Equality of health: dream or reality?

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The Independent Inquiry into Inequalities in Health was set up to contribute to the government’s new health strategy. The consultative paper on the strategy, Our healthier nation: a contract for health, which was published early this year, highlighted ‘the need to improve the health of the worst off in society and to narrow the health gap’ as one of its two overriding principles.

At the time of writing, the report has not been published, and I am not able to reveal specific recommendations. I will, nevertheless, say something about our approach and the general areas within which our recommendations will fall. It is particularly apt that the first public account of our work should be given in the same Royal College which Sir Douglas Black graced as President between 1977 and 1983.

The Scientific Advisory Group consisted of: two epidemiologists, David Barker and Michael Marmot, both Fellows of the Royal College of Physicians (RCP); two social scientists, Margaret Whitehead and Hilary Graham; and Jackie Chambers, Birmingham’s Director of Public Health. Our scientific and administrative secretaries were loaned to us respectively by the Medical Research Council and the Department of Health: Dr Catherine Law, paediatrician and public health specialist (also a Fellow of the RCP) and Dr Ray Earwicker, who previously led the support team in the Chief Scientist’s office. For statistical advice, Frances Drever was seconded from the Office for National Statistics.

Why do we, in Britain, have such an unbridled appetite for inquiries in this subject? After all, counting Jeremy Metters’s careful and practical contribution published in 1993, we have already had five reports on health inequalities in Britain in 20 years. Abroad, except from Scandinavia, there have been none that I know of, including from the United States. Is this because, as the birth place of the industrial revolution, Britain was also first to encounter the social consequences of over-rapid urbanisation and the ‘dark satanic mills’? Or does it stem from the national reaction to the Great Depression in the 1930s – the same impulse towards social justice that brought forth the National Health Service (NHS)?

What is certain is that in Britain, the political sensitivities concerning inequalities in health have been extreme and the reactions of politicians to them have sometimes bordered on the ridiculous. Two examples are: (a) the previous government’s attempt in 1980 to suppress the Black Report by limiting publication to a few cyclostyled copies circulated in the depths of August (these copies are now historical curiosities and, I understand, worth a small fortune: the report itself rapidly became a Penguin best-seller); and (b) the present government’s insistence that the term ‘inequalities of health’ should not appear on any Department of Health document, but that it be replaced with the politically correct ‘variations in health’.

The origin of our worry about inequalities in health stems from a sense of justice whose roots go deep into the history of civilisation. Concern about the plight of the poor and the unfortunate, and our moral duty to alleviate it, goes back to the origins of Judeo-Christian thought and possibly beyond. Almost 3,000 years ago one of the Hebrew prophets chastised contemporary Judean society for wallowing in riches while neglecting the needs of the poor. Usually, biblical allusions are to a personal duty of care for the unfortunate (as epitomised in the story of the Good Samaritan) rather than to a duty to society as a whole.

For the Ancient Greeks, on the other hand, social justice was a political rather than a personal duty and a crucial element of good government. The Aristotelian view was that the government’s privilege to mete out punishment for crime should be balanced by a just distribution of resources within society. This idea emerged again in Renaissance Italy and became a political force in the Age of Enlightenment. It has guided the Inquiry in its work.

The Independent Inquiry into Inequalities in Health

In the Independent Inquiry into Inequalities in Health we were set two tasks. In an abbreviated form these were as follows:

1. To summarise the evidence of inequalities in health and expectation of life in England, including trends.

2. As a contribution to the new health strategy, to identify priority areas for future policy development based on scientific and expert evidence which will lead to cost-effective and affordable interventions for reducing health inequalities.

I have two brief footnotes to add concerning the second agenda. The absence of an economist on the group prevented us from dealing with cost-effectiveness. As far as ‘affordability’ is concerned, this is, in our view, a political
rather than a scientific matter, because how much of what we have recommended is affordable or unaffordable depends on the priority the government is prepared to give to redressing inequalities relative to its other objectives. We must, therefore, leave this issue to them.

Like our predecessors, we accepted a socio-economic explanation of health inequalities. This approach traces the roots of ill health beyond personal behaviour and lifestyle to such determinants as income, education, employment and the material environment. In Policies and strategies to promote social equity in health, Dahlgren and Whitehead model the main determinants of health as layers of influence, one over another, which can be modified by appropriate policies. Their model emphasises interactions between these different layers. For example, individual lifestyles, such as smoking and taking physical exercise, are influenced by living and working conditions which in turn relate to culture and socio-economic conditions.

Inequalities in health therefore reflect differential exposure of individuals – from before birth and across the whole lifespan – to risks associated with socio-economic and environmental factors. This approach is shared by the government which, in Our healthier nation, expresses its determination to tackle the ‘root causes of ill health’. The potential impact of economic issues on health has also received the personal blessing of the Prime Minister. In an answer to a Parliamentary Question (11 June 1997) on income inequalities and health he said:

...it is for this reason that the Secretary of State for Health has asked Sir Donald Acheson to conduct a further review into inequality and the link between health and wealth... Those inequalities do matter and there is no doubt that the published statistics show a link between income inequality and poor health.

The socio-economic model also dictates the breadth of our review. This is demonstrated by the scope of the 17 ‘input papers’ commissioned for the report, reflecting the areas on which it focuses for policy development. These papers deal with inequalities at the various stages of a person’s life and how these are influenced by the social environment, income, nutrition, education, transport and pollution, housing and the material environment, health related behaviour and the NHS. Additional papers addressed inequalities associated with gender, ethnicity, and mental and oral health.

Policies need to be both ‘upstream’ and ‘downstream’. Policies recently introduced by the government, such as the provision of pre-school education for all four year-olds, increasing certain social security benefits, and recommendations about the key but complex area of public and private transport as it affects inequalities in health, are examples of upstream policies. Benefits to health comprise but one part of a wide range of positive results of such policies. On the other hand, policies to reduce smoking (eg through a comprehensive set of recommendations directed at reductions particularly among the less well off), to promote physical exercise or improve nutrition, involve downstream interventions. These have a direct effect on the human body. Our report recommends both upstream and downstream policies, and describes their impact at the various stages of life.

**Socio-economic inequality in health: a continuum**

The penalties of inequalities in health affect the whole social hierarchy and usually increase consistently from the top to the bottom. However, they do not derive from a dichotomy that envisages society as comprising two groups: the well off and the poor; or the healthy and the unhealthy. This point is demonstrated by Fig 1 which shows that mortality from all causes among men increases step-by-step as one descends the social ladder. A similar but less steep progression is seen among women. The same applies to most specific causes of death, including cardiovascular disease, lung cancer, accidents and suicide.

This pattern has an important implication, viz if mortality increases in a stepwise fashion, the benefit of concentrating exclusively on the least well off is inevitably limited. Thus, if it were possible to improve the mortality of the bottom quintile to match that of the top quintile, this would eliminate less than half (actually 40%) of the excess mortality attributable to the social gradient.

The penalties to health of position in the social ‘pecking order’ can also be shown using a classification based on occupation (Fig 2). If the experience of the least well off (social class V) matched that of the most fortunate, the effect on the attributable risk would be slight, largely because social class V (unskilled workers) represents a small group. The consequence is that only 6% of the attributable mortality is saved. In other industrialised countries, wherever suitable data are available and have been

![Fig 1. The socio-economic gradient of all cause mortality among men in England (in quintiles). Classified by place of residence at death according to the Townsend index of deprivation. (Reproduced from Ref 6.)](image-url)
examined, a similar stepwise progression of mortality has been found.

Regarding the degree of inequalities in health, the UK stands midway between, on the one hand, the United States and France where inequalities seem to be more marked, and on the other, the more egalitarian Scandinavian countries, where they are less marked.

But what happens in countries at the other end of the spectrum of development? The Adult Morbidity and Mortality Project (AMMP) in Tanzania* also shows a clear relationship between mortality and socio-economic status. Measuring status not by occupation but by years of education, those who have had eight years of education have half the mortality experienced by those who have had four years.

So, while poverty is unquestionably associated with greater mortality and poorer health, the stepwise gradient in mortality with social circumstances tells an additional and equally important story.

Further insight comes from the celebrated studies of Whitehall civil servants, a group of people who cannot be regarded even in the lowest echelons to be impoverished in the usual sense of this word, but amongst whom, as I know from personal experience, a strong hierarchy exists. There are four grades in the Whitehall Civil Service — (in descending order of seniority) professional and executive, administrative, clerical and support staff — and the studies show that, within this hierarchy, there is again a clear stepwise gradient of mortality. In order to explain this, it is necessary to consider the novel idea that in the absence of material deprivation, one's position in a social hierarchy can impose a degree of psychosocial deprivation and stress that can seriously damage health. Can it be that in the recesses of Whitehall, in those relatively comfortable warm and well lit offices, there are methods of working that have a major influence on mortality? Evidence is accumulating that this may be the case: that, when one loses control over one's workload and the reward does not seem to match the effort, the prevalence of cardiovascular disease, depression and sickness absence increase.

The next step in unravelling the implications for health of the social hierarchy must be to find relevant biological mechanisms. These presumably involve neuro-endocrine and immunological pathways.

### Putting families and children first

In Britain, as in other countries, inequalities in health are of long standing and were identified as soon as data became available to measure them. Although it has been known for more than a century that, in principle, these inequalities are remediable, they have proved resistant to change. Indeed, although mortality rates have fallen dramatically, many of the districts with a poor experience in relation to the national average a century ago remain below average today, and the overall geographical pattern has changed comparatively little. Regrettably, this cycle has not yet come to an end.

Some of the mystery of this resistance to change has yielded to recent research. Follow-up through life of successive samples of births has pointed to the crucial influence of adverse events in infancy and childhood on subsequent mental and physical health. As might be expected, the frequency of these events is linked to the social disadvantage of the parents. The fact that the adverse outcomes (eg mental illness, short stature, obesity, delinquency, unemployment) of these early events cover a wide range carries an important message. It suggests that policies that reduce such early adverse influences may benefit not only the future life of the child but the next generation.

Another line of research that concentrates on nutrition shows that low birth weight or thinness and stunting at birth are not only associated with coronary heart disease, diabetes and hypertension in later life, but are closely related to the mother's diet throughout pregnancy. As two principal determinants of a baby's weight at birth are the mother's pre-pregnant weight and her own birth weight, the significance of policies to improve the health of present and future mothers for future generations as well as for their own benefit is obvious.

On the basis of these findings, we have concluded that, while there are many interventions that will reduce inequalities between adults from the various social groups, those with the best chance of reducing future inequalities relate to children, to parents and in particular to present and future mothers. Our report therefore gives these groups priority.

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Inequalities in health: the current position

So what is the current position on health inequalities in the UK? How large are they, what has been happening to them in recent years and how do they compare with other countries?

Mortality

Death rates have continued to fall over the last 25 years in both sexes – more steeply in men than in women. However, over the same period, measuring social position in terms of occupation, differences in rates between those at the top and those at the bottom of the social scale have widened. Thus, over the last 20 years, death rates fell by about 40% in classes I and II, about 30% in classes III and IV, but only 10% in class V. So, not only did the differential between top and bottom increase, it happened across the whole social spectrum (Fig 3). For men, the excess mortality in social classes IV and V has increased from 53% to 68%; for women, from 50% to 55%.

While smoking patterns have had an important influence, the increase in differentials is not limited to cardiovascular disease and lung cancer but extends to mortality from accidents and suicides. These two causes of death record the steepest differentials. In terms of years of life lost per thousand men aged 20–64, deaths from suicide and accidents make a larger contribution (5.3 years per 1,000) than do coronary heart disease and lung cancer (4.2 years per 1,000). This is, of course, because the former deaths usually occur in younger men. A social gradient in mortality is also present in the perinatal period, and among older people.

As might be expected, this mortality picture is mirrored by expectation of life. Men in social classes I and II live, on average, five years longer than those in social classes IV and V, and for women, the comparable figure is three years. In both genders the recent improvements have been greater among the better off (2.1 years for men; 1.9 years for women).

Morbidity

There are also major socio-economic gradients in morbidity. The data from the general household survey’s recent publication Living in Britain11, shows that among men aged 45–64, about one in five (17%) professional men reported a limiting, long-standing illness compared to almost half (48%) of unskilled men. Among women, a quarter of professional women but almost a half (45%) of unskilled women report long-standing illness. Similar patterns are seen throughout the life cycle. Mental health is no exception; there are socio-economic differentials in neurotic disorders in women and for alcohol and drug dependence in men.

Many of the risk factors for health also have gradients, although not always in both genders. In women there are socio-economic gradients for obesity and high blood pressure, while in men there are similar gradients for accidents. As far as dental health is concerned there remain major gradients in caries among children (Fig 4), which are matched by the pattern of loss of teeth and edentulousness in later life.

Smoking

In view of its importance, smoking deserves separate consideration. Since 1972, the prevalence of smoking has
fallen steadily in social class I and is now approximately 10% in both genders. In the rest of the social spectrum, the prevalence of smoking remains much higher, and among women it seems that the downward trend may recently have flattened off or even reversed. The fact that nicotine levels are also higher in the less well off indicates a greater degree of nicotine dependence. For this reason, our recommendations on smoking, whilst comprehensive, focus particularly on the problems in quitting smoking experienced by the less well off.

**Nutrition**

Nutrition also deserves special mention because of its fundamental role not only in a range of important diseases including some cancers, coronary heart disease, stroke, and osteoporosis, but also in the growth and development of children, anaemia and obesity. Yet here the news is also disturbing. In Britain today there remain major class gradients in the consumption of fruit and vegetables and in foods rich in dietary fibre throughout the life cycle. As a consequence, those in lower socio-economic groups tend to have lower intakes of anti-oxidant and other vitamins and minerals, such as iron, calcium and magnesium, and higher intakes of cheap energy-dense foods rich in salt and fat – in other words, a dietary pattern that matches the pattern of ill health and disease.

In terms of their nutrition, the Inquiry is particularly concerned about the plight of people – particularly single mothers – in the bottom tenth of the national income distribution. It is a paradox that in the areas where many such people live, a healthy food basket often costs more than in advantaged areas. This is because the increasing tendency to develop out-of-town supermarkets has led to the creation of ‘food deserts’, where cheap and varied food is only accessible to those who have private transport or are able to afford public transport if it is available. An extreme effect of lack of money is having to go without food; this phenomenon is prevalent in some groups in Britain today, particularly single mothers.

**Birth weight**

Low birth weight is an indicator of future health: it is associated with poorer health and earlier death. Babies born to parents from social class I weigh, on average, 130g more than those born to class V and 200g more than babies registered by their mothers alone. This disadvantage is further compounded by a steep social gradient in breastfeeding.

**Inequalities in socio-economic determinants**

It is appropriate to conclude this account of inequalities in health with a brief summary of current inequalities in socio-economic determinants. The most important of these is income distribution. Between 1979 and 1994/5 average incomes grew in real terms by about 40%, but this growth was far greater (60–68%) amongst the richest tenth of the population. For the poorest tenth, average income increased by only 10% (before housing costs) or fell by 8% (after them). Some slight improvement has occurred since 1992. This almost unparalleled divergence has not been without social consequences. It is no coincidence that during a similar period the crime rate has almost trebled.

Furthermore, what is not generally realised is that, ironically, the risk of suffering the psychological and sometimes physical trauma of crime is greatest among the poor, not the wealthy (Table 1). Shortage of money also makes it difficult for the poor and the elderly to keep in touch with friends and participate in society. Yet strong social networks are known to promote and protect health.

**Reducing inequalities in health**

What, then, are the remedies for this unsatisfactory situation? While I am not able to be specific in this article, I shall mention briefly the general direction of our suggestions about policy.

The first point to make is that a policy that improves health on average may have no effect on inequalities – or may actually increase them. An example already outlined in this article is the effect of the anti-smoking campaigns of recent decades on the pattern of prevalence of smoking in women. The biggest reductions in prevalence have been in the better off, while in the least well off there has been comparatively little benefit and in the worst off, possibly even an increase. The same can be said for other campaigns such as the exhortation to increase breastfeeding. Programmes to prevent illness by immunisation or by screening for early cancer of the cervix or breast also tend to be taken up to a greater extent by the better off. The same has been found for family planning, antenatal services and dental services.

These examples highlight the need for extra attention to be focused on the needs of the less well off if inequalities in health are to be reduced. This will require a change in our approach to policies across a wide field. It will be necessary for inequalities to be identified and then narrowed, not only for programmes with a direct impact on health, but for all

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Table 1. Percentage risk of being a victim of crime in England and Wales, 1995. (Reproduced from Ref 13 by permission of the Office for National Statistics © Crown Copyright 1999.)

| Council estate residents and low income | Affluent family | Affluent suburban rural residents |
|-----------------------------------------|----------------|----------------------------------|
| Theft of vehicles                       | 25             | 21                               | 16                             |
| Vehicle vandalism                       | 11             | 7                                | 6                              |
| Theft of bicycles                       | 10             | 3                                | 3                              |
| Burglary                                | 10             | 4                                | 4                              |
| Home vandalism                          | 5              | 5                                | 3                              |
| Other household                         | 9              | 7                                | 5                              |
| Any household offence                   | 36             | 35                               | 27                             |
social policies likely to have an impact on health. These embrace a wide range, including, for example, education, employment and income.

Thus, we believe that reductions in inequalities are most likely to be achieved if social policies are prepared with due consideration of their likely impact on them. We already acknowledge ‘environmental impact assessment’ and ‘health impact assessment’; ‘health inequalities impact assessment’ is the next step. Mechanisms are already in place for environmental and health impact assessments. They share many of the same principles, and methodologies are being further developed – these could be extended to measure the impacts of policies on health inequalities.

**Areas for future policy development**

The report identifies 12 areas in which we believe it will be necessary to develop policies if progress is to be made in reducing health inequalities. These can be considered in two main groups with, in addition, the NHS, which does not fit easily with either of these.

The first group consists of the six main socio-economic determinants of health:

1. Poverty, income, tax and benefits
2. Education
3. Employment
4. Housing and the environment
5. Mobility, transport and pollution
6. Nutrition.

The second group consists of:

7. The life cycle divided into its three phases
8. Gender and ethnicity.

It also deals with issues that do not fit easily into the first group:

9. Support for parents and children
10. Lifestyles – smoking, physical exercise, alcohol
11. Suicide, accidents and sexual health in young people
12. Further development of policies for older people and the ethnic minorities.

It may appear surprising that I have not mentioned drug misuse. This is because drug misuse, although an important risk factor for health, appears to have no social gradient.

In the report, a separate chapter is devoted to each of these 12 areas according to a more or less standard format. In each there is a section which in turn deals with:

- the inequalities that exist in the particular area
- policies based on evidence that we consider likely to reduce these inequalities
- the benefits that can be expected to result from the policies.

A total of 39 main recommendations cover these areas. There has been some concern that this number is excessive. In our defence it must be said that we are covering almost the whole of social policy. It works out at about three recommendations per field, which seems reasonably modest.

**Equity within the NHS**

The creation of the NHS half a century ago was in itself a response by our forefathers to the gross inequities that existed in healthcare before the second world war. In international terms it has few rivals in its completeness of...
coverage and cost-effectiveness, and it is a monument to social justice. Yet although we may all justifiably be proud of it, even 50 years on from its foundation we would be ill advised to be complacent.

In our report we look at equity within the NHS both in terms of access to effective care and the allocation of resources according to need. We also consider the importance of local partnerships between the NHS and local authorities, the voluntary and business sectors, and local people.

As far as access to effective care is concerned, there is evidence that both in general practice and the hospital service, there is still much to be done within the NHS to ensure equity. For example, in primary care, strong evidence persists to support what might be called the ‘inverse prevention law’. In other words, those communities most at risk of ill health experience the least satisfactory access to the full range of available preventive services – including cancer screening, health promotion and immunisation.

Figure 5 shows claims by general practices for reimbursement for health promotion services in London according to the degree of deprivation (Jarman score) of the location of the practice. In general, the higher the degree of deprivation, the lower the score, that is: less tends to be spent on health promotion services in areas where the need is greatest.

The second example (Fig 6) comes from the hospital service. It deals with surgical treatment of coronary heart diseases (coronary artery bypass grafts and angioplasty) in health authorities grouped by degree of deprivation. In spite of the well known increase in prevalence of coronary heart disease with increasing deprivation, the rates of coronary artery surgery are, on average, similar across the range of deprivation. In contrast, there are up to three-fold differences in operation rates within Jarman bands of deprivation: differences for which there is no apparent rational explanation but which may make all the difference between treatment and non-treatment for the individual.

Although this brief discussion of the NHS may seem rather negative, in international terms the degree of equity delivered by the NHS is exemplary. However, we hope that our recommendations will ensure that in future, equity is formally taken into account as a key objective and outcome in all NHS policies. This will ensure that it is not taken for granted and will, we hope, provide a basis for continuing improvement.

Conclusion

In conclusion, I return to the title of this article and the question it poses: are inequalities in health inevitable? My answer, based on the exhaustive review we have undertaken over the last 18 months, and which I believe would carry the unanimous assent of our group, is that the majority of inequalities in health are not inevitable and are remediable. While there will be exceptions, the majority of health inequalities that currently exist in our society are, over time (ie over more than one generation), certainly amenable to substantial reduction.

There is nothing mysterious about what needs to be done. Few new policies are needed to achieve this. What is needed is a new emphasis for existing policies across the whole social spectrum – income, education, employment, the environment, transport, nutrition, smoking and the rest – an approach which, wherever possible, gives priority not just to the poor but to the less well off as a whole. In our report we set out a portfolio of areas for policy development based on evidence, many of which are mutually reinforcing. These, we believe, comprise an effective agenda, which, if implemented, will make a major beneficial impact on health inequalities.

At this point our task as scientists is done. Priorities

Fig 6. Rates for coronary artery bypass grafts and angioplasty by health authority grouped by level of deprivation, 1995–6. (Reproduced from Ref 15.)
concerning implementation and affordability must be for politicians to decide. We hope that, bearing in mind the importance of the reduction of inequalities in health to the fundamental and historic issue of social justice, the government will give our report due weight in the development of its future policies.

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