

**A RAPID REVIEW OF THE LITERATURE ON THE
PROSPECTS FOR IMPROVING THE HEALTH OF OLDER
LONDONERS**

CENTRE FOR POLICY ON AGEING

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INTRODUCTION

This rapid review was originally commissioned by the London Office of the NHS Executive to inform the proposed Health Improvement Strategy for London. The structure and aim of the review was laid down by the Executive. It was to look at opportunities for health improvement from the point of view of health promotion and public health. The review should include:

- some discussion of the key policy issues - what are they?
- epidemiological data on the health of older people - with special emphasis on studies of older Londoners
- a summary review of the kinds of intervention that might be deployed as part of a health improvement strategy for older people - collating available evidence on effectiveness and cost-effectiveness.

Although there have been some changes in the relationship between policy for older people and the wider London Health Improvement Strategy, the basic aim and structure of this review has remained largely unchanged. The opportunities for health improvement are considered from the point of view of health promotion and public health. No attempt has been made to take a comprehensive look at the effectiveness of medical and nursing care for older people, nor at the organisation of this care in London.

There are two other important constraints on the scope of this review, which may help to explain the nature of its contents, or at least what might otherwise be seen as odd omissions. Firstly, the review does not give an overview of all that might be included in a strategy to promote healthy ageing in London. It concentrates very much on policy measures and interventions that are targeted at older people- people who are already old. All sorts of issues are thereby excluded from consideration - such as workplace interventions or pre-retirement education. The rationale for this decision is to be found in the contents of the rest of the Health Improvement Strategy. Secondly, very little is said about the material and social circumstances of older people in London, and their influence on health. Older people in Tower Hamlets have a material and social environment which is very different from that which is to be found in Richmond or Kingston. The case for targeting resources on particular areas of London with a view to funding e.g. community development initiatives for older people, or housing improvement schemes, or improved access to leisure facilities - as well as the issues that arise out of the need for the coordination of effort between different agencies - has been largely omitted from this present review. This omission reflects a particular division of labour between the Centre for Policy on Ageing and the London Research Centre. The CPA review tries to identify health problems where there is evidence of the scope for health gain and evidence of the availability of policy measures or interventions that are effective in achieving this end.

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SECTION 1

Health issues for older people

1.1 Impaired health and disability in later life

A health improvement strategy for older people in London raises a range of issues which are all connected and shaped by the fact that health and functional status tend to deteriorate with age - and often deteriorate to the point where people are no longer capable of living independently in the community. What gives added urgency and weight to these issues is the fact that more people are living longer. Between 1980 and 1994 life expectancy for men and women in their late sixties rose by almost two years. An increasing proportion of the population can expect to survive into their eighties, and it is among this age group that use of personal social services is particularly high.

Declining health status is by no means inevitable - several longitudinal studies following up cohorts of older people in their seventh, eighth and ninth decades show that we often have an exaggerated idea of inexorable decline in old age (Palmore 1985; Jagger 1989). A significant minority of people in their seventies and eighties show health improvement over periods as long as five years. Declining health and increasing dependence are nevertheless the common experience of most people in these age groups.

What longitudinal studies have also shown is that 'normal ageing' is associated with various kinds of deterioration and decline which appear to have no clear relation to underlying disease - unless we choose to describe ageing itself as pathological. Muscles, for example, become weaker and joints less flexible; individuals tire more easily; memory function tends to decline; there is a loss of physiological reserve which hampers the process of recovery from illness (e.g. Bassey 1998). Frailty - which has been defined as increasing vulnerability to environmental challenge - becomes increasingly common as people reach their late seventies and eighties (Strawbridge 1998).

- Most Londoners who are 65 years old or more will have at least one chronic or long-standing health problem; and the number of chronic diseases per individual increases with age (Harwood 1998).
- Although many of these older people - especially among the 'younger old' - will be more or less symptom-free, most people who are 65 years old or more experience some kind of health or functional impairment - such as chronic pain or breathlessness or joint stiffness or dizziness or urinary problems or weakness of limbs, etc. (Harwood 1998). Individuals who are 85 years old or more tend to suffer from more of these problems

than those who are between 65 and 74 years of age.

- The prevalence of disability - measured with a scale based on the ability to perform selected activities of daily life (ADLs) - rises fairly steeply after 70 years of age. The most common form of disability in older people is locomotor disability. Forty per cent of a sample of older people aged 65 years or more in Gospel Oak were unable to walk 400 metres and climb a flight of stairs normally (Harwood 1998). Following the 1987 OPCS definition of disability in England and Wales, which set the threshold for disability relatively low, 59 per cent of the sample had some kind of disability - and among the oldest age group (85 years+) the prevalence of disability rose to 92 per cent.
- The majority of older people who have difficulty in performing some of the activities of daily life are nevertheless quite capable of living independently in the community. As the old grow older, however, they are more likely to be housebound (Hunt 1978; Parker 1997; Cox 1987) and dependent on the help of others for the performance of such essential activities of daily life as dressing or feeding or using the toilet (Martin 1988).

It is clear then that for most older people death is preceded by a more or less prolonged period of disability and ill-health. In some cases this may amount to no more than a few months or weeks of terminal illness. For many people, however, it means several years of chronic ill-health and disability. It is evident (i.e. hardly requires support from research) that most older people would prefer to survive into their seventies and eighties without significant impairment of health or disability. Certainly it is clear - and this point is well supported by social research - that older people set great store by their ability to live independently (Age Concern 1992) - that is to say, without requiring the help of others in performing the essential tasks of day-to-day life. An increase in life expectancy that was gained at the cost of more years of dependency would be seen by many as a dubious benefit.

The conclusion to be drawn from this is that it is a mistake to identify health gain or health improvement simply with the adding of years to life. The benefits of an effective health improvement strategy for older people must extend beyond the adding of years to life to include the 'adding of life to years'. Whatever postpones or lightens the burden of the health-related loss of well-being which is so often associated with ageing - chronic ill-health and functional limitation - adds life to years. The challenge is to maintain health and quality of life in an ageing population.

This distinction between adding years to life and adding life to years is an essential part of the background to what is perhaps the first large issue to arise for a health improvement strategy for older people:

- how should the strategy formulate its aims and what targets should be adopted to judge progress towards the achievement of these aims and help to determine priorities ?

There are, in other words, important questions to be asked about the aims and objectives of a health improvement strategy for older people. What kind of balance should be struck between adding years to life and adding life to years?

1.2 Scope for prevention/postponement of morbidity and disability in later life

Reasonable optimism about the possibility of developing effective measures to prevent age-related disability and/or to compress the period of morbidity/infirmity at the end of life is based on various kinds of evidence. The age-associated risk of disease and disease-related disability is highly variable across and within different populations, and there is a substantial and growing body of evidence to support the view that established risk factors for some of these diseases can be modified. There is also a growing body of evidence to suggest that a significant portion of age-associated decline in physical functioning is due to 'disuse' or 'deconditioning' rather than disease processes or a biologically conditioned process of senescence (Muir Gray 1985; Buchner & Wagner 1992).

(1) A great deal of later life disability is caused by a fairly limited number of chronic diseases and there is ample evidence of considerable international variation in the rates of chronic (and disabling) disease in later life. Secular trends for (a) the prevalence of disability at specific ages and (b) age-specific incidence rates for some serious disabling diseases also point to the influence of environmental and lifestyle factors in the occurrence of disease. The proportion of older British men unable to perform four key activities of daily life has halved between 1976 and 1994 (Bone 1996). In the United States age specific rates for cardiovascular disease have halved in the last thirty years, though they have doubled in Hungary (Kesteloot 1989). The incidence of stroke in the United Kingdom, as in most industrialised countries, has been declining for several years (Bonita 1992). Several countries, including Britain, have seen considerable increases in rates for hip fractures since the Second World War.

(2) Although in some cases (such as dementia) not enough is known about risk factors for these diseases to develop risk reduction strategies for primary prevention of disease, in other cases risk factor models are fairly robust (such as cardiovascular disease, chronic obstructive pulmonary disease, osteoporosis).

(3) There is a growing body of evidence from large-scale longitudinal studies (mostly North American but some also from Europe) which links individual variations in health and functional

status in later life with various environmental and behavioural factors (Stuck 1999). These studies, which follow large cohorts of older people from anything between two and thirty years, try to identify factors which predict not only survival, but survival in a healthy and active condition. They do not restrict their view of the dimensions of health to the absence or presence of disease; and usually give special attention to the maintenance of physical function e.g. mobility and the capacity for personal self-care. Many of them also include cognitive functioning. Some studies will look for factors associated with the preservation of independence in activities of daily life; some will concentrate on mobility measures; and others will use their own composite measures such as 'successful ageing' or the 'avoidance of frailty'.

All these studies report (i) that there is a great deal of individual variation in changes of health and functional status in later life; (ii) that one of the major determinants of health and functional status at the endpoint of the study is prior health and functional status - individuals who have certain kinds of chronic illness at the beginning of the study or succumb during the course of the study are at greater risk of functional decline; (iii) that variations in health and functional status are also systematically associated with potentially modifiable risk factors. Apart from chronic disease, prominent among the factors picked out by these studies as predictive of functional decline are an unhealthy lifestyle and lack of social support or social participation. There is, for example, a substantial amount of evidence to suggest that the same lifestyle factors which add years to life also add life to years. Regular exercise and the avoidance of smoking protect against loss of physical function (Guralnik & Kaplan 1989; Mor 1989; Breslow & Breslow 1993; LaCroix 1993; Simonsick 1993; Seeman 1995; Strawbridge 1996; Strawbridge 1998). One very important finding to emerge from many of these studies is that a healthy lifestyle is a determinant of healthy ageing independently of its effect on the incidence of chronic illness.

(4) A substantial part of the large body of research looking at the benefits of exercise on older people is concerned with the reversal of 'de-conditioning' in older people. This research suggests that it is possible to modify age-associated decline in various kinds of physical capacity which are closely linked to functional status (Wagner 1992). It is possible to improve e.g. cardiovascular fitness, lower limb strength and balance control in 80 year olds as well as healthy and active 60 year olds.

1.3 Expanding services and unmet need

Much of this report will be concerned with the influence of individual lifestyle and environment on health and functional ability. There is no doubt, however, that older people have much to gain from medical care - clinical or therapeutic interventions - aimed at relieving functional deficits or distressing symptoms associated with many of the common diseases of later life. Joint replacement surgery and cataract surgery can make a great deal of difference to the quality of life

of older people with osteoarthritis or cataracts. There is no doubt also that older people have much to gain from prompt and effective interventions in acute crises. The quality of the medical care administered in these circumstances can make a great deal of difference to the outcome. And finally it is evident that disabled older people have much to gain from the provision of adequate and appropriate social care and aids to relieve handicap. The adequacy of provision of these services - which may all be quite reasonably described as *preventive* - represents health issues of considerable concern to older people in London (Warnes 1997); and it must be important for a health improvement strategy for older people in London to determine to what extent and in what ways it should address this matter.

There are several broad questions to be considered under this heading. The first concerns the widely aired issue of shortfalls in the provision of services that have a significant and well-recognised impact on quality of life. Complaints about the inadequacy of chiropody services or occupational therapy services as well as complaints about long waiting times for elective surgery or what is sometimes called preventive social work are common in reviews of services for older people. These are all interventions that can do much to relieve distress and improve functional status, and it is arguable that there is plenty of scope for expanding services that provide these interventions to older Londoners who are known to need them.

The second issue concerns the identification of unmet need for established interventions. Much has been written about the existence of undiagnosed health problems and unmet need in the older population. In the UK general practitioners are contractually obliged to offer an annual health check to everyone aged 75 years or more, and although the value and effectiveness of such a programme remains a matter for dispute, "the early recognition and seeking out of established symptomatic disease and social detriment so that treatment and social support can be instituted to improve quality of life and reduce functional deficit" (Williams 1994) is the main rationale for this kind of regular health surveillance. Some studies have found that elderly people who have not seen their doctor for a long time have significant levels of unreported morbidity (Bowling 1989), whereas others have found their health to be at least as good as those who are known to the doctor (e.g. Ebrahim 1984).

It is important also, when shaping the response to this broad problem of identifying unmet need, to take into account evidence that uptake of some of these community-based services is fairly uneven across different social and/or ethnic groups. A series of empirical studies in the 1980s drew attention to the low uptake of community health and social services by older people from minority ethnic groups (e.g. Home Office 1989). "The testimony of Asian GPs to the difficulties still faced by elderly members of their community in obtaining services is a disappointing result after a decade of research, debate and development. It is a problem which needs to be addressed" (Pharaoh 1995).

And finally there is an issue to do with the extension of interventions of established effectiveness to people in older age groups. Older people - those say who are aged 75 years or more - may be offered certain kinds of intervention less frequently than those in younger age groups. Sometimes this kind of data may be thrown up in an audit as a reflection of what is widely seen as reasonable clinical practice - it so happens that age is closely associated with the ability to benefit from the intervention. At other times it may reflect what is seen as a more questionable practice - the adoption of operational policies which select people for certain kinds of intervention on the basis of age. At other times perhaps it may not be clear what is going on. It seems clear, for example, that cancer in people aged 75 years or more is less extensively investigated and treated than in younger people - and that this is not wholly explained by greater comorbidity or frailty (Turner 1999).

1.4 Scope of the strategy

Evidence on the health gains that might be achieved for older people by expanding and extending services of established effectiveness raises a general issue to do with the relationship between (a) a public health/health improvement strategy and (b) a strategy for improving health services for older people. The demarcation line between these two strategies is usually drawn with the aid of a distinction between interventions which aim to relieve existing health problems and functional deficits and interventions which aim to prevent the emergence of these problems in the first place. However, the fact that a large proportion of older people already have some kind of chronic illness and/or functional limitation blurs the line of demarcation between the two strategies. It seems, for example, wrong-headed to argue that a health improvement strategy for older people should restrict its aims to the task of preventing the *onset* of chronic disease and/or disability in older people - and not include efforts to prevent or postpone *further* functional decline in older people who are already disabled. In which case the health improvement strategy has to include some consideration of what is usually described as tertiary prevention and deemed to be the proper province of clinical medicine.

1.5 Who are older people?

It is essential to distinguish between (i) a strategy to promote healthy ageing in the population and (ii) a strategy to improve the health of people who are already 'old'.

A strategy to promote healthy ageing would implement measures and interventions across all age groups. It would highlight, for example, the importance - for the prevention of osteoporosis in later life - of achieving peak bone mass in early life; and the importance - for the prevention of cardiovascular disease - of an active and healthy lifestyle in 'middle age'. Healthy ageing - seen

from this point of view - is one of the outcomes of efforts across the life course to improve the health of the general population. Many of the determinants of healthy ageing are factors that impinge on people long before they cross the threshold into old age - whenever that is deemed to occur. People accumulate risks for 'unhealthy ageing' and 'positive resources for health' throughout their lives.

One important question that can be asked in the context of a strategy for healthy ageing is whether it is better to act earlier rather than later to diminish risks for ill-health. In many cases it is clear that this is so. It is better to stop smoking sooner rather than later - and better still not to start. There are, on the other hand, many preventive interventions that are more or less tailor-made for people in later life - as for example influenza vaccination or regular health and functional screening.

A strategy to improve the health of people who are already 'old' is different from a strategy to promote healthy ageing. It is concerned with measures and interventions that are targeted at people who are no longer 'young' or 'middle-aged'. It has to start from a consideration of the capacity of a particular segment of the population to benefit from certain kinds of health-promoting or health-improving interventions. If the London health improvement strategy intends to pick out older people as a priority group - a segment of the population who are at increased risk of ill-health, functional decline and death *because of their age* - then one of the very first issues therefore that has to be faced is: who are older people? Is it necessary for the strategy to define the group 'older people' - as potential recipients of interventions - by chronological age? Are they people who are of pensionable age? People who are at least 65 years old? Are the 'younger old' to be included as well as the 'older old'?

There are good reasons, in the context of a health improvement strategy, for setting a fairly low threshold for 'old age'. By including the 'younger old' - say 50 years+ - the strategy is able to take in the possibility of interventions such as the promotion of pre-retirement planning as well the scope for health promotion around the menopause. There are also good reasons, however, for adopting a narrower definition of the group 'older people'. Many people in their fifties would not think of themselves as old. They tend to fall within the standard definition of middle-age - as in studies of CVD risk among middle-aged men (e.g. Wannamethee 1998) - and may fall within the reach of workplace interventions.

This present report does not concern itself with everything that might plausibly be included in a strategy for healthy ageing. It does not purport to cover all the ground that would be required by e.g. a strategy for the prevention of disability in later life. It is concerned only with a part of that more comprehensive strategy - the part that deals with interventions with older people - and to that extent must be considered incomplete.

1.6 Health inequalities in later life

There is plenty of evidence linking survival in later life to various measures of social advantage and disadvantage - such as occupational class or income or educational attainment (a widely used predictor of survival/healthy ageing in US surveys). In Britain people from a non-manual occupation group are more likely to reach 'old age' than their contemporaries from unskilled/semi-skilled occupation groups. These mortality differentials persist in later life (Marmot & Shipley 1996). There is also evidence linking occupational class with self-assessed health and functional status in later life (e.g. Victor 1991). And although relatively little research has been carried out in the United Kingdom on the link between ethnicity and healthy ageing, there is evidence from a variety of national and local studies that older people from minority ethnic communities have higher rates of chronic illness than the white population (Smaje 1995). It is important to ask therefore:

- in what ways should a strategy to improve the health of older Londoners address the problem of social and ethnic inequalities in health?

It may be possible to do something to modify lifetime exposure to health risk as well as the different kinds and levels of 'positive health-promoting' resources which people bring with them or have available to them as they enter into later life. But what about the people who are already old? Should a strategy for improving the health of older people target or prioritise certain groups of older people on the basis of socioeconomic or demographic characteristics?

1.7 Social resources, deficits and burdens

One of the most consistent findings in longitudinal and cross-sectional studies of healthy or successful ageing is that networks of social support and opportunities for social participation are of enormous importance to the well-being *and* health of older people, though there are still plenty of questions to be asked about the precise nature of the relationship between these variables (Bowling 1991).

By the middle of the 1980s a considerable body of evidence had accumulated - almost entirely from US studies - on the 'health protective' effects of social support and continuing social activity in later life. For older people, good 'social support networks' (i.e. close personal friends and confidants) and the maintenance of an active social life appear to increase the chances of survival (Blazer 1982; Zuckerman 1984; Welin 1985; Schoenbach 1986; Seeman 1987). It is widely agreed that good social support not only aids recovery from illness but also appears to act as a

buffer against some of the stressful events and circumstances that are common in later life (House 1988). Results from more recent studies suggest that good social support and/or the maintenance of social activity have an effect on the preservation of functional ability and independence (Roos & Havens 1991; Seeman 1995; Kaplan 1993; Steinbach 1992). The association between social support and psychological well-being seems to be even clearer (Prince 1997a).

If the presence or absence of networks of social support is a very important feature of the social circumstances of older people, so also are the demands that may be made upon them as informal carers. For very large numbers of older people, the primary carer is also an older person - usually a spouse (e.g. Buck 1997); and as the population ages, an increasing number of older people in their sixties and seventies find themselves looking after parents. There is now quite a lot of evidence to suggest that the strains and costs of informal caregiving are often considerable, especially if they fall mostly on a single individual who is co-resident with the person receiving care. They may even undermine the health of the caregiver and so precipitate the institutionalisation of the older person who had until then managed to live in the community. Certainly the psychological well-being of carers is a key predictor of breakdown of community care (Levin 1994). Interventions to help caregivers may benefit older people in two ways therefore: they may benefit both as caregivers and as receivers of care.

- To what extent and in what ways should a strategy to improve the health of older Londoners address (i) what the Gospel Oak study describes as 'social support deficits' (Prince 1997a) and (ii) the problems of informal carers?

SECTION 2

Operationalising the policy issues

2.1 The heterogeneity of older people

Older people are a very heterogeneous group. There are enormous variations in health and functional status - especially if a relatively young group of older people are included - as well as in social and economic resources. At one extreme (to take an age of 60 years as a threshold) there are fit, healthy and active 60 year olds who are disease-free with no significant disability or functional limitation (e.g. able to perform heavy household tasks/ walk one-half mile/climb flight of stairs/ without difficulty); and at the other extreme there are very frail 90 year olds with multiple chronic health problems who need help with such essential elements of personal care as going to the toilet or washing. This is not to say that all 60 year olds fit into the one category and all 90 years olds in the other, though for sure more 60 year olds than 90 year olds are fit, healthy and active - and more 90 year olds than 60 year old are frail and need help with personal care. The point is rather that older people are a very diverse group. Although there are some issues that cut across this diversity, there are others which depend squarely on current health and functional status.

- Many older people are apparently free of chronic disease and without significant functional limitation (they are able e.g. to do heavy household tasks and to walk a mile or more without difficulty). Two issues which are of particular relevance to this group are: (a) the scope for the primary prevention of fatal/chronic disabling disease and (b) the possibility of benefit from trying to detect and treat 'hidden' disease.
- The great majority of older people living in the community who have impaired health or some kind of functional limitation are perfectly capable of looking after themselves. Of particular relevance to this group are issues to do with the possibility of benefit from efforts aimed at (a) the detection of untreated illness or functional deficits; (b) preventing the onset of significant disability and the associated loss of independence; and (c) helping individuals to cope better with symptomatic illness and to enhance their functional status.
- The issues that arise for older people living in the community who already have significant disability or functional limitation will be somewhat different for those with less severe health problems. Although it is not possible (by definition) to act to delay the

onset of significant disability in this group, it may be possible (a) to do something to prevent further functional decline and so diminish the risk of institutionalisation. It may also be possible (b) to improve the functional status of this group and so reduce their dependency on others - whether these are formal care services or informal carers. For this group - as for those who have less severe impairments - there is a general issue about (c) the extent to which and the ways in which they can be helped to cope more successfully with their health problems, even if it is not possible to postpone further functional decline.

- The relatively small proportion of older people who live in some form of institutional care are among the frailest and most disabled section of the population. These are older people who - often for a combination of medical and social reasons - are unable to live independently in the community. They are more reliant than other older people on formal care provision; they are less able to help themselves; and more vulnerable to sudden and rapid deterioration. To what extent and in what ways should health improvement for this population be included in the strategy?

2.2 Postponing the onset of symptomatic chronic disease in the older population

A great deal of evidence has accumulated in recent years about the role of personal lifestyle in the aetiology of often-fatal chronic disease and the loss of functional ability in later life. Smoking, lack of physical activity, obesity and excessive alcohol consumption are risk factors not only for the two major causes of mortality in later life - cardiovascular disease and various cancers - but are also clearly implicated in other common and disabling diseases of later life - such as osteoporosis and chronic obstructive pulmonary disease. A healthy lifestyle reduces risk of disabling disease and increases the chances of a healthy old age. In the context of the present review, the important issue is to determine the benefits of adopting a healthy lifestyle *in later life* (rather than the benefits in later life of adopting a healthy lifestyle).

- What are the benefits of adopting a healthy lifestyle - e.g. stopping smoking or losing weight or increasing physical activity - late in life? Do the benefits of behavioural change diminish with increasing age to such an extent that after, say, 65 years of age, they become negligible and it is no longer worthwhile making the effort? Or does the adoption of a healthy lifestyle add years to life and life to years even for those who are already old?

Given that there is good evidence for the health benefits of a certain kind of lifestyle, what can be done to bring about lifestyle change in older people who have an 'unhealthy lifestyle'? Evidence that modifiable individual risk factors make a significant contribution to the incidence

of often-fatal disease has generated a very large body of research looking at the effectiveness of pharmacological and educational/behavioural interventions intended to reduce risk for CVD. Most reviewers (e.g. Ebrahim & Davey-Smith 1997) tend to agree that there is only very limited evidence for the effectiveness, in the general population, of educational or behavioural attempts at individual risk factor modification in reducing cardiac disease or mortality. In high-risk populations, however, there are more grounds for optimism. Behavioural interventions in patients with established heart disease (secondary prevention) can change objective risk factors for CVD and can even reverse coronary heart disease (Ornish 1990).

- What evidence is there for the effectiveness, in older people, of interventions to reduce risk for chronic disabling disease? Is it possible, for example, to change the behaviour of older people without symptomatic cardiac disease so as to reduce the incidence of symptomatic disease?

2.3 Detecting hidden and treatable disease

Should the health service increase and extend its efforts to detect hidden and treatable disease in that segment of the older population which is apparently healthy?

The answer to this question must rely on evidence relating to e.g. the benefits of inviting women over 65 years of age for breast cancer screening - the benefits of screening for other forms of cancer where early intervention confers considerable benefits - the prevalence of untreated or poorly controlled hypertension - the benefits of screening for osteoporosis in post-menopausal women with fractures.

2.4 Screening for symptomatic disease and functional deficits in the older population

Is there sufficient evidence for the presence of a large pool of untreated disease and functional deficits in the older population to support the case for making greater efforts to improve access to health services? There are studies which suggest e.g. that there are large numbers of older people with undiagnosed and/or poorly controlled hypertension (e.g. Health Survey for England 1996); that depression in older people is poorly recognised and under-treated in primary care (Crawford 1998); that a significant proportion of older people with hearing deficits do not have hearing aids (Stephens 1990); or that more could be done to relieve handicap in the 'older old' by the provision of cheap and simple appliances in the home (Hart 1990).

Are there some groups of older people - as for example members of ethnic minority groups who find it hard to communicate in English and may lack information about the availability of services - who have relatively poor access to health care?

2.5 Preventing or postponing the onset of functional decline in older people with chronic illness

If disease prevention is not possible, it may still be possible by means of behavioural and lifestyle changes - as well as early treatment - to slow the progression of existing chronic diseases and the rate of disability associated with them.

Some of the issues that arise under this broad heading are concerned with the *management* of chronic disease in older people. Is it possible to prevent or postpone the onset of functional decline in this population by the more effective management of chronic disease? Recent UK surveys have shown that there is scope for improving the management of patients with established ischaemic heart disease in primary care (e.g. ASPIRE 1996). Evidence for the benefits to be obtained from well-planned rehabilitative interventions in chronic disease is to be found in increasing numbers of trials (see e.g. Young 1991; Sridhar 1997; Lavie & Milani 1999).

There are also, however, questions and issues about the ways in which older people with chronic disease may be 'helped to help themselves'. The aim here is not really to ensure that the appropriate treatment is provided to those who need it (or may benefit from it). The aim rather is to make the patient a more active partner - perhaps the more active partner - in the partnership of care between doctor and patient. What is at issue here is not so much the benefit of e.g. 'exercise therapy' for a patient with heart disease as the effectiveness of measures to encourage and enable someone with heart disease to incorporate regular exercise into their daily life.

2.6 Preventing functional decline in disabled older people

There is widespread consensus about the importance for older people of good rehabilitative care; and there is now a large and growing research literature on the most effective strategies for the preservation of functional ability about catastrophic events such as hip fracture, stroke and heart attack. In 1991 the Royal College of Physicians highlighted the importance of effective rehabilitative care after acute disease in its recommendations on preventive care for older people.

The present government has declared the improvement of rehabilitative services to be one of its priorities for the NHS. Good rehabilitative care helps disabled older to attain optimal functional status and has been shown to prevent functional decline; and there is plenty of evidence to suggest that the opportunities for rehabilitation are not being fully exploited (e.g. Lindley 1995; Royal College of Physicians 1999).

Another important issue for this group of older people - besides the availability of appropriate rehabilitative care - is whether or not it is possible to prevent functional decline (and so help

maintain the independence associated with living in the community) by means of non-therapeutic or non-clinical interventions which aim to provide people with the information and skills they need to maintain optimal health. How can this group of older people be helped to help themselves - to exercise more control over their health - and in so doing postpone functional decline?

2.7 Coping with ill-health and functional limitation

Chronic diseases associated with both functional limitation and undesirable symptoms are common in later life. Often when medical therapy is powerless to halt the progress of disease it may offer relief to symptoms to help to preserve function. Often, however, clinical medicine has relatively little to offer - or, to put it another way, what it has to offer leaves a considerable burden of symptoms and functional limitation still to be carried by the individual. Ill-health and disability place large burdens of adjustment on older people; and some of them adjust better and cope better than others. They manage symptoms more successfully, preserve optimal levels of functioning, maintain an active social life and succumb less readily to the low spirits or depression which are so commonly associated with chronic disease and functional limitation in later life.

- What more can/should be done to help older people to adjust and cope better with health problems that cannot be removed by medical means?

There are questions to be asked here about the value of e.g. patient education programmes and self-help groups for older people with various medical conditions as well as e.g. befriending schemes for people with restricted mobility. What kind of benefits should these kinds of initiative have to demonstrate in order to secure the support of a strategy for health improvement in older people? What kind of value should be set on interventions which may not be effective in postponing functional decline but are effective in enhancing older people's sense of well-being and their ability to cope?

2.8 Health improvement in residential and nursing home care

As the population ages and more people live for longer in their own homes in the community, the characteristics of the older people who live in residential and nursing home care are changing. They are a frailer and more disabled population now than they were ten or fifteen years ago. Very few people return to live in the community after admission to institutional care, apart from those who are there for temporary respite care. It is easy to see how such a population might slip out of view for a health improvement strategy for older people. One very obvious goal

of health improvement for older people - enabling them to live 'independently' in the community - has (or appears to have) little relevance to their condition. For this population the possibilities of health improvement depends very largely on the quality of the health and social care that they receive.

All this perhaps is true, but it should not be allowed to obscure the fact that it may be possible to do a great deal to improve the health and functional status of this population by doing something about the organisation of services that provide them with health care. What lends plausibility to this argument are the well-canvassed problems of access to general and specialist health care for this population (Black & Bowman 1997). In other words, although there *are* particular preventive interventions which have been designed for older people in residential care (e.g. hip protectors or exercise classes), there is, arguably, a prior problem to consider, namely their access to various health care services, community-based as well as specialist. There is evidence, for example, of inadequate management of urinary incontinence in residential care (Peet 1996) and inadequate monitoring of prescribing regimes (Thacker & Jones 1997).

SECTION 3

Epidemiology

3.1 Mortality

Over the last thirty years or so, mortality in later life has been falling much faster than ever known before; and Londoners have of course shared in these benefits. It seems indeed that mortality among older Londoners is somewhat lower than in the general population. Warnes (1996), comparing London's 'older age' Standardised Mortality Ratios (SMR) for 1989-94 with those for England and Wales as a whole, found that male Londoners aged 65 years and over experienced 4 per cent fewer deaths per year than the general population, and females had a 7 per cent advantage. There was furthermore less geographical variation in SMRs within London (between 'inner deprived', 'mixed status', and 'high status' areas) than across the country as a whole.

These results confirm and extend those of an earlier study, also from the King's Fund London Commission, which concluded that the broad morbidity and mortality patterns of London's older people are unlikely to differ greatly from national patterns; Londoners are if anything at a slight health advantage (Benzeval 1992). In London, as in the rest of the country, the major causes of death among individuals aged 60 years+ are circulatory diseases, followed by cancer then respiratory disease (*see Tables A1 and A2 in appendix*). Mortality from circulatory disease accounted for 46 per cent of all deaths in the London population (up to age 75 years) in 1989; and cancer was the cause of death for one in four Londoners. Benzeval's analysis also showed that mortality due to ischaemic heart disease was consistently lower in London, regardless of the type of area category considered, than in the country as a whole. In only one London district (Newham) was the SMR due to ischaemic disease found to be higher than the national average. For each category of comparison, London had a consistently and significantly better experience of mortality due to ischaemic heart disease than equivalent non-London districts. Further analysis by Warnes (1996) has shown that this is corroborated by 1989-94 data. Mortality data for cerebrovascular disease and cancer showed a similar pattern (Benzeval 1992).

3.2 Chronic disease among older people

The proportion of older people suffering from chronic disease rises with age. In the 1996 General Household Survey (ONS 1998), 61 per cent of men aged 65-74 reported a long-standing illness, compared to 47 per cent in the 45-64 year age group. A similar increase in vulnerability to chronic disease is seen in older women. Slightly fewer women than men reported long-standing and limiting long-standing illness at ages 65-74 but the percentage for women rises above that for men among those aged 75 and over (*see Table A4 in appendix*). Women at older ages (75+) tend to suffer more limiting long-standing illness than men.

Older people are also less likely than younger people to rate their health as good or very good. In the 1996 Health Survey for England the proportion of people reporting good health declines with age and men generally report better health than women. Around three quarters (76 per cent) of all adults assessed their health as good or very good - this percentage fell to 62 per cent for those aged 65 to 74 and fell to just over half (53 per cent) of those aged 85 and over.

National and local UK studies agree in finding musculoskeletal disease to be the most commonly reported category of chronic illness in the older population. In the General Household Survey (ONSa 1998) arthritis and rheumatism were the most commonly cited causes of long-standing illness: 188 men and 313 women per 1,000 aged 75 years or more said that they suffered from these complaints (*see Table A3 in appendix for fuller details*). Somewhat higher prevalence rates are reported in the 1996 Health Survey for England (Prescott-Clarke and Primatesta 1998), the MRC Cognitive Function and Ageing Study (Parker 1997) and the Gospel Oak study (Harwood 1998).

In the HSE 37.7 per cent of adults age 65 and over reported long-standing illness or disability of the musculoskeletal system, 26 per cent reported heart and circulatory system problems and 9.4 per cent problems of the respiratory system. In the MRC study the prevalence rates for arthritis were higher still (the sample included older people in residential care). High blood pressure was the next most commonly reported condition. In Gospel Oak, North London, the most frequent diagnosis in a sample of community-dwelling older people (65 years+) was once again arthritis, reported by 58 per cent of the subjects and most often affecting the knees. The other commonly reported diagnoses were heart disease (22 per cent), lung disease (22 per cent), and eye disease (15 per cent) (Harwood 1998).

Although some chronic disease in later life is asymptomatic, the majority of people of 65 years or over report troublesome symptoms of one kind or another. In the 1984-85 Health and Lifestyle Survey (Cox 1987) 28.3 per cent men aged 65-74 and 33.5 per cent men age 75-84 reported painful joints 'during the last month'. The percentages of women with painful joints

were higher in both age groups with 48.5 per cent of those aged 75-84 reporting pain. Palpitations and breathlessness were reported by 26 per cent of men aged 75-84 and 30.6 per cent of women. Other commonly reported problems (more than one-fifth of men and women) were back pain, trouble with feet, trouble with eyes and trouble with ears.

In Gospel Oak, North London (Harwood 1998), 53 per cent of the sample (65 years+) reported regular pain, mostly in back or joints. One quarter reported dizziness (23 per cent), breathlessness (24 per cent) or urinary symptoms (27 per cent). Sixteen per cent had fallen within the last month and 14 per cent had generalised or specific weakness of the limbs.

Foot problems (mentioned in the Health & Lifestyle survey - see above) are a very common health problem associated with advancing age and may not find a place in any of the list of diseases of later life. A survey undertaken in the 1960s estimated that 70-90 per cent of people aged 65 and over had some trouble with their feet, and that at least half of these people would benefit from chiropody treatment (Clarke 1969). A larger national study (Cartwright and Henderson, 1986) found that the proportion of elderly people reporting trouble with their feet had increased since the earlier survey by Clarke (1969), as had the number of foot problems identified by chiropodists and the proportion of elderly people receiving chiropody. Sixty-five per cent of people aged 85 years or more cannot cut their own toenails, and in 1993 less than half of this age group had seen a chiropodist in the previous three months (OPCS 1996). Foot problems, particularly amongst the 'older old', are a major cause of mobility difficulties (Age Concern 1998). Studies by Bowling (1994; 1997) in East London found that the single physical health problem which was most consistently associated with and predictive of chronic difficulties in daily living among the 'older old' was foot problems.

3.3 Disability among older people

The prevalence of disability increases with age, though in London, as elsewhere, the majority of older people aged less than 75 years are without disability. General Household Survey data on the ability of people aged 65 years or more to perform selected activities of daily living (ADLs) - for example going up and down stairs or bathing - show that over 70 per cent of this population have no difficulty in performing each of the tasks assessed (Jarvis 1997 - *see Table A6 in appendix*). This figure is very close to those obtained in the first Gospel Oak study (Livingston 1990) for people classed as having no problems in day-to-day living (68 per cent), and in the Guy's/Age Concern survey in Lewisham and North Southwark (Lindesay 1990) for people who do not have a health problem that 'interferes a great deal' with daily activities (71 per cent).

The sharp increase in disability in the 75+ population can be illustrated from an estimate of the

prevalence of disability among London's older population in 1996 (Kenny 1996) based on OPCS estimates for age and sex specific prevalence rates for ten levels of disability in the general population (Martin 1988). The estimated percentage of all Londoners age 65+ without a disability is 55.7 per cent whilst 33.1 per cent have a moderate or high level of disability (levels 5-10). Moderate to high levels of disability increase quite dramatically in the 80+ age groups. See Table 1 below.

Community based studies within London tell the same story. Harwood (1998) measured the prevalence of disability in residents over age 65 years in Gospel Oak, North London, using the same disability scale as the 1988 OPCS survey (see Table A5 in appendix). Twenty-two per cent of the sample had mild or moderate locomotor disability and 18 per cent were more severely disabled. The most prevalent disabilities after locomotion were hearing (21 per cent), intellect (17 per cent), behaviour (16 per cent), reaching and stretching (13 per cent), personal care (13 per cent), continence (13 per cent), seeing (11 per cent), dexterity (8 per cent), communication (4 per cent), consciousness (3 per cent) and eating and digestion (1 per cent). The proportion able to undertake all the ADLs assessed without difficulty was 41 per cent - cutting toenails caused the greatest difficulty (51 per cent), followed by climbing stairs (41 per cent) and using the bath (29 per cent).

Table 1 Disability levels by age group of older Londoners, projected populations 1996

	Disability level (percentage)						Any disability			Popn
	None	1-2	3-4	5-6	7-8	9-10	000s	%	Score ¹	000s
65-69	72.8	10.9	6.6	4.6	3.2	1.9	70.0	27.2	3.93	257.3
70-74	66.7	13.2	8.2	6.0	4.0	1.9	77.0	33.3	3.91	231.3
75-79	52.8	14.3	11.1	10.1	7.2	4.4	84.8	47.2	4.50	179.7
80-84	37.4	16.6	13.3	12.9	11.5	8.3	87.0	62.6	4.91	138.9
85+	21.7	9.1	11.5	18.0	19.3	20.2	90.0	78.3	6.27	115.0
65+	55.7	12.8	9.5	9.0	7.4	5.7	408.9	4.3	4.77	922.3
65+ (000s)	513.4	117.8	87.5	82.7	68.7	52.2	408.9	-	-	922.3

¹ The score is a weighted mean based on mid-point of disability levels, excluding people with no disability.
Source: Kenny (1996) in Warnes (1996)

One of the most severe manifestations of disability in the older population is 'houseboundness'.

What evidence there is suggests that this group tend to have a relatively poor quality of life (Lindesay & Thompson 1993) and they require and receive high levels of support from health and social services (Hunt 1978). Hunt (1978) reported a rate of 4.5 per cent in a national sample of people aged 65 and over living in the community, which included people who were 'psychologically' housebound or bedfast. Parker (1997), in a much larger national sample, report a rate of around 3-4 per cent for the 65-74 year age group. People aged 75 years or more are much more likely to be housebound, with twice as many women (22.1 per cent) as men (10.1 per cent) being in this condition. A community-based study of older people (65+) in Lewisham and North Southwark reported rather lower rates (3.5 per cent overall rising to 20 per cent in the 85+ age group), though with a different definition of houseboundness (Lindesay & Thompson 1993). There were, however, many more people in the sample (11.3 per cent) who were dependent upon the help of others to get out of the house. Bowling and Browne (1991), in a survey of people aged 85 years or more living at home in East London, found that 52.9 per cent of their sample were either housebound or needed help going out.

Longitudinal studies of changes in functional ability in older adults, especially those studies which look at the 'older old', tend to show that stability or decline is more common than improvement. A follow-up study of a large sample of community-dwelling people aged 75 years or more in Leicestershire showed that most of those who were independent in ADLs at baseline had deteriorated at the end of five years; and 23 per cent of the survivors became critically impaired over the course of the study and "potentially required help at any time of the day or night" (Jagger 1989). Bowling (1994) followed up a cohort of people aged 85+ living at home in inner London (City and Hackney). Fourteen per cent of the sample showed low levels of disability at the beginning and end of the study period; 66 per cent had moderate to severe difficulties with ADLs at baseline and follow-up; and the remainder showed considerable deterioration.

3.3.1 Trends in disability-free life expectancy

Table 2 Life expectancies¹ by gender and age, England and Wales (years)

	Life expectancy			Disability-free life expectancy ²		
	1980	1985	1994	1980	1985	1994
Men						
65-69	12.9	13.3	14.8	11.6	12.1	13.5
70-74	10.0	10.4	11.6	8.6	9.1	10.3
75-79	7.6	7.9	9.0	6.2	6.5	7.6
80-84	5.7	5.9	6.9	4.1	4.6	5.4

85+	4.3	4.5	5.3	2.7	3.1	3.8
Women						
65-69	16.9	17.3	18.6	14.4	14.2	15.6
70-74	13.3	13.7	15.0	10.8	10.5	12.0
75-79	19.1	10.5	11.7	7.7	7.2	8.8
80-84	7.4	7.8	9.0	5.0	4.3	6.1
85+	5.3	5.6	6.8	2.7	2.2	4.0

1 Further number of years which a person might expect to live

2 With the ability to perform activities of daily living (bathing, getting around, feeding and getting to the toilet) independently.

Source: ONS; PSSRU, University of Kent. In Matheson and Summerfield (1999)

There is some evidence to suggest that disability generally among the older population is decreasing in the UK. Matheson and Summerfield (1999) analyse several years of GHS data on the ability to perform basic self-care tasks to present time-trend data for disability-free life expectancy. In 1994 men and women aged 65 could expect more years of disability-free life than people of the same age in 1980. *See Table 2 above.* The results also suggest that the improvement has been greater for women.

3.4 Major causes of disability in later life

There is a 'core group' of common disabling diseases which are found to be associated with and/or predictive of disability in most community-based studies of disability in later life. Some of the common diseases of later life have a clinical picture which includes disability (e.g. arthritis and stroke). Others such as cardiac disease or respiratory disease are generally associated with a substantial decrease in endurance capacity and, as a result, restrictions in mobility.

There is little doubt that musculoskeletal complaints, most notably arthritis, rank first in the list of major causes of disability in later life. In the OPCS disability survey (Martin 1988) musculoskeletal complaints were the most commonly cited causes of disability among disabled adults living in private households (46 per cent of those with some degree of disability). Hearing loss (38 per cent), visual impairment (22 per cent), diseases of the circulatory system (20 per cent), and respiratory problems were also commonly mentioned. For those living in communal establishments, however, senile dementia (56 per cent) stands out as the most common cause of disability, followed by arthritis (37 per cent) and strokes (30 per cent).

The NHS Health Advisory Service (1997) lists five categories of Common Disabling Diseases in Elderly People (>75 years of age), and makes a point of including incontinence as a major

cause of disability (along with neurological, cardiovascular, respiratory and musculoskeletal diseases). It is estimated that the condition increases the risk of hospitalisation by 30 per cent in women and 50 per cent in men (Thom 1997). Another very important cause of disability in later life, though it is not usually classified as a disease, is falling. Falls prevention has become a major focus for health promotion in later life, in this country not least because of the priority given to accident prevention. Depression, also not included in the HAS list, is a major cause of morbidity in later life, though its relationship with disability (as cause or effect) is often unclear.

3.4.1 Musculoskeletal disease

Rheumatic complaints, arthritis and soft-tissue symptoms affect eight million people and are a major cause of physical disability in the UK (British League Against Rheumatism 1994). The most common problem within this group of disorders is osteoarthritis of the weight-bearing joints, particularly of the knee and hip. The majority of people have some degree of osteoarthritis by the age of 65 and more than 85 per cent by the age of 75 (Grimley Evans 1993).

The onset of joint pain and the appearance of diagnostic radiological features are both insidious and it is, therefore, difficult to make very accurate estimates of the prevalence and/or incidence of osteoarthritis (Symmons 1997). A survey carried out in Leigh and Wensleydale in the 1950s and 1960s showed that the prevalence of moderate or severe osteoarthritis in one or more joints rises progressively with age; 60 per cent of those aged over 65 had moderate or severe osteoarthritis in at least one joint. Other studies show that the prevalence of osteoarthritis continues to rise with age up to the age of 90 and over (see Symmons 1997). Prevalence among women is about half as high again as among men. People suffering from arthritis consult their general practitioner about their condition twice a year on average (McCormick 1995).

Osteoporosis is one of the major determining risk factors for fractures in later life. It is estimated that in the UK the disease affects one in three women and one in twelve men over age 50 years; more than three million people. There are approximately 60,000 hip, 50,000 wrist and 40,000 clinically diagnosed vertebral fractures annually due to osteoporosis and most of these occur in women (Cooper 1993). It has been estimated that, for British white women at the age of 50 years, the remaining lifetime risk of an osteoporotic fracture is 14 per cent for the hip, 11 per cent for the spine and 13 per cent for the radius (Donaldson & Cook 1990). The annual age-specific incidence rates show that the incidence of hip fracture rises sharply with age, especially after age 65 (Symmons 1997). Although data from the three decades up to 1983 showed that the age-specific incidence rates for hip fracture had doubled for those aged over 65, possibly due to the lower amount of physical activity undertaken by present day women (Boyce & Vessey 1985), more recent data (Spector 1990; Anderson 1993) suggest that the increase in age-specific hip

fracture incidence may have stopped at around 1980.

Osteoporotic fractures are associated with serious disability. For example, of those patients able to walk before sustaining a hip fracture, half cannot walk independently afterwards. Hip fractures alone account for more than 20 per cent of the orthopaedic bed occupancy in the UK, and the majority of the direct health service cost of osteoporosis (Royal College of Physicians 1999). Complications adding to the rehabilitation problems include pneumonia, pressure sores and urinary tract infections (National Osteoporosis Society 1994).

SCOPE FOR PREVENTION

There is a potential for the primary prevention of arthritis with a focus on diet and physical activity to reduce the effects of obesity and to maintain the integrity of the musculoskeletal system to prevent joint injury (Fries 1992). Currently there is no specific therapy available that has been found to be efficacious in preventing or slowing the progression of OA - much of the medical management of the disease is devoted to symptomatic relief by reducing pain (Badley & Rothman 1996).

The risk factor profile for osteoporosis is more firmly established and includes smoking, physical inactivity and high alcohol intake. There is clearly scope for primary prevention at younger ages, and it is here indeed that much of the preventive effort must be concentrated (Kannus 1999). The possibility of identifying and treating women who have suffered substantial loss of bone has generated much debate about the value of population screening of asymptomatic women to evaluate their bone density. The case for population screening of women at menopause is generally considered weak, largely because of the poor performance of bone density measurement as a screening test. The problem is that most elderly women have lost sufficient bone for the hip to fracture with the impact of an unprotected fall (Law 1991). Various strategies have been deployed to try to prevent hip fracture in older women, including falls prevention, the wearing of hip protectors and the use of nutritional supplements.

3.4.2 Falls

Thirty per cent of people aged 65 years or more who live in the community fall each year. Falls are even more common among the 'older old'; half of those who are aged 80 years or more fall each year (Blake 1988). Each year at least 10 per cent of older people living in the community experience a serious injury as a result of a fall - mostly fractures (Campbell 1990; Downton & Andrews 1991; Tinetti 1995). Such falls and the injuries they cause are associated with pain, loss of confidence and restricted activities. Fear of falling, quite apart from fall-related injuries, may have a considerable impact on mobility (Vellas 1997).

Falls are the leading cause of death from injury among people aged 75 years or more and over

85 per cent of all fatal falls in England and Wales are in people aged 65 years+ (Oakley 1996). It has been estimated that falls and fall-related injuries account for around 5 per cent of all acute admissions of older people to hospital (Alexander 1992). Longitudinal studies in the USA (Tinetti & Willians 1997) and in this country (Donald & Bulpitt 1999) confirm that falls - with or without serious injury - are also associated with an increased likelihood of admission to long-term care.

SCOPE FOR PREVENTION

The close association between falling and ageing has generated a great deal of interest and research into modifiable risk factors for falling as well as falls prevention. Weakness of the lower limbs, loss of balance control, impaired gait, loss of visual acuity, postural hypotension all contribute to the risk of falling. So of course do a variety of environmental hazards, though the significance of these hazards - and the gains that may result from modifying them - are still a matter of some uncertainty (Norton 1997; Sattin 1998). It is of course important to bear in mind that an intervention which proves effective in preventing falls may not prove so effective in preventing injurious falls.

3.4.3 *Cardiovascular Disease*

High blood pressure (hypertension) is widespread in the older population, affecting perhaps a fifth of all adults in the Western world. It is a recognised risk factor for heart attacks and stroke, and is the most common kind of circulatory problem seen in general practice (McCormick 1995).

Morbidity data from general practice put the prevalence of hypertension at 16 per cent for the 65-74 year age group and 14 per cent for the 75-84 year olds.

In the United Kingdom in 1990 ischaemic heart disease (IHD) accounted for 30 per cent of deaths in men and 23 per cent of deaths in women. In 1997 there were 122,400 deaths in England and Wales from ischaemic heart disease of which 105,600 were amongst those aged 65+ (ONS 1998). IHD accounts for 24 per cent of all years of life lost up to age 75 in males in England (Marmot 1996). It is also a major cause of morbidity and as such is responsible for a significant proportion of the NHS budget (Thiru 1999). In 1992-93, 8 per cent of 75-84 year olds consulted their GP because of problems with IHD (McCormick 1995). Ischaemic heart disease is more common among men than women (although hypertension is more common in older women), the male to female ratio being highest at ages 25-44 then decreasing with age (McCormick 1995).

Stroke is the third most common cause of death in the United Kingdom after myocardial infarction and cancer (Wolfe 1997). Crude incidence rates are around two per 1,000 in Western countries, which equates to about 100,000 first strokes in Britain per year. Three out of four strokes occur in people aged over 65 years and about a third of stroke patients die within six

months of the event, the majority of deaths occurring in the first month (Ebrahim 1996). In 1997 there were 57,750 deaths in England and Wales from stroke of which 53,400 were amongst individuals over age 65 (ONS 1998). Epidemiological trends show a continuing decline in stroke mortality in England and Wales. Rates among men aged 45-84 have been falling approximately 2-3 per cent per annum since the 1960s and similar rates can be seen for women.

There are not many UK prevalence studies for stroke. Geddes (1996) reported a lifetime prevalence of 14.7 per 1000 in Yorkshire; though prevalence in Newcastle upon Tyne seems to be somewhat higher, at 17.50 per 1000 (O'Mahoney 1999), in line with regional differences in mortality in the UK. Geddes (1996) assessed disability and handicap of stroke patients. They reported that 55 per cent in the Yorkshire study reported requiring help from another person to perform everyday activities compared with 56 per cent in the Newcastle upon Tyne study. O'Mahony (1999) estimated that the prevalence of stroke-associated disability was approximately 11.7 per 1000. Wade (1994), using mainly UK data, drew together some representative data of levels of disability for the acute phase to six months on (*Table A7 in appendix*). Six months after stroke incidence only 47 per cent of patients are physically independent and 53 per cent suffered either partial or complete motor loss. A study of stroke outcome in West Lambeth and Tunbridge Wells found that at one year 11 per cent of surviving patients were moderately to severely disabled and 23 per cent were mildly disabled (Wolfe 1995).

Circulatory disease and diabetes are prominent among the conditions which have been associated in longitudinal studies with significantly increased risk of loss of physical functional ability (though see Stuck 1999). Although it is by no means easy to find consistent results across quite a large number of studies with considerable differences in methodology (e.g. different measures of functional ability, length of follow-up and sample populations), circulatory disease emerges as a fairly consistent predictor of loss of physical functional ability (Pinsky 1985; Lammi 1989; Guralnik & Kaplan 1989; Harris 1989; Guralnik 1993; Boult 1994; Parker 1996). Further evidence for the impact of circulatory disease on functional status has been accumulated through studies looking at the contribution of vascular disease to cognitive decline (e.g. Breteler 1994; Gale 1996).

What these results suggest is that effective interventions to change risk factors for often-fatal disease (e.g. smoking and obesity and lack of physical activity) are likely to have wider benefits than the extension of life. The reduction of risk for cardiovascular disease should add life to years as well as adding years to life.

SCOPE FOR PREVENTION

The prevalence in the population of well-established risk behaviours (e.g. smoking and physical inactivity) and other potentially modifiable risk factors (e.g. high blood pressure, obesity, high

serum cholesterol) indicates that there is considerable scope for public health measures to prevent coronary heart disease and stroke. Despite the fact that several individual trials have shown that it is possible to reduce cardiovascular risk by health promotion interventions, a more recent meta-analysis of large trials of multi-factorial interventions in the general and working populations found that the effects of a wide range of behavioural interventions on disease events and mortality are statistically insignificant (Ebrahim and Davey-Smith 1997). There is, on the other hand, good evidence for the effectiveness of anti-hypertensive medication in reducing CHD and stroke deaths in older people up to the ages of 80-85 years (Sanderson 1996; Mulrow 1994a). It is now widely accepted that risk reduction strategies should be targeted much more closely at people who are at high risk of cardiovascular disease or have evidence of clinical disease.

3.4.4 *Respiratory disease*

Respiratory diseases produce enormous morbidity and potentially avoidable mortality in elderly people throughout the Western world, and furthermore, the burden of many of these diseases (smoking related airways obstruction, asthma, pulmonary tuberculosis) is growing. It has been estimated that at least 8 per cent of all hospital admissions of older people in England are due to respiratory conditions; and that general practitioners can expect 700 respiratory consultations per year from every 1000 elderly patients on their list (Department of Clinical Epidemiology National Heart and Lung Institute 1988). Older people themselves regard respiratory problems as second only to musculoskeletal disorders as a cause of major disability (Hunt 1978).

Harwood (1998) estimated that 22 per cent of the older population in Gospel Oak had lung disease of some kind or another. Higher estimates have been obtained with other samples. Renwick & Connolly (1996) reckon that nearly 30 per cent of caucasian inner-city dwellers over 65 years have airways obstruction (COPD or asthma) and that two-thirds of these receive no treatment. For more dependent older people the prevalence rate is even higher (Banerjee 1987).

Fairly robust, and somewhat lower, *national* prevalence estimates for bronchitis and asthma have been obtained by the Medical Research Council CFA study (Parker 1997). That COPD produces significant morbidity and impairment of quality of life among older people seems clear (Renwick & Connolly 1996) and it has a marked association with depression (Prince 1997; Yohannes 1998).

SCOPE FOR PREVENTION

A great deal of chronic lung disease in older people is smoking related. Immunisation for influenza can have a significant impact on morbidity and mortality (Gross 1995) and there is evidence that uptake of immunisation among high risk groups of older people could be improved (Watkins 1997). It should be possible also to improve treatment rates for older people with

respiratory disease.

3.4.5 Dementia

Dementia is a major cause of disability and functional decline in later life (Jagger 1989). The risk of developing dementia increases with age and the percentage of people in the population with dementia doubles among each five year age group over the age of 65. By the age of 80, it has been estimated that as many as one person in five may be affected (Gray & Fenn 1993). Kirby (1998) examined trends in death rates from dementias and neurodegenerative disorders in people aged 65+ in England and Wales between 1979 and 1996.

The key findings were that:

- Age-standardised death rates from dementias and neurodegenerative disorders for people aged 65+ more than doubled between 1979-96.
- The most dramatic increase was seen in deaths from Alzheimer's disease which by 1996 was recorded as the underlying cause of death in over 2,000 people compared with just seven deaths in 1979.
- It is estimated that in 1996, about 665,000 people aged 65+ were suffering from significant dementia.

Estimates of prevalence and incidence rates for dementia can be found in several studies, some based on a community-dwelling population of older people, others on the total older population (in private households and residential care).

Gurland et al 1983	London (65 yrs+)	2.3% point prevalence for 'pervasive dementia'
Clarke et al 1986	Melton Mowbray (75 yrs +)	4.5% prevalence of 'marked cognitive impairment'
Morgan et al 1987	Nottingham	3.2% prevalence of cognitive impairment
Lindesay et al 1989	London (65 yrs+)	4.6% prevalence of cognitive impairment
Copeland et al 1992	Liverpool (65yrs+)	4.7% prevalence of all types of dementia
Mann et al 1992	London (65 yrs+)	8% with possible cognitive impairment 6.1% with 'clinical' dementia
Saunders 1993	Liverpool	4.7% age standardised prevalence rate
Morgan 1992	Nottingham	cumulative 4 year incidence of 4.3% in 65 yrs+
Jagger et al 1989	Melton Mowbray	annual incidence of 1.4% in 75
Mann et al 1992	London	2.6% annual incidence rate for 'possible dementia' in 65yrs+

At any given time a high proportion of dementia cases, whether in long-stay care or in the

community, will be unknown to specialist services (Cooper & Fearn 1998). Cases known to services in Camberwell comprised only one-fifth of expected total prevalence (calculated from national prevalence data).

SCOPE FOR PREVENTION

Investigation of the epidemiology of Alzheimer's disease has been unrewarding so far - the disease has no well established risk factors.

3.4.6 Depression

Recent UK studies of the prevalence of depression in community-dwelling older people have come up with prevalence rates of between 10 per cent and 20 per cent:

Gurland et al 1983	London	12.9%
Morgan et al 1987	Nottingham	9.8%
Lindesay et al 1989	London 65 yrs +	17.8%
Livingston et al 1990	London 65 yrs +	15.9%
Copeland et al 1992	Liverpool 65 yrs+	11.2%
Prince et al 1997	London 65 yrs +	17%

All these figures refer to depression of clinical severity, and include cases of minor as well as major depression. Depression is the commonest psychiatric disorder among older people. It can have a devastating effect on an individual's quality of life and is often associated with a significant increase in dependence and need for supportive care independently of disability (e.g. Banerjee & Macdonald 1996).

Longitudinal studies of depressed older people in the community tend to agree that the outcome is poor: depression is a good predictor of mortality and functional decline (Copeland 1992; Strawbridge 1998). Similar studies show that deteriorating health and functional ability is also a strong predictor of depression and low life-satisfaction (Bowling & Grundy 1997)

Very strong cross-sectional associations are consistently reported between depression and (I) physical disability and handicap (ii) social support and activity. In a recent study in Liverpool physical illness and restricted mobility were both found to increase the odds of depression more than twofold (Copeland 1999). A somewhat different approach to the problem in Gospel Oak - and one that suggests some potential for intervention - led to the conclusion that handicap (defined as the disadvantage experienced as a consequence of disease) was strongly associated with depression - rather than impairment or disability per se (Prince 1997b). What was also of considerable importance in the Gospel Oak study were 'social support deficits' - the lack of close and/or supportive personal relationships.

The best evidence of the scope for prevention comes from the findings of community studies which indicate that there is a significant amount of undetected and/or untreated depression in the community (e.g. Blanchard 1994).

3.4.7 *Sensory Impairment*

Visual impairment is strongly related to age, occurring mainly in the elderly - the main blinding disorders, cataract, macular degeneration and glaucoma, collectively account for more than 60 per cent of the world's blindness and are all primarily diseases of the elderly (Minassian 1996).

Certification for blindness increases sharply with increasing age: from 3 per 100,000 between 0-15 years, to 45 in the 65-74 year age group to 530 per 100,000 people aged 85 years and above. More than 80 per cent of the people certified as blind or partially blind between April 1990 and March 1991 in the UK were aged 65 years and over. Overall 28 people per 100,000 were certified as blind and 31 per 100,000 certified as partially sighted. The OPCS disability survey (Martin 1988) estimated that there are about twice as many people who are visually impaired as those accounted for by the registered population.

Wolmald (1992) found that the prevalence of blindness among people aged 65 and over in inner London was 1 per cent by WHO criteria and 3.9 by American criteria. The prevalence of visual impairment (WHO criteria) was 7.7 per cent and by American criteria 10.6 per cent. Cataract accounted for 75 per cent of low vision. The study also found that only eight out of sixteen patients with low vision were known by their general practitioner to have an eye problem. The authors concluded that there is a considerable amount of undetected ocular disease and potentially remediable disability in the community. This conclusion has received further support from a more recent London-based study by Reidy (1998). The prevalence of cataract causing impairment in a large 65 years+ sample was 30 per cent, and most of these people were not in touch with eye services. Three quarters of the people with definite glaucoma were not known to specialist services.

Studies have shown that at least 20 per cent of cataracts get worse over the course of a year and 65 per cent worsen over five years. Most people with cataract, if left untreated, will eventually become severely visually disabled (NHS Centre for Reviews and Dissemination, 1996). The review produced by the NHS Centre for Reviews and Dissemination (1996) estimates that between a fifth and a third of people aged 65 to 74 will develop some lens opacity over a five year period.

The RNIB undertook a national study of older visually impaired people in 1997 to assess,

amongst other problems, the impact of blindness or partial sight on ability to perform selected tasks (Baker & Winyard, 1998). It was discovered that 82 per cent cannot read letters or bills; 71 per cent cannot do their own shopping; 62 per cent cannot clean their own homes; 49 per cent cannot do their own cooking and 48 per cent cannot wash their own clothes - all factors which impinge upon an individuals independence. The impairment also has a substantial impact on the ability to go out on their own. Fifty-one per cent of respondents aged 60-74 never go out on their own; this percentage rises to 63 per cent at age 75 and over. The loss of vision can erode social life and leave people incarcerated in their own home (Baker & Winyard 1998).

The best available estimates in the UK for bilateral severe and profound hearing impairments come from the National Study of Hearing (Davis 1989). Approximately one-third of those aged 61-70 were found to suffer from some form of hearing impairment (at least 25 dBHL in the better ear), rising to 60 per cent of those between the ages of 71 and 80.

Even at the mildest level, hearing impairment can interfere with a person's ability to communicate, causing social and emotional isolation, precipitating loss of satisfaction in life and ultimately depression. A number of community studies in the UK have consistently reported a relationship between deafness and depression in old age (see Herbst 1996). Hearing impairment may also be responsible for aspects of impaired cognitive performance such as poor recall (Savory 1993).

Herbst and Humphrey (1981) estimated that one-third of people aged 70 years and over are deaf enough to require a hearing aid and that this proportion rises over 80 years. Hearing aids are still not used by a majority of elderly sufferers (Hirkish 1989; Stephens 1990; Popelka 1998). A more recent study by Wilson (1993) found that the prevalence of hearing impairment that is amenable to correction may be as high as 54 per cent in those aged 65 years and over. Liston (1995), in a small study (n=57) of attitudes to hearing difficulties and the wearing of hearing aids, found that almost all patients consulting their general practitioner with hearing problems were referred for audiological examination but that subsequent follow-up was poor. Problems with the use of hearing aids were common. A quarter number of patients with hearing problems did not consult their doctor but 'suffered in silence'.

SCOPE FOR PREVENTION

The best evidence of the scope for prevention comes not from a knowledge of risk factors which might inform a strategy for primary prevention, but from the findings of community studies which indicate which suggest that there is a significant amount of undetected and remediable sensory impairment in the community.

3.4.8 *Incontinence*

Urinary incontinence is an affliction with a wide range of severity. It is a socially humiliating disability that many sufferers are unwilling to acknowledge, and for this reason may be associated with low social contact (Simonsick 1998). One of the key triggers for admission to residential care for people with dementia (Hope 1998), it is not a single disease entity but rather several different conditions each with specific symptoms, findings upon examination and recommended treatment (Research Into Ageing 1998).

Because of the unwillingness of sufferers to acknowledge the condition, estimating prevalence rates is wrought with difficulties. It is estimated, however, that the condition affects 6 to 8 per cent of people over age 64 years in the community and up to 31 per cent in hospital and long-term care (Iqbal & Castleden 1997).

An overview of research presented by Grimley Evans for the Carnegie Enquiry into the Third Age (1993) suggests that many sufferers of incontinence do not receive what is thought to be the best care available. Chutka (1996) carried out a review of articles on the management of urinary incontinence and found that because of the complexity of the condition, many physicians are uncomfortable with undertaking assessment and treatment. Many patients are, therefore, not asked about incontinence and the condition remains untreated. Inadequate management of incontinence can lead to a downward spiral in terms of both mental and social deterioration that may in turn lead to social isolation or institutionalisation (Gray & Burns 1996).

3.5 Ill-health in specially vulnerable groups of older people

3.5.1 Ethnicity and health

One of the most distinctive features of London is its large ethnic minority population. In 1991 London was home to nearly 1.35 million people belonging to an ethnic minority group, who accounted for 20 per cent of the total resident population, and almost one-third in inner London. Forty-five per cent of the ethnic minority population in the UK live in London (Matheson & Holding 1999).

The minority ethnic populations of Great Britain are relatively young, but ageing. The past decade has seen a small but significant rise in the proportion aged 60 years or more (Warnes 1996). This will increase considerably over the next decade as increasing numbers of people from ethnic minority groups reach retirement age.

One of the main foci for recent research into the health of people from ethnic minorities is cardiovascular disease among South Asians and Afro-Caribbeans. Non-insulin dependent diabetes is much more common among both these groups than among Europeans; and in older

Asians prevalence rates are more than twice those in the European population (Mather & Keen 1985). Among South Asians mortality from coronary heart disease is higher than it is among Europeans (Marmot 1984; Balarajan 1991); and stroke mortality is higher among Afro-Caribbeans (Balarajan 1991).

McKeigue and Chaturvedi (1996) argue that high rates of CHD among South Asians in the UK are part of a wider phenomenon affecting people of South Asian origin around the world. On the basis of a detailed review of the prevalence of established risk factors for CHD in this population, they conclude that the most plausible explanation of the phenomenon is that a pattern of metabolic disturbances associated with insulin resistance and central obesity underlies high rates of both CHD and diabetes. The relative risk for CHD mortality is highest in young South Asian men (20-29 years), and diminishes with increasing age. There appears to be no social class gradient in CHD mortality in this population. Mortality was found to be as high in a comparatively affluent part of northwest London as in the economically deprived Bangladeshi population in East London (McKeigue & Marmot 1988). Data from Fourth National Survey of Ethnic Minorities (Modood 1997) suggest most of the reported difference in coronary heart disease between South Asians and whites can be attributed to greater rates among the Pakistani and Bangladeshi groups, though this conclusion is not supported by other studies.

Balarajan (1991) found that rates from stroke were 76 per cent higher in Caribbean men and 110 per cent higher in Caribbean women (about double the average for England and Wales). Studies carried out in London have also confirmed the higher rate of stroke among certain ethnic minority groups (e.g. Maheswaran 1997; Stewart 1999). Mortality from CHD, on the other hand, seems to be generally rather low in this population, though it is clear that hypertension is much more common in Afro-Caribbeans than Europeans. The rates of mortality from hypertensive disease is four times higher than the national average in Caribbean men and seven times higher in Caribbean women (Balarajan 1991). People born in Africa and the Indian subcontinent were also subject to high death rates though the relative mortality rates from hypertensive disease are not as great as they are for those born in the Caribbean (Balarajan and Bulusu, 1990). Analysis of data from the Fourth National Survey of Ethnic Minorities (Modood 1997) showed similar results.

Evidence that ethnic minority groups tend to suffer from greater ill-health than the white population of the UK can be found in various other sources. For younger age groups (20-69 years) all-cause mortality rates are higher in most ethnic minority groups than the general population. In older age groups (70 years+), however, these differences seem mostly to disappear - with the exception of the Irish and women from the Indian sub-continent (Balarajan & Bulusu 1990).

Analysis of the 1991 Census (Dunnell 1993) showed that (controlling for age) all ethnic groups, with the exception of the Chinese, reported higher levels of limiting long-standing illness than the white group. The Health and Lifestyles Survey of black and ethnic minority ethnic groups in the UK (Rudat 1994) reached a somewhat different conclusion, that "overall there is no difference in current self-reported health or disability between the UK population and the African-Caribbean and Indian population". There were, however, quite significant differences among people aged 50-74 years. These differences were particularly marked in the Bangladeshi population - with older Bangladeshi men being twice as likely to report limiting illness or disability as men in the general population.

This broad picture can be fleshed out - and complicated - by a fairly small number of local studies comparing the health of older people within ethnic minority groups with the indigenous population. These studies are to some extent constrained by the difference in age structures of the population. In Birmingham, for example, Ritch (1996) details the health status of a sample which contains relatively few older women from ethnic minorities and relatively few older men aged 75 years+. The higher prevalence of hypertension and diabetes in this particular sample confirms findings from other studies. What was less expected was the relatively high prevalence of arthritis among the Asian population. Overall, elderly Asians appeared to be as disabled as the indigenous population who were a decade older. Poor vision also seems to be more common among older Asians and Afro-Caribbeans (Donaldson & Taylor 1983; Ebrahim 1987). A London-based comparison of the health of Gujerati Asian elders and an age-matched group of older people from the indigenous population found that Asian subjects had a higher prevalence of diagnosed diseases, with the exception of chronic obstructive airways disease. They had, however, a lower risk of falling, less urinary incontinence and reported levels of higher life-satisfaction (Ebrahim 1991). The impact of disease was less than in the indigenous population.

In Leicester, which has the highest South Asian immigrant population in the UK, things look rather different. Here the older Asian Gujerati population has significantly higher levels of disability than a comparable white population (Lindesay 1997). A more recent London-based study found little difference between the health status of the Gujerati and white population in a fairly prosperous part of North London (Silveira & Ebrahim 1998). The East London samples included in the study (white, Bengali, Somali) showed, however, considerable ethnic variation. The East London white population were generally healthier than the Bengali or Somali groups, though all three East London samples reported more ill-health and less life-satisfaction than the North Londoners.

3.5.2 *Socioeconomic status*

Although there is abundant evidence to connect deprivation with ill-health in the UK population, there remains some uncertainty about the persistence of this connection in later life. There are

several reasons for this. Research has tended to concentrate very much on people of working age, and questions have been raised about applicability to retired people of the occupational class categories that have been used to amass much of the evidence for a connection between socioeconomic status and mortality. There is also evidence that the strong association between deprivation and mortality which is apparent in the under 65 age group is weakened at older ages (Bentham 1995), a phenomenon which has been attributed to the earlier death of more vulnerable individuals and the selective survival of those who are fitter. This view of the matter is to some extent confirmed by the results of a follow up of civil servants from the Whitehall Study. Socioeconomic differentials in mortality persisted well into retirement, though the ability of work-based and non-work based indicators of socioeconomic status to predict mortality declined after retirement. The *absolute* difference in mortality increased, however, in retirement (Marmot & Shipley 1996).

The general socioeconomic pattern of mortality found in London reflects that seen in the rest of the country. Although life expectancy in London RHAs has in recent years been consistently higher than the national average, for *inner London* areas the gain in life expectancy between 1981 and 1992 was lower than in most other parts of the country - with the exception of heavy industry areas and ports (Charlton 1996). In 1990-92 the inner London SMR for all causes of death between 0 and 74 years was 117. People in inner London had the highest levels of mortality in the country for respiratory disease and death from injury and poisoning. Inner and West London of course contain some of the most deprived local authorities in the country, with the highest SMRs. When, however, comparison is made between the least and most deprived 10 per cent of local authorities, the mortality differentials are much higher in the 45-64 year age group than the 65-84 year group (Drever & Whitehead 1995).

Despite this apparent reduction in mortality differentials in later life, there is nevertheless considerable evidence that the burden of ill-health and disability is higher in more socially disadvantaged groups of older people. The link between income level and ill-health in later life seems well established, for example, in various US studies that have tried to identify predictors of healthy/unhealthy ageing (e.g. Jeffreys 1996). In Sweden Thorslund & Lundbery (1994) reported significant health inequalities (in circulatory problems, aches and pains, etc.) between older people (77-98 years old) who had been manual workers and those who had been professionals or had other non-manual jobs. In the United Kingdom, various national and local studies have pointed to a similar kind of connection, though the evidence is not altogether unambiguous.

Weich and Lewis (1998), in a secondary analysis of data from the British Household Panel Survey, found that common mental disorders were associated with a relatively low material standard of living; and that this association was strongest in the older age groups (56-75 years).

A recent review of prevalence studies of depression in community-dwelling older people confirmed this conclusion (Beekman 1999). However, two London-based community surveys of depression in older people - and one in Liverpool - found no link with occupational class, income, length of full-time education or even quality of housing (Lindesay 1997; Prince 1997; Copeland 1999). There does, however, seem much less doubt about the link between occupational class/educational level and cognitive impairment (e.g. Gale 1996).

Evidence for the connection between socioeconomic status/deprivation and prevalent physical disease in later life can be found various datasets. Secondary analyses of data on self-reported ill-health in older people (65 years+) from the General Household Survey (Victor 1989; Victor 1991; Arber & Ginn 1993) have found higher rates of long-term limiting illness in respondents whose last occupation put them in the lowest occupational classes. There are clear, though somewhat complex, patterns of regional differences in later life morbidity reported by the Medical Research Council CFA Study (Parker 1997) as well as associations between disability and social class/education (McGee 1998). Patterns of service use also suggest significant differences in health status. A large Nottingham-based study of emergency admissions of older people to hospital (Bernard & Smith 1998) found large differences in admissions in people from more or less deprived areas. Analysis of general practice consultation rates for people aged 65 years+ shows that people classified as social class V (last occupation) have higher contact rates with their GP than people in social class I (McNeice & Majeed 1999). They also receive about twice as many home visits. It is notable that these social class differences were only apparent in the 65-74 year old age group. Indeed for people in the 85 years+ age group, the direction of the effect was reversed.

3.5.3 *Living alone*

The proportion of older people living alone has increased enormously over the last fifty years. Recent GHS data put the figure at around 40 per cent - for householders over 65 years. For people over 75 years the figure is even higher (OPCS 1997). The group most likely to live alone are elderly women. In 1991 there were almost 400,000 people over 65 living alone in London; and older people in inner London are more likely to live alone than people in outer London.

It is, however, one thing to live alone and quite another to be socially isolated or lonely. Several studies have shown (e.g. Hunt 1978) that households composed of more than one elderly person are, if anything, more 'isolated' than single person households, which is to say that older people who live alone tend to make and receive more visits than those who live with someone else. It is possible, in this sense, to be relatively isolated and not lack good 'social support'. There are, even so, plenty of older people living alone who *are* isolated. The most isolated older people tend to be those who live alone, are infirm, and have no relatives or children living nearby

(Townsend & Wedderburn 1965). These are also the older people who are most likely to be receiving personal social services.

Not everyone who lives alone is lonely; and even among those who are socially isolated there are many who are not lonely (Victor 1994). Some people appear to be not much troubled by their relative lack of close human contact and support. Townsend (1957), and many others since, have argued that desolation - the loss of someone who is loved - is more important than social isolation in explaining the loneliness experienced by many older people. The attentive concern of relatives and neighbours may overcome isolation and yet leave a sense of desolation untouched. Surveys in this country and in the USA suggest that younger people tend to overestimate the problem of loneliness in old age (Midwinter 1991). Even so, large numbers of older people say that loneliness is a serious problem for them - between 5 and 10 per cent in most of the UK surveys (Victor 1994).

Whatever doubts may be raised about living alone *per se* as a risk factor for general ill-health (Iliffe 1992), there is evidence to connect living alone/isolation/loneliness with depression in later life. Prince (1997), in Gospel Oak, found that loneliness was one of the strongest predictors of depression. Sixteen per cent of the older people who said that they felt lonely often were depressed. Living alone, and having no supportive neighbours or close friends, were also both associated with depression. Similar conclusions emerge from the Liverpool study (Copeland 1999) - where the researchers found evidence to suggest that the risk of depression was associated with the frequency of social contact or participation in social activity - and a study of immigrant elders in East London (Silveira & Ebrahim 1998).

3.5.4 Carers

Although several studies have suggested that informal carers of older people have an increased risk of psychiatric morbidity, the generalisability of their results has been limited by the use of selective and unrepresentative samples (e.g. members of Alzheimer's Disease Society or subjects referred to a psychiatrist). Community-based studies with probability samples have come up with more mixed findings. O' Connor (1990), for example, in a study of 120 carers of people with dementia, found that levels of psychological distress were no greater than in controls.

Larger and more recent community-based studies have, however, tended to confirm the view that informal carers - especially if they are co-resident with the person receiving care - of mentally frail older people have a higher relative risk of psychiatric morbidity. Livingston (1996) reported that although the prevalence of depression (in Islington) was not significantly higher in carers overall than in co-residents of older people who were not frail, it was higher in carers who were looking after someone with a psychiatric disorder - rather than a physical disability. Further

evidence for the relationship between carer stress and mental frailty in the older person receiving care is found in a more recent national study conducted by the MRC Cognitive Function and Ageing Study (Buck 1997). In this case, however, it was found that physical and mental frailty together - rather than either on their own - was a significant factor in explaining carer stress.

SECTION 4

Available interventions/policy options

In this section we simply list a set of broadly defined policy options in terms which may help to clarify the kind of 'investment decisions' that have to be made in a health improvement strategy.

Each of these options represents a line of action - an approach to health improvement - that is already being followed by health and social care agencies. The question is - how much and what kind of health gain can be expected from a commitment to put *more* effort into various approaches to health improvement for older people in London. The following section lays out in summary form the available evidence for the first five of the options listed below. The sixth option - to invest in the improvement of the sociophysical environment - we have omitted, on the grounds that this is a central issue for an accompanying report from the London Research Centre.

- Encourage and enable older adults with and without chronic disease to adopt a healthier and more physically active lifestyle
 - e.g. educational and behavioural interventions aimed at risk reduction for CVD in older people without symptomatic CVD/patient education programmes for self-management of chronic disease/ physical exercise interventions in specific high risk populations, e.g. older women at risk of osteoporotic fracture

- Extend screening/case-finding interventions :
 - to identify individuals with untreated health problems or functional deficits for which there are treatments of known effectiveness e.g. untreated hypertension or incontinence or depression or hearing deficits
 - to identify individuals with 'hidden' and treatable disease e.g. extend invitations

for mammographic screening to all women aged 65-69 years
- to identify individuals who would benefit from falls prevention programmes

- Improve or extend uptake of preventive interventions of established effectiveness in specific high risk populations
 - e.g. immunisation for influenza /special dietary supplements / hormone replacement therapy / secondary prevention of heart disease

- Social interventions to:
 - increase social participation and/or mutual aid among older people
 - provide social (i.e. emotional) support to relative loneliness and/or isolation
 - provide help to older informal carers

- Improve access to existing health services where there is good evidence (a) that interventions improves quality of life and (b) demand outstrips supply
 - e.g. chiropody/occupational therapy/elective surgery for joint replacement/intensive rehabilitation after acute disease

- Interventions or programmes to improve the sociophysical environment
 - e.g. housing and environmental improvements to reduce falling /improved street lighting to reduce fear of crime/ etc.

SECTION 5

Effectiveness of available interventions

5.1 Encourage and enable older adults with and without chronic disease to adopt a healthier and more physically active lifestyle

The first question to ask is:

- Does the adoption of a healthy lifestyle late in life add years to life or life to years? Is it reasonable to expect significant improvement in the health of the older population from lifestyle change?

Granted that it is reasonable to expect significant improvement in the health of older people from late life changes in health behaviours, the second question to ask is:

- What can be done to encourage and enable older people to make changes in health-related behaviours? What evidence is there for the effectiveness of interventions to bring about change?

5.1.1 Smoking

Smoking represents the greatest single self-imposed risk to health and, for smokers, stopping smoking would be more effective than any other change in behaviour in reducing the risk of premature mortality (British Medical Association 1990).

(i) Smoking prevalence in older people

Overall smoking prevalence has declined in the United Kingdom since the 1970s. Smoking prevalence increases with age until people are in their twenties and thereafter declines with age.

In the 1996 Health Survey for England (Prescott-Clarke and Primatesta 1998) the proportion of people smoking decreases from 30 per cent of men aged 45-54 to 19 per cent of those aged 65-74 and 14 per cent of those aged 75+. A similar decline can be seen among women. The highest percentages of ex-smokers are among the older age groups (53 per cent of men aged 65-74 and 63 per cent aged 75+; and 33 per cent of women aged 65-74 and 32 per cent of women aged 75+). *See Table 8A in appendix.* There are clear social class and income level gradients in older people's smoking behaviour - in all age groups up to 75 years+ (Cooper 1999). Older people in poorer circumstances are more likely to smoke, and to smoke heavily.

(ii) The benefits of smoking cessation in later life

Of the benefits of smoking cessation for younger or middle-aged adults there is no doubt. Recent US studies of the long-term effects of smoking behaviour provide good evidence that smoking cessation - even for lifetime smokers who are in their sixties - increases the chances of survival.

Cardiovascular risk is reduced quite rapidly so that older smokers who quit have a reduced risk of death compared with current smokers within one or two years of quitting. Quitters also have a reduced risk of pneumonia and influenza mortality. Cancer risk, however, appears to decline much more gradually, in line with the view that risk is related to accumulated lifetime exposure.

The evidence from these observational studies suggests that the overall risk of death for quitters approaches that for never-smokers after 15 or 20 years of abstinence (LaCroix & Owenn 1992).

There is strong evidence that smoking cessation in late life slows down decline in respiratory function and reduces distressing symptoms of impaired respiratory function (Vetter & Ford 1990).

5.1.2 The risks of physical inactivity and the benefits of a physically active lifestyle

There is an enormous and ever-growing research literature on the benefits of regular exercise and/or physical activity in later life (Elward & Larson 1992). Adults who are sedentary or relatively inactive are at greater risk of cardiovascular disease and functional decline in later life.

Regular physical activity, even in relatively old (75 years+) cohorts of older people, decreases the mortality rate (Sherman 1994). Whether or not it is possible for older people who have been relatively inactive for most of their adult lives to reap health benefits by increasing levels of physical activity is a different matter. Evidence for the feasibility of achieving these benefits in

relatively inactive older adults comes from various sources including: observational studies which follow up large cohorts of older people and look at the association between late-life changes in physical activity and survival; observational studies which look at the benefits of relatively low-intensity exercise or physical activity in older people; and experimental studies looking at the different kinds of health benefits conferred by supervised exercise on various groups of older people.

(i) Exercise and physical activity in older people

Participation in regular physical activity declines with age. Whatever measures are used to estimate regular physical activity - participation in sporting activities, regular walking, gardening and household chores - older people are found to be less active than younger people. To some extent this is only to be expected. More worrying than the fact that older people are less active than younger people is the fact that the population as a whole has an increasingly sedentary lifestyle - and older people share in these trends. There has, for example, been a gradual decline, since the 1970s, in walking for everyday purposes such as shopping. The average number of journeys made on foot per person per annum fell by 12 per cent over the period 1985-86 to 1993-95 (Lumsden & Mitchell 1999). In the HSE for 1993-94 less than 10 per cent of people aged 70 and over had walked at least a mile at a brisk pace in the previous four weeks; and 58 per cent of men and 70 per cent of women aged 80 or more are reckoned to be sedentary.

Although social/occupational class *per se* appears to have little effect on levels of physical activity in the older population, national datasets suggest there is a strong association between lack of material resources and sedentariness (Cooper 1999). A local study in Newcastle, however, found that older people are less likely than younger people to cite lack of money as a barrier to participation in physical activity (Chinn 1999). Lack of transport was also found to be a comparatively minor problem among the older people (65-74 years) in this sample.

(ii) Adding years to life

Results from long-term observational studies of the effects of changes in level of physical activity are more or less in line with the evidence for the benefits of smoking cessation (see above). Findings from three large US studies - the Harvard Alumni Study, the Alameda County Study and the Aerobics Centre Longitudinal Study - suggest that previously inactive older men and women who take up regular exercise live longer than those who remain inactive (Kaplan 1989; Paffenbarger 1991; Blair 1995). Closer to home, results from the British Regional Heart Study show that an increase in physical activity was beneficial for older men who took up physical activity after the age of 50 (Wannamethee 1998).

Results from experimental trials of the benefits of moderately vigorous exercise for previously inactive but healthy older people demonstrate (i) that many healthy older people in their sixties and seventies can tolerate vigorous aerobic exercise after an appropriately designed and supervised exercise programme; and (ii) that participation in such a programme may improve cardiorespiratory fitness (see e.g. Buchner 1992). A US randomised controlled trial of the benefits of aerobic exercise for healthy (i.e. no symptoms of cardiac disease) elderly subjects who were not regular exercisers showed large differences in the occurrence rates of new cardiovascular diagnoses (Posner 1990). These findings suggest that regular exercise, even when started late in life, can delay the onset of symptomatic cardiovascular disease.

Not all older people are willing or able to participate in programmes of fairly vigorous aerobic exercise. Drop-out rates from exercise programmes can be high, though a recent US review suggests that older people who make up their mind to join an exercise programme are no less likely than younger adults to continue participation (King 1999). It is important therefore to look at the possibility of achieving cardiovascular benefits from relatively low-intensity exercise. This will be particularly important for older people who are unable to tolerate more vigorous exercise - including, for example, those with established heart disease (Lavie 1999).

Data from the British Regional Heart Study show that vigorous (i.e. sporting) activity is not essential for the reduction of cardiovascular risk, and that light activities such as regular walking and weekend recreation can bring this benefit for men over 60. The benefits of taking up 'light to moderate' physical activity were apparent for sedentary older men with and without pre-existing cardiovascular disease (Wannamethee 1998). These results are in line with those from the Honolulu Heart Program which indicate that in physically capable older men (61-81 years) regular walking is associated with a lower overall mortality rate (Hakim 1998). Further evidence for the survival benefits of low-intensity physical activity is found in recent longitudinal studies looking at the association between 'customary physical activity' and survival. The analysis in these cases does not focus on a single source of exercise such as recreational walking but tries to take in a wide variety of activities such as housework, gardening, shopping as well as leisure activities. Results from the Nottingham Longitudinal Study of Activity and Ageing suggest that relatively high levels of customary physical activity are associated with lower overall mortality (Morgan & Clarke 1997). Similar results have been obtained from one of the EPESE (established populations for epidemiological studies of the elderly) sites in the USA (Glass 1999).

(iii) Adding life to years

There is a large and steadily accumulating body of evidence, from both observational studies and experimental trials (of exercise training programmes), that increasing levels of physical activity and/or taking up regular exercise has other benefits besides the adding of years to life. There is

good evidence that it may help to delay decline in physical functioning and mobility in older people both with and without chronic disease. The important questions for policy are: how much and what kind of exercise is associated with what benefits and for which groups of older people? It is once again of particular importance to see what kind of benefit might flow from an uptake of relatively low-intensity exercise - such as regular walking or physical activity that might be done in the home - as well as sporting exercise or exercise classes.

A very large US prospective study of the effects of regular physical activity (including household chores etc.) on risk osteoporotic hip fracture in older women (65 years) found that the most active women had a 36 per cent reduction in hip fractures compared with the least active women (Gregg 1998). These results confirm and extend findings from studies of the relationship between weight bearing exercise, including walking, and the prevention of bone loss/hip fractures in post-menopausal women (e.g. Cummings 1995).

Regular physical activity of moderate intensity is associated with other outcomes besides the prevention of fractures or bone loss. In a UK sample lower levels of customary physical activity were associated with higher levels of service use (including personal social services) eight years after the initial interview (Bath & Morgan 1998). There is also accumulating evidence from prospective observational studies to suggest that regular walking among older people may extend the healthy and nondisabled part of life expectancy. It may help to prevent mobility losses (LaCroix 1993) and has been associated with a lower risk of hospitalisation for CVD in older people (La Croix 1996).

The findings of these observational studies are supplemented by results from large numbers of experimental trials of fitness training which show that it is possible to *improve* the functional status of relatively inactive older people. It is possible to achieve clear gains, not only in cardiovascular fitness, but also in lower limb strength, balance control and (perhaps) decreased risk of falling. Or, to put it another way, what these studies show is that some of the long-term effects of de-conditioning are reversible, even in later life (e.g. Cunningham 1987; Posner 1992; Fiatarone 1994; Wolfson 1996; Jette 1996)

An outcome of increasing importance in many of these studies is risk of falling. The general trend of results is to suggest that strength and/or endurance training, which is often gymnasium-based and makes use of relatively sophisticated equipment, has a relatively small impact on the risk of falling, despite positive effects on muscle and bone strength, aerobic capacity and flexibility (Province 1995). What appear to be more promising than strength and/or endurance training are exercise programmes designed to improve balance control or a kind of mixed programme that aims to improve balance, gait and flexibility as well as lower limb strength. Impressive results have been obtained in controlled trials of class-based programmes with

samples all aged 60/65 years or more (Lord 1995; Wolf 1996), as well as a home-based exercise programme (Campbell 1998) in an even older sample (80 years+).

It has proved more difficult to secure similar gains in samples of older people who are disabled or frail or institutionalised (e.g. MacRae 1996; McMurdo & Johnstone 1995; Rubenstein 1994; Mulrow 1994b). Most of the experimental trials cited above manage to secure high levels of adherence from healthy volunteers. With older people who are chronically ill or disabled or frail, problems of adherence can be considerable (as they may be of course with relatively healthy older adults); and furthermore the intensity of the intervention must be moderated to take account of lower levels of baseline functioning. Results from the San Antonio and Boston arms of the FICSIT trial confirm these difficulties: although it is possible to show improvement in some mobility-related measures of physical performance as a result of fitness training - reducing the risk of falling in these populations is another matter (Province 1995).

It is because of mixed results such as these (and the evident possibility that exercise may increase the risk of falling in some groups of older people) that the effectiveness of exercise interventions in preventing falls remains questionable (Gillespie 1997). Putting falls to one side, however, it is important to emphasise that it is not only healthy and non-disabled older people who can benefit from regular exercise. Fitness training and/or exercise therapy can achieve significant improvement in quality of life for some groups of community-dwelling older people with disability and/or chronic illness. It has shown to improve exercise capacity (a major factor in limiting mobility) in older people with established CHD (Lavie & Milani 1999) and has a recognised role in promoting recovery after major cardiac events (NHSCRD 1998). A study by Ettinger (1997) reports that exercise has a beneficial impact on pain, physical performance and disability in older people (60 years+) with osteo-arthritis; *and* that these gains can be sustained beyond a fairly short time period with a relatively low-cost programme applicable to large numbers of community-dwelling adults. Also of importance, from the point of view of applicability in the community, are trials which report similar kinds of benefit from home-based exercise programmes for older people with disability (Jette 1999; O'Reilly 1999).

Evidence for psychological benefits of regular exercise in older people - by comparison with evidence on physical benefits - is relatively weak. Speculation that regular physical exercise may slow down some of the age-associated changes in the central nervous system has generated quite a large body of experimental research on the impact of exercise on neuropsychological function (Emery 1991). Many of the trials look at the effects of fairly intensive interventions in samples of older people who are relatively young (e.g. 50-60 years) and healthy. On the whole their results are disappointing, despite clear gains in cardiorespiratory fitness, and as it is more difficult to achieve significant improvement in physical fitness in older and frailer samples, it is hardly surprising that trials with institutionalised older people have failed to show positive

results.

As for the effects of exercise on the older person's sense of well-being, it seems clear that when an exercise intervention has a positive and marked impact on physical fitness (McMurdo & Burnett 1992) or symptoms of chronic illness such as back pain (Bravo 1996), subjects also report improvements in their self-perceived health status. They feel better. The same goes for older people who are somewhat depressed and anxious. Whether or not regular exercise has an effect on psychological well-being in healthy older adults without depressive symptomatology is less clear, though there is some evidence for such an effect (Emery & Blumenthal 1990; Hill 1993).

5.1.3 Obesity and nutritional risk

(i) Prevalence

Data from the Health Survey for England (Prescott-Clarke and Primatesta 1998) show that there has been an increase in the percentage of men age 65-74 who are classified as obese (BMI over 30) from 15.2 per cent in 1993 to 19.6 per cent in 1996. Although the prevalence of obesity in the 75+ age group is lower than in men aged 65-74, the proportion of those classified as obese during the same period rose more sharply (10.8-16.1 per cent) in the older group. The percentage of men who are 'morbidly obese' is relatively low at 0.2 per cent in 1996.

The same trend is seen in women aged 65-74. Between 1993 and 1996 the percentage of women classified as obese rose from 21.5 per cent to 24.5 per cent. A slightly larger rise occurred in the 75+ age group. The percentages of those in the morbidly obese category are again relatively low with 1.3 per cent in 1993 and 1.4 per cent in 1996 among those aged 65-74 and 0.9 per cent in 1993 falling to 0.7 per cent in 1996 among those aged 75+.

(ii) Weight reduction

Evidence for the benefits of weight reduction in later life can be found (a) in the relationship between body mass index and CVD in older people as well as those who are middle-aged and (b) the association between obesity and other chronic disabling diseases of later life. Obesity impairs mobility.

There is some uncertainty, however, as to whether weight reduction *per se* confers cardiovascular benefits in people who are already overweight. Results from the British Regional Heart Study suggest that weight loss does not appear to reduce risk even in the overweight or obese - though weight *gain* clearly increases risk (Walker 1995). It is possible therefore that

prevention of obesity may be a more important target than weight reduction. It must, however, be emphasised that weight reduction may confer other health benefits besides reduction of mortality.

(iii) Improving nutrition

The importance of a healthy diet in the general population has been the subject of extensive research through its association with CVD and certain cancers. In this respect older people are urged to adopt similar patterns of eating to those advised for younger adults - less fat, less salt, more fibre, more fresh fruit and vegetables, etc. (Department of Health 1992). There are, however, other kinds of nutritional risk to which older people are especially vulnerable. In particular, older people tend to reduce the overall amount of food they consume which may make it difficult to maintain an adequate supply of essential nutrients.

Cooper (1999) use data from the 1996 Health Survey for England to document the relationship between advancing age and declining quality of diet. As in the general population (James 1997), there is a strong association between material deprivation in later life and a poorer diet.

5.1.4 Interventions to help preserve optimal health

5.1.4.1 Health promotion programmes for unselected populations of older people

Results of primary-care based interventions to modify cardiovascular risk behaviours in the general or working age population show that, although many of the interventions may effect modest changes in behaviour, the changes that are made appear insufficient to have much public health impact (Ashenden 1997), as well as being costly (Ebrahim & Davey-Smith 1997). This is the background against which interventions to encourage or promote the kinds of behavioural change in older people have to be assessed. It is possible that older people, simply by virtue of their age, are, like individuals at relatively high risk of cardiovascular disease, more likely to benefit from behavioural interventions. It is also possible that interventions which are moderately successful in effecting behavioural change may have little effect on morbidity and mortality, especially if the change is not sustained over time. Published evaluations of interventions looking specifically at (healthy) older people - and there are not many - lend some support to the former of these hypotheses, but have relatively little to say about the second.

MULTI-COMPONENT HEALTH EDUCATION PROGRAMMES

Some of the best evidence for the effectiveness of health promotion interventions in changing risk behaviours in unselected populations of older people (60+) comes from three randomised controlled trials in the USA, two of them relatively large (Fries 1993; Mayer 1994; Fox 1997),

and one in Australia (Kerse 1999). In all four of these studies behavioural change is the main focus of the intervention - and the main outcome measure. Mayer (1994) reports a positive effect on behavioural outcomes after one year from a health promotion package with two components: subjects received feedback from a lifestyle assessment instrument and were then helped to set their own 'risk reduction' goals through face-to-face counselling; they also attended an eight-week group-based health education course. Intervention subjects were more likely than controls to increase their level of physical activity and decrease their intake of dietary fat and caffeine. There were, however, no differences between the two groups in respect of non-behavioural risks e.g. body mass index and blood pressure. Positive results were also reported by Fries (1993) in a study of a low-cost health promotion programme administered by post. Although the sample includes subjects under 65 years, results for the 65+ are analysed separately after one and two year follow-ups. Improvements favouring the intervention group were noted in health habits (including exercise levels, smoking behaviour and dietary fat intake) and non-behavioural factors (including systolic blood pressure) for both age categories, as well as 'physician-utilisation. The intervention evaluated by Fox (1997) was delivered by a public health nurse and was built round a basic health assessment: subjects received a mutually agreed personal health plan and individualised counselling to support implementation of the plan. Follow-up at the end of one year showed that the intervention group had made more risk-reducing behaviour changes than control; and they were also more likely to have made use of other preventive services (e.g. mammography, influenza, immunisation, etc). The Australian trial, based on a primary care system similar to that in the UK, evaluates a five-stage educational programme led by GPs for patients aged 65 years and over (Kerse 1999). After one year, older people who received the intervention, which concentrated on (i) exercise and social activity and (ii) a review of medication and vaccination status, had increased their regular walking, undertook more pleasurable activities and rated their health more highly. No change was seen in functional status or medication use.

EXERCISE PROMOTION

All the trials cited in the previous section had as one of their aims the promotion of physical activity among older people; and in this respect at least they all seemed to be effective. Many other studies have been published, in this country and the USA, of interventions which concentrate *exclusively* on the promotion of physical exercise. The problem, as we have already indicated above, is to promote and *sustain* change. The point is well illustrated in a recent evaluation of an exercise intervention for post-menopausal women at risk of osteoporotic fracture in east London (Ebrahim 1997). Adherence was poor, despite the fact that the women selected for the intervention knew themselves to be at relatively high risk *and* the intervention was of a relatively low intensity. Only one-third of the women approached agreed to be involved; and only one-fifth of those approached were willing to continue with 'brisk walking' over a two-year period. For older people living in the community with disability or multiple chronic

conditions, problems of nonparticipation and nonadherence may be even more severe (McMurdo 1995; Morey 1989).

A 1995 review of RCTs of physical activity promotion in free living populations identified ten trials that met the inclusion criteria (exercise behaviour as the dependent variable etc.) and none of them had been conducted in the UK (Hillsdon 1995). The authors concluded that it was difficult to draw any firm conclusions about the effectiveness of these interventions because of the small number of trials and the heterogeneity of the subjects. However, it does seem that previously inactive adults *can* be encouraged to increase activity levels and sustain change. The most effective interventions were those which offered personal instruction, continued support (often through telephone contact) and exercise of moderate intensity which did not require attendance at a facility. Only two of these studies included older subjects, one with positive results (King 1991), one with negative results.

Physical activity promotion through primary care is now widespread in the UK, sometimes through 'exercise by prescription', sometimes through counselling interventions (Fox 1996). There is little evidence of strategic targeting of older people (participants are more likely to be middle-aged than old), though some schemes have been very successful in recruiting ethnic minority patients who would not usually use leisure or sports facilities.

To date only a handful of these interventions have been subjected to evaluation in RCTs, and all of the evaluations include middle-aged subjects as well as older people. The only study to focus on the older population is an evaluation of the HEA 'Look After Your Heart' short health promotion course on a large group of retired women (Rowland 1994). Although the study showed positive results - participants in the programme had significantly better self-perceived health and did more exercise than the controls - the essentially observational methodology of the evaluation leaves open the possibility that participants in the programme were a self-selected group of healthier and fitter subjects.

Results from a randomised controlled trial of a ten-week exercise referral programme in East Sussex (sample aged 40-70 years), report that people who adhered to the programme showed benefits even at thirty-seven weeks (Taylor 1998). The results, however, do not include an intention-to-treat analysis (32 per cent of the intervention group attended less than 5/20 sessions; 25 per cent at least 15/20 sessions). The study concentrates, in other words, on the effectiveness of the exercise programme in promoting exercise and achieving measurable benefits in programme participants.

Stevens (1998) followed up a sample of inactive Londoners (aged 45-74 years), some of whom had been randomised to a ten week programme to increase their physical activity. At eight

months, individuals randomised to the intervention group showed increased levels of physical activity relative to controls, with a net reduction of 10.6 per cent in the proportion of people classified as sedentary. Very few people, however, increased their physical activity to currently recommended levels, and uptake of the programme was poor - 35 per cent of those randomised to the intervention attended the first consultation, and 25 per cent attended the second consultation at the end of programme.

The findings of a Newcastle trial of a range of initial primary care interventions to encourage exercise were less promising (Harland 1999). Although individuals receiving interventions did increase their levels of physical activity compared to controls (and the more intense the intervention the greater the increase) the differences were not significant and were not sustained at the end of one year. Even the most intensive intervention - which included six motivational interviewing sessions and a financial incentive (equivalent to the cost of using a leisure centre) - was not effective in promoting long-term adherence to increased physical activity.

SMOKING CESSATION

One of the few UK controlled trials of a health promotion intervention which focuses on older people reports positive results from a counselling intervention (i.e. not class-based) which singles out one health behaviour, smoking (Vetter & Ford 1990). What is interesting about the results from this study is the suggestion of an age-related difference in behaviour change. Although a higher proportion of the intervention group stopped smoking than controls for all age groups, the proportion fell with increasing age from 18 per cent of those aged 60-64 to 7 per cent of those aged 65 and over. The intervention had demonstrable benefits in adding life to years: it was effective in reducing distressing symptoms of impaired respiratory function.

EDUCATION FOR FALLS PREVENTION

Findings from observational studies to identify risk factors for falling have suggested that the presence of hazards in the home (poor lighting in stairwells etc.) and avoidable risk-taking in the home may be important risk factors in the occurrence of falls. On the basis of these studies, various educational or behavioural strategies for the prevention of falls have been developed and evaluated by researchers.

Reinsch (1992) reported negative results from an evaluation of twelve-month cognitive-behavioural and exercise interventions with a sample of older people aged 60 years or more. The cognitive-behavioural intervention was a class-based programme (i) to provide health and safety information; (ii) to teach relaxation techniques; and (iii) to improve reaction times by video games. The positive effect on the occurrence of falls reported by Hornbrook (1994) from a

mixed intervention 'package' - delivered without any attempt at targeting and relying heavily on group-based education sessions to advise on home safety and risk taking, identification of home hazards, as well as exercise etc. - is hedged round by an important qualification: the effect was small and of uncertain clinical significance. Hornbrook carried out a second evaluation of the same intervention with a 'higher risk' (i.e. even older) population as one arm of the FICSIT study, but failed to find any effect on falls (Province 1995).

5.1.4.2 Health promotion programmes for older people with chronic disease and/or disability

INDIVIDUALLY TAILORED HEALTH PROMOTION PROGRAMMES

Moderately promising results have been obtained in a Canadian randomised controlled trial (Hall 1992) of a "personalized health promotion program for frail elders" with an "emphasis on the development of personal health skills"; and a US trial of a "multi-component disability prevention and disease self-management program led by a geriatric nurse practitioner" (Leveille 1998).

The sample in the Hall (1992) study is very different from the relatively healthy community-dwelling older people who have participated in trials based round Seniors' Centres in the USA: they were all 65 years old or more and had all been assessed to receive 'personal care at home' (home helps, meals on wheels, etc.). The primary aim of the intervention was to help maintain older people in the community - to prevent or postpone the kind of functional decline which usually leads to institutionalisation. After a three-year intervention delivered against a background of social care provision which enables attention to be directed away from uptake of social support to other factors, recipients were more likely than controls to be "alive and still assessed for care at home". Experimental subjects received home visits which concentrated on the development of 'personalised health plans' across any of ten health-related topics : health care, substance use, exercise, nutrition, stress management, emotional functioning, social support and participation, housing, finances and transport.

The sample studied by Leveille and colleagues (1998) was somewhat older (70 years+) but less functionally impaired. Although all the participants were mobile and independent in the activities of daily life, they were all receiving treatment for at least one chronic illness (excluding dementia or terminal disease). In other words, they were at relatively high risk of disability. The intervention, which aimed to prevent disability by promoting physical and social activity and chronic illness self-management, was (in this respect like the Hall study) tailored individually to each patient after consultation with the primary care doctor. The intervention group, at twelve-month follow-up, showed less decline in function - measured by hospitalisation and scores on the Health Assessment Questionnaire - than controls. The intervention led to

significantly higher levels of physical *and* social activity as well as significant reductions in the use of psychoactive medications.

A very different approach to health promotion for more or less the same target group - older people (65 years+) discharged from hospital to care at home for various chronic medical conditions - is evaluated in a recent Canadian study of the benefits of "critical reflection" (McWilliams 1999). The aim of the intervention was to help individuals to take a different view of their own chronic illness so that they might (a) "redefine needs and action priorities" and (b) modify their daily lives. The intervention was made up of 10 weekly sessions in which "a nurse facilitated reflection on life and health". At one year follow-up there was no significant differences between the intervention group and controls in respect of the two main outcomes - hospital utilisation and self-assessed quality of life.

CARDIAC REHABILITATION AND SECONDARY PREVENTION OF CARDIAC DISEASE

Behavioural interventions in patients with established heart disease can change objective risk factors for CVD - and may reduce non-fatal cardiac events as well as cardiac mortality (Ebrahim & Davey Smith 1997). Several systematic reviews and meta-analyses of trials of cardiac rehabilitation (for people who have already had a major cardiac event) have been published in recent years (NHSCRD 1998). The majority of published studies refer to programmes which are (i) hospital-based; (ii) concentrate on exercise training with or without some kind of educational/psychological intervention; and (iii) include mainly low-risk, male, white, middle-aged MI patients. It seems reasonably clear, however, that the benefits of cardiac rehabilitation may be extended to older MI patients (Lavie & Milani 1999).

Significant improvements in lifestyle (i.e. more exercise/better diet), symptoms, health status and hospital readmission over two years have been achieved by interventions designed to initiate and maintain lifestyle change in patients with established CHD or angina. Two UK RCTs have shown that personal health education (Cupples & Knight 1994) or regular visits to a secondary prevention clinic (Campbell 1998) can be more effective than routine care from GPs. A five-year follow-up of one of the patients in one of these studies (Cupples & Knight 1999) reported that the exercise benefits, though smaller, were still evident. And in the USA, Whelton (1998) found that older patients with hypertension were sufficiently motivated (to reduce their dependence on antihypertensive medication) to make and sustain significant lifestyle changes (reduction in intake of salt and calories). The intervention achieved a decrease in the need for medication of approximately 30 per cent.

PATIENT EDUCATION AND THE SELF-MANAGEMENT OF CHRONIC DISEASE

What is self-management of chronic disease? Clark (1991) identified several common self-

management tasks from a review of studies of patient education for arthritis, diabetes, heart disease, asthma and COPD. The core tasks included: recognising and responding to symptoms; using medicine; managing acute episodes; maintaining activity; smoking cessation; interacting with health care providers; managing emotions and psychological responses to illness.

Over the last fifteen years or so a substantial literature has developed on the self-management of chronic disease, and reviewers have generally concluded that educational/behavioural interventions are effective and worthwhile. About two-thirds of the studies reviewed by Lorig and colleagues (1987), for example, reported changes in health behaviour and a positive impact on measures of health status. Since, however, so much of the research into this topic is disease-specific, it is relatively unusual for researchers to go out of their way to look for subjects who may be classified as older people, and none of the studies cited in this section have samples which fall within our age limit of 65 years or more. Even so, the topic was one that seemed to demand inclusion in the present review.

Lorig's research into arthritis self-management (ASMP) is one of the few programmes to have generated a comparison of the benefits of patient education in the younger old and the older old (Lorig et al 1984). In line with other studies in this area, the ASMP intervention appeared to have a positive impact on pain and depression, but not physical function/mobility. The improvement, which was present in both younger (55-74 years old) and older old (75+) after an eight-month follow-up, persisted in the younger group only through twenty months. Improvements were associated more with self-efficacy than behaviour change

Positive results in controlled trials of patient education programmes have also been reported for older people with heart disease (Clark 1992; Clark 1997) and Parkinson's disease (Montgomery 1994). Although Clark's studies, like Lorig's, highlight the psychosocial rather than the physical benefits of the intervention, meta-analyses of the results of psychosocial interventions in patients with heart disease suggest that they may significantly reduce morbidity and mortality (Linden 1996; Mullen 1992).

5.2 Extend screening/case-finding interventions

5.2.1 Comprehensive geriatric screening and regular health surveillance

Health and functional assessments for older people are used for various purposes in different settings. What are known in the US literature as 'comprehensive geriatric assessments' help to inform the clinical management of older people admitted to acute care services. About the value of these specialist-led multi-disciplinary assessments there is now considerable consensus (Stuck 1993). Older patients after their discharge from acute care services are also an important target

group for assessments which have a preventive aim in view - the prevention of re-admission to hospital for example (Rubin 1993; Hansen 1995).

Combined medical, functional and psychosocial assessments are also used as part of community-wide screening programmes for everyone deemed to be at high risk - because of their age - of serious morbidity and functional decline. In the UK general practitioners are contractually obliged to offer an annual health check to everyone aged 75 years or more, though the value and effectiveness of such a programme remains a matter for dispute. Williams (1994) describes the purpose of these health checks as *tertiary* prevention, "the early recognition and seeking out of established symptomatic disease and social detriment so that treatment and social support can be instituted to improve quality of life and reduce functional deficit". Programmes for some kind of regular health surveillance/multiphasic screening for older people living in the community are of course by no means new. The surveillance can take many different forms besides a medical consultation - including 'postal surveillance' (Pathy 1992), visits from unskilled volunteers trained to use a simple proforma (Carpenter 1990), periodic assessments provided by nurses or health visitors to older people in their own homes (Vetter 1984), or assessments by multi-disciplinary teams in primary care settings (Williams 1987; Epstein 1990).

Since Tulloch & Moore's (1979) pioneering study of geriatric surveillance and screening in general practice, researchers in the USA and Europe have evaluated a wide range of health screening programmes for older people living in the community. Despite considerable variation in both programme content (what to screen for?) and method of delivery (e.g. who does the screening and how often?), researchers have used broadly similar outcome measures to detect health benefits. Does the intervention have any effect on survival? Does it postpone functional decline (measured by functional capacity or admission to care homes) and prevent serious morbidity (often measured by admission to acute care)? Does it improve psychological well-being (measured by morale or self-perceived health)?

It is difficult to find straightforward answers to these questions in the results from robustly designed trials of screening programmes. Although most of the trials report health benefits of one kind or another, there is sufficient inconsistency between the results to urge caution over claims for effectiveness (Beales & Tulloch 1998; Fletcher 1998). There is furthermore some uncertainty about the mechanism by which the reported benefits are obtained. Do health checks prevent institutionalisation by identifying the need for practical support in the home? Do they postpone functional decline and prevent mortality by identifying unmanaged medical conditions or preventable causes of death? Or is it that they provide more isolated older people with an important source of social support?

Attempts to evaluate the cost-effectiveness of regular health checks for older people in the UK

have not yet provided unequivocal evidence of their value. Shackley and Donald (1993) argued that it was impossible to say whether the benefits of screening justified the costs. On the other hand, a large Nottingham-based study by Brown (1997) reported that nearly half the patients assessed were found to have some problem for which action was taken, a result which the authors argue goes some way towards confirming the value of the programme. A large RCT, which it is hoped will settle outstanding questions, is currently underway in the UK (Fletcher 1998).

Results from published trials of regular health surveillance in the community are then fairly mixed. Some studies (e.g. Hendriksen 1984; Vetter 1984; Pathy 1992) report reductions in mortality for groups of older people whose health was kept under regular surveillance for two to three years. Others do not. Some studies (e.g. Fabacher 1994; Stuck 1995) report that subjects receiving the intervention were less likely to experience a decline in functional ability or loss of independence. Others do not (Vetter 1984; McEwan 1990; Carpenter & Demopoulos 1990; Van Rossum 1993). Some report reductions in admissions to long-term care (Stuck 1995; Hendriksen 1984; Carpenter & Demopoulos 1990), whereas others (Pathy 1992; Van Rossum 1993) find no evidence for such an effect. Tulloch & Moore (1979) found that their screening programme made no impact on the prevalence of medical disorders, whereas German (1995) reported a positive effect on a multi-dimensional health index in a trial of preventive health checks. A positive effect on self-perceived health was found by Pathy (1993) but not Van Rossum (1993).

Among the various trials which suggest that preventive assessments for older people have a beneficial effect on health are two with a marked health education component (Vetter 1992; German 1995). Vetter's 1992 UK study was planned as an evaluation of a simple health visitor intervention to reduce fractures in older people aged 70 and over. Although no effect was detected on the incidence of falls or fractures, the intervention - which included recommendations on nutrition, smoking, exercise, etc. as well as referral for medical problems and inappropriate medication - was associated with better survival. Links with educational/behavioural interventions to reduce risk for often fatal disease were also present in the US trial (German 1995), which embedded health counselling in a wider preventive assessment undertaken in a clinic (not at home). The assessment emphasised biomedical screening - with a physical examination (e.g. digital rectal exam), laboratory procedures (e.g. occult blood in stool) - and included immunisation for influenza - and the sample is somewhat younger (65+) than that found in most trials of geriatric screening. The study reported a positive effect - at two years' follow-up - on mortality and a multi-dimensional index of health status, though there were no significant changes in health behaviour associated with the intervention (Burton 1995).

One general point to make about these trials is that those which are based in the USA tend to

show better results - in respect of the prevention of functional decline - than those which were conducted in the UK and Europe. It is possible that this may have something to do with the content of the interventions - are they more intensive in the USA (more frequent visits) or do they place more emphasis on biomedical screening - or it may be that the US interventions are filling gaps in primary provision which are much smaller in the UK and Western Europe. In other words, the USA visits may be picking up medical problems that would otherwise be overlooked - whereas in Britain and Holland the same problems tend to be picked up anyway. It is also important in this connection to bear in mind the distinction between preserving independence (living longer at home) and delaying disability for understanding the significance of these trials. The intervention evaluated by Carpenter & Demopoulos (1990), for example, would appear to preserve independence by ensuring better access to practical social support services in response to functional deterioration; the intervention evaluated by Stuck (1995) would seem to preserve independence by delaying the onset of disability.

5.2.2 Preventive assessments and the prevention of falls

Although nearly all falls prevention trials conducted with community-dwelling older people include some form of exercise programme or recommendations, the exercise is often only one element in a more complex multi-component intervention. Results from trials which assign a central role to individual assessments for risk factors for falls (with appropriate follow-up) are on the whole more effective at reducing at falls than those which look at (i) exercise-only interventions or (ii) educational/ sociobehavioural interventions in dealing with this problem (Gillespie 1997).

A modest but significant reduction in falls (trend level only difference for injurious falls) was reported by Tinetti (1994), who screened a sample of community dwellers to identify high risk individuals (i.e. 'likely fallers') as a target group for a relatively intensive intervention. Tinetti is unable to say anything about the effectiveness of the individual components of the intervention. It seems clear, however, that the targeting of the intervention to high risk individuals played a very important role in the success of the trial. The negative results - for both hip fractures and the occurrence of falls - reported by Vetter (1992) from a similar intervention (though of 'lower intensity') may perhaps be explained by the fact that the intervention was population-based: assessment formed part of the intervention rather than part of the selection process for inclusion in the study. A similar conclusion would seem to be warranted by the negative results reported from a Canadian trial (with a slightly younger sample - 60 years+) of comprehensive risk assessment with individualised feedback (Gallagher 1996). The positive effects noted by Wagner (1994), also with a population-based intervention, are reported with important qualifications : the effect was small and appeared only in the first year of the study. It had disappeared by the second year of follow-up.

Exercise seems, however, to have had little to do with the success of the London-based PROFET trial (Close 1999). The intervention, which hinged on a full medical assessment with special emphasis on visual acuity, balance, cognition and prescribing practice, was aimed at patients who had presented to an accident and emergency department with a fall and were aged 65 years or older. Referrals were made to the appropriate service when necessary; and everyone in the treatment group received a single home visit from an occupational therapist. After one year patients in the intervention group showed a significantly reduced risk of falling and of admission to hospital.

As the results from the exercise trials summarised earlier show, there are considerable differences between community-dwelling older people and those who live in institutions, which are reflected both in the character of the interventions used with these different populations and in the health gains that may be achieved from the interventions. Further confirmation of the difficulty of preventing falls in frail and institutionalised older people is found in the results from an evaluation study by Rubenstein (1990) of a postfall assessment. The findings do, however, highlight the importance of falls as a marker for underlying medical problems - which in this study were detected and appropriately managed as a result of the postfall assessment. The intervention reduced hospitalisations, even though it had no effect on falls.

5.2.3 Screening and case finding for depression

The suggestion that GPs are very often unaware of their older patients' mental health needs is not new. The attempt to test the hypothesis that GP recognition of depression in the elderly is poor has, in at least one UK study, led to the opposite conclusion, with as many as 88 per cent of elderly depressed patients being correctly identified (Macdonald 1986). The problem was that little or no action was taken after identification.

Four London studies - two in Gospel Oak, one in Islington, and one in Lewisham - modify these conclusions with respect to the detection of depression and confirm them with respect to under-treatment. In other words there is evidence of substantial hidden psychiatric morbidity among older people that may benefit from identification and treatment. Blanchard (1994) reported a low rate of specific treatment for screened depression (19 per cent). One aspect of this problem appears to be the reluctance of the majority of depressed older people to declare their emotional problems to their GP. Banerjee & Macdonald (1996), in a study of elderly people receiving home care, found that most of those with depression (26 per cent of the sample) were receiving little or no treatment. That there is a potential for increased pharmacological treatment of older people with depression is a conclusion also of the Islington community study (Livingston 1997). Most recently another study in Gospel Oak (Crawford 1998) found that depression was recognised by GPs in only half of older people screened as 'cases'; and that only 38 per cent of these were

receiving some kind of specific treatment, though the authors take the view that the potential for health gain in improving recognition of mental illness in primary care is fairly limited. Not only has considerable effort already been made in this direction, but more importantly perhaps, there are no treatment strategies of proven value for the majority of elderly depressed patients presenting to GPs (with *minor* as opposed to major depression). It must be stressed, however, that not everyone shares this pessimistic view of the effectiveness of available treatment strategies for depression in older people. Quite apart from differences of opinion over pharmacotherapy, there is evidence from a London-based randomised controlled trial of the effectiveness of interventions offered by community psycho-geriatric teams in alleviating depression in frail older people at home (Banerjee 1996).

5.2.4 Screening for sensory impairment

The rationale for including screening for visual impairment in multiphasic screening of older people is clear: there is a substantial amount of untreated and remediable visual impairment in the older population. The RNIB has recently argued that services are "losing sight of the blind"; and general practitioners are currently obliged to offer an annual assessment of vision as part of the 75 years and over health check (Baker & Winyard 1998).

The evidence from RCTs, however, lends no support to the view that there are significant health benefits to be gained by adopting a more energetically pro-active approach to screening and case-finding. To the contrary, a systematic review of community-based programmes for screening older people for impaired vision (as a part of multiphasic health checks) concluded that the evidence (from five trials, three of which were UK-based) did not support their continued inclusion in the annual health check (Smeeth & Illiffe 1998). The authors surmise that several factors may contribute to what they argue should be seen as a surprising conclusion; and draw particular attention to UK studies which suggest that there are significant barriers to uptake of services, namely the cost of spectacles and long waiting lists for treatment. They do not comment however on the relevance of these barriers to the non-UK studies included in their review and argue that further work is needed to clarify appropriate interventions for older people with unreported visual impairment. In a separate review of the same topic, Smeeth (1998) argues that although "visual screening is of unproved value, it is clear that the care of older people with symptomatic eye problems could be markedly improved".

5.2.5 Screening for cancer

This report has said very little about the prevention of cancer, largely because of its focus on the prevention of disability and chronic ill-health. It is clear, however, that there are significant health benefits to be obtained by screening for some kinds of cancer in later life.

The recommendations of the 1986 Forrest report on screening for breast cancer in older women have been much criticised over the years (e.g. House of Commons Health Committee 1995). An upper age limit of 65 years - after which the provision of screening would depend on self-referral - was selected on the basis of studies which showed a rapid fall in the acceptance of invitations to screening after that age. Whether or not, as Sutton (1997) suggests, this decision reflects ageism rather than rational policy-making, there is a growing body of evidence that argues for its revision. There is evidence, for example, from Swedish trials that screening for breast cancer is no less effective in reducing mortality in women aged 65-69 years than in women aged 50-64 years (Chen 1995): it reduces mortality by about a third (Law 1999). A recent Scottish study of breast screening for older women reported an attendance rate of 76 per cent - comparable to that reported in Sweden in the 1980s for women up to 74 years (Tabar 1985), and in the UK for younger women (Hendry 1996). Preliminary results from a UK pilot study show that women who have previously attended for screening will continue to do so after the age of 64 years, if invited (Rubin 1998).

Although there is evidence that screening can detect asymptomatic early stage prostate cancer, there is as yet no evidence that mortality from prostate cancer could be reduced by the introduction of population screening. One major barrier to introducing screening for prostate cancer is that there are no results available from RCTs regarding the effectiveness of different treatments (Selley 1997).

The evidence on the other hand for mass screening for colorectal cancer is strong (Robinson & Hardcastle 1998) and the DoH is actively considering the position. Effectiveness data for flexible sigmoidoscopy will not be available until 2006. The results, however, from the Haemoccult trials for the benefits of faecal occult blood (FOB) screening for men and women aged between 50 and 69 years are persuasive. FOB screening significantly reduces mortality (with compliance rates of 60 per cent in the Nottingham trial) and is comparable in cost-effectiveness to mass screening for breast cancer. In the longer term it is likely to prove more cost-effective than breast cancer screening (Whynes 1998).

5.3 Social and psychosocial interventions

There is a considerable body of evidence to suggest that good social support networks and continuing social activity are associated with longer life and better health in older people. The range of interventions that might be reasonably described as 'social' is wider, however, than those which aim either to stimulate older people to greater social activity or to provide them with a substitute for the kind of emotional support which friends or relations may offer in times of strain and loss. It might include, for example, programmes to provide practical help with domestic chores for older people living in the community (Townsend 1988), or interventions to

help carers of people with dementia. It would certainly include many 'interventions' which could be more usefully described as projects for the promotion of mutual aid among older people - community development projects - galvanising older people in the community into concerted action on health matters or helping to establish self-help groups (Minkler 1992). It could even be taken to include re-housing - what are the health benefits of moving from poor quality 'high rise' accommodation to purpose-built sheltered housing? This section picks out three kinds of intervention: programmes to help informal carers; home safety programmes for falls prevention; and initiatives to provide older people with social support or greater opportunities for social participation.

5.3.1 Interventions to help informal carers

Interventions to provide support for informal carers of older people take various forms (emotional support; information and training; mainstream respite services) and may be assessed in various ways. It is one thing to ask whether or not they have a measurable impact on the health or psychological well-being of carers; and quite another thing to ask whether or not they reduce the social costs of caring (RIS 1998).

Reviews and meta-analyses of interventions to provide help to carers have generally concluded that the results of these interventions are disappointing, which is to say that they seem to have little impact on 'carer distress' (Knight 1993; Montgomery 1996; Thompson & Thompson 1998). Such conclusions, however, are usually hedged round with qualifications. Poor quality studies and small sample sizes, as well as the diversity of the interventions examined, argue the need for caution in interpreting the results, especially as some of the studies present clear qualitative evidence in favour of interventions. Because of the limitations of the research evidence, Thompson & Thompson (1998) conclude that "it is not possible to recommend wholesale investment in caregiver support programmes or withdrawal of the same".

Three London-based RCTs confirm this view of interventions for carers, though in each case there are particular reasons for qualifying the broadly negative interpretation of the results. Homer & Gilleard (1994) reported that inpatient respite care was associated with no observable improvement in carers' emotional well-being, though the majority of *patients* showed some improvement, particularly those who were being looked after by highly stressed carers. In Islington, Murray (1997) found that individualised packages of care for spouses of older people with psychiatric illness had no measurable effect on the study group as a whole. Carers, however, who were themselves mentally ill at the outset, showed significant improvement. And Riordan & Bennett (1998), in an evaluation of specially augmented domiciliary services for people with dementia, found that the intervention made no difference to the well-being of the main carer or the psychological profile of the person with dementia. What the intervention did seem to effect

was the ability of the carer to continue to maintain informal care in the community: the intervention postponed admission to residential care.

5.3.2 *Falls prevention and home safety*

It has been estimated that between one-third and a half of all falls to older people in the community are due to environmental hazards in and around the home (Lilley 1995), though there is evidence to suggest that the modification of 'extrinsic' risk factors such as these have more potential for preventing falls among the 'young old' than the 'older old' (Norton 1997). Recognition of the significance of environmental hazards in the home has led to the inclusion of some kind of home safety visit in most multi-factorial interventions to prevent falls among community-dwelling older people.

There are, however, relatively few published evaluations of interventions aimed primarily at modifying environmental hazards. Interventions aimed at increasing older people's *awareness* of hazards seem (see above) to have little effect. The actual provision of home safety modifications is of course a different matter. Fairly large-scale community-based home safety programmes have been evaluated by Thompson (1996) in Australia and Ytterstad (1996) in Norway. Both these studies reported positive results, though neither of them are controlled trials. They rely, in other words, on pre-test/post-test comparisons, and are discounted in the Cochrane Review on this topic (Gillespie 1997).

5.3.3 *Promoting social activity and participation*

Many of the techniques that are used to ameliorate social isolation or stimulate social activity in older people are well known. Social clubs, day centres, befriending visits are among the most obvious examples of well established facilities often provided by voluntary action. In recent years also there has been a great deal of effort to make the social environment in care homes more agreeable and stimulating. Attempts to assess the effectiveness of these programmes are more recent still, and reviews have emphasised the difficulties of evaluating programmes to ameliorate social isolation and the dearth of hard data on the most effective and efficient methods for decreasing isolation and increasing positive social supports (Institute of Medicine 1990; Rubinstein 1994).

It is not surprising perhaps, given the nature and declared aim of social interventions such as these, that it is rare to find a study which includes health status among its outcomes. They tend to be more concerned with what have been described as 'intermediate' outcomes - which evaluate success or failure by asking whether people have been galvanised into shared activity or whether they have changed their behaviour - and outcomes that try to gauge 'psychological well-being'.

Did the programme succeed in building new social networks or increasing social interaction?
Did it have any effect on the participant's sense of isolation or their morale?

A randomised controlled trial of an 'activation program' for older residents (52-91 years) in sheltered housing in Sweden found that their experimental group became more active - more socially participative (Arnetz 1982) - as well as more protesting - less passive (Arnetz & Theorell 1983) - though there was no discernible effect on most of the other 'behavioural parameters' which had been selected as outcomes for the study e.g. alertness, talkativeness, interestedness and happiness.

One kind of 'activating' intervention with older people which has become common in residential and day care settings is group discussion (e.g. Rattenbury and Stone 1989; Rünberg 1998). If we look outside residential and day care settings - which provide care for the frailer and more disabled portion of the older population - to relatively healthy older people living in the community, it appears to become more difficult to demonstrate any effect on well-being from these kinds of 'activating' or 'supportive' interventions. Scates and colleagues (1986), in a study which compared different kinds of group intervention - including reminiscence and an activity group - found no significant changes (in life satisfaction or anxiety) in a group of older volunteers (65 years+) all of whom had good existing social support networks. Grimby and Svanborg (1996), looking at a Swedish sample of older people aged 70years+, found that a complex medico-social intervention - including home preventive assessments, lifestyle advice, and exercise programmes as well attempts to increase levels of social interaction - had no effect on psychological well-being. Sixty-one per cent of the sample were married. An evaluation of a three-year intervention programme by Hedelin (1997), again with a Swedish sample (65 years+) living in the community, also failed to detect any positive effect on well-being. The aim of the programme was "to prevent, detect at an early stage and alleviate depression and depressive conditions in older people by developing social networks, social support and visiting activities".

Are targeted social interventions - those which pick out groups of especially vulnerable community-dwelling older people - more effective? In the USA, Bogat and Jason (1983), in a quasi-experimental study of 'network-building' programs for older people on a waiting list to enter sheltered accommodation, found no significant effect on well-being. More promising results were obtained by Andersson (1985) in a randomised controlled trial of an intervention against loneliness in a sample of older Swedish women (60-80 years) who lived alone *and* rated themselves as lonely at an initial screening interview. The aims of the interventions were to alleviate 'emotional estrangement' (experienced lack of intimacy) and 'social estrangement' (experienced lack of relatedness to the social environment) by the use of 'group work'. At a follow-up interview conducted six months after the completion of the intervention, experimental

subjects had an increased range of social contacts, more self-esteem and were less lonely; they also had lower blood pressure.

More recently, in Canada, a pilot study of a volunteer visiting programme for older people already receiving home care and assessed as lonely by nursing staff found some evidence to suggest that the intervention improved 'life satisfaction' (MacIntyre 1999). To set against these results is a UK trial, which is one of a few evaluations of a social intervention which uses a wide range of health and functional outcomes as well as measures of psychological well-being (Clarke 1992). The only difference between the intervention and non-intervention groups was found to be in self-perceived health-status (i.e. no effect on functional ability, morale, life satisfaction, etc.). The intervention package was aimed specifically at enhancing social contacts in older people who were aged 75 years or more and lived alone.

5.4 Improve or extend uptake of preventive interventions of established effectiveness

There are very few (non-screening) interventions that fall unequivocally into this category. There are, that is to say, not many preventive interventions of established effectiveness in the older population which depend for their utilisation on some kind of active cooperation or positive request on the part of the patient. Secondary prevention of heart disease and immunisation for influenza are probably the best candidates for health gain from this approach. Evidence for the use of dietary supplements (calcium and/or vitamin D) or antiresorptive agents to prevent bone loss and fractures is promising, but they are still unanswered questions about their effectiveness in high risk or population-based strategies (Walker-Bone 1998).

5.4.1 Secondary prevention of heart disease and high risk strategies

There is now widespread consensus that the effectiveness of measures for the prevention of cardiovascular disease is greatly enhanced if they are targeted at specific high risk populations such as people with hypertension. There is also good evidence that the most effective approach to reducing morbidity and mortality in this group combines pharmacological treatment with behavioural risk factor reduction (Ebrahim & Davey 1997).

A large primary care based study by Foss (1996) showed that a relatively large proportion of older people receiving medication for hypertension had coexisting and modifiable risk factors (smoking/inactivity/obesity/poor diet) and claimed to have received no advice on specific aspects of lifestyle change. Older patients (65 years+) in the sample were least likely to recognise obesity as a risk factor or to have made an effort to lose weight. They were also less likely to have recognised dietary risk and adopted healthier eating habits.

Evidence that there is considerable scope for improving secondary prevention of heart disease in older people in this country can be found in various recent studies looking at the uptake of cardiac rehabilitation services, as well as audits of the management of older people with hypertension or diagnosed ischaemic heart disease in primary care.

The 1996 British Cardiac Society survey of the potential for the secondary prevention of coronary disease showed, for example, that about a quarter of younger cardiac patients (aged up to 70 years) had poorly controlled blood pressure and one-fifth were not taking aspirin (ASPIRE 1996). Local and regional audits of the management of patients with ischaemic heart disease in primary care point to similar conclusions. In a study of 435 patients (206 were aged 65 years+) in South Thames Thiru (1999) found that 25 per cent appeared to have inadequately controlled blood pressure and that even more would benefit from medication (or more intensive treatment) to lower cholesterol levels. Campbell (1998) found even lower levels of recording of risk factors and uptake of potentially effective interventions in a sample of Scottish general practitioners. Half of the patients had at least two aspects of their medical management that were suboptimal and two-thirds had at least two aspects of their health behaviour that would benefit from change.

A recent national survey of cardiac rehabilitation services in England and Wales found that the elderly were excluded (i.e. routinely not invited) in 40 per cent of a sample of centres providing the service (Thompson 1997). As a general rule those who are invited to attend cardiac rehabilitation have a good prognosis and are relatively young. Figures for the uptake of cardiac rehabilitation in the UK vary considerably between different centres (Melville 1999). Although some US studies have shown very low rates of uptake among older heart patients invited to attend specialist centres for rehabilitation (Ades 1992), age was not associated with uptake of invitations in the Nottingham survey (Melville 1999). Studies, however, in both Nottingham and Glasgow (Pell 1996) report that socioeconomic status/deprivation *is* associated with poorer uptake. It seems therefore that those at greatest risk are missing out on the benefits of cardiac rehabilitation.

5.4.2 *Immunisation for influenza*

There is good evidence from observational studies that vaccination for influenza can reduce the incidence of pneumonia, hospitalisations and death among older people, if the vaccine matches or is similar to the influenza strain (Gross 1995). On the basis of this evidence, it has been argued that all people in the UK over 65, not just those at high risk through chronic illness, should be considered for influenza vaccination (NHSCRD 1996). A recent survey of sixty+ general practices in Wales found that less than a half of those people considered to be at high risk had received vaccine (63 per cent of people with heart disease; 39 per cent diabetes; 41 per cent asthma; and only one in three of those who were aged 75 years or more). Personal advice

from the GP or practice nurse was an important stimulus to uptake (Watkins 1997). Results from US studies of health promotion interventions for older people suggest that it is relatively easy to encourage older people to adopt this particular 'preventive behaviour' (e.g. Fabacher 1994; Fox 1997).

5.4.3 Calcium, vitamin D and other therapeutic agents to prevent bone loss

Reviews of the evidence for the effectiveness of increased calcium intake or vitamin D in the prevention of fragility fractures have tended to be cautious in their assessment of benefits (Cummings & Nevitt 1997; Gillespie 1995). Evidence for the benefits of increasing dietary calcium is promising rather than conclusive, and comes mostly from observational and case-control studies. Trials with calcium supplementation have shown a reduction in fracture risk, though the largest of these also made use of vitamin D (Chapuy 1994; Dawson-Hughes 1997). There are large cost differences between regimens which make use only of vitamin D and those which also use calcium supplements - large enough to suggest a shift from a population-based strategy to a high risk strategy (Torgeson & Kanis 1995). In this connection, given the ethnic minority profile of London's older population, it is important to note that older Asians in Britain are at relatively high risk of vitamin D deficiency (Solanki 1995).

Although clinical trials have demonstrated that postmenopausal hormone replacement therapy (HRT) effectively prevents bone loss, there is less evidence for its effect on fracture rates (Walker-Bone 1998). Recommendations over the long-term use of HRT are complicated by evidence for its cardioprotective effects and an increase in breast cancer risk. On top of this, compliance is known to be poor in older women and there is evidence that protection against bone loss is lost quite rapidly after HRT is stopped - so that medication would have to be continued indefinitely after the menopause to have an appreciable impact on fracture rates (Law 1991). It is for reasons such as these, quite apart from uncertainty about the ability of available screening technology to predict who will have fractures (Wilkin 1999), that commentators argue against a national screening programme (with bone densitometry) to target HRT (Advisory Group on Osteoporosis 1995; Walker-Bone 1998). The Royal College of Physicians currently recommends a case-finding strategy to identify people with osteoporosis - picking up e.g. patients with fragility fractures or strong risk factors (RCP 1999b).

Biphosphonates have also been shown to reduce bone loss and prevent fractures - and furthermore they have been shown to be effective at older ages (65-80 years). The inclusion of these agents in high risk strategies to prevent fractures is currently being evaluated in several randomised controlled trials (Black 1996) - they are expensive - , and it has been suggested that the targeting of effective antiresorptive agents through screening of postmenopausal and elderly women will prove a cost-effective strategy for the prevention of osteoporotic fracture (Walker-

Bone 1998). The fact, however, that there are serious doubts about the value of screening for low bone mineral density would seem to support the case for an alternative approach - whereby treatment is focused on infirm older people irrespective of their bone density (Wilkin 1999).

5.5 Improve access to services

There is a great deal that could be said about improving access to services for older people in London. The present report, however, is more concerned with prevention/health improvement than general service development, and we have made no attempt to gather comprehensive information on health services for older people in London. Even so, there are important issues that demand consideration from the perspective of a health improvement strategy. We have chosen to highlight three issues, each of them important for a different kind of reason. The first issue - access to services for ethnic minority elders - is important because London is home to almost half of the ethnic minority population in Britain. The development of rehabilitation services - the second issue - concerns what is after all a key specialist service for older people, and is besides a national priority. The third issue - chiropody - is included not only because it arises so persistently, but also because it is a relatively low-cost community-based service which can make a lot of difference to mobility in later life.

5.5.1 Access for ethnic minorities

Evidence on access to services for older people from ethnic minorities is mixed and complex. Smaje and LeGrand (1997), in a review of the significance of ethnicity in the use of health services in the UK, concluded that there was "no gross pattern of inequity in the use of health services by different ethnic groups in Britain.... Relative to need, most ethnic minority groups apparently 'over-utilise' services when compared to the white population." This general conclusion is qualified, however, by three exceptions: male and female Chinese of all ages; younger Pakistani women; and use of outpatient services among younger South Asians and Afro-Caribbeans. It has been suggested that high utilisation rates of primary care - a common finding (e.g. Balarajan 1989) - may reflect a poorer quality service (Benzeval 1995), though the evidence is admittedly patchy and by no means conclusive. In Leicester, for example, older Gujeratis were less likely than older whites to have been offered an annual health check by their GP (Lindesay 1997).

For community health services and social care services, however, the picture is notoriously different, especially for groups who may have difficulty in communicating in English (e.g. Badger 1989). In Birmingham, for example, older Asians were much less likely to use chiropody, physiotherapy or district nurse services (Ritch 1996) than the indigenous population. And in Leicester, although older Gujeratis were more likely to have seen their GP than the older

white population, they were less likely to have applied for district nurse or chiropody services (Lindesay 1997). One important factor in explaining the lower uptake of services is lack of knowledge. This certainly seems to have been the case in the Leicester study, where older Gujeratis were less likely to have heard of the main community services (with the exception of luncheon clubs), less likely to understand their purpose, and less likely to know how to apply for them. Lack of knowledge seems, however, to be only part of the problem. Pharaoh (1995), for example, suggests that white GPs, unlike their Asian counterparts, may assume that their older Asian patients are quite likely to have the kind of family support that would obviate the need for e.g. bathing or chiropody services. The Leicester researchers, on the other hand, are of the view that the assumption may not be unreasonable. Certainly the older Gujeratis in their sample were less likely to be living alone than the white population. Also of considerable importance is the fact that services may not be very well attuned to culturally specific needs, which may deter significant numbers of potential applicants for services.

Further evidence for problems with community services can be found in a Liverpool study by Boneham (1997) which tried to find out why there was a low level of use of psychogeriatric services among older ethnic minority individuals with psychiatric morbidity, and a qualitative study of the use of respite services by minority ethnic carers of older people in Lothian (Netto 1998). The Liverpool study uncovered considerable unmet need for community services, especially in those who lived alone (46 per cent of the sample), and especially in respect of chiropody services. Although the low level of service use could be explained in part by lack of knowledge, the authors argued that it had more to do with distrust of mainstream services and a sense of the inappropriateness of what was being offered. The Scottish study concluded that the low uptake of respite services in this population could be accounted for by a general lack of awareness of availability of services. Rather different results emerge, however, from a study of users of geriatric psychiatry services from the Indian subcontinent in west London. In this case, it was found that there were no differences between services users who were white and those from the Indian subcontinent in respect of uptake of other health and social services (Redelinguys & Shah 1997).

What is clear to all these various researchers is that the issue requires further investigation and action.

5.5.2 Rehabilitation

The evidence for the benefits of specialist multi-disciplinary assessments for older people, and also for specialist multi-disciplinary rehabilitation, has been gradually accumulating over the last decade or so, and is now fairly compelling. Rehabilitation services for stroke and hip fracture have been the subject of a string of reports throughout the 1990s, all making more or less the

same points. Specialist rehabilitation is more effective than conventional care, and access to this kind of service is uneven.

The treatment of stroke provides a good example of how effective rehabilitation can influence outcome in respect of disability. Specialist stroke care - characterised by multi-disciplinary rehabilitation as well as specialisation of medical and nursing staff - is associated with a 29 per cent lower risk of death or dependency (Stroke Unit Trialists 1997). In 1995 a survey of consultants commissioned by the Stroke Association showed that access to this kind of specialist rehabilitation was very uneven across the country (Lindley 1995), and now, four years on, an audit carried out by the Royal College of Physicians has reiterated the same criticism. Only one half of the trusts participating in the audit had specialist stroke teams.

5.5.3 Chiropody

Despite the importance assigned to chiropody services, not least by older people themselves (DoH 1994), there is evidence of patchy availability of services, with serious shortages in some areas and long waiting lists for appointments (Harding 1997). Figures in initial contacts for chiropody were actually lower in 1994-95 than they had been in 1991-92 (DoH, 1996). The Society of Chiropodists and Podiatrists also reports widespread reductions in posts and cuts to services during 1996-97 (Harding 1997). There is a very good case for taking a close look at the provision of chiropody services across the capital.

SECTION 6

Conclusions, policy options and issues for London

6.1 The health of older Londoners

Although every effort has been made to include London data wherever possible during the course of this review, a great deal of the evidence relies on studies conducted nationally or in localities other than London. For the purposes of a health improvement strategy for older Londoners, this mixture of local and non-local data on the health and functional status of the older population raises a number of questions. In particular, does the epidemiological data help to pick out any health problems that serve to give a distinctive profile to the health and functional status of London's older population? And to what extent is it reasonable for the strategy to rely on data that are not specific to London for the determination of priorities and how much effort should be made to collect more and/or better data on the health of London's older population?

There are several points to make by way of reply to the first question - how is London different?

- This review has presented a substantial amount of London-based data from 'small area' studies on the prevalence of disability and chronic ill-health in later life. A lot of this

comes from the Gospel Oak study, though there are also studies of older populations in other areas such as Lewisham and Southwark, Islington, and Hackney. What emerges from these studies about the major health problems affecting older Londoners - and the scope for prevention - is not much different from what is known about the older population generally. The most common diagnoses among older Londoners are the same as the most common diagnoses in the older population as a whole: arthritis; hypertension and heart disease; lung disease; impairments of vision and hearing. About two-fifths of people over 65 years have some degree of locomotor disability; and there is a fair amount of undetected or untreated visual impairment and depression. Where specific London data on the prevalence of health problems are lacking, there is little reason to suppose that it is unsafe to rely on national data for the determination of priorities.

- London does, however, have a somewhat younger population than the country as a whole. In the 1991 census 15% of the population were of pensionable age compared to 18% for the rest of country.
- Mortality data suggest that London's older population are slightly healthier than the older population generally, despite having several of the most deprived boroughs in the country.
- The concentration of ethnic minority populations in London constitutes one of the most distinctive features of the demography of the capital. The ethnic minority population is 'younger' than the population as a whole. This means that in some London boroughs there is a link between high proportions of non-white ethnic groups and low proportions of older people (Matheson & Summerfield 1999). There is evidence that the burden of ill-health and disability in older people from non-white ethnic minorities is greater than in the white population. Cardiovascular disease and diabetes in particular are more prevalent in people of South Asian and African-Caribbean descent than in the white population.
- Inner London has the highest levels of mortality in the country for respiratory disease.

6.2 Effectiveness and cost-effectiveness

What policy makers want from the evaluation studies cited in the previous section is, firstly, evidence that they work, and secondly, some means of comparing interventions in respect of their effectiveness and cost-effectiveness.

6.2.1. What works?

The best evidence of effectiveness (what works) is available for a handful of interventions which have been evaluated in several clinical trials and have been the subject of meta-analyses or systematic reviews.

- Influenza vaccination works: during influenza epidemics it reduces mortality, morbidity and hospitalization among people aged 65 years or more.
- Anti-hypertensive medication works in older people: it has been shown to have measurable survival benefits in people up to about 80 years of age.
- Multi-factorial behavioural interventions (with or without pharmacological treatment) to reduce cardiovascular risk work better in high risk populations than in the general population: they reduce cardiac deaths (although not much of this evidence comes from research which has been conducted specifically with older people).
- Cardiac rehabilitation works: it has measurable survival and quality of life benefits (though once again the evidence is limited in respect of older cardiac patients).
- Multi-disciplinary assessment for falls prevention with appropriate follow-up works: it prevents falls and fall-related injuries in high-risk populations of older people living in the community (eg. those who have already fallen).

There is also some evidence from randomised controlled trials for the effectiveness of educational/behavioural interventions targeting older people.

- Educational/behavioural interventions can be effective in reducing CVD risk behaviours among unselected populations of older people. There is some evidence for the effectiveness of various approaches to encouraging increased levels of physical activity among older people.
- Individually tailored health promotion interventions - targeted towards older people with chronic health problems or disability and focussed on behaviour change/self-management of disease - can add life to years.
- There is limited evidence that social interventions are productive of health benefits.

6.2.2 *Comparisons and costs*

The evaluation studies that have been cited in this review use a wide variety of outcome measures. Some look for an effect on survival, some on risk behaviours that have a well-attested

relationship with mortality. Others concentrate on outcomes which say something about the ability of the intervention to preserve or enhance health-related quality of life. This diversity of outcome makes comparison difficult. Comparisons between different interventions tend to be restricted to sets of intervention which have more or less the same objective (eg. falls prevention), and even here the amount of information that is available is limited. The best data, not surprisingly, are available for those interventions which have been subjected to the largest number of large clinical trials (mostly of pharmacological interventions).

There is very little UK data on costs and cost-effectiveness of preventive interventions with older people. The interventions which have been - or are being - most closely scrutinised for evidence of cost-effectiveness include likely candidates for population-based approaches to prevention in older people and pharmacotherapy eg. screening for breast and colorectal cancer; dietary supplements and other therapeutic agents to reduce bone loss in later life. There is not much published UK information on the cost-effectiveness of educational/behavioural interventions with older people, though there are some published data on exercise interventions (see below) and the results of an economic analysis of the PROFET falls prevention trial is to be published shortly (Close 1999). Researchers in the USA, where providers have to persuade insurers that prevention in later life is a 'good buy', are more likely to include this kind of information.

Notwithstanding that comparisons are very difficult, it is important to try to say which among the interventions considered in this review seem to offer the best prospects of health improvement in later life. Putting to one side interventions/policy responses which are currently the subject of large trials or are under active consideration at a national level, there are several policy recommendations - all to do with service development - which stand out as candidates for priority action at London-wide level:

- improve secondary prevention of CVD
- improve rehabilitative care for older people with stroke or hip fracture
- increase uptake of influenza vaccination among people aged 65 and over.

What distinguishes these recommendations is that they build on the availability of interventions of established effectiveness. There are in addition a number of other issues/health problems which demand attention or active consideration as possible strategic priorities:

- promoting healthy lifestyles among older people
- health and health care for older people from ethnic minorities
- falls prevention
- undetected and/or untreated hearing disability and depression
- access to health care for older people in institutional care

- increase provision of chiropody services.

6.3 Secondary prevention of cardiovascular disease

This report has outlined evidence to suggest that there is considerable scope for (i) reducing cardiovascular risk in older people with hypertension; (ii) improving the management of established heart disease in older people; and (iii) increasing the uptake of cardiac rehabilitation among older people, especially those who are socially disadvantaged. Taken together with evidence in favour of targeting preventive efforts at high risk populations, there is a very strong case for making the improvement of secondary prevention of CVD among older people a strategic priority for London. Added force is lent to this conclusion by the ethnic profile of London's population and the relatively high risk of CVD among south Asians and Afro-Caribbeans.

6.4 Rehabilitative care

The problems of rehabilitative care are problems of uneven service development. Although the discussion of these problems clearly belongs in the proposed London-wide strategy for developing services for older people, there is also a good reason for including them here. In the first place, good rehabilitative care has an important part to play in the prevention of disability in the population. In the second place, it is useful - if only as a policy exercise - to put proposals for increasing the provision of specialist clinical care alongside e.g. educational /behavioural interventions to reduce risk for CVD in unselected populations of older people. Is it possible and/or reasonable to compare the claims of a form of tertiary prevention with attempts at the primary prevention of disabling disease in older people?

6.5 Influenza vaccination and respiratory disease

Current guidance recommends that everyone aged 75 yrs or more and everyone at high risk because of chronic ill-health should be invited for vaccination. Evidence from Wales suggests that vaccination coverage in London is likely to be poor and could be increased. This evidence - together with high rates of mortality from respiratory disease in inner London and what is known about the efficacy of vaccination - make a good case for taking a more proactive approach to increasing coverage. There is a good case also for undertaking some kind of audit of the management of chronic lung disease in the inner London older population.

6.6 Promoting healthy and active lifestyles

One question that is inescapable in any discussion of health improvement for older people is -

what should be done to promote what the Americans call 'personal health maintenance' among older people?

6.6.1 Promoting exercise and regular physical activity

It seems fairly clear, on the basis of the evidence presented in this review, that the promotion of regular exercise/physical activity among that segment of the older population which is sedentary, though not disabled or chronically ill, has to be considered as a possible priority for a health improvement strategy for older people.

Evidence for the benefits of taking up regular exercise/increasing levels of physical activity in later life is very strong. There is also, and this is obviously an important point, increasingly good evidence that regular exercise of low-to-moderate intensity - such as regular walking - has quality of life benefits as well as survival benefits. There remain, however, some uncertainties about the precise nature of the optimal exercise regimes for different groups of older people, especially those with chronic illness, though these uncertainties should not be allowed to weaken the force of the key point. In what seems to be an increasingly sedentary society, it is reasonable to expect considerable health benefits to flow from an increase in levels of regular physical activity among the less active members of the older population.

It is a different matter to determine how best to promote exercise in older people. Although there *is* evidence to suggest that healthy but sedentary older people can be encouraged to adopt and sustain more physically active lifestyles, much of it comes from the USA. The evidence that has been gathered in UK evaluations of primary care programmes of prescription for exercise provides at best only weak support for their effectiveness in promoting exercise in older people; and the results of the Health Education Authority LAYH programme are promising rather than conclusive. The positive results from the West London trial, which located an exercise specialist in two general practices, are qualified by the relatively small impact of the programme - about 10% of people classified as sedentary increased their levels of physical activity and the increases tended to be fairly small (Stevens 1998).

Researchers from Sheffield have used cost data from a large trial of physical activity in the over-65s to argue that a publicly funded programme of regular moderate exercise for this population could achieve important health benefits at relatively low cost (Munro 1997). What they have in mind here is a large (city-wide?) programme of aerobic-style exercise classes run by qualified instructors to be paid for by health commissioners (£854K per annum for twice-weekly classes for 10,000 participants). They hope to achieve fairly high participation rates on the back of fairly low investment of effort into recruitment. The results of the Newcastle study (Harland 1999) must cast doubts on the feasibility of this optimistic scenario. So also do the results of the West

London trial (Stevens 1998). Although the costs of moving someone out of the group classified as sedentary were fairly low, the costs of achieving currently recommended levels of activity were relatively high.

What all these results suggest is that it is important to adopt an experimental approach to the promotion of exercise in older people. There is a very strong case for trying out different approaches to exercise promotion in different populations of older people. These should include home-based exercise programmes with some kind of telephone supervision (King 1999). It would also seem to be important also to consider ways of increasing levels of physical activity that do not depend on the adoption of special exercise routines. There is a good case for targeting these programmes at particular social and ethnic groups.

6.6.2. Health promotion for disabled and chronically ill older people

Just as there is a good case for trying out various approaches to the promotion of regular physical activity in older people, so also there is a good case for replicating in the UK trials of some of the approaches to health promotion among chronically ill or disabled older people that appear to have been successful in North America (Hall 1992; Leveille 1998). Although domiciliary visits - with a health promotion content - of older people have been evaluated before in the UK (eg Vetter), there seem to be sufficient differences in the content and intensity of the interventions to warrant another look. The key point about these programmes is their targeting - they are aimed at older people who are at relatively high risk of serious functional decline, not by virtue of their age alone (eg. 75 yrs+), but because of their physical condition.

6.7 Older people from ethnic minorities

6.7.1 Cardiovascular disease and diabetes

In London's ethnic minority population, cardiovascular disease and diabetes are the health problems which demand consideration as targets for priority action. McKeigue & Chaturvedi (1996) identify obesity and smoking as the two key target variables for reducing CHD in the south Asian population, though they also argue that "the immediate priority is to reduce risk among those in *middle age*, who will account for most of the years of life lost from CHD in the next ten years". Smoking prevalence among older Bangladeshi men in particular - 57% in the survey by Rudat (1994) - is extremely high relative to the general population. High levels of registration with general practitioners - together with regular consultation - suggest that for south Asians primary care is the most important framework for health promotion. In London this means improving practice premises and strengthening staff.

For people of Afro-Caribbean descent control of high blood pressure has to be a major therapeutic goal. McKeigue & Chaturvedi suggest that improved detection of hypertension is unlikely to bring many benefits in a population where detection rates are already considerably higher than in the white population. There is evidence, however, that among those receiving treatment, blood pressure is not so well controlled in Afro-Caribbean as in the white population.

Although it is possible that this may be due to poor compliance, there is a lack of knowledge about the efficacy of different medications in people of black African descent, and the appropriate blood pressure levels at which treatment should be considered. Weight reduction is generally regarded as the intervention of choice when trying to reduce blood pressure, though there is evidence from the USA that African Americans are more salt sensitive than whites. Evidence for the feasibility of achieving and sustaining significant blood pressure reduction through lifestyle interventions is not especially good, however.

It is important in both these cases to ask whether it is reasonable to extrapolate findings on the effectiveness of individual lifestyle interventions in the general population to older south Asians or Afro-Caribbeans in the UK. The point has often been made that elderly people are too much excluded from clinical trials, with the result that not enough is known about the effectiveness of preventive interventions to make unequivocal recommendations (MRC 1994). Even less is known about older people from black and ethnic minority populations.

6.7.2 Access to services

The evidence presented in this report confirms that uptake of community health services is relatively low among older people from ethnic minority populations, though whether or not this is the case 'across the board' is uncertain. It seems likely that various factors contribute to this state of affairs - including lack of knowledge and lack of availability of culturally sensitive services. This is an issue of longstanding concern, and it requires, as a matter of priority, further investigation and action.

6.8 Falls prevention

Evidence for the effectiveness of post-fall assessments for community-dwelling older people is fairly compelling. The questions which the strategy should consider are: should the strategy propose measures to ensure that appropriate service development takes place across London? is it necessary to adopt London-wide measures in this case, and if it is, is any further evidence required before adopting this proposal?

6.9 Hearing disability and depression

Hearing disability and depression are common health problems in later life. There is good evidence that there are large numbers of older people in whom these problems are unrecognised and/or untreated. Effective remedies are available (though perhaps this view would be contested for depression). Are there further research questions to be pursued here: what should be done to increase the recognition and treatment of these problems in older people? The same questions should also be asked of visual impairment. To what extent does the issue turn on failure to recognise the problem or does the difficulty lie elsewhere - with poor uptake of services (with visual impairment) - or poor compliance (with hearing aids) - or a sense that there is not much that can be done (with depression)?

6.10 The provision of chiropody services

There seems little doubt that easily remediable foot problems - especially the inability to cut toenails - makes *some* contribution to mobility restrictions in the older old. Does demand for these services outstrip supply? Is there unmet need among particular groups, such as older people from ethnic minorities?

6.11 Access to health care for older people in institutional care.

Problems of access to health care have been mentioned several times in this review. The issue in these cases has as much to do with equity as with the prospect of significant health improvement. One group of older people for whom this may be a particularly serious problem are those in institutional care. What makes their case serious is the tendency to suppose that they comprise an ineliminable residue of chronically ill and disabled people who are in a state of inexorable decline and for whom little can be done.

6.12 Research and audit

One essential message that should not be lost in the torrent of information about the prospects for effective action to improve the health of older Londoners is the importance of research and audit. A great deal of the ground that has been covered in this review is riddled with uncertainty and unanswered questions. It is above all very difficult to say - on the basis of hard evidence - what are the best lines of action to follow. The fact that this conclusion has laid so much stress on better targeting of existing services, on the importance of efforts to improve uptake and access, is a reflection of this difficulty. Although the last decade has seen an upsurge of interest in the development of preventive interventions for older people, a great deal of research still has to be done to develop the evidence base for a strategic approach to the prevention of disability and chronic ill-health in later life (Ebrahim 1999).

Appendix 1

A note on method

Very little needs to be said about the way that this review has been put together than is not explained in the main body of the report.

The content of the report is determined at least in part by the problems of demarcation mentioned in section 1. It is not easy, in the case of older people, to make a tidy distinction between interventions which aim to relieve existing health problems and functional deficits and interventions which aim to prevent the emergence of these problem in the first place.

The review has relied almost entirely on published literature from scientific journals identified through MEDLINE. This applies to data on the health and functional status of older people as well as to evaluations of interventions. There are of course some exceptions to this - , for example, national studies by the Office of Nnational Statistics, the King's Fund and the Health

Authority. No attempt, however, has been made to present secondary analyses of existing datasets. Nor have we tried to pull together local sources of information on the health status of older people in London. To trawl through e.g. reports of Directors of Public Health or reports from Social Services Departments, obviously an important source of information on local health issues, would have changed the character of the review.

Nearly all the evaluation studies cited in the review are randomised controlled trials. If interventions are not evaluated with RCT methodology, this is pointed out in the text. The aim, in other words, was to gather the most robust findings from evaluations which employed the most rigorous methodology. Every effort has been made to include conclusions of appropriate systematic reviews - usually from the Cochrane Database or the NHS Centre for Reviews and Dissemination.

Appendix 2

Table 1 Death rates: by gender, cause and age, 1997

United Kingdom	Rates per 100,000 population						
	60-64	65-69	70-74	75-79	80-84	85+	All aged 50+
Men							
Circulatory diseases ¹	379	1,132	1,918	3,125	4,947	8,012	1,420
Cancer ²	325	918	1,406	1,870	2,513	3,103	892
Respiratory diseases	71	266	587	1,105	2,226	5,029	534
Injury and poisoning	40	40	54	83	151	263	59
Infectious diseases	7	15	21	33	42	73	16

Other causes	98	214	368	600	1,200	2,792	341
<i>All men</i>	<i>921</i>	<i>2,585</i>	<i>4,354</i>	<i>6,818</i>	<i>11,078</i>	<i>19,273</i>	<i>3,262</i>
Women							
Circulatory diseases ¹	146	540	1,057	1,916	3,533	6,911	1,312
Cancer ²	284	608	870	1,096	1,316	1,576	676
Respiratory disease	47	180	367	646	1,304	3,587	550
Injury and poisoning	17	25	33	55	108	253	50
Infectious diseases	4	11	13	20	36	66	15
Other causes	70	168	292	503	1,056	3,061	472
<i>All women</i>	<i>568</i>	<i>1,532</i>	<i>2,633</i>	<i>4,236</i>	<i>7,353</i>	<i>15,455</i>	<i>3,075</i>

1 Includes heart attacks and strokes

2 Malignant neoplasms only

Source: ONS (1998)

Table 2 Percentage of deaths from specific causes at ages 65 years and over, 1989-94

	London				Non-London			
	Inner deprived	Mixed status	High status	Total	Inner deprived	Mixed status	High status	Total
A. Males								
CHD	23	25	27	25	28	29	28	29
Ratio ¹	0.82	0.86	0.96	0.86				
Stroke	7	7	7	7	7	8	8	8
Other	70	68	67	68	65	63	64	63
B. Females								
CHD	21	22	22	22	25	26	23	

								24
Ratio ¹	0.84	0.85	0.96	0.92				
Stroke	11	12	13	12	13	14	14	14
Other	68	66	65	66	62	61	63	62
C. All ages and both sexes, 1985-89								
IHD Ratio ¹	0.76	0.81	0.92	0.82				
CVD Ratio ¹	0.75	0.81	0.86	0.80				

Notes: CHD - Coronary heart disease; IHD - Ischaemic heart disease; CVD - Cerebrovascular disease.

1. Ratio of London percentage of rate to non-London rate for equivalent areas. Panels A and B were tabulated by Richard Hamblin. Panel C refers to absolute rates per 1,000 and is reproduced from Benzeval (1992) - Table 2.9 - their three socio-economic zones were inner deprived, urban and high status.

Source: Warnes (1996)

Table 3 Chronic sickness: rate per 1000 reporting selected long-standing conditions, by age and sex, 1996/97

Condition	Men		Women	
	65-74	75 and over	65-74	75 and over
Musculoskeletal				
Arthritis and rheumatism	148	188	134	313
Back problems	60	30	83	47
Other bone and joint problems	57	91	45	110
Heart and circulatory				
Hypertension	63	37	61	61
Heart attack	66	75	28	83
Stroke	27	43	5	22

Other heart complaints	80	64	21	58
Other blood vessel/embolic disorders	28	26	7	26
Respiratory				
Asthma	51	42	41	39
Bronchitis and emphysema	24	37	7	15
	1	0	2	2
Hay fever				
Other respiratory problems	31	29	13	22

Source: GHS (1998)

Table 4 Percentage of persons reporting long-standing illness and limiting long-standing illness among adults, by age and sex 1996 (per cent)

Percentage who reported	0-4	5-15	16-44	45-64	65-74	75+
Males						
Long-standing illness	14	19	27	46	61	64
Limiting long-standing illness	4	8	14	31	42	50
Base population	771	1736	4124	2480	884	626
Females						
Long-standing illness	13	16	27	47	58	68
Limiting long-standing illness	4	8	16	32	40	53
Base population	786	1685	4406	2603	1052	855

Source: GHS (1998)

Table 5 **Distribution of Office of Population Censuses and Surveys disability scale categories**

Category	% of patients, by group					
	Age group (years)			Sex (age-standardised)		Total (N=223)
	65-74 (n=125)	75-84 (n=73)	85 (n=25)	Male (n=93)	Female (n=130)	
0	62%	23%	4%	40%	44%	43%
1-2	19%	38%	12%	29%	22%	25%
3-4	9%	12%	16%	11%	11%	11%
5-6	6%	12%	32%	10%	11%	11%
7-8	2%	8%	20%	3%	8%	6%
9-10	2%	5%	16%	6%	3%	5%
Mean (median)	1.2 (0)	2.7 (1)	5.6	2.2 (1)	2.2 (1)	2.2 (1)

Source: Harwood et al (1999)

Table 6 **Changes in difficulty accomplishing selected activities of daily living (ADLs) in people aged 65 and over, GB (per cent)**

Task	1980	1985	1991	1994/5
<i>Difficulty managing stairs</i>				
On own no difficulty	71	73	70	72
On own with some difficulty	21	18	21	19
Only with help or not at all	8	9	8	9
<i>Difficulty going out of doors and walking down road</i>				
On own no difficulty	79	78	76	77
On own with some difficulty	9	1	13	10
Only with help or not at all	12	13	11	13

<i>Difficulty bathing</i>				
On own no difficulty	82	83	88	82
On own with some difficulty	10	8	7	10
Only with help or not at all	9	9	5	8
<i>Difficulty getting around the house</i>				
On own no difficulty	91	92	93	91
On own with some difficulty	7	6	5	8
Only with help or not at all	2	2	2	1
<i>Difficulty getting in or out of bed</i>				
On own no difficulty	92	93	90	92
On own with some difficulty	6	5	8	6
Only with help or not at all	2	2	2	2

Source: Jarvis, 1997, using selected years of the General Household Survey.

Table 7 Acute (0-7) days, three week and six month impairment/disability rates for survivors of stroke

Phenomenon		Acute	3 week	6 month
Impairments	Initial loss/depression of consciousness	5%	-	-
	Not oriented (or unable to talk)	55%	36%	27%
	Marked communication problem (aphasia)	52%	29%	15%
	Motor loss (partial or complete)	80%	70%	53%
Disabilities	Incontinent of faeces	31%	13%	7%
	Incontinent of urine	44%	24%	11%
	Needs help grooming (teeth, face, hair)	56%	27%	13%
	Needs help with toilet/commode	68%	39%	20%

	Needs help with feeding	68%	38%	33%
	Needs help moving from bed to chair	70%	42%	19%
	Unable to walk independently indoors	73%	40%	15%
	Needs help dressing	79%	51%	31
	Needs help bathing	86%	65%	49%
	Very severely dependent	38%	13%	4%
	Severely dependent	20%	13%	5%
	Moderately dependent	15%	15%	12%
	Mildly dependent	12%	28%	32%
	Physically independent	12%	31%	47%

Note: The 'acute' figures are of limited accuracy as many patients were not assessed within the first week; many of these were very ill and probably very dependent. Consequently the figures relating to acute disability are minimum estimates. These data relate only to survivors.

Source: Wade (1989) In: Wolfe et al (1996)

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