoH 1992) and in the new conditions of service for General Practitioners. Viewed in this context, there is little reason for either study to take cognisance of the wider implications for health for the client group; implementing the strategy and achieving the targets are what counts. The results in both studies were viewed as disappointing; the authors linked this to the fact that the interventions were carried out by nurses. Closer medical involvement was urged, on the grounds that interventions by GPs have proved to be helpful in the past. However, like doctors, nurses have demonstrated good results with helping people to stop smoking in a variety of different settings (Macleod, Clark and Dines 1993).

As this critique suggests, the main fault lies, not in the implementation of the approach alone but in the underlying problematic assumption that health is best achieved by treating it like a disease. Early treatment, careful control and rehabilitation in cases of established disease are all a suitable focus for medical intervention, and a greater emphasis on empowering health promoting attitudes might improve outcomes in those situations.

Overall, these studies do not make a case for everyone to abandon health promotion, which continues to be needed to reduce inequalities and preventable suffering. Rather, they add to the growing literature which demonstrates the poor results achieved when a medical approach is used for these purposes. In maintaining health, medical intervention is not always the most effective way. Achieving a 'well population' requires a different attitude and mindset than that which currently prevails in today's NHS.

References

Atkin, Lunt, Parker and Hirst (1993)
"Nurses Count: A National Census of Practice Nurses" SPRU York

Bandura A (1977)
Social Learning Theory Prentice Hall Englewood Cliffs N J

Becker M H(1974)
The health belief model and personal health behaviour Health Education Monographs 2 324-508

Blackburn C (1991)
Poverty and Health: Working with Families Open University Press Milton Keynes

Corell J, Levin J and Jaco E(1985)
Lifestyle: an emergent concept in the socio-medical sciences Culture, Medicine and Psychiatry 9: 423 - 437

Cowley S (in press)
Health as Process: A Health Visiting Perspective Journal of Advanced Nursing

Department of Health (DoH)(1992)
The Health of the Nation: A Strategy for Health in England HMSO London

Downie R, Fyfe C and Tannahill A(1990)
Health Promotion: Models and Values Oxford Medical Publications Oxford

Graham H(1983)
Women's Smoking and Family Health Social Sciences and Medicine 25: 47-96

Graham H(1993)
Women's Smoking: Government targets and social trends Health Visitor 66: 3 80-82

House J, Landis K and Umberson D(1988)
Social Relationships and Health Science 241: 540-545

Lafalle R and Hiemetra H(1990)
The Regimen of Salerno: a contemporary analysis of a medieval lifestyle programme
Health Promotion International 5: 1 57-74

Macleod Clark J(1993)
From sick nursing to health nursing: evolution or revolution? in Research in Health Promotion and Nursing (eds Wilson-Barnett J and Macleod Clark J) Macmillan
Basingstoke 256-270

Macleod Clark J and Dines A(1993)
Case studies of health promotion with adults: Nurses working with people who wish to stop smoking in Health Promotion Concepts and Practice (eds Dines A and Cribb A)
Blackwell Scientific Publications Oxford 87-93

Muir J, Mant D, Jones L and Yudkin P (Oxcheck Group Study) (1994)
Effectiveness of health checks conducted by nurses in primary care: results of the Oxcheck study after one year British Medical Journal 308: 308-312

Nelhoff J and Schneider F(1993)
Epidemiology and the criticism of the risk-factor approach in Towards a New Science of Health (eds Lafelle R and Fulder S) Routledge London 118-128

Procheska J and Diclemente C(1984)
The Transtheoretical Approach: Crossing Foundations of Change Don Jones/Irwin Homewood

Reading R, Colver A, Openshaw S and Jarvis S(1994)
Do interventions that improve immunisation uptake also reduce social inequalities in uptake?
British Medical Journal 308: 1142-1144

Rijke R (1993)
Health in medical science: from determinism towards autonomy, in Towards a New Science of Health (eds Lafalle R and Fulder R) Routledge London 74-83

Ross, Bower, and Sibbald(1994)
Practice Nurses,: Characteristics, Workload and training needs. BJGP, Vol 44, January 15-18

Rowe J and Kahn R(1987)
Human Ageing: Usual and successful Science 237 143-149

Tannahill A(1992)
Epidemiology and health promotion: a common understanding in Health Promotion: Disciples and Diversity (eds Bunton R and Macdonald G) Routledge London 86-107

Tones K, Tilford S and Robinson Y(1990)
Health Education: Effectiveness and Efficiency Chapman and Hall London

Wood D, Kinmonth A L, Pyke S, Thompson S (Family Heart Study Group) (1994)
Randomised controlled trial evaluation cardiovascular screening and intervention in general practice: principal results of British Family Heart Study British Medical Journal 308: 313-320

World Health Organisation (WHO) (1994)
A discussion document on the concept and principles of health promotion Reproduced in Health Promotion International 1: 1 73-76

THE ASSOCIATION OF
PRIMARY CARE
FACILITATORS

CRITIQUE OF OXCHECK AND FAMILY HEART STUDY

KEY POINTS

- Data collection via screening is essential to identify areas of need.
- The General population should be given informed health choices
- Media Sensationalism relating to research reports is detrimental to health professionals work
- Health Education related to screening is part of health promotion and should not be judged in isolation
- Management of change is a continuum and one year follow-up is not a sufficient time scale
- No single smoking intervention is considered particularly effective yet the prevalence of smoking continues to decline therefore a variety of approaches is essential
- Intervention relating to diet, blood cholesterol and blood pressure are deemed effective but not overtly acknowledged
- The nurse should be part of the Primary Health Care Team not working in isolation
- We need a comprehensive health promotion programme whereby primary care is encouraged to continue offering a health education package

The Association of Primary Care Facilitators has several thoughts relating to the two studies which although originally appeared to be pessimistic in fact support the direction of thought within most districts i.e. Health Promotion should be based on need, in order to assess need baseline data should be collected and the screening programme allows that process.

Whilst identifying areas of need for professionals to focus their attention, the general public should be allowed access to information which allows them to make lifestyle choices. When that process is completed the input by professionals should be proportional to need, and innovative ways used to address that need.

Correspondence to:

The initial Press response made an objective interpretation of both studies, very difficult. Various radio stations used such contentious statements, as '£80 million wasted on health promotion' instantly making life harder for professionals who believe that Management of Change relating to lifestyle can ultimately improve the individuals health, that thought however, leads to a point of definition, frequently the health promotion banding is referred to as a somewhat erroneous term. Many Professionals would agree, the screening programme is part of health education which is merely one of the tools of health promotion, and indeed both studies support that. Showing that although there had been some modification of lifestyle the underlying issues of poverty, unemployment and housing still have to be addressed and should be part of a health promotion programme which is government led and supported by health professionals.

However, the idea that the screening programme should be scrapped is also hard to accept based on this limited data. Both studies only offered follow-up after one year but the Management of Change, according to Prochaska and Di Clemente (1986) is cyclical and may take many attempts before the behaviour change is permanent. Perhaps a more realistic time scale would be 10 or 20 years, for follow-up. However, it would be inconclusive as to which intervention was responsible for the change and therefore unsatisfactory for the researchers. Also when managing lifestyle change only one behaviour should be addressed, an issue supported by OxCheck.

It was stated in both the studies that there was no significant affect on the smoking status of patients and indeed other studies have shown no intervention has been particularly effective. However, in the last 20 years the prevalence of smoking in adults 16 and over has dropped, from 52% to 31% in males and from 41% to 29% in females (Office of Population, Census and Surveys 1991). There has to be something responsible for that decline. Perhaps the raising of public awareness, discussion with patients by the professionals and concerted campaigns are responsible for that change. So although individual surgery data is not significant it is important in the larger perspective. Perhaps those still smoking are the people who would be affected by a change in government policy i.e. ban tobacco advertising. Surely the health professional has a responsibility to continue informing the patient who smokes of the dangers and supporting the individual in their efforts to stop.

Although the smoking intervention was not seen to be significant in both the studies some interventions were considered effective, i.e. in helping patients to modify their diet and lower cholesterol concentration and specifically in the family heart study intervention helped in lowering blood pressure. This was achieved by nurses whose training varied from 2 - 3 days (OxCheck) to longer training unspecified (Family Heart Study) who were then deposited within surgeries not necessarily working as part of the team. It would seem the most appropriate use of skills to have a team approach to any aspect of work within primary care (Hasler, 1994).

Both studies suggest the Health Promotion package (DoH, 1989) is not justified in the format tested and doubtful in its new format (DoH, 1993). As facilitators there is a belief in the value of health promotion and that health education has its uses provided it is part of a comprehensive programme e.g. Possibilities for action from Social

Variation in Coronary Heart Disease (Simmonds, 1994). There does not appear to be anything in either the OxCheck or family heart study that disproves that standpoint.

References

Department of Health (1989) Terms of Service for Doctors in General Practice HMSO : London

Department of Health (1993) GP Contract health promotion package : Guidance on implementation. NHSME, FHSL (93) 3.

Hasley J C (1994) The Primary Health Care Team Royal Society of Medicine Press : London

Office of Population Census and Surveys (1991) Classification of Occupations : HMSO, London

Prochaska J Diclemente C (1986) The transtheoretical Approach : Crossing traditional boundaries of therapy. Dow-Jones-Irwin Homewood, Illnois.

Simmonds O (1994) Report of one day conference. Social variation in CHD. Possibilities for action. National Forum for Coronary Heart Disease Prevention (Unpublished)

CRITIQUE OF FHS AND OXCHECK FOR KING'S FUND CONFERENCE 7 NOVEMBER 1994

This paper does not undertake a detailed critique of the methodology of the studies other than to say that they have been carefully designed, but rather to look at the implications of their findings.

The conclusions do not bear close relation to the findings. On a population basis, even if the benefits had been considerably less than those that were demonstrated they would have been benefits worth having.

The studies focus only on the contribution from primary care. They take little or no account of the wider context and other actions/changes that may have been occurring in the wider community; eg messages in the media, that may also have been effecting a change in lifestyle. We would support the comments in the letter from Pharoah and Sanderson[1] that there are different approaches to health promotion, which are complementary. In that these studies only look at one aspect of the totality, they do not take account of the fact that the effects of different interventions may be additive or even synergistic. Health promotion in general practice needs to be seen in the wider context as contributing to the overall strategy.

Having said that we do not wish to comment in detail on the methodology, there are a few observations we would like to make about their practical implications.

Both these studies handed the responsibility for the interventions over to nurses. In the FHS these were research nurses employed specifically for the study and in the Oxcheck they were the practice nurses. However both have the feeling of being 'bolt on' activities. From practical experience, we do not believe it would be possible to sustain the intensity of intervention in day to day primary care practice and that further research is required using more realistic models involving other primary care staff. Likewise the potential of interactive computer technology in this field should be explored.

Both the studies attempted to change a wide number of risk factors; eg smoking, weight, cholesterol levels, blood pressure etc. We understand that a hierarchy of factors was given in the Oxcheck study although the details were not available.

---

1 Health Promotion Contributes to the battle against Heart Disease; BMJ (1994) 308: 852

However there is a danger that the studies attempted to change too many factors at the same time and that there would be greater success if fewer changes were attempted simultaneously. For example, Russell et al demonstrated General Practitioners effectiveness in reducing smoking[2].

The studies demonstrated benefits across all grades of risk. These benefits however are small for individuals at low risk and need to be weighed up against alternative ways of organising health promotion in primary care; eg by making more use of graded advice for a graded risk.

These studies only look at one year of follow up. Whilst we accept that for many other interventions in primary care there is a rapid pay off, we do not feel that follow up has been long enough for this type of activity and that longer and more sustained effort will be required to demonstrate its full potential.

It is accepted that data will need to be collected from primary care to monitor health promotion activities. The current system appears to be over inclusive and has overburdened practitioners in its collection. It would be better to request a smaller number of items and insist on higher quality data.

Conclusions/Recommendations

a. We believe that these studies make a useful contribution to our knowledge but do not in themselves demonstrate that health promotion in primary care should be abandoned.

b. There is an urgent need to understand what interventions are effective in reducing CHD risk. There is a need to understand which population groups should be targeted and by whom the intervention should be undertaken (eg doctor, nurse, paramedic etc). Further research is required using more sophisticated and realistic models which take account of the wider climate.

c. There is a need for further training amongst clinicians to acquire skills in communicating health promotion messages and in understanding the population perspectives of this work. This training should begin in the undergraduate curriculum and continue throughout professional life.

d. Interactive computer technology has the potential to play a role in this field and research is required to ensure that potential is fully exploited.

Health Promotion Subgroup
Public Health Network

---

2 Russell MAH, Wilson C, Baker CD; Effect of general practitioners advice against smoking; Br Med J; 2:231-235, 1979

PAPERS

The 4 papers produced for the conference by keynote speakers:-

1. The Evidence for a population approach to uni and multi-functional interactions in primary care - where do OXCHECK and FHS fit?

   Klim McPherson - Professor of Public Health Epidemiology, London School of Hygiene and Tropical Medicine

2. Models of Health-related behavior change.

   Marie Johnston - Professor, School of Psychology, University of St Andrews.

3. The Evidence for interventions in 'at risk' populations in primary care.

   Desmond Julian - Chair of National Forum for CHD Prevention.

4. Introducing Screening Programmes In Primary Care

   Fecsma Winkler - Chief Executive, Kent FHSA

The 4 papers produced for the ...

1. The Evidence ...
multi-functional ...
OXOTHECA ...

2. ...

3. ...
...

4. ...

Klim McPherson 10 October 1994
Professor of Public Health Epidemiology
Dept Public Health and Policy
London School of Hygiene and Tropical Medicine

The evidence for a population approach to uni and multifactorial interventions in primary care - Where do OXCHECK and FHS fit

For Kings Fund Conference Nov 1994

Introduction.

I will obviously be restricting my comments in this paper to CHD prevention. CHD has a multifactorial aetiology, is eminently preventable as far as we can tell and is common in developed societies. The question I am asked to address is what is the evidence for encouraging uni or multi factorial interventions among populations in primary care. Broadly the answer is that the evidence, particularly when balanced with the putative costs, seems not very strong. The next question is how does this evidence bear on the policy question concerning appropriate investment in health gain, as compared with other policies ?

But that bald statement about weak evidence has inevitably to be understood in the context of what constitutes, or could possibly constitute, strong evidence. Clearly in the context in which medical interventions are (or should be) evaluated what we would require is a series of excellent prospective randomised trials in which population interventions have fairly consistently been associated with an important reduction in CHD incidence or death compared with controls.

That is clearly not now the case, as the critics of health promotion are quick to point out[1]. Indeed that is why we are here. Secondary prevention trials of dietary interventions typically produce a few percentage points of cholesterol reduction[2]. Intensive dietary interventions among a few well motivated subject can produce more dramatic reductions in serum cholesterol levels[3]. Appropriate interventions can reduce blood pressure and hence risk and smoking cessation in the health care context is well studied and known to be effective in specific contexts[4].

So why are we not all advocating and funding population interventions in primary care? The answer is that proper randomised intervention trials do not show conclusive evidence for much benefit for a population approach and some therefore favour an opportunistic intervention[5] and others worry, quite reasonably, about cost effectiveness ratios.

My concern is that in such an ambience we should be appropriately cynical about the possibility of benefit but we should at the same time be careful not to throw the baby out with the bath water, until we can know what is effective and what isn't and what is truly cost effective and what isn't. Before I come to any conclusions I want to emphasise three aspects in this brief review of the evidence.

i) what is conclusive evidence in the circumstances
ii) what are the actual problems with the current evidence
iii) what do we need yet to know - that is knowable

1. What is conclusive evidence.

Firstly I take the evidence favouring a multi factorial, as opposed to a uni factorial, and a population, as opposed to a high risk, approach as being, in principle, overwhelming. That is to say specifically that there is no doubt at all that the vast majority of the premature cardiovascular events in our society occur among people who have relatively low levels of a few risk factors only[6]. The events which occur among person with high designated levels of acknowledged risk factors are a minority of all events. The questions surround the effectiveness and appropriateness of multi factorial interventions among such populations. However a relatively small attributable effect on some risk factors among populations would be important.

Secondly the evidence, which comes from a multitude of sources, that the primary care team is currently the dominant, and deemed to be the most reliable, source of medical information for populations in the UK, is pretty convincing[7]. There are problems of course to do with comprehension and credibility trends that can give rise to no complacency. Interestingly however a recent survey showed doctors to be still high in terms of their role in moral guidance.

The particular problem we are facing here has to do with the effectiveness of any intervention designed to reduce the cardiac risk among populations in primary care. Successfully attributing effectiveness to interventions is generally complicated. In contrast to prevention policies evaluating therapeutic treatments is systematically easier. This is because they are specific to the patient and his or her disease, and always administered by enthusiasts for the therapeutic role. They are often based on finely tuned and validated biological knowledge. They can be a consequence of sophisticated laboratory information, tailored often to a particular organ system. Finding the evidence for effectiveness often relies on observing quite large effects and reliably measured outcomes on well defined, often small, (randomised) groups of ill people, consequently for a relatively short time[8].

This is the paradigm through which evidence is now gathered and by which its conclusiveness and relevance is judged. It might though require some slight adjustment for the interpretation of evaluations of preventive interventions for the following FIVE reasons.

Compare this set up with basis for establishing the evidence for the effectiveness of health promotion. Here interventions are not specific, often poorly measured, sometimes based on poorly understood complex psychological and sociological phenomenon and are commonly contaminated with many external influences on free healthy populations. These populations are large, very heterogenous and often poorly defined and observing the relevant final hard outcomes has to be delayed, among fit individuals, often for decades.

Finding the evidence for the effectiveness for some things will therefore be naturally easier than for others. It should be clear that finding the evidence for the effectiveness of health promotion will be systematically much more difficult than finding similar relative sizes of effects of treatments. Thus the role of that evidence about outcomes must have on policy is therefore rendered very different by intrinsic differences in the ability to reliably find it.

Some argue that, notwithstanding the above considerations, the implementation of health promotion strategies should anyway, for ethical reasons, have to await **conclusive** evidence of effectiveness[9]. I think if this is accepted policy we cannot take much potential preventive medicine as a serious option at all, apart from well

established, often biologically specific, vaccinations and immunisations. The implications of this apparent double jeopardy, particularly associated with behavioral interventions, have to be recognised fully by all concerned. If that is the real reason for disparaging such interventions in primary care but justified by seemingly unimpressive trial results, then the argument is dishonest.

In this case of establishing the attributable effect of multifactorial interventions almost everything is duly attenuated by the complicated processes involved in the mechanisms required to make such programmes work. The follow up is as yet short. The controls are not strictly comparable for fear of contamination and yet contamination is not necessarily avoided. The interventions may not themselves be optimal, administered by people whose training and vocation may not be in disease prevention or in health promotion. Furthermore the populations included are of relatively low risk anyway[10 11]. This is the FIRST point.

Useful models for the effectiveness of interventions designed to alter behaviour like Prochaska's stages of change model tell us[12] that the response to health messages depends on the particular stages of change that subjects may be in. In these studies we have no information about where the subjects are with respect to their individual stages and each relevant behaviour change. Thus the response to an intervention may well be a function of some exogenous factor which itself is strongly determined by social and psychological factors and for which there may be strong systematic temporal, geographic, social and other correlates and determinants. This is the SECOND point.

However we normally take biology to be more stable than that which is why extrapolation from one or two trials may then be more secure. In the circumstances we are now considering, however such extrapolation may simply be premature and irresponsible. If most of the subjects were in a precontemplative stage with respect to their behaviour and a key risk factor then an extremely modest effect would be predicted. However that would not necessarily predict the results of another trial among people more commonly in a contemplative or preparation stage. And if the intervetnion simply shifts people through stages then the outcome measures used are inappropriate.

THE THIRD point invokes another phenomenon, often discussed in the evaluation of surgical treatments, the learning curve. In this case not only might populations become more receptive but the primary care team might become much more effective and potent. It seems clear to me that business of learning how to provide in an acceptable, effective and efficient way, health information that is useful to patients is likely to be in its infancy[13]. I believe this because it certainly has to be difficult, since it is so complex, and the evidence on the its effectiveness is currently unimpressive. Moreover simply talking to primary care professionals gives rise to a strong impression that an important proportion simply do not regard disease prevention and health promotion as their vocation. This must be an important but expected observation, they were trained to treat illness after all.

All this leads to me feeling that the major hypothesis has yet to be properly tested. Another differences for policy implementation between preventive and therapeutic interventions is that the latter is specific and individual and can be developed and improved and implemented and then, once consolidated, can be sensitively tested. With a preventive policy the intervention has to be developed and defined years before it is implemented and then the testing takes a long time for the effect to happen. This is a FOURTH disadvantage for demonstrating effectiveness. The bath water is still too easily confused with the baby simply because the opportunities for the baby to grow

and mature are massively laborious and commonly underestimated.

Moreover within the paradigm of clinical testing the effect is a particular direct effect of the intervention among the subjects randomised. In prevention the behavioral manifestations of any attributable effect need not be at all so straightforward and yet ultimately beneficial. Moreover, of course, an important part of any effect could also act in a more dispersed manner by influencing others and thus contaminating or diluting the measurement of intervention effect. There is much evidence for a significant effect of control as a consequence of empowerment having very indirect effects on CHD which may not be measured by established risk factors[14] and there is much evidence for an intervention effecting the health behaviour of controls in a beneficial manner[15]. These effects may be potent and attributable to the intervention but will not be booked out to the intervention in these trials. This is the FIFTH point.

Thus the most rigorous method of evaluation usually relies on tight biological processes and well titrated interventions. It also relies on precise measurement and minimal misclassification and does best when treatments are administered uniformly by enthusiasts. Often a relatively homogenous biological system is expected not greatly moderated by external factors. Moreover the outcomes by which effectiveness is to be compared are relevant and specific and exclusive to the patient.

In these circumstances none of these features apply to anything like the same extent and hence it seems silly to interpret the results of these two trials as if they did. We need seriously to consider the implications. These are that a modest effects in these two trial possibly give rise to illegitimate despair.

2. What are the problems with the current evidence

The current evidence suggests modest effects attributed to the interventions so far. But I would have expected little else. In the recent publication from Finland[16] we find that a massive community intervention gave rise to a change in risk status among men and among women in the first year which is entirely similar to the results of these two studies, both with respect to aggregate findings and heterogeneity of apparent response. In Finland the ultimate effect was a reduction in risk factors both predicting and observing a 40% reduction in mortality after 20 years. Some risk factors were apparently reduced in one gender only in the first year and others were unexpectedly disappointing. But chance has peculiar manifestations as we well know. That is why having only a few trials is such a disadvantage because one is too tempted to take each individual measured outcome difference as the truth, because there is such a paucity of other experimental data.

And in the OXCHECK and FHS trials the intervention was a single entity. Quite why we should conclude, taking account of the difficulties mentioned above, that this means that such interventions are not sufficiently effective defeats me. They may not be, but these data certainly do not go very far towards proving it. It seems more likely to me that these interventions are the beginning, and possibly only one component, of something very important in sensible programme to reduce unwanted premature mortality.

These trials were looking for a small attributable effect on a large number, which translates into a small average change. They have found it, against all the odds. Almost everything intrinsic to the experimental setup might have conspired towards such an effect not being found. Since essentially it was found, it seems most likely therefore that the ultimate effect of well refined well motivated specific interventions on populations who have some enthusiasm for change might work much better.

It seems to me that a cool interpretation of the current evidence suggests that it is much what would have been expected by those who believe that primary prevention of multi factorial interventions will work among populations with moderate levels of a few risk factors. Clearly the potency of some of the interventions could be improved upon, particularly smoking in OXCHECK and possibly cholesterol in the FHS. But these improvements must be worked on in all health promotion interventions and titrated appropriately to the empowered citizens.

3. What do we need yet to know - that Is knowable

Firstly the interesting part of the questions here involves the poorly explored extent to which the risk levels of a community are merely the sum of the risk levels of each individual or whether the nature, practices and culture of the community itself have effects on these risk levels as well. In particular the extent to which the business of changing risk levels for the better is more efficiently achieved through community participation than through individual members of that community[17].

Secondly the extent to which the role of the primary care team affects, and is affected by these matters needs to be carefully explored. We have discussed the measured role of primary care interventions on the risk levels of individuals among randomly selected groups. This, as I have argued, seems acceptable. But it is important to know how these effects are moderated by intrinsic risks in a community and how they relate to other aspects of public health policy such as a tobacco advertising ban and a public food policy. The question we need to answer is to what extent do multi factorial intervetnions in primary care simply move population through stages of change. If that is the hypothesis then the outcomes will not be measured levels of risk factors.

Another area which deserved more investigation in my view is the possibly augmentation of an effect using interactive video techniques to provide specific information about risk. The idea is that information which is specific to the person participating both with respect to their own risk factors and with respect to the manner in which risk is presented. Such facilities could give the best estimate of the effect of any changes which the participant was willing to postulate on life chances. It would be quite easy to manufacture such software. We are investigating the use of interactive video discs for informing patients about their symptoms and their treatment and the results are interesting because they demonstrate that patients react in very disparate but, by their own lights, entirely rational ways and that they tend not to respond in the manner predicted. They particularly do not necessarily respond in the manner their medical advisor would recommend.

In the end of course an intervention policy designed to benefit the health of the public, must be justified by its effectiveness, its acceptability and its cost. Work being undertaken in my Unit, by Margaret Thorogood and the Health Gain Team, indicates quite attractive cost effectiveness ratios for some, so called, opportunistc strategies among populations. This work uses the OXCHECK attributable effects on risk as it s basis. The relationship these factors have with stages of change and risk in the short term and morbidity in the long term are the crucial determinants of appropriate public health policy.

In some instances concentrating on high risk individuals will obviously be better than a general non specific policy. It terms of acceptability it is often stigmatising, and therefore alienating, to have a policy directed at particular individuals in a community characterised in a particular (high risk) way. The strong tradition in medicine is of course to identify sick individuals and treat them as if divorced from the community from which they come. In prevention it is quite possible that a generalised message made specific to individuals is quite as potent and as valid, and possibly much more effective, than one concentrating on particular high risk individuals. It is utterly clear that we do not yet know that that is not the case.

CONCLUSION

In the 1970's a trial undertaken in primary care of a multifactorial screening intervention demonstrated no reduction in cardiovascular risk[18]. This is possibly the basis of our cynicism but the present evidence should not be the cause of continued despair. In my view it should be an encouragement to experiment and to study further to refine the interventions.

Cervical Screening in general practice is now well established and fairly clearly beneficial, but the cost for the programme of each life saved is calculated as £100,000[19] Nobody has ever demonstrated this effectiveness in clinical trials. For years it was inefficiently provided and probably ineffective. But the process lead eventually to greater knowledge and a better service.

It seems clear that a proper interpretation of the evidence from these two trials suggest a continued evolution of the role of primary care in primary prevention, in a manner which acknowledges all the evidence and enables improvement in the approach[20].

REFERENCES

1. Le Fanu J. Preventionitis. The exaggerated claims of health promotion. The Social Affairs Unit 1994; ISBN 0 907631 58 4.

2. Multiple risk factor intervention trial research group: Multiple risk factor intervention trial; risk factor changes and mortality results. JAMA 1982 248: 1465-1477

3. Burr M. Clinical trials of altering dietary fat intake. J.Cardiovascular risk. 1,1 38-43.

4. Sanders D. Smoking Cessation Interventions: Is patient Education Effective?. Health Promotion Sciences Unit, PHP Departmental Publication No.6, 1992, ISSN:0962-6115.

5. Stott N. Screening for cardiovascular risk in general practice; blanket health promotion is a waste of resources. BMJ 1994 308 285-286.

6. Rose G. The Strategy of Preventive Medicine. OUP 1992.

7. Griffin J Health Information and the Consumer. OHE Briefing 1994.

8. McPherson K. Health promotion under fire. Lancet 1994 344 890-1.

9. McCormick J Health promotion: the ethical dimension. Lancet 1994 344 390-1.

10. ICRF OXCHECK study group. Effectiveness of health checks conducted by nurses in primary care. Results of the OXCHECK study after one year. BMJ 308-12.

11. Family Heart Study Group. Randomised trial evaluating cardiovascular screening and intervention in general practice: principle results of the British family heart study BMJ 1994: 308 313-20.

12. Prochaska JO, Velicer WF, Rossi JS et al Stages of change and decision balance for twelve problem behaviours. Monograph.

13. Donati Pierpaolo. The need for new social policy perspectives in health-behaviour research. In Health Behaviour research and health promotion. ed Anderson R et al OUP 1988.

14. McPherson K. The Cochrane lecture: The best and the enemy of the good: randomised controlled trials, uncertainty, and assessing the role of patient choice in medical decision making. Journal of Epidemiology and Community Health 1994;48:6-15.

15. WHO European Collaborative group. European collaborative trial of multifactorial prevention of coronary heart disease: Final report on the 6 year results. Lancet 1986 869-872.

16. Viatiainen E, Puska P, Pekkanen J et al. Changes in risk factors explain changes in mortality from ischaemic heart disease in Finland. BMJ 1994 309 23-7.

17. Blackburn H Community programmes in coronary heart disease prevention and health promotion: changing community behaviour. In Coronary heart disease epidemiology Eds Marmot M and Elliot P OUP 1992.

18. The South East London Screening group. A controlled trial of multiphasic screening in middle-age; the results of the South East London screening study. Int J Epi 1977 6 357-363.

19. First Five Years of the NHS cervical screening programme. National coordinating network 1994. Reported in Independent 12th Oct 1994.

20. Silagy C, Mant D, Carpenter L, Muir J and Neil A Modelling different strategies to prevent coronary heart disease in primary care. J Clin Epi 47 1994 993-1001.

MODELS OF HEALTH-RELATED BEHAVIOUR CHANGE

Marie Johnston
University of St Andrews

Paper prepared for: King's Fund Centre Conference, November 7th 1994. The way forward following the publication of the OXCHECK and FHS studies.

Correspondence to: Professor Marie Johnston, School of Psychology, University of St Andrews, St Andrews, Fife, KY16 9JU

Acknowledgements: I am grateful to Theresa Marteau, Wendy Simpson, Sheina Orbell and Charles Abraham for discussions contributing to the ideas presented here.

INTRODUCTION

Models of behaviour change have been very influential in guiding research and practice by behavioural and social scientists working in health related areas, but have not necessarily impinged on the practice of other professions in the field. Given the current emphasis on achieving health targets by changing behaviour it is essential that work on health-related behaviour change is informed by previous work on behaviour change in other domains, such as voting behaviour or buying cable television, if the same theoretical and empirical investigations are not simply going to be reworked in a health context. Recent discussion of and reported disappointment in the results of two primary care based interventions directed at cardiovascular disease risk factor reduction, FHS (1994), and OXCHECK (ICRF, 1994) has prompted this review of current theoretical and empirical research on health-related behaviour change.

Simple models such as that illustrated below have clearly been demonstrated to be inadequate to describe the process. However, they may still be the implicit models when assumptions are unstated and naive attempts may be made to change behaviour by changing information and attitudes.

information —> attitudes —> behaviour —> health

As long ago as the 1930s, behavioural science research demonstrated the gap between attitudes and behaviour and psychologists have been striving to bridge that gap with appropriately defined and researched theoretical constructs ever since.

While the topic is beyond the scope of this paper, the above model may also fail if the link between behaviour and health is unreliable. The commentary on studies aiming to change risk factor or health outcomes by changing behaviour may attribute failure to find convincing evidence to the inadequacy of the behaviour change achieved. However, the problem may lie elsewhere, and the postulated links between behaviour and health lying at the interdisciplinary interface between behavioural and medical science may also be weak. As Safer (1986) points out, the strength of this relationship can be overstated in health promotion campaigns and failures can be attributed to difficulties in changing behaviour where in fact the results were due to combination of minimal behaviour change and weak links between behaviour and measured health outcomes. In a similar vein, Hays et al.(1994) found very limited evidence of association between adherence to recommended health care practices and a wide range of health outcomes in a study of adults with chronic medical conditions. In neither the OXCHECK (1994) nor the FHS (1994) was it possible to examine changes in behaviour, such as changes in diet, separately from changes in physiological outcomes such as cholesterol measures.

The aims of this paper are to make theoretical and empirical findings from behavioural and social sciences available to those planning research or interpreting findings of research. The topics addressed are:

1. main theoretical models in this area
2. research findings on key theoretical constructs
3. stage models
4. current approaches to understanding the gap between intention and behaviour
5. role of health professionals
6. communication of research findings.

1. MAIN THEORETICAL MODELS IN THIS AREA

Two main theoretical models dominate current research on the relationship between information, attitudes and health-related behaviour: the Health Belief Model which was originally based in behavioural science research but subsequently was modified to provide a heuristic for multidisciplinary research on health-related behaviour: and the Theory of Reasoned Action/Planned Behaviour, a theoretical model which is widely respected and adopted by behavioural scientists in every area of investigation of behaviour, including health-related behaviour. These two models are fully described, followed by a briefer mention of other, sometimes overlapping, theoretical frameworks which are also influential. Other models are reviewed by Marteau (1989a).

The Health Belief Model (HBM) (Becker, 1974)

The HBM has performed an important function in research on health-related behaviour as it has encouraged researchers to adhere to an explicit model of the process rather than assuming an intuitive, unshared model. First proposed in the 1960s, the Health Belief Model attempted to bring together what was known about the situational and attitudinal factors involved in taking action relevant to health, such as engaging in dental care, attending for health checks or giving up smoking. The main beliefs involved concern the perceived health threat and the expectancy of benefits of, and barriers to, the proposed behaviours. Cues to action are seen to prompt the perception of threat. It has been modified in a number of ways, but Figure 1 represents a summary of the main components. Social, personal and demographic factors are also postulated to influence the process and more recently, health motivation and self-efficacy beliefs (see below) have been included in the model.

INSERT FIGURE 1

The model has been used in understanding and predicting all sorts of health-related behaviours (see Janz and Becker, 1984; Harrison et al., 1992), e.g. use of condoms (Abraham et al., 1992), diabetic adherence (Bond et al., 1992) and attendance for

screening, (Norman and Fitter, 1989; Norman, 1993; Norman and Conner, 1993; Norman, in press; Marteau 1992; Hyman et al., 1994).

The main problems with this model are:

i) *contents of model*

- - it assumes a rational decision-making process, when many behaviours that influence health may be habitual or influenced by social or emotional rather than rational processes
- - it overestimates the role of threat compared with empirical evidence on the topic
- - cues to action are seen to influence perceived threat, but should more
- appropriately have a direct effect on the likelihood of preventive action
- - it has a limited and poorly specified role for the influence of other people
- -it takes no account of self-efficacy, i.e. whether one could perform the behaviour (although this component was added later)

- it lacks specification of how components are measured

ii) *how it has been used*

- - several versions of the HBM exist in different publications
- - when the model has been updated, this seems only to add complexity rather than to give a coherent model
- - there is no agreement on how to measure the main variables and so different studies may measure different constructs even when describing them by the same name
- - measures used frequently lack evidence of reliability and validity
- - frequently only single components rather than full model is assessed, making results difficult to interpret
- - frequently, there is incomplete statistical testing, using univariate rather than multivariate analyses and ignoring the proposed relationships between components of the model - for example, it is not clear what the model would predict if perceived susceptibility were high but there was no data on perceived severity.

iii) *predictive value*

- - the model typically explains only a small amount of variance in behaviour

iv) *lack of integration with other theories of behaviour*

- - there is no a priori reason to expect health-related behaviour to follow different rules from other behaviour and one might therefore expect a general model of behaviour to be applicable.

The current evaluation of the HBM is well summarised by Conner (1993):

> "The Health Belief Model has been the most widely applied model in health psychology but is more a loose association of variables that have been found to predict behaviour than a formal model. ....
> Despite its precarious theoretical position the HBM continues to be widely used in health psychology and to meet with some amount of success in predicting health behaviours and outcomes (see meta-analysis by Harrison et al., 1992)."

Some, but not all of these criticisms apply to the Theory of Reasoned Action /Planned Behaviour.

The Theory of Reasoned Action/Planned Behaviour (TRA/TPB)

Like the HBM, the TRA and TPB are examples of social cognition models. Social cognition models deal with the thoughts and beliefs that people have about objects or events occurring in social situations. The Theory of Reasoned Action was introduced in the 1970s by Fishbein & Azjen (1975) and to British medical audiences at a meeting at the Nuffield Provincial Hospitals Trust (Fishbein, 1976) and has undoubtedly been the most influential model of attitudes and behaviour.

This model is illustrated in Figure 2. It proposes that behaviour is determined by behavioural intentions which are in turn determined by a combination of attitudes and social norms. Both attitudes and social norms are subjective expected utilities similar to those in economic models. Attitudes are a multiplicative function of beliefs about the likely outcomes of a specified behaviour (probability) and the value attached to these outcomes (value). Social norms are a mulitplicative function of our beliefs about what other people would want us to do and our motivation to comply with their wishes. The authors proposed that social and environmental factors operated via the components of the model.

INSERT FIGURE 2

The main advances introduced by this model were:

i) the influence of other people via social norms
ii) the focus on beliefs and attitudes toward the *specific* behaviour under study
iii) the mediating effect of behavioural intentions

Since the development of TRA only one modification has been made, the addition of perceived behavioural control (a concept similar to self-efficacy) to produce what is now known as the Theory of Planned Behaviour (Azjen, 1988).

While this model still has some of the problems of the HBM, its components and methods of assessing them are more clearly specified. When it is appropriately

investigated using reliable assessments of the components and statistical methods which combine the components as specified by the model (rather than examining their univariate explanation of variance) it consistently explains a substantial amount of variability in behaviour.

There is still some concern about how much variance the model predicts, with estimates typically varying between 20 and 40%. Whether one describes this amount of variance explained as very little or considerable depends on the way in which we interpret the research findings (see section 6). It would surely be adaptive to view this as a good start and try to improve on it rather than to abandon it and start again.

Because the model can be used to investigate any form of behaviour, it might be applied to behaviour relevant to health without assuming that the behaviour is motivated by health considerations. For example, use of condoms can readily be considered within this model as a social/interpersonal relationship behaviour rather than as a health-related behaviour.

Examples of uses of the model are reviewed by Sheppard et al., (1988) and include: attendance for breast screening (Vaile et al., 1993), attendance at health checks (Norman and Conner, 1993) and breast feeding (Manstead, 1983).

Sometimes research on health-related behaviours uses a combination of the HBM and TPB, but this can be problematic as there is then no clear theoretical specification about how the components of the models interact.

Other influential social cognitions and frameworks

As indicated, both of the above models have been criticised and this is further explored by Schwarzer (1992), Abraham and Sheeran, (1993), Conner (1993) and Ingham (1993). Further theoretical frameworks which are currently popular but which are open to some of these criticisms are described here.

Protection Motivation Theory (Rogers, 1975,1983) deals with many of the same variables as TRA/TPB. It postulates that perceived severity, vulnerability, response effectiveness and self-efficacy predict intention which in turn predicts behaviour.

In the 1950s, Social Learning Theory postulated that behaviour was determined by expected outcomes and perceived control of behaviour and this is most clearly expressed in current formulations by Bandura (1989). Bandura's Social Learning/Cognitive Theory postulates that behaviour is determined by **perceived self-efficacy**, i.e. one's belief that one can carry out a behaviour, and the expected outcomes: the expected consequences if no action is taken i.e. the risk: and the expected consequences if a specific action is taken, i.e. response efficacy. His self-

efficacy construct has been extremely influential and is now incorporated into all currently valued models.

He proposes that self-efficacy can be modified in three ways: most effectively by successful performance of the behaviour, but also by observing the behaviour in others and to a lesser extent by persuasion. Evidence of the predictive value of self-efficacy is reviewed by Schwarzer (1992) and has been found for dental flossing, BSE, smoking, exercising, etc. As would be predicted from the model, self-efficacy at the end rather than the beginning of intrevention programmes has proved the best predictor of smoking cessation and relapse (Schwarzer, 1994; Marcus and Owen, 1992; Kavanagh et al., 1993).

Various conceptualisations of perceived control have been influential in health-related research (Wallston et al., 1989). The best known. but recently criticised (Wallston, 1992), are those based on Locus of Control, the belief that control over events is either internal to oneself or external and due to chance or to the actions of (powerful) others. This construct has become readily measure in health research following the development of Wallston et al.'s Multidimensional Health Locus of Control scale, although scales relevant to the particular behaviour are now more commonly used. Attributions (see below) and self-efficacy beliefs (see above) are also perceptions of control and the relationship between these different kinds of control beliefs is discussed by Wallston et al., (1989).

Attribution theory (Jones et al., 1972, Weiner, 198#) deals with beliefs about the causes of events and examines the determinants and the consequences of such beliefs. **Causal beliefs** can influence the critical belief components of HBM or TRA. King (1982) found that cognitions derived from attribution theory combined with those from the HBM were effective in predicting attendance for screening.

Tymstra (1989) has proposed that people decide to undertake behaviours, including health-related behaviours as they believe that they might regret alternative decisions at a later time when they have had the opportunity to experience the consequences. This is referred to as Anticipated Decision Regret and clearly has much in common with beliefs and attitudes toward the behaviour in HBM and TRA.

RESEARCH FINDINGS ON KEY THEORETICAL CONSTRUCTS

Perceived Risk and Optimism

Perceived risk is an important component of virtually all of the models in this area, appearing as perceived susceptibility in the HBM and as an expected outcome of behaviour in both TRA and Bandura's formulation.

Weinstein (1982) has observed the phenomenon of **unrealistic optimism**, the tendency of a group of people to perceive their individual risk as, on average, less than average. When asked to rate their risk of getting a variety of diseases on a scale from "much more than other people in the group" to "much less than people in the group", the average score was less than the "average" point on the scale. Similarly Marteau et al., (1994) have noted that in the FHS, 37.2% rated their risk of having a heart attack over the next 15 years as less than average for their age and sex while only 21.3% perceived their risk to be above average. Optimism is greater in those whose personal risk is lower (Marteau et al., 1994), but it is also related to the perceived controllability of the disease in question (Weinstein, 1982). In addition people rate their risk to be lower when they are about to engage in risk reducing behaviour (Weinstein & Nicolich, 1993). Recent research by Weinstein and Klein (1994) have demonstrated that some health education messages, e.g. those describing the habits of the person at high risk of disease, may serve to reduce perceived risk. Perhaps by sharpening the contrast with the individual's own behaviour, such messages render the risk remote and may therefore lower motivation to change behaviours. On the other hand, it has also been found that optimists were more likely to attend for screening for breast cancer (Kreitler et al., 1994). This apparaent contradiction may be resolved by considering different types of optimism.

Schwarzer (1994) has proposed that two quite different types of optimism exist, defensive optimism and functional optimism. Defensive optimism is motivated by threat and results in reducing perceived vulnerability and reduced motivation to take preventive action. Functional optimism is optimism about outcomes and one's competence to achieve them and may lead the individual to undertake preventive behaviour.

Fear arousal and Avoidant coping

An important question has been the extent to which it is necessary to raise fear in order to motivate preventive behaviour. As long ago as 1970, Leventhal proposed that the evidence suggested that emotional and problem-solving processes occurred in parallel rather than one causing the other. While awareness of risk may be functional, fear arousal may be ineffective as it gives no guide to the adaptive behaviour and may interfere with the desired behaviour by encouraging avoidant coping, i.e. directing attention away from the source of threat. In an elegant series of well-controlled experimental studies followed by clinical studies of cholesterol screening, Croyle and his colleagues (1992, 1994) have shown that the emotions raised by health checks may prove dysfunctional. Participants having a positive finding had poorer recall of their results and they were more likely to underestimate their cholesterol levels than those who had a normal result. These results have been interpreted as evidence of avoidance or minimisation of threat that is motivated to achieve anxiety reduction rather than risk

reduction. This in turn raises the issue of the extent to which the cognitive processes involved in risk minimisation may influence problem-solving, including risk reduction.

These findings lead one to expect that, in health checks, those at greatest risk would display most avoidance and the evidence appears to be supportive. In the FHS, those who returned after one year were much more likely to have been non-smokers (approx. 80%) than non-returners (approx. 60%). It is possible that the experience of screening was more fear arousing, or at least more unpleasant, for the smokers and that this motivated the avoidance of the follow-up. It may also explain some of the 32% who did not attend in the first place. Simpson et al.(1994) found that smokers were less likely to attend a primary care screening clinic than non-smokers.

In a similar vein, those with "unhealthy" behaviours may be more likely to deny the usefulness of health education campaigns; Eiser and Gentle (1989) found that smokers, drinkers and no-joggers rated such campaigns more irrelevant than non-smokers, non-drinkers and joggers. These results suggest that people may be motivated to avoid messages and situations which are personally threatening and that people with low behavioural risk will give greater attention to and be over-represented at health campaigns and screening checks .

Evidence that it is unnecessary to raise high levels of fear to have effective risk reduction is provided by Rudd et al, (1986) . They demonstrated that a reassuring debriefing following hypertension screening resulted in equal reductions in blood pressure, but considerably less anxiety than a traditional, more frightening debriefing message.

STAGE MODELS

Models such as the HBM and TRA/TPB propose that the processes involved in engaging in health-related behaviour are the same regardless of the current stage of beliefs of the individual. Thus in the TRA, a message which increased positive attitudes to exercise should increase behavioural intention which in turn should increase the likelihood of taking action, regardless of whether the individual has exercised or intended to prior to the message. Each of the models suggest that an algebraic combination of weighted cognition measures will place each individual on a single dimension which defines the likelihood of taking action. Others have argued that the processes involved and the explanatory variables are different at different stages or levels.

This is an extremely important point for behavioural risk reduction programmes as it suggests that:

a) the interventions needed to change behaviour will be different at different stages and

b) that any population will contain individuals at different stages who might require different inputs to achieve behaviour change

c) single continuum models will have limited power to predict behaviour unless they take account of individual stages.

The best known model in the Transtheoretical Model of Behaviour Change (Prochaska and DiClimente 1983; DiClemente et al., 1991). It is described as transtheoretical as it attempts to integrate what has been learned from research within a variety of frameworks. It proposes that there are 6 stages in behaviour change:

- *precontemplation* - not intending to make changes
- *contemplation* - considering a change
- *preparation* - making small changes
- *action* - actively engaged in new behaviour
- *maintenance* - sustaining change over time
- *relapse* - relapsing back to an earlier stage

They describe 10 different processes involved in behaviour change and propose that these processes are differentially applied at different stages. For example, someone contemplating giving up smoking would use consciousness raising to gain more information, whereas precontemplators would be defensive and avoid information which might change their way of thinking. They found evidence in support of this and other predictions about processes in studies of smokers (1983, 1991). They also proposed that the differences between stages were mediated by self-efficacy and by decisional-balance, the balance between the pros and cons of undertaking the change. They found evidence of greater levels of self-efficacy in those in a stage of preparation compared with contemplators who had higher levels than precontemplators. Both their studies of smoking and other studies (Marcus & Owen, 1992; Marcus et al., 1992) of exercise engagement show the operation of decisional balance; pros only exceed cons at the stage of preparation and the balance is achieved both by increases in pros and reductions in cons.

An alternative but similar approach is Weinstein's Precaution Adoption Process (Weinstein, 1988; Weinstein and Sandman, 1992). Their model differs from Prochaska and DiClemente's most recent model in elaborating stages of precontemplation. Since the latter dealt primarily with on-going problem behaviours such as smoking, there was less likelihood of being unaware of the issue. Unlike the

Transtheoretical model, the Precaution Adoption Process makes a clear discrimination between those who have decided not to act and those who have never thought about it. The Precaution Adoption Process proposes that we go through the following stages in adopting any precautionary behaviour:

- unaware of issue
- unengaged by issue
- deciding about acting/ decided not to act
- acting
- maintenance.

They also suggested that different theoretical constructs would be critical in understanding behaviour at each stage and in predicting progress to the next stage. This was an important point for understanding the failure of social cognition models to predict large amounts of the variance in health behaviours as it proposed that there might be stages at which the variables of the social cognition models would not operate. Their empirical studies on radon testing suggest that once the stage of "decision to act" is reached, these variables no longer contribute to explaining behaviour change (Weinstein & Sandman, 1992). In this model, decision to act is a categorical variable, unlike the behavioural intention variable of the TPB which is a continuous variable.

They also proposed that different methods would be effective in encouraging progress depending on the individual stage. Thus general information about risk should be useful until the point at which the individual recognises the risk, but from there the next stage is likely to depend on information about personal risk. By contrast, information should not be effective once the decision to act has been taken.

These models have served to highlight yet again the gap between cognitive stages and actual behaviour. It would appear that informational and persuasive interventions can assist in reaching the decision to act (Precaution Adoption Process), a high level of behavioural intention (TRA), high levels of perceived threat (HBM) and high levels of outcome expectancy, but are of limited value in actual behaviour change.

CURRENT APPROACHES TO UNDERSTANDING THE GAP BETWEEN INTENTION AND BEHAVIOUR

What predicts behaviour?

The main predictor of behaviour is previous behaviour or habits and many theoretical models incorporate this point. This could of course be because we retain the same

cognitions and they influence the behaviour in the same way on each occasion, but this seems implausible. When we brush our teeth each morning, is this because we run through the potential risks of dental caries, the likely value of tooth-brushing and the extent to which our significant others would wish us to? Or is it because we do it every morning, without any complex cognitive process? Or perhaps behaviour that has become habitual was initially mediated by cognitive processes. Thus variance that might be attributed to original social cognitive variables is mopped up in prediction from habitual behaviour. The finding that people being treated for hypertension were less likely to persist if they had been identified through screening than through self-presentation due to symptoms (Degoulelt et al., 1983) points to the importance of behavioural momentum.

A further predictor is the presence of a prompt. The HBM suggests that a 'cue to action' makes a behaviour more likely and would explain the effectiveness of reminders. It may also be that anything which makes the behaviour easier increases its likelihood. Leventhal et al. (1965) randomly allocated subjects to various levels of fear arousal and at each level to either receive a map giving directions to the clinic or not. The main predictor of uptake of tetanus injections was not types of persuasive communication but whether they were given a map.

This is an issue that psychologists working in the social cognition tradition are currently grappling with and the following section deals with ongoing rather than established research ideas. Drawing on theoretical and empirical work on the relationships between motivation and action, Schwarzer (1992) has proposed that the process of taking actions to facilitate health consists of two quite separate processes, a motivational and an action or volitional process.. He suggests that social cognitive models have only dealt with the former, except insofar as self-efficacy has been specified as influencing action as well as motivation in the TPB. He proposes that we need plans and methods of controlling action in order to turn behavioural goals or intentions into behaviours.

More recently, Gollwitzer (1993) has proposed that behavioural intentions are more likely to be translated into behaviour if we develop an implementation intention. Orbell et al. (1994) examined this experimentally in a study of breast self examination (BSE). Female student subjects completed questionnaires assessing components of the TPB with respect to BSE, including a question on intention to perform BSE. Then a random half were encouraged to develop an implementation intention; they were asked where and when they intended to perform it. One month later subjects reported their performance and a higher proportion of those in the implementation intention group had performed BSE compared with the control group. Gollwitzer suggests that implementation intentions work by acting as a cue at the time the behaviour is due to be performed, so forgetting should be less common in those developing an implementation intention. Orbell et al. asked those who had not performed BSE to give reasons. As predicted by

Gollwitzer very few of those in the implementation intention group reported forgetting compared with a substantial number in the control group.

The concept of implementation intention would appear to have much in common with earlier concepts of defining targets and setting goals as used by behaviour therapists. While the social cognitive approaches appear to be making some progress in bridging the intention - behaviour gap, it is important to recall that there are alternative approaches to behaviour and behaviour change. Behavioural psychology of the 1960s and 1970s developed a wide array of techniques directed at behaviour change without focusing on cognitive processes. These methods attempted to predict and control behaviour based on assessment and manipulation of antecedents and consequences and were based on the theoretical work of Skinner and Pavlov earlier this century. Self management methods such as rewards, prompts, goal-setting, self-monitoring (see Kanfer and Gaelick-Buys, 1991; Gambrill, 1977) have been found to be effective in achieving desired behaviour change, including for health-related behaviour.

We have used these methods in giving feedback following worksite screening for behavioural risk factors. (Michie et al., in press; Cockroft et al., in press). Attenders were randomly allocated to receive either simple informational feedback of results, or behaviourally based feedback including setting behavioural goals and signing and retaining a copy of a contract to carry out these behaviours. Of those returning when invited to return six months later, those in the behaviourally designed feedback group showed significantly greater reductions in behavioural risk factors than those in the simple feedback group. These results, although limited, suggest that there may still be much to be learned from behavioural interventions.

Behavioural approaches have tended to be superseded by cognitive and cognitive-behavioural approaches. (Hawton et al., 1989). These attempt to achieve greater understanding and potential to change the mental processes that are said to influence behaviour. In addition they have directed their focus towards intra-psychic problems such as depression where overt behavioural processes may not have been of such great value. Thus behavioural approaches seem to have become less popular, not because they were shown to be wrong but because greater understanding appeared to be possible with cognitive models, especially of emotional disorders. In the field of behavioural risk factors it may be important to be influenced both by what is understood and by what has been effective.

Progress might come from attempting to reconcile the social-cognitive and behavioural perspectives on behaviour change. Social cognition models might contribute fuller understanding to processes like goal-setting, for example as Gollwitzer proposes by clarifying the role of implementation intentions in facilitating recall. Similarly, a more detailed study of the demonstrated effective behavioural interventions might define the processes requiring greater theoretical understanding. I would expect

that considerable advances might be made by bringing together the research in these two fields.

THE ROLE OF HEALTH PROFESSIONALS

The behaviour of health professionals may play a significant part in determining risk behaviour change as it is likely to do for any health outcome (Marteau & Johnston, 19). Variance in their behaviours can be considered in two ways: first, as behaviour per se and second, as communications with patients which might be informed by research on factors influencing patients' behaviour.

Predicting the behaviour of health professionals

As we have suggested earlier (Johnston & Marteau, 1987; Marteau & Johnston, 199) health professionals are subject to the same influences as any other human being. Thus their behaviours are likely to be influenced by their attitudes, social norms, behavioural intentions, self-efficacy beliefs, implementation intentions etc. Patients may not be given advice on behavioural risk factor reduction because doctors may believe that changing the behaviour will not affect the risk factor (attitudes toward the behaviour) or because they believe they are incapable of giving appropriate dietary advice (self-efficacy concerning the behaviour), as in Schuker et al.'s (1987) study of cholesterol screening. Bekker et al. (1994) found that GPs attitudes predicted rates of uptake of mammography in their patients. They also point to the importance of social norms or rewards for the behaviour by noting the increased rates of screening since it was included in GP contracts, again indicating the importance of the behaviour of health professionals as well as patients..

Communication with patients

The information health professionals give is likely to be important in influencing perception of risk and thereby feeding into the social-cognitive processes described by models such as HBM or TRA/TPB. As mentioned earlier, individuals are likely to have an optimistic view of their risk. However, the method of communicating personal risk could result in the person seeing their risk to be lower which may or may not be appropriate.

For maximum effectiveness, the message should be tailored to the individual. Stage models would suggest that some account needs to be taken of the individual's stage so that information can be made relevant; for example, decisional-balance would suggest that both pros and cons for behaviour change need to be addressed, but Weinstein's model would suggest that the supplementing information would be different for an individual who was "unengaged by the issue" compared with one who was "deciding about acting" or "decided not to act". In a similar vein, messages need to be made

salient to the individual; 21% of Rastam et al.'s (1988) sample regarded screening results as unimportant.

How the information is framed will also determine its impact. An important distinction has been made in Prospect Theory (Kahneman & Tversky, 1979) between gain versus loss framing and they have proposed that individuals are more likely to engage in new behaviours to avoid loss. For example, Meyerowitz and Chaiken (1987) compared messages concerning BSE according to whether they had a gain frame (If you adopt these behaviours you will gain ....), a loss frame (if you do not adopt these behaviours you will lose ....) or a neutral frame. They found that the loss frame resulted in greatest change in attitudes, intentions and behaviours. Others have examined the framing of health check results in terms of wellness or fear.

In addition to communicating information about risk and the importance of risk factor change, health professionals might wish to address factors bridging the intention-behaviour gap. Key factors are likely to be: self-efficacy beliefs, action plans/implementation intentions, cues to action and rewards. All of these are likely to be enhanced by a clear plan of action which is within the individual's capability with planned follow-up for reinforcement of success as in our study of worksite screening (Michie et al., in press; Cockroft et al., in press). It is not clear how many of these components were included in the FHS and OXCHECK studies.

Even when the information in the message is communicated effectively, the method of communication may limit its effectiveness. Ley's Cognitive Hypothesis (Ley, 1988) summarises a large body of evidence in this field and proposes that patient satisfaction with medical communications can play a significant part in determining adherence to medical communications; satisfaction is influenced in turn by understanding and recall of information given. As noted above, emotional factors may influence the recall of information and highly threatening messages may be minimised in recall (Croyle, 1992). The method of informing can have undesirable side effects, influencing emotional and social outcomes as well as the direct impact on risk factors (e.g. MacDonald et al., 1984). Direct evidence of the effects of different messages of communicating health check results is provided by the study of Rudd and colleagues (1986) mentioned earlier. A reassuring message achieved both risk factor (high BP) reduction and anxiety control, while the traditional debriefing message achieved risk factor reduction, but anxiety remained high.

For the TRA/TPB models, health professionals may be important in determining the social norm. A clear message about the desired behaviour change should contribute to relevant behavioural intentions, especially if the individual is motivate to comply with the wishes of the health professional. While not investigated in this context, previous research has pointed to the increased persuasiveness of medical figures in white coats and the recent FHS and OXCHECK studies may have had smaller effects because the messages were given by nurses.

COMMUNICATION OF RESEARCH FINDINGS

Important behavioural processes come into play not only in the behaviour of patients and health professionals, but also, I would suggest, in the behaviour of the researchers, particularly at the stage of interpreting results. While there are fairly well-refined and agreed procedures for ensuring adequate levels of measurement and statistical procedures, there is little explicit agreement about what constitutes a "finding of significance" as against a "significant finding". Evidence for this assertion is most clearly demonstrated in the reporting and letters following the FHS and OXCHECK studies.

The BMJ editorial by Stott (1994) introduced the studies under the subtitle, "Blanket health promotion is a waste of resources" and went on to say that: "Both studies found very modest changes in the intervention groups despite intensive intervention." (p286).

By contrast, Cruikshank (1994) considers that, "The probable 3 mm Hg fall in systolic blood pressure would be a major achievement ..." and Pharoah and Sanderson (1994) similarly comment that, "a sustained 1 mm Hg reduction in mean diastolic blood pressure would reduce deaths due to coronary heart disease by 4% .....". The latter go on to say that such results compare "favourably with other interventions". Under the BMJ heading "Pessimism is uncalled for", Beevers and Curzio (1994) comment on the OXCHECK results, "We would have liked a greater reduction, but in the context of Britain's appalling mortality from coronary heart disease this should be a cause for celebration".

The authors' replies to published comments on the OXCHECK and FHS studies point to some misunderstandings of results, but these comments clearly demonstrate the potential for different evaluations of the same findings. This highlights two problems: first the need to specify in advance what constitutes a "finding of significance" and second, to examine whether the pressure to avoid a Type I error is not such that a Type II error is highly possible.

Both studies make a post hoc interpretational adjustment in the discussion of results for the effect of repeated measurement on blood pressure: "The difference between the intervention and control groups in both systolic and diastolic blood pressure is entirely consistent with an accommodation effect." (Muir et al.,1994: OXCHECK) and "... the lower blood pressure is likely to be due partly to acclimatisation to measurement in the intervention group. " (Wood et al., 1994: FHS). OXCHECK cites studies which allow the likely size of this effect to be quantified. Surely such an adjustment should be part of the precisely specified methodology rather than part of what appears to be an arbitrary adjustment after the findings have been presented, although OXCHECK

comments in the Design section that accommodation would be a major difficulty in interpretation. In fact the pre-specified cut-offs and power calculations for both studies (FHS p314-315; OXCHECK p309) indicate that the trial was designed to detect blood pressure effects that the authors later interpret to be no greater than might be attributed to spurious effects.

Other post-hoc criteria that were applied to the interpretation of the results were:

- the sustainablitiy of effects
- the likely effects on morbidity and mortality
- the effectiveness compared with other methods of intervention
- their value for money compared with other use of the same resources, either for other healthcare or outside healthcare
- the practical applicability of the intervention

Perhaps in future trials, the size of finding which would satisfy these criteria for a "finding of significance" should be estimated in advance so that the debate about these matters which have an inevitable degree of arbitrariness can be conducted prior to the availability of the data.

The second point concerns the unidirectional nature of the post hoc argument. It is biased toward ensuring that no insignificant finding is wrongly interpreted as significant. In many ways this is fully justified as costs incurred in implementing these programmes might be inappropriately wasted and the scientific and medical communities misled by inaccurate use of data. But what of the possibility that a significant opportunity to reduce population morbidity and mortality by a small amount might be rejected? And surely the scientific community will retain awareness of the data as well as the interpretations.

All of the post hoc arguments in the discussion of the results serve to diminish rather than enhance the results. Thus effects of repeated measurement of blood pressure, the likely smoking habits of those not returning, under-reporting of smoking, the nursing costs of implementing the programme, the sustainability of the effects are arguments used to cast doubt on the size and value of effects, while comments on the high validity of the interventions and designs are part of the argument that these results are as good as might be expected. None of these arguments is unjustified. But equally it might be argued that contamination effects would serve to reduce intervention-control group difference, that underlying population changes in risk factors might mask differences due to the interventions, that the interventions were directed toward individuals who had to date resisted the effects of other persuasive messages relevant to lifestyle, that the interventions had not been designed and executed by specialists in behavioural change techniques - perhaps weaker arguments, but arguments for this side were not aired.

One might consider whether this bias in the argument is in some way motivated, as one would in examining behavioural biases in patients such as the minimising of recalled level of risk in patients receiving highly threatening screening results. For example, current presentation as a good scientist may require more avoidance of Type I than Type II errors. Alternatively, it may be important to avoid finding support for new measures at a time of financial stringency in health services. The argument in the FHS study that a typical practice would require at least four full time nurses was based on the arbitrary, and surely unnecessary, assumption that the total population should be screened in 18 months, thus adding an unusual bias to the argument. A further possibility is that it may be acceptable to criticise the work of nurses (see comment by Beevers & Curzio, 1994). Or interventions involving behavioural rather than pharmacological implementation may have to satisfy higher or different standards of evidence; it has been suggested in an entirely different domain that if the benefits accruing from psychological preparation of patients for surgery (Johnston & Vogele, 1993) had been achieved by pharmacological means, then such preparation would become mandatory. By contrast, current standards of reporting require very limited specification of the actual behavioural intervention making its likely impact impossible to estimate on the basis of previous work and, perhaps more importantly, ensuring that an effective intervention could not be reliably replicated.

Alternatively, the bias may reflect a contrast effect occurring when the results are poorer than was expected, with the result that the authors are particularly critical of their findings.

CONCLUSIONS

Population based interventions in behavioural risk factors are complex both in terms of the research processes and in terms of the simultaneous application of biomedical and behavioural science. It is therefore crucial that they are informed by the best available evidence. Research in health-related behaviour frequently neglects available theory and evidence, or is guided by theoretical models which have been seriously criticised and largely replaced by more satisfactory models. Psychologists and other behavioural scientists have not necessarily made these models available beyond subject-based publications, making such models inaccessible. In addition, failures within psychology to reconcile social-cognitive and behavioural models has increased the difficulty of the task.

Interventions need not only to be well-designed, they need also to be well-described and characterised to ensure that unsuccessful methods are not repeated and that where significant benefit is achieved, the benefit can be replicated. Such descriptions should cover both the behaviour of patients or members of the public and the behaviour of health professionals, as both may contribute to behaviour change and to health outcomes.

Finally, in such complex interventions, interpretation of findings can be controversial. If the size of finding to be considered valuable were specified in advance of data being available, then the debate about what constituted a finding of significance could be conducted without the potential for post hoc bias.

REFERENCES

Abraham, C, Sheeran, P (1993)

Inferring cognitions, predicting behaviour: two challenges for social cognition models.

Health Psychology Update, 14, 18-23.

Abraham, C, Sheeran, P, Spears, R, Abrams, D (1992)

Health beliefs and promotion of HIV-preventive intentions among teenagers: a Scottish perspective.

Health Psychology, 11, 363-370.

Azjen, I (1988)

Attitudes, Personality and Behaviour.

Milton Keynes: Open University Press.

Bandura, A (1989)

Perceived self-efficacy in the exercise of personal agency.

The Psychologist, 2, 411-424.

Becker, MH (1974)

The health belief model and sick role behaviour.

Health Education Monographs, 2, 409-419.

Beevers, M, Curzio, J (1994)

Pessimism is uncalled for

BMJ, 308, 853

Bekker, H & Marteau, TM (1994)

The role of health professionals' beliefs and attitudes in uptake of screening.

Paper delivered at British Psychological Society Special Group in Health Psychology Annual Conference, September 1994.

Bond, GG, Aiken, LS, Somerville, SC (1992)

The Health Belief Model and adolescents with insulin-dependent diabetes mellitus.

Health Psychology, 11, 190-198.

Cockroft, A, Gooch, C, Ellinghouse, C, Johnston, M, Michie, S (in press)

Evaluation of a programme of health measurements and advice among hospital staff.

J Occupational Health,

Conner, M (1993)

Pros and cons of social cognition models in health behaviour.

Health Psychology Update, 14, 24-31.

Croyle, RT, Jemmott, JB III (1991)

Psychological reactions to risk factor testing

In Mental Representation in Health and Illness, edited by JA Skelton and RT Croyle

New York: Springer-Verlag

Croyle, RT (1994)

Cognitive and affective impact of cholesterol screeing: The role of motivated bias.

Paper delivered at International Association of Applied Psychology, Madrid, July 1994

Cruikshank, JK (1994)

Health promotion in general practice

BMJ, 308, 852

Degoulet, P, Menard, J, Vu, HA, Golmard, JL, Devries, C, Chatelier, G, Plouin, PF (1983)

Factors predictive of attendance at clinic and blood pressure control in hypertensive patients.

BMJ, 287, 88-93.

DiClimente, CD, Prochaska, JO, Fairhurst, SK, Velicer, WF, Velasquez, MM, Rossi, JS (1991)

The process of smoking cessation: An analysis of precontemplation, contemplation, and preparation stages of change.

J Consulting and Clinical Psychology, 59, 295-304.

Eiser, JR, Gentle, P (1989)

Health behaviour and attitudes to publicity campaigns for health promotion.

Psychology and Health, 3, 111-120.

Family Heart Study Group (1994)

Randomised controlled trial evaluating cardiovascular screening and intervention in general practice: principle results of the British family heart study.

BMJ, 308, 313-320.

Fishbein, M, Azjen, I (1975)

Belief, Attitude, Intention, and Behaviour.

New York: Wiley

Fishbein, M (1976)

Persuasive communication: a social-psychological perspective on factors influencing communication effectiveness.

In Communication between doctors and patients, edited by AE Bennett

Oxford: OUP

Gambrill, E (1977)

Behavior Modification: Handbook of Assessment, Intervention and Evaluation.

San Francisco: Jossey-Bass.

Gollwitzer, PM (1993)

Goal achievment: the role of intentions.

European Review of Social Psychology, volume 4, edited by W Stroebe and M Hewstone.

Chichester: Wiley

Harrison, JA, Mullen, PD, Green, LW (1992)

A meta-analysis of studies of the health belief model with adults.

Health Education Research, 7, 107-116.

Hawton, K, Salkovskis, PM, Kirk, J, Clark, DM (1989)

Cognitive Therapy for Psychiatric Problems

Oxford: Oxford University Press

Hays, RD, Kravitz, RL, Mazel, RM, Shelbourne, CD, DiMatteo, R, Rogers, WH, Greenfield, S (1994)

The impact of patients adherence on health outcomes for patients with chronic disease in the Medical Outcomes Study.

J Behavioral Medicine, 17, 347-360.

Hyman, RB, Baker, S, Ephraim, R, Moadel, A, Philip, J (1994)

Health Belief Model variables as predictors of screening mammography utilization.

J Behavioral Medicine, 17, 391-406.

Idler, EL (1992)

Self-assessed health and mortality: a review of studies.

In International Review of Health Psychology, edited by S Maes, H Leventhal, M Johnston.

Chichester: Wiley

Imperial Cancer Research Fund OXCHECK Study Group (1994)

Effectiveness of health checks conducted by nurses in primary care: results of the OXCHECK study after one year.

BMJ, 308, 308-312.

Ingham, R (1993)

Old bodies in older clothes.

Health Psychology Update, 14, 31-36

Janz, NK, Becker, MH (1984)

The health belief model: a decade later

Health Education Quarterly, 11,1-47

Johnston, M, Marteau, TM (1987)

The health beliefs of the health professionals.

In Clinical Psychology: Research and Developments, edited by H Dent

London: Croom Helm

Johnston, M, Vogele, C (1993)

Benefits of psychological preparation for surgery: A meta-analysis.

Annals of Behavioral Medicine, 15, 245-256.

Jones, EE, Kenrose, DE, Kelley, HH, Nisbett, RE, Valins, S, Weiner, B (eds.) (1972)

Attribution: Perceiving the causes of behaviour.

General Learning Press: Morristown, NJ.

Kahneman, D, Tversky, A (1979)

Prospect theory: An analysis of decision under risk.
Econometrica, 47, 263-291.

Kanfer, FH, Gaelick-Buys (1991)
Self-management methods
In Helping people change, edited by FH Kanfer and AP Goldstein
New York: Pergamon.

Kavanagh, DJ, Pierce, J, Lo, SK, Shelley, J (1993)
Self-efficacy and social support as predictors of smoking after a quit attempt
Psychology and Health, 8, 231-242.

King, J B (1982)
The impact of patients' perceptions of high blood pressure on attendance at screening: an attributional extension of the health belief model.
Social Science and Medicine, 16, 1079-1092.

Kreitler, S, Chaitchik, S, Kreitler, H, Weissler, K (1994)
Who will attend tests for the early detection of breast cancer?
Psychology and Health, 9, 463-483.

Lau, RR, Hartman, KA, Ware, JE (1986)
Health as a value: methodological and theoretical considerations.
Health Psychology, 5, 25-43.

Leventhal, H (1970)
Findings and theory in the study of fear communications
Advances in Experimental Social Psychology, 5, 119-186

Leventhal, H, Singer, R, Jones, S (1965)

Effects of fear and specificity of recommendations upon attitudes and behaviour.

J Personality and Social Psychology, 2, 20-29.

Ley, P (1988)

Communicating with patients

London: Croom Helm.

MacDonald, LA, Sackett, DL, Haynes, RB, Taylor, DW (1984)

Labelling in hypertension: A review of the behavioural and psychological consequences.

J Chronic Diseases, 37, 933-942.

Manstead, ASR, Proffitt, C, Smart, JL (1983)

Predicting and understanding mothers' infant-feeding intentions and behaviour; testing the theory of reasoned action.

J Personality and Social Psychology, 44, 657-671.

Marcus, BH, Owen, N (1992)

Motivational readiness, self-efficacy and decision-making for exercise

J Applied Psychology, 22, 3-16.

Marcus, BH, Rakowski, W, Rossi, JS (1992)

Assessing motivational readiness and decision making for exercise

Health Psychology, 11, 257-261.

Marteau, TM (1989a)

Health beliefs and attributions

In Health Psychology: Processes and Applications, edited by Annabel Broome

London: Chapman & Hall.

Marteau, TM (1989b)

Psychological costs of screening

BMJ, 299, 527

Marteau, TM (1992)

Health-related screening: psychological predictors of uptake and impact.

In International Review of Health Psychology, edited by S Maes, H Leventhal, M Johnston.

Chichester: Wiley

Marteau, TM (1994)

Psychology and screening: Narrowing the gap between efficacy and effectiveness.

British J Clinical Psychology, 33, 1-10.

Marteau, TM, Johnston, M (1990)

Health professionals: a source of variance in patient outcomes.

Psychology and Health, 5, 47-58.

Marteau, TAM, Kinmonth, A-L, Pyke, S, Thompson, S (1994)

Readiness for lifestyle advice? Self-assessments of coronary risk prior to screening in the British family heart study.

British J General Practice, 44.

Meyerowitz, BE, Chaiken, S (1987)

The effect of message framing on breast self-examination, attitudes, intentions and behaviour

J Personality and Social Psychology, 52, 3, 500-510

Michie, S, Johnston, M, Cockroft, A, Ellinghouse, C, Gooch, C (in press)

Uptake and impact of health screening for hospital staff.

J of Organisational Behaviour

Muir, J, Lancaster, T, Thorogood, M, Yudkin, P, Fowler, G (1994)

Authors' reply: OXCHECK study.

BMJ, 308, 853

Norman, P (1993)

Predicting the uptake of health checks in general practice: Invitation methods and patients' health beliefs

Social Science and Medicine, 37, 53-59.

Norman, P (in press)

Applying the Health Belief Model to the prediction of attendance at health checks in general practice.

British J Clinical Psychology

Norman, P, Conner, M (1993)

The role of social cognition models in predicting attendance at health checks.

Psychology and Health, 8, 447-462.

Norman, P, Conner, M (in press)

Predicting health check attendance among prior attenders and non-attenders: The role of prior behaviour in the Theory of Planned Behaviour

Norman, P, Fitter, M, (1989)

Intention to attend a health check: some implications for general practice.

Counselling Psychology Quarterly, 2, 261-272.

Orbell, S (1994)

Psychological and social aspects of screening.

In Towards a screening strategy for Scotland, edited by D Stone and S Stewart. Scottish Forum for Public Health Medicine: Univ of Glasgow Press.

Orbell, S, Hopkins, S (1994)

It's easy to change behaviour if you know when to: implementation intentions and behavioural enactment.

Paper delivered at the British Psychological Society Special Group in Health Psychology Annual Conference, September 1994.

Orbell, S, Sheeran, P (1993)

Health psychology and uptake of preventive health services: a review of thirty years' research on cervical screening

Psychology and Health, 8, 417-433.

Pharoah, P, Sanderson, S (1994)

Health promotion contributes to the battle against heart disease.

BMJ, 308, 852.

Prochaska, JO, DiClimente, CD (1983)

Stages and processes of self-change of smoking: Toward and integrative model of change

J Consulting and Clinical Psychology, 51, 390-395.

Rastam, L, Russell, V, Luepker, MD, Pirie, PL (1984)

Effect of screening and referral on follow-up and treatment of high blood cholesterol levels

American J of Preventive Medicine, 4, 244-249

Rogers, RW (1975)

A protection motivation theory of fear appeals and attitude change.

Journal of Psychology, 91, 93-114.

Rogers, RW (1983)

Cognitive and physiological processes in fear appeals and attitude change: A revised theory of Protection Motivation.

In, Social Psychophysiology: a sourcebook, edited by JT Cacioppo and RE Petty. New York: Guildford Press.

Robson, J, Boomla, K, Livingston, A (1994)

Doctors have a duty to the whole community.

BMJ. 308, 852.

Rudd, P, Price, MG, Graham, LE, Beilstein, BA, Tarbell, SJH, Bacchetti, P, Fortmann, SP (1986)

Consequences of worksite hypertension screening

American J Medicine, 80, 853-861.

Safer, MA (1986)

A comparison of screening for disease detection and screening for risk factors.

Health Education Research, 1, 131-138.

Schwarzer, R (1992)

Self-efficacy in the adoption and maintenance of health behaviours: Theoretical approaches and a new model.

In, Self-efficacy: Thought control of action.

edited by R Schwarzer.

Hemisphere: London

Schwarzer, R (1994)

Optimism, vulnerability, and self-beliefs as health-related cognitions: a systematic overview.

Psychology and Health, 9, 161-180.

Schuker, B, Wittes, JT, Cutler, JA, Bailey, K, Mackintosh, DR, Gordon, DJ, Haines, CM, Mattson, ME, Goor, RS, Rifkind, BM (1987)

Changes in physician perspective on cholesterol and heart disease: Results from two national surveys.

J American Medical Association, 258, 3521-31526.

Sheppard, BH, Hartwick, J , Warshaw, PR (1988)

The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research.

J of Consumer Research, 15, 325-339.

Simpson, W, Johnston, M, McEwan, S (1994)

Uptake and impact of CHD risk factor screening: an evaluation of three different methods of offering screening.

Paper delivered at the British Psychological Society Special Group in Health Psychology Annual Conference, September 1994.

Stott, N (1994)

Screening for cardiovascular risk in general practice.

BMJ< 308, 285-286.

Tymstra, T (1989)

The imperative character of medical terminology and the meaning of 'anticipated decision regret'.

International J of Technology Assessment in Health Care, 5, 207-213.

Vaile, MSB, Calnan, M, Rutter, DR, Wall, B (1993)

Breast cancer screening services in three areas: uptake and satisfaction.

J of Public Health Medicine, 15,

Wallston, KA (1992)

Hocus pocus, the focus isn't strictly on the locus: Rotter's learning theory modified for health.

Cognitive Therapy and Research, 16, 183-199.

Wallston, KA, Wallston, BS, Smith, S, Dobbins, CJ (1989)

Perceived control and health.

In Applications in Health Psychology, edited by M Johnston and TM Marteau.

Transaction Press: New Brunswick, N.J.

Weiner, B (1988)

Attribution theory and attributional therapy: some theoretical observations and suggestions.

British J Clinical Psychology, 27, 99- 104

Weinstein, ND (1982)

Unrealistic optimism about susceptibility to a health problems

J Behavioral Medicine, 5, 441-460.

Weinstein, ND (1988)

The precaution adoption process.

Health Psychology, 7, 355-386

Weinstein, N D (1994)

Risk, optimism, and preventive behavior: so much to learn.

Paper presented at workshop at University of Amsterdam, April 1994

Weinstein, ND, Klein, WM (in press)

Resistance of personal risk perceptions to debiasing interventions

Weinstein, ND, Nicolich, M (1993)

Correct and incorrect interpretations of correlations between risk perceptions and risk behaviours.

Health Psychology, 12, 235-245.

Weinstein, ND, Sandman, PM, (1992)
Evidence from home radon testing.
Health Psychology, 11, 170-180.

Wood, D, Pyke, S, Kinmouth, A-L, Thompson, S (1994)
Authors' reply: British family heart study.
BMJ, 308, 853-854.

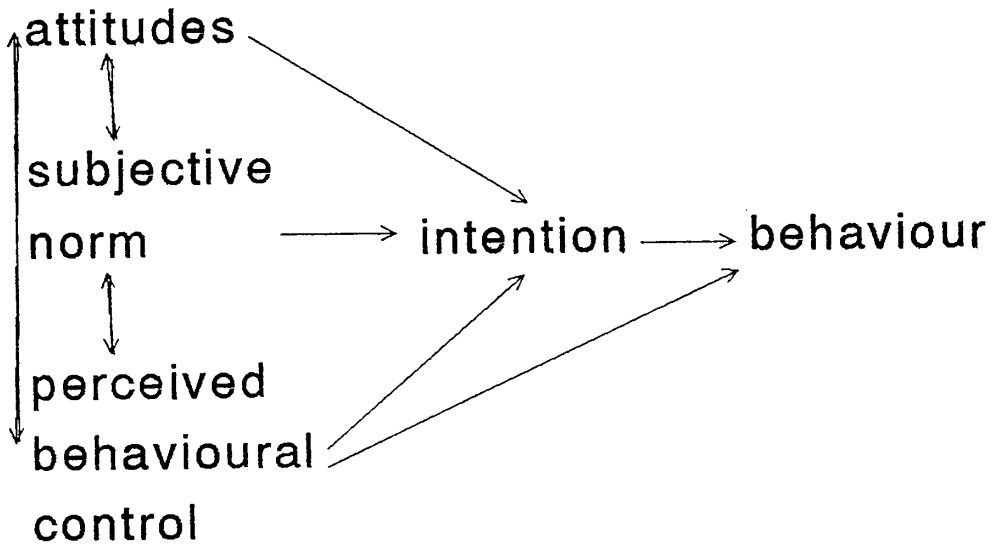


Figure 2: Theory of Planned Behaviour

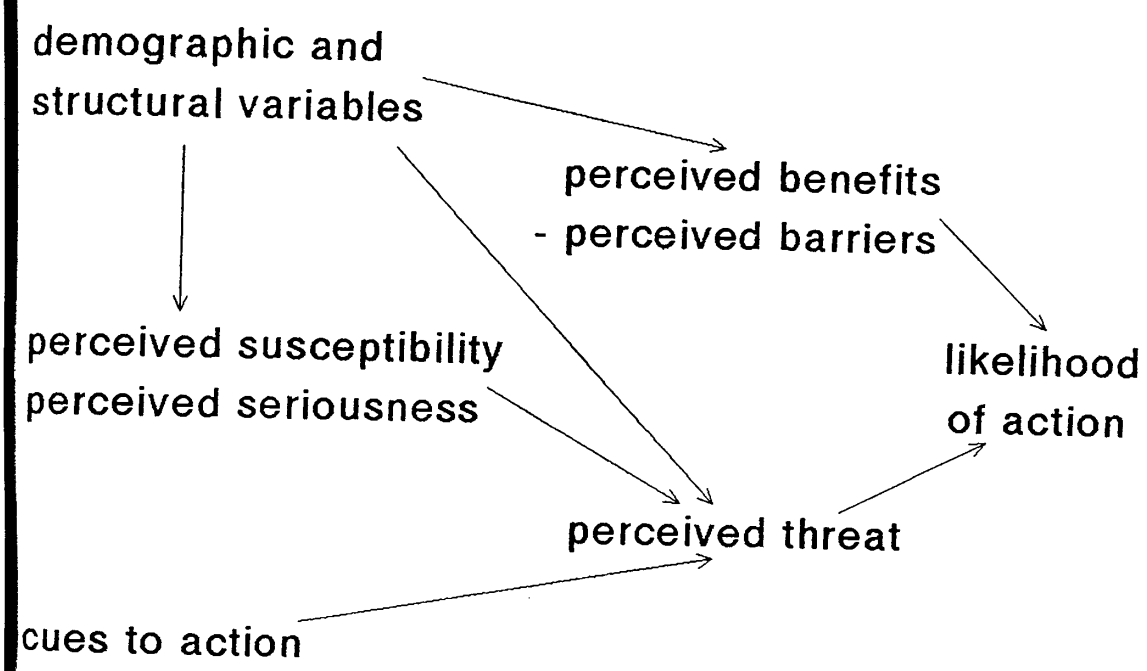


Figure 1: Health Belief Model

THE EVIDENCE FOR INTERVENTIONS IN 'AT RISK' POPULATIONS.

Relevance for Primary Care

The term 'at risk' is interpreted as referring to individuals who already have manifested coronary heart disease in the form of angina pectoris or myocardial infarction (or both). While it clearly would be preferable to prevent coronary heart disease manifesting itself in the first place, patients with these disorders are a very important group for the following reasons:-

- They are numerous-amounting to some 2-3 million people
- About 50% of deaths from coronary disease occur in those who have already revealed themselves as suffering from this disorder. Preventive measures which reduce mortality in this population would have a substantial effect on total deaths from coronary disease.
- Several strategies (beta-blockade, aspirin, ACE inhibitors) have been shown in randomised controlled trials to be effective in reducing mortality long-term in selected groups of post-infarction patients.
- Lifestyle changes (smoking cessation. physical activity, dietary changes) have beneficial effects in patients with CHD but have been less studied by randomised clinical trials.
- Those in primary care have an essential rôle in ensuring that patients receive appropriate interventions. The primary care team should verify adherence to the interventions as they are often not maintained.

Effective interventions after myocardial infarction.

Cigarette smoking. There has been no randomised study of smoking cessation after myocardial infarction but several observational studies have shown that the mortality over the succeeding years is about 50% less in those that quit compared with those who continue to smoke. A study from Gothenburg reported that the mortality rate at 5 years was 14% in those that stopped smoking compared with 29% in those that continued; the rates at 7.5 years were 16% and 49% respectively(1).

Exercise. Overviews of clinical trials have suggested a reduction in overall mortality of 20-25%(2), but it is difficult to be sure that this effect is due to exercise alone or to other beneficial lifestyle changes that tend to accompany it.

Lipid-lowering. An overview of the studies of the effectiveness of lipid-lowering after infarction showed that reducing cholesterol in those with hyperlipidaemia reduced the risk of myocardial infarction, although there was not a significant reduction in mortality[3]. Hyperlipidaemia should first be treated by diet and only if the lipid levels remain high after three months' adherence to a lipid-lowering diet should drugs be considered.

Other aspects of the diet. Patients should been encouraged to eat at least five items of fruit or vegetables a day. One randomised controlled trial showed that a diet containing fatty fish reduced recurrent infarction and death; further evidence is required in this area.

Diabetes. Diabetics who have sustained a myocardial infarction have an increased short-term and long-term risk of recurrent infarction and death. Good control of the diabetes is important in preventing further complications.

Anticoagulants and aspirin. It has been established in a number of clinical trials that both anticoagulants[4] (such as warfarin) and aspirin[5] are effective in reducing the risk of recurrent myocardial infarction and death. Because of the greater risk of bleeding and the problems of anticoagulant control, aspirin is regarded as the preferred option and is indicated in all post-infarction patients for whom there are no contra-indications.

Beta-blockers. Randomised controlled clinical trials have established that beta-blockers reduce mortality and reinfarction rates by 20-25% in the months and years following myocardial infarction[6]. Some physicians recommend beta-blockers for all patients for whom they are not contra-indicated. Others reserve these drugs for those who have had a complicated course, or who have readily induced myocardial ischaemia, because it has been found that beta-blockers have little effect in those at low risk[7].

Calcium antagonists and nitrates. Although these drugs have an important place in the treatment of angina, there is no evidence they reduce mortality after infarction.

ACE inhibitors. ACE inhibitors reduce mortality in patients who have suffered from heart failure during the acute event [8] or who have a reduced left ventricular function as assessed by echocardiography or nuclear imaging[9]. These agents should certainly be used long-term in those who are in heart failure in the convalescent period, but probably are also of value in those whose heart failure has been brought under control.

Preventive strategy after myocardial infarction. The recommended lifestyle measures are appropriate for all patients.

It is probable that the various regimens described are, at least to some extent, additive in their effects. Aspirin is suitable for about 90%, beta-blockade for 30-50%, and ACE inhibitors for 20%.

At present, it is uncertain what proportion of patients should receive lipid-lowering drugs; the results of trials are awaited.

Effective interventions in angina pectoris.

Few trials have been undertaken in patients with angina, but it is reasonable to suppose that benefits would accrue from lifestyle changes, such as smoking cessation, dietary modifications and increased physical activity (within the patient's limitations).
Aspirin has been shown to be effective in reducing the incidence of myocardial infarction and death in patients with angina [5]. It is probable that beta-blockers and lipid-lowering reduce mortality in anginal patients but this has not been proven.

Implications for primary care.

- Interventions by the primary care team can have an important effect on improving the prognosis of patients with coronary heart disease and thereby improve mortality figures overall.
- There is evidence that there are many unrecognised cases of coronary heart disease in the community, especially among women.
- There is good evidence that the management of patients with coronary heart disease in the community leaves much to be desired, particularly bearing in mind the effectiveness of the therapies that have been subjected to randomised controlled trials.

References

1 Åberg A, Bergstrand R, Johansson S, et al. Cessation of smoking after myocardial infarction. Effects on mortality after 10 years. Br Heart J 1983; 49: 416-22.
2 O'Connor GT, Buring JE, Yusuf S et al. An overview of randomized trials of rehabilitation with exercise after myocardial infarction. Circulation 1989; 80: 234-44.
3 Roussouw JE, Lewis B, Rifkind BM. The value of lowering cholesterol after myocardial infarction. N Engl Med J 1990; 323: 1112-9
4 Smith P, Arnesen H, Holme I. The effect of warfarin on mortality and reinfarction after myocardial infarction. N Engl J Med 1990; 323: 147-52

5 Antiplatelet Trialists' Collaboration. Collaborative overview of randomised trials of antiplatelet therapy. I. Prevention of death, myocardial infarction, and stroke by therapy in various categories of patients. BMJ 1994; 308: 81-106.

6 Yusuf S, Peto R, Lewis J, Collins R, Sleight P. Beta-blockade during and after myocardial infarction: an overview of the randomized trials. Prog Cardiovasc Dis 1985; 27: 335-71.

7 Furberg CD, Hawkins CM, Lichstein F. Effect of propranolol in postinfarction patients with mechanical and electrical complications. Circulation 1983; 69: 761

8 AIRE (Acute Infarction Ramipril Efficacy) Investigators. Effect of ramipril on mortality and morbidity of survivors of acute myocardial infarction with clinical evidence of heart failure. Lancet 1993; 342: 821-8.

9 Pfeffer MA, Braunwald E, Moyé LA, Basta L, Brown EJ, Cuddy TE, et al. Effect of captopril on mortality and morbidity in patients with left ventricular dysfunction after myocardial infarction. N Engl J Med 1992; 327: 669-77.

WORKSHOP TASKS AND ALLOCATIONS

FRAMEWORK/WORKSHOP TASK

1. Summarise key learning from OXCHECK/British Family Heart Studies for Primary Care.

2. Identify the context and constaints of the Environment for developing Health Promotion in Primary Care

3. Summarise the implications for practice or policy or research in Primary Care

4. Make 6 - 10 key recommendations for the future. For practice or policy or research.

Although the wider agenda cannot be ignored, the workshop task is to concentrate on primary Care. It would be sad with so many experts from professional interest groups if the key task (ie. to make recommendations) is lost in a very free and wide ranging discussion.

FRAMEWORK/WORKSHOP TASK

Summarise key learning from OXCEP...
studies for Primary Care

Identify the context and ...
developing Health Promotion ...

Summarise the implications ...
research in Primary Care

Make 6 - 10 key recommendations ...
practice or policy in ...

Although the wider objectives ...
task is to concentrate on ...
many experts from ...
to make recommendations ...
discussion.

WORKSHOP TASKS AND ALLOCATIONS

The Task.

The purpose of circulating the task beforehand is to allow participants the opportunity to consider this in the light of the 2 studies, the critiques and the papers.

The Allocations

In allocating participants to workshops, we have aimed to achieve a number of things.

(1) To achieve productive discussion amoungst 'experts'. In most cases participants have been allocated to areas of experience and expertise.

(2) To achieve a good mix of participants in each group.

(3) To enable a richer mix so that a few people are being asked to participate in workshops in which their voice would be not normally be heard. This hopefully means that people who do not normally meet each other and hear each others views will do so, ie. some practitioners in the policy groups and policy makers in each of the groups .

(4) To retain each group as a manageable size and ensure all voices are heard.

If you really feel that you cannot contribute to the discussion of the group to which you have been allocated, please let us know or arrange your own exchange. We would ask that participants do not swap workshops on the day as this will create the in-balance we have tried to avoid.

WORKSHOP ALLOCATIONS

IMPLICATIONS FOR RESEARCH

GROUP 1
Venue: Dining Room

** Steve Gillam
* Lesley Rogers

Michael Calnan
Sarah Cowley
Alun Evans
Linda Ewles
Simon Fradd
Marie Johnston
Alan Glanz
David Mant
Brian Pentecost
Stuart Pocock
David Thompson
David Wonderling
David Wood (British Family Heart Study)

GROUP 2
Venue: Committee Room

** Sally Kendall
* Mike Rayner

Joan Curzio
Christina Davies
Godfrey Fowler
Nick Freemantle
Paula Hunt
Philip Leech
Michael Marmot
Theresa Marteau
Michael Oliver
Lewis Richie
Simon Thompson
Valerie Weeks
David Wilkin
David Wood (Regional Advisor)

** Chair
* Rapperteur

WORKSHOP ALLOCATIONS

IMPLICATION FOR POLICY

GROUP 3
VENUE: Lecture Theatre

** Tim Van Zwannenberg
* Chris Shearin

Kathie Binysh
Margaret Buttigieg
Yvonne Doyle
Anne Ford
Elaine Fullard
Judy Gilley
Susan Gooding
Desmond Julian
Jean O'Brien
Bridget Riches
Martin Buxton
Nigel Stott
Hywel Williams
Fedelma Winkler

GROUP 4
Venue: Meeting Room A

** Viv Spellar
* Aislin O'Dwyer

Ian Bashford
Angela Coulter
Marilyn Eveleigh
Muir Gray
Tim Lancaster
Paul Lincoln
Klim Macpherson
Alan Maryon-Davies
Viviene Press
Kieran Sweeney
Margaret Thorogood
David Todd
Heather Waring
Sue White

** Chair
* Rapperteur

WORKSHOP ALLOCATIONS

IMPLICATIONS FOR PRACTICE

GROUP 5
Venue: Meeting Room B

** Janet Bailey
* Amanda Killoran

Ashley Adamson
Alistair Cameron
Atie Fox
Gina Higginbottom
Jacqueline Jolleys
Mark Jones
Clare O'Neill
Roisin Pill
Roger Ramsay
John Robson
Gerry Shaper
Frederick Shaw

GROUP 6
Venue: Meeting Room C

** Tony Dowell
* Lisa Bullard-Cawthorne

Henrietta Campbell
John Chisholm
Anne-Louise Kinmonth
Sarah Luft
John Muir
Amy Nicholas
John Noakes
Olivia Simmonds
Martine Standish
Chris Totton
Joanne Yarwood
Pat Yudkin

** Chair
* Rapperteur

WORKSHOP ALLOCATIONS

IMPLICATIONS FOR PRACTICE

GROUP 5
Venue: Meeting Room B

GROUP 6
Venue: Meeting Room C

PARTICIPANTS LIST

	Adamson	Ashley	British Dietetic Association
*	Bailey	Janet	Chair, Ass of Primary Care Facilitators
	Bashford	Ian	Senior Medical Officer, Scottish Home and Health Dept.
	Binysh	Kathie	Department of Health
	Bullard-Cawthorne	Lisa	National Forum for CHD Prevention
*	Buttigieg	Margaret	Director,Health Visitors Association
	Buxton	Martin	Department of Health Economics Research Brunel University
	Calnan	Michael	Centre for Health Service Studies, University of Kent
**	Cameron	Alistair	NHSE
	Campbell	Henrietta	Deputy Chief Medical Officer, Dept of Health & Social Servces - N Ireland
	Chisholm	John	BMA
	Coulter	Angela	Director, King's Fund Centre
	Cowley	Sarah	Dept of Nursing Studies, King's College London
	Curzio	Joan	Nurse Researcher, Dept of Medicine & Therapeutics, Gardiner Institute, Glasgow
	Davies	Christina	Medical Research Council
*	Dowell	Tony	Director, Centre for Research in Primary Care, Leeds
	Doyle	Yvonne	Faculty of Public Health Medicine
	Evans	Alun	Prof of Epidemiology, Dept of Epidemiology and Public Health, Belfast
	Eveleigh	Marilyn	Nurse Adviser, East Sussex FHSA
	Ewles	Linda	DHA/FHSA Health Promotion Mgr, Bristol
	Ford	Anne	Chair Practice Nurse Forum RCN
**	Fowler	Godfrey	OXCHECK, Dept of Public Health & Primary Care, Oxford
	Fox	Atie	Practice Nurse
	Fradd	Simon	BMA

PARTICIPANTS LIST

[redacted]	British Dietetic Ass
[redacted]	Chron. Ass of Phy
[redacted]	Senior Medical Off
	and Health Educ
[redacted]	Department of
[redacted]	National Heart
Molgaard	Director, Heart
Merlin	Department
	Bruns
Mirdrel	Centre for
	Univ
Alfaloli	Mus
Henriette	Pres
	Ol
John	Pr
Angelo	Lec
Sarah	Lec
	Co
Joan	Lec
	Ph
	Co
Christine	Ne
Tony	Dir
	Pri
Yvonne	Fac
Alan	Prof
	Epi
Kathryn	Nurs
[redacted]	DHA/HSA
Annie	Chief Practice
[redacted]ney	OXCHECK Dept
	Care, Oxford
	Practice Nurse
	BMA

	Freemantle	Nick	NHS Ctre for Reviews & Dissemination, York
	Fullard	Elaine	National Facilitator Development Project, HEA Primary Care Unit, Oxford
*	Gillam	Steve	Dept Public Health Bedfordshire Health
	Gilley	Judy	BMA
	Gooding	Susan	The Director, HEA Primary Care Unit
	Gray	Muir	Anglia & Oxford RHA
	Higginbottom	Gina	Health Visitors Assc, Rotherham
	Hunt	Paula	Senior Nutritionist/Dietitian, HEA Primary Care Unit, Oxford
	Jolleys	Jaqueline	Chair Association of Medical Advisors
**	Johnston	Marie	Department of Psychology, University of St Andrews
	Jones	Mark	Community Health Advisor RCN
**/*	Julian	Desmond	Chair National Forum for CHD prevention
	Glanz	Alan	Research Directorate
*	Kendall	Sally	Faculty of Health Studies, Buckinghamshire College of Brunel Uni
	Killoran	Amanda	HEA Primary Health Care Unit, Oxford
	Kinmonth	Anne-Louise	British Family Heart Study, Dept of Primary Care, Southampton
	Lancaster	Tim	OXCHECK - Dept of Public Health & Primary Care, Oxford
	Leyden	Rosie	Wordworks
	Leech	Phillip	NHSE
	Lincoln	Paul	HealthEducation Authority
	Luft	Sarah	English National Board
*	Noakes	John	RCGP
	Mant	David	Prof of Primary Care Epidemiology, University of Southampton
**	McPherson	Klim	London School of Hygiene & Tropical Med
	Marmot	Michael	Dept of Epidemiology & Public Health, University of London
	Marteau	Theresa	Psychology & Genetics Research Group,London
	Maryon-Davies	Alan	Consultant in Public Health Medicine, Health Promotion subgroup of Public Health Network

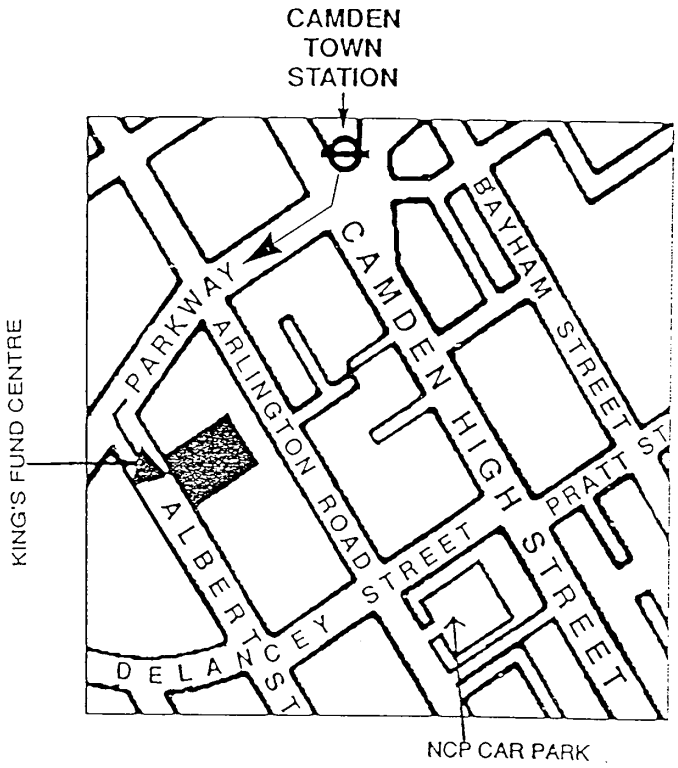
Muir	John	OXCHECK Dept of Public Health & Primary Care, Oxford
Nicholas	Amy	NHSE
O'Brien	Jean	NHSE
O'Dwyer	Aislinn	NW Region
Oliver	Michael	Emeritus Prof of Cardiology, Nat. Heart & Lung Institute
O'Neil	Clare	Nurse Study Co-ordinator, OXCHECK
Pentecost	Brian	Medical Dir, British Heart Foundation
Pill	Roisin	Dept of General Practice, Cardiff
Pocock	Stewart	Prof of Medical Statistics, London School of Hygiene & Tropical Medicine
Press	Vivienne	Department of Health
Ramsay	Roger	RCGP, Wales
Rayner	Mike	Dept of Public Health & Primary Care, Oxford
Riches	Bridget	NHSE
Ritchie	Lewis	RCGP Dept of General Practice, University of Aberdeen
Robson	John	Healthy Eastenders Project
Rogers	Lesley	National Forum for CHD Prevention
Shaper	Gerry	British Heart Foundation
Shaw	Frederick	Secretary, Nat Association of GP Tutors
Shearin	Chris	King's Fund Centre
Simmonds	Olivia	Associate of primary Care Facilites
* Spellar	Viv	Director of Health Promotion, Wessex
Standish	Martine	Society of Health Promtion Officers,
Stott	Nigel	Dept. of General Practice, Cardiff
Sweeney	Kieran	GP, Research Fellow, Exeter
Thompson	David	National Institute for Nursing, Oxford
Thompson	Susan	British Family Heart Study, Dept of Medical Statistics, London School of Hygiene and Tropical Medicine
Thorogood	Margaret	London School of Hygiene & Tropical Med
Todd	David	Chair, National Association of Fundholding Practices
Totton	Chris	Secretary, Society of Health Promotion Officers
Tunstall-Pedoe	Hugh	Cardiovascular Epidemiology Unit, Dundee

[redacted]

*	Van Zwanennberg	Tim	Director, Health Commissioning, Primary Care Development, Newcastle & North Tyneside
	Waring	Heather	Education Manager, British Heart Foundation
	Weeks	Valerie	Nursing Officer, Dept of Health
	White	Sue	NHSE
	Wilkin	David	Centre for Primary Care Research, Manchester
	Williams	Hywel	Senior Medical Officer, Welsh Office
**	Winkler	Fedelma	Chief Executive, Kent FHSA
	Wonderling	David	
	Wood	David	Regional Advisor in General Practice
**	Wood	David	British Family Heart Study, National Heart & Lung Institute
	Yudkin	Pat	OXCHECK Dept of Public Health & Primary Care, Oxford
	Yarwood	Joanne	British Family Heart Study

** Speakers

* Workshop chairs/session chairs



King's Fund Centre
126 Albert Street
Camden Town
London
NW1 7NF

(Telephone: 071-267 6111)

Tube: Camden Town station is on the Northern Line

Parking: The Centre has no parking space for visitors and is in a parking meter zone. The NCP car park is in Arlington Road.