

Working together to reduce poverty's damage

Doctors fought nuclear weapons, now they can fight poverty

See pp 541, 547, 553,
558, 591

Next week the Royal Colleges of General Practitioners, Nursing, and Physicians, the Faculty of Public Health Medicine, Action in International Medicine (an organisation of colleges and academies of health professionals with member institutions in 30 countries), and the *BMJ* will hold a conference on poverty and health. The conference will be part of worldwide professional activity to reduce the harmful effects of poverty. This week the *BMJ* publishes its fourth issue in two years that has clustered papers on inequalities in health. Why all the fuss?

Some suggest that it's because the *BMJ* is politically motivated. If that means the *BMJ* wants action on a major threat to health, it's true. We would like all political parties in all countries to pay attention to inequalities in health. Many are reluctant to do so. They are more concerned to cut taxes and so win the votes of what the economist J K Galbraith calls the comfortable majority.¹

We are publishing these special issues of the journal for four main reasons. Firstly, anybody interested in health has to pay attention to wealth. It's the single most important driver of health worldwide, even more important than smoking. Secondly, a great deal of research is under way into inequalities in health. It affects every part of medicine. We are beginning to understand that, for developed countries, relative poverty (having an income substantially below the mean for that society) is a more important influence on health than absolute poverty (lacking the basic means to live).^{2,3} And this research is leading to important discoveries on how social pressures lead to disease outcomes.² The *BMJ* receives many papers on inequalities in health, and many of them make it through our peer review process. It seems sensible to cluster them.

Thirdly, things are getting worse not better. The gap between the rich and poor is tending to widen both between and within countries—with inevitable effects on health. Our final reason for publishing these special issues that cluster papers on inequalities in health is that there is increasing evidence on what health workers and health services can do to diminish the harmful effects of inequalities in health.^{4,6} England's chief medical officer will address next week's conference, and he and the Department of Health are taking an increasing interest in inequalities in health.^{4,7}

The overall gains in health that have occurred around the world are being overshadowed by increasing disparities between rich and poor. The number of people in absolute poverty increased over the latter

half of the 1980s and now comprises more than one fifth of humanity.⁸ Since 1980 economic decline or stagnation has affected 100 countries, resulting in reduced incomes for 1.6 billion people.⁹ Between 1990 and 1993 average income fell by 20% or more in 21 countries, particularly in eastern Europe and the countries of the former Soviet Union.⁹

The net worth of the world's 358 richest individuals is equal to the combined income of the poorest 45% of the world's population—2.3 billion people. A comparison of wealth alone would, no doubt, be even more dramatic since the wealth of poor people is usually much less than their income.⁹ Between 1960 and 1991 the ratio of the shares of the global income of the richest 20% of the world's population to the poorest 20% increased from 30:1 to 61:1.⁹

The polarisation of wealth has become grotesque, and we are seeing the consequences. For example, life expectancy among men has declined in some of the countries of eastern and central Europe over the past five years, and in Russia and the Ukraine infant mortality has risen. Dramatic increases in preventable diseases such as diphtheria, typhoid, and whooping cough have occurred.⁹ Worldwide, around a third of children under 5 show evidence of malnutrition as judged by their weight for age.⁸

In Britain, income distribution has become more unequal, and, says the United Nations Development Programme, it is now one of the most unequal industrialised countries in the world.⁹ For example, the proportion of people with an income below half the national average rose from under 10% in 1982 to over 20% in 1993.¹⁰ It has since fallen back to around 19%.¹⁰ Unskilled men now have a mortality three times that of professional men.¹¹ This is a widening from a twofold differential in the early 1970s. In the 1980s this was equivalent to a five year difference in life expectancy for men aged 20.¹² Now it will be wider.

A study in the north of England showed that there has been a substantial rise in mortality in men aged 15-44 in poorer electoral wards as well as widening differences in mortality between rich and poor.¹³ The latest national figures in Britain showed a fall in life expectancy for young men for the first time this century.¹⁴ It's highly likely that poverty and social inequalities are contributing to this fall.

A prospective study we publish today shows that socioeconomic factors act cumulatively over a lifetime: men born to fathers with manual jobs, who started their working life in manual jobs, and remained in

The London declaration¹⁶

All institutions and associations of health professionals should:

- Urge political leaders of their country to make public commitments to reduce poverty and improve the health of their populations
- Exchange and disseminate information on trends in health and poverty and on successful and failed interventions directed at tackling their causes and effects
- Recognise, harness, and enhance the potential energy resource of poor people themselves
- Work to direct more health resources to the district level of their healthcare systems
- Foster and coordinate intersectoral and interagency collaboration, especially at district level
- Work to eliminate the marginalisation of population groups such as lonely elderly people, disabled people, and refugees
- Ensure that front line health workers have appropriate training and the ability to access and use relevant information
- Influence public opinion by liaising with national and international media
- Lobby governments to reduce their economic dependence on harmful activities, such as the arms trade, narcotics, nicotine, and alcohol.

them had an age adjusted relative death rate 70% higher than those who were born to fathers with non-manual jobs and then worked themselves in non-manual jobs.¹⁵

Next week's London conference is part of a growing range of international activities to promote greater equity in health and health care. It was prompted by the "London declaration" produced at a conference organised by Action in International Medicine and the World Health Organisation (see box[•]).¹⁶ The declaration has led to worldwide activity. For example, the American College of Physicians is hosting a symposium on international health at its 1997 annual meeting. A major conference is planned in Baltimore in September to discuss the challenges of improving health in deprived urban environments in North America. In the Philippines the Academy of Family Physicians has set up a task force on health and poverty and is discussing with the government how to expand the coverage of primary care.

The World Health Organisation, together with the Swedish International Development Agency, has called for greater equity in health and health care¹⁷ and is encouraging consultation on the renewal of its "Health for All" strategy, which includes a strong commitment to reduce poverty and its consequences for health.¹⁸ United Nations agencies have launched the 20:20 initiative, which proposes that 20% of aid budgets and of developing country budgets should be allocated to basic social services including health and education.¹⁹ This contrasts with the decline in overseas development assistance to the lowest level in real terms for 25 years. Of this only a tiny proportion goes to basic education and health care.²⁰

We now need greater coordination between bodies representing health professionals, international agencies, and non-governmental organisations concerned with health and development. Only by concerted efforts will there be any impact on the policies of

national governments and bodies, such as the World Bank, that are major sources of funding for health. Health professionals can play an important part in this process by showing their indignation at the continued wastage of humanity and acting as advocates for effective policies to reduce poverty and its consequences for health. Although much effective action may lie outside the health sector, there is good evidence that cost effective basic services can improve health in conditions of extreme poverty,⁵ and a recent systematic review of effective interventions for "developed" countries has been conducted by the NHS Centre for Reviews and Dissemination.⁶ There is a need for sustained action because, with growing populations and major environmental threats to the health of vulnerable populations such as climate change,²¹ the toll exacted by poverty on human health is likely to grow in absolute terms without substantial shifts in policy and practice.

Doctors won the Nobel peace prize for their international campaign against nuclear weapons. Now the same worldwide, professional energy should be concentrated on combatting the damage done by poverty.

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The endothelin system in cardiovascular disease

Discovery to drug development in under a decade

The function of the vascular endothelium has become a major focus of research. This is partly because of the success of drugs (such as the angiotensin converting enzyme inhibitors, the nitrovasodilators, and aspirin) which act through mechanisms related to endothelial function, and partly because endothelial dysfunction is now thought to be an important early factor predisposing to atherogenesis.¹

Endothelin-1 is a recently discovered endothelium derived vasoconstrictor and pressor peptide with mitogenic properties,² which is now recognised to influence basal vascular tone and blood pressure.³ Endothelin antagonists are currently in development and may provide an important new approach to the treatment of cardiovascular disease.⁴

Endothelin-1 is generated from an inactive precursor, "big" endothelin-1, through the action of a unique endothelin converting enzyme. The mature peptide acts on endothelin type A and endothelin type B receptors. In blood vessels, endothelin-1 causes vasoconstriction largely through stimulating the endothelin type A receptor on smooth muscle cells, although type B receptors may also contribute in some vessel types. Vasoconstriction is modulated by generation of the vasodilators, nitric oxide and prostacyclin, mediated by type B receptors on endothelial cells.

The main approaches to drug treatment are inhibition of endothelin converting enzyme and antagonism of endothelin receptors. Most success has so far been achieved with receptor antagonists, either selective endothelin type A or combined type A and B receptor antagonism. Whereas endothelin type A receptors are a natural target for treatment, the benefits of inhibition of type B receptors will depend on the balance between its constrictor and dilator actions. Several drugs of both types are currently under clinical evaluation.⁴

Endothelin-1 is present in plasma and may thereby widely influence vascular tone. However, it is mainly released towards smooth muscle and functions primarily as a locally acting paracrine factor rather than a circulating hormone. The generation of endothelin-1 is increased by a wide range of vasoactive and inflammatory mediators, changes in shear stress of the vessel wall, and, importantly, by hypoxia. Evidence now suggests a role for endothelin-1 in local ischaemia (including myocardial infarction⁵ and acute renal failure⁶), vasospasm (including Raynaud's disease⁷ and subarachnoid haemorrhage⁸), and sustained vasoconstriction (including hypertension³ and heart failure). But it is its role in the pathophysiology of chronic heart failure that is attracting most interest.

Chronic heart failure causes substantial morbidity and mortality and is a major consumer of healthcare resources.⁹ It leads to stimulation of compensatory neurohumoral reflexes, including effects on the renin-angiotensin and sympathetic nervous systems, which also serve to increase peripheral vascular resistance, renal sodium reabsorption, and cardiac workload. This leads to a vicious circle of declining cardiac function,

which provides a rationale for the use of angiotensin converting enzyme inhibitors.

Neurohumoral activation and tissue hypoxia should also increase the production of endothelin-1; and the actions of endothelin-1 (vasoconstriction and co-mitogenesis, leading to cardiac and vascular hypertrophy, enhanced activity of the renin-angiotensin and sympathetic nervous systems, and increased renal vasoconstriction and sodium retention) are all consistent with the circulatory abnormalities found in patients with chronic heart failure. Indeed, plasma endothelin concentrations are elevated in chronic heart failure, mainly through an increase in plasma concentrations of big endothelin-1, consistent with increased generation of endothelin-1. Plasma concentration of big endothelin-1 correlates well with severity of heart failure^{10,11} and is the most powerful predictor of outcome.¹¹

In the first clinical study bosentan, an antagonist to combined endothelin receptors A and B, was given intravenously to patients with severe chronic heart failure who had stopped angiotensin converting enzyme inhibitors.¹⁰ This increased their cardiac output and reduced systemic and pulmonary vascular resistance without inducing reflex tachycardia or increasing plasma concentrations of angiotensin II or noradrenaline. More recent studies show that single doses of the endothelin type A receptor antagonist BQ-123 and the endothelin converting enzyme inhibitor phosphoramidon produced haemodynamic benefits in patients taking angiotensin converting enzyme inhibitors.¹² These benefits were sustained during chronic oral treatment with bosentan (W Kiowski, personal communication). The beneficial effect of angiotensin converting enzyme inhibitors on mortality was predicted from an animal model of heart failure.^{9,13} It is therefore promising to find that BQ-123 substantially improved 12 week survival from 43% to 85% in this coronary occlusion model of heart failure,¹⁴ as well as improving haemodynamic function and cardiac remodelling.

There is now substantial evidence to support further clinical investigation of endothelin receptor antagonists in several cardiovascular diseases and particularly in chronic heart failure. We need further clinical studies to show whether selective endothelin type A or combined A and B receptor antagonists are likely to produce the greatest benefit, and major clinical trials to confirm that these agents provide benefits in morbidity and mortality beyond those associated with conventional treatment of a diuretic and angiotensin converting enzyme inhibitor.

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The medical health emergency card

Not to assuage public concern, but to make users' lives easier

The idea of an emergency card carried by patients with certain conditions—for example, diabetes—is not new. A similar card for mentally ill patients is also not new: a users' group, Survivors Speak Out, first introduced a crisis card in 1989, and interest has since grown.¹ Known as a mental health emergency card, its aim is to enable patients to give advance directives about their management. As such the card poses particular problems, not least in relation to the legal status of advance directives.² At first sight mental health emergency cards seem to have something for everyone.³ However, contradictions in the objectives of different groups have delayed their widespread implementation and led to an atmosphere of distrust.

Survivors Speak Out, the inventor of the card, has recently withdrawn its version. Its aim was to increase users' self determination in the event of a loss of mental capacity. But users now complain that mental health professionals are increasingly helping patients to complete their cards.⁴ They fear that patients will be coerced into including potentially damaging information.

Different objectives led to trusts developing cards at the request of the public, professional carers, and the police. For these groups one of the failures of community care is that some of the most vulnerable patients are lost to follow up,⁵ sometimes because of lack of communication between services. The hope was that the card would alert professionals to previous contacts with other services.

Finally, the recommendation that the Royal College of Psychiatrists should develop a card was a response to public concern about violent mentally ill offenders.³ Thus the public may see these cards as a way of identifying potentially dangerous patients. The police and other professionals may also see them as a means of helping determine disposal—for example, through court diversion schemes.

But professionals also face difficulties in helping people with these cards. It is unclear whether, in the face of a clear advance directive on a card, their clinical judgment should be overridden. Despite a discussion document from the Law Society in 1989⁶ and an

enthusiastic endorsement from the Commons health select committee,⁷ the legal status of these cards remains unclear. Currently both voluntary and non-voluntary bodies are awaiting the conclusions of a commons working group on the Law Commission report on mental capacity⁸ before proceeding with potential card schemes.

There is no evidence from the UK or elsewhere on the success or otherwise of mental health emergency cards and on what any success may depend. In the absence of such data, practical aspects of the card are also a source of disagreement. Who, for example, should fill it out? That this has become an issue is probably more a symptom of mistrust than a fundamental problem. An obvious tension exists between privacy and information, and many fear that the cards may further stigmatise ill patients—or, worse, that the information may be used against the holder. One compromise might be simply to include only a contact name and number (accessible 24 hours) that would provide a bona fide caller with further information and the name of an advocate for the patient. Such a card might then be offered widely without suggesting a history of mental illness, while to some extent meeting the objectives of different groups. Such minimal information would also fit on to a necklet or bracelet, which might be more practical for some patients.

Finally, which patients should carry the cards? It is hard to imagine them being anything but voluntary, and they must certainly not be simply a knee jerk response to public concern. Whether or not a mental health emergency card can satisfy both users and professionals remains to be seen. But the cards will be successful only if patients accept and use them.

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Screening could seriously damage your health

Decisions to screen must take account of the social and psychological costs

The costs and benefits of screening programmes are generating more than their usual share of interest. Last week the NHS Executive's new national screening committee held a press conference at the Royal College of Surgeons and declared that the costs of prostate cancer screening—in terms of impotence, incontinence, postoperative mortality, and psychological disturbance—outweighed any possible benefits. This statement was made possible because of two systematic reviews commissioned by the Health Technology Assessment programme.^{1 2} Many more systematic reviews of screening programmes are due to be reported soon, so the debate on screening will continue to run.

The decision about prostate cancer screening was relatively easy because there is no reliable evidence that early treatment improves outcome and the operative morbidity is unacceptable. But for some programmes due to be reported on soon the decisions may be more difficult; the benefits of a small increase in life expectancy or reduction in disability for a small number of people will need to be balanced against a range of harmful psychological effects. People receiving false positive results have been shown in three different screening programmes (for congenital hypothyroidism,³ breast cancer,⁴ and Down's syndrome⁵) to suffer high levels of anxiety which do not resolve immediately when subsequent testing shows no signs of disease.

People found in workplace screening programmes to be hypertensive have increased sickness absence, increased anxiety, and reduced self perceived health status, regardless of whether their hypertension warranted treatment.^{6 7} Several studies on the effectiveness of cholesterol testing have shown a paradoxical effect: a reduction in deaths from heart disease but a small increase in total mortality.⁸ It has been suggested that men who know that they are at increased risk of dying of heart disease may be more inclined to take other risks. Some of these adverse psychological effects probably also have an impact on the family and friends of the individual who has been screened.

Some of this literature on adverse effects is contradictory and many potential deleterious effects have yet to be researched. One of these is the "certificate of health effect."⁹ This suggests that people who have received a negative result on screening may be more resistant to advice on healthy lifestyles. For example, people who screen negative for cancer may feel safe continuing smoking, and those with low serum cholesterol eating their unhealthy diets. Screen-

ing programmes may also imply that good health can be maintained by regular visits to the doctor for check ups and that individual behaviour is less important.

Screening is a relative newcomer to healthcare provision and it is likely to have had some impact on the way people think about health and disease. Public misconception about the purpose of screening programmes has been demonstrated in Australia,¹⁰ and a reduced sense of personal control over health has been shown to be associated with poorer self rated health, more episodes of illness, and less self initiated preventive care.¹¹

Screening programmes affect a large number of people relative to the number who benefit. A small adverse effect of screening on quality of life, health promoting behaviour, or individuals' capacity to care for themselves could have an impact on the public health which outweighs any health gain to be achieved by screening.

Calls to establish new screening programmes are usually based on evidence of benefits to people who are found to have the disease. Until we know the full impact of these programmes on the health and wellbeing of others it will be difficult to decide whether these programmes are good for the public's health. This is why the NHS Research and Development Programme has recently called for bids to undertake primary research into the effect of screening on self care and health related behaviour. This is conceptually different from what has been done before because it is trying to measure broad sociological effects of screening in contrast to individual psychological effects. These effects are intrinsically difficult to research, but the research community does need to rise to the challenge. We must know the social and psychological costs of screening before deciding whether individual screening programmes should or should not be provided.

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Clinical information systems and the year 2000

Ensuring that dates are correct will be expensive but not doing so could cost more

In what sounds like a horror story, the crash of as many as 45 000 computer systems is predicted as the year 2000 dawns.¹ Awareness is now growing of the problems posed by the millennium for computer systems, which is caused by the way that these systems handle dates. For all industries worldwide to correct their date handling before 2000 may cost as much as \$600bn (£400bn).² Clinical information systems represent a proportion of this problem, and those responsible for them need to take steps now to ensure that they do not fail in three years' time.

The millennium problem is the result of a shortcut often taken by those implementing computer systems to save memory or disk space. The shortcut is to truncate the four digits of a year to two—1997 is shortened to 97. Calculating with truncated years which span the millennium gives incorrect results—for example, someone born in 1999 becomes -99 years old, not 1. A more insidious error is that comparison of pre with post-millennium truncated years may not be correct, and consequently age, period, and date related functions—such as child health checks and recalls for cervical smears—may fail to work properly.³ Other problems may be that computers will incorrectly date files,⁴ computer clocks will reset to incorrect years,⁵ and files created after 1999 may be purged automatically.

Unfortunately there is no easy way of detecting which systems have the problem or of fixing it. Year truncation is particularly prevalent in systems developed in third generation languages such as COBOL, FORTRAN, C, BASIC, or MUMPS. Even if designs may have specified four digit years and been documented as such, individual programmers may have consistently or inconsistently truncated dates during implementation. Programmers may have added the numerical constant 1900 or prefixed the string "19" to offset truncated dates in systems with full and truncated dates, so obscuring the problem on casual scrutiny. Newer clinical information systems using database management systems should be less prone to date truncation,⁵ but even many of these inherited specifications or data

from earlier systems using truncated years and may therefore also have truncated dates.

Fixing the problem will probably demand manual, line by line inspection of source programs to identify truncated years and other forms of inadequate date handling. All this requires expert knowledge of the software, is time consuming, and not amenable to automation.⁶ The work itself has considerable potential to introduce a new wave of software defects,⁶ and managing projects to carry out the necessary work may cost more than the work itself.⁴ Finding source programs may prove impossible for some clinical information systems, and these may have to be abandoned.

Although estimating the size of the problem for clinical information systems is virtually impossible, at least 25 000 individual systems of at least 500 different types are probably routinely used in Britain. Any system written in a third generation language—and there are many—is highly suspect, while those written in database management systems are less suspect but still need to be cleared. Assurance of correct date handling is especially important when patient safety might be compromised³ or large financial losses are possible—for example, in contract datasets.

Unhappily, there are no benefits to the expense of meeting the millennium other than maintaining continuity of operation and ensuring patient safety. It is, however, work which must be done, and done soon.

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