The Health of the Nation: responses

Smoking

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Any government that is seriously committed to improving the health of its population must have a strategy for controlling the use of tobacco and reducing the number of people who smoke. It is therefore encouraging that *The Health of the Nation* recognises smoking as a key area for action and suggests a fairly ambitious target that by the year 2000 around four out of five people should be non-smokers (box).¹

Our discussion focuses on the relation between smoking and the prevention of disease and, drawing on experience from other countries, whether the measures outlined in the consultation document are likely to be adequate to achieve the smoking target.

Smoking as a key area

The Health of the Nation describes smoking as "the largest single preventable cause of mortality" and adds that "it accounts for more than a third of all deaths in middle age."¹ Current estimates suggest that about 115 000 deaths,² and roughly 106 000 admissions to hospital³ in Britain every year are attributable to smoking. Passive smoking increases the risk of lung cancer by 10-30% and causes respiratory complaints in children.⁴

Smoking costs the NHS at least £500 million annually,⁵ but the costs of ill health to society are considerably more, with an estimated 50 million working days being lost through sickness absence.⁶ The benefits of giving up smoking in reducing the risks of lung cancer and coronary heart disease for the adult population, including elderly people, are well documented,^{7,9} as is the effectiveness of different kinds of interventions at an individual and population level.¹⁰⁻¹²

Another reason for choosing smoking as a key area is the public's strong views on smoking. As Mr Waldegrave points out those steering the future direction of a national health strategy for England "need to take heed of the views of the people who will have to implement it, including the people themselves." Surveys of public opinion suggest that most are in favour of stronger measures to control the advertising of tobacco and restrict smoking in public places. (Office of Population Censuses and Surveys, unpublished data). Furthermore, most (54%) regular adult smokers would like to stop smoking for good (Department of Health, unpublished data) and most young people (88%) believe that breathing other people's smoke is dangerous.¹³

As smoking affects both the quality and the duration of life it could provide a common goal that would bridge the NHS and other agencies. Everyone who works in the NHS, in whatever discipline, comes face to face daily with the harm caused by tobacco smoking; many feel helpless in preventing it. Widespread commitment to a national goal to reduce smoking,

Suggested targets in green paper

To reduce the proportion of men smoking cigarettes to 22% by 2000 and of women to 21% (reductions of 33% and 30% respectively). The target can further be broken down by sex and age group

Age (years)	Men		Women	
	1988 (%)	2000 (%)	1988 (%)	2000 (%)
16-19	28	20	28	20
20-24	37	25	37	25
25-49	37	25	35	25
50-59	33	20	34	20
≥60	26	15	21	15

especially if this included a clear commitment from the government, could mobilise NHS workers' enthusiasm to work with and alongside other organisations.

Case against smoking as a key area

Efforts to reduce smoking are almost always met with fierce opposition and powerful counter lobbying,¹⁴ most of which originates from the tobacco industry. Attempts to encourage people not to smoke lead to accusations of interference with personal liberties, "nannying," or "victim blaming." Loss of £6 billion revenue from tobacco taxation,¹⁵ increased unemployment, and rising costs to the NHS because of increasing numbers of people surviving beyond the age of 65 years are all arguments which are put forward.

A stronger case is the evidence that smoking provides an essential coping strategy for people whose lives might otherwise be intolerable because of the material and cultural deprivation they experience.¹⁶ Strategies to reduce smoking among these groups would need to tackle the origins and effects of poverty, so why not address these issues first?

Finally, recent falls in the prevalence of smoking might be interpreted as showing that little more needs to be done in the future and greater attention needs to be paid to other areas.

What should the targets be?

Smoking is the only area where the government is considering targets differentiated by age and sex (but not social class). More than seven million (63%) smokers belong to the manual occupational groups and there are also important geographical variations in smoking prevalence between the north and south of England.¹⁷ These differences in smoking behaviour at

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least partly explain the gradients in mortality from coronary heart disease observed in different parts of the country.¹⁸ Targets for smoking should be set in ways which will guide national and local prevention strategies. Thus differentiated targets for smoking must take account of the current distribution of smokers in the population and be based on social class or geography.¹⁹

Between 1982 and 1988 rates of fall in smoking prevalence were around 0.8% a year for men and 0.5% a year for women (about 159 000 fewer smokers a year).¹⁷ The government's target requires a rate of fall of 0.9% a year for men and 0.7% a year for women (or 300 000 fewer smokers) each year. Greater efforts and commitment will undoubtedly be required.

But targets to reduce smoking should not be set in isolation from the rest of the national health strategy. Targets for coronary heart disease, stroke and cancers, as well as for the health of pregnant women are dependent on those for smoking. Much could be learnt from work undertaken in Holland,²⁰ in which the impact of risk factor reduction on disease mortality has been predicted through statistical modelling techniques.

Towards a future strategy

The Health of the Nation describes two separate strategies for achieving the target: to reduce the number of young people who start to smoke and to encourage current smokers to give up. The measures outlined for achieving this include health promotion by the primary health care team, the adoption of smoking policies governing the workplace and public places; national programmes of health education targeted particularly at teenagers and pregnant women; and controls on tobacco advertising and levels of duty.

INTERNATIONAL EXPERIENCE

Experience in other countries shows the importance of adopting a comprehensive strategy for tobacco control. In 1988 Californian voters passed the bill "Proposition 99," which introduced a range of measures including an increase in cigarette taxation from \$0.10 to \$0.35 a pack, the additional revenue

being used to fund a \$30 million media campaign, tobacco education in schools, and training for physicians. Local bylaws were also passed to protect non-smokers in the workplace. California's Department of Health Services has set a target of reducing the prevalence of smoking by 75% between 1990 and 1999. Since the bill was passed smoking prevalence has dropped from 26.3% (1987) to 21.2% (1990).²¹

Canada also has a national strategy to reduce tobacco use and the federal government has adopted a range of legislative measures to support its implementation. The Tobacco Products Control Act aims at phasing out all tobacco advertising through bill boards, the media, and retail premises by 1993; requires manufacturers to display prominent health warnings on packets; and controls the promotion of brand names through sponsorship agreements.

In 1990 a separate (private members) act, the Non-Smokers Health Act, also came into force. This act requires all employers who run businesses within federal jurisdiction such as banking, broadcasting, and other public services to restrict smoking to separately ventilated rooms or ban it altogether. Smoking is not permitted on intercity buses and will be phased out from all domestic and international flights by 1993. Tobacco taxation has increased since 1984, the sharpest increase being last year when total tax on cigarettes rose from \$2.64 to \$3.72. Between 1984 and 1989 tobacco consumption per person fell by 29% compared with 5% during the same period in Britain.²²

Strategy for England

Strategies for health cannot be lifted off the shelf, nor can they be imported. They need to be woven from the cultural, political, and economic fabric of the society for which they are intended.

The pace at which progress can be achieved has to be judged. Public demand for public health measures and the measures' acceptability should be important criteria in determining the pace of change. Research should be done to assess these factors to prevent serious misjudgments occurring when formulating government policy. The health costs of moving too slowly in reducing the prevalence of smoking need to be assessed.

Towards smoking targets for the year 2000

Current	Future
<i>Fiscal Policy</i> Ad hoc increases in price of tobacco	Regular increases in the real price of tobacco as a declared policy. Tobacco not included in retail price index
<i>Control in tobacco promotion</i> Broadcasting ban but widespread televising of tobacco sponsored sport Voluntary agreement on control of tobacco advertising but ineffective Strong health warning in line with European Community directive Sales to children under 16 prohibited through legislation—weak enforcement	Complete ban on all forms of tobacco advertising, promotion, and sponsorship, including that for other products bearing the names, logos, and designs of cigarettes, tobacco, or cigar brands Increased size of health warnings. Generic packaging Strict enforcement of under age illegal sales by local authorities including license withdrawal
<i>Smoke free environments</i> Discretionary enforcement of restrictions in public places	Smoking restriction in public places governed by legislation—including schools, health premises, public transport, local authority premises
<i>Health promotion</i> Piecemeal funding of health promotion campaigns Developing local health strategies. Variable collaboration with district and family health services authorities Health promotion in general practitioner contract Health education low priority in school national curriculum	Fully resourced national health promotion programme Smoking designated as joint priority in local health strategies Local targets for recording of smoking status agreed with general practitioners Implementation of personal and social education programmes in national curriculum

In our view the pace of change is currently too slow (box).

The Health of the Nation lists most of the basic ingredients used by other countries to reduce smoking in the population, although it is uncertain which ingredients the government intends to adopt and whether these will go far enough.

PRICE

Price has a considerable influence on tobacco consumption. For every 1% increase in price controlling for disposable income and other factors, consumption can be expected to fall by 0.5%,²³ this fall being seen particularly among those on low income.²⁴ *The Health of the Nation* highlights the 15% increase in duty levelled on tobacco products in the 1991 budget and quotes the Chancellor of the Exchequer as saying "there are strong arguments for a big duty increase on tobacco." We estimate that if this rise was reflected in a price increase tobacco consumption would be expected to fall by around 7% more than if the tax duty had remained unchanged.

A recent study for the Health Education Authority analyses the relation between increases in cigarette prices and taxation, other health promotion activities, and consumption, based on the British experience.²⁵ The results predict that considerable price increases would be required to achieve the government's smoking targets, if this was the only additional measure taken. The same targets could, however, be achieved with much more modest price increases if there was adequate investment in health promotion and strong action on controlling tobacco promotion.

Price increase remains, however, the cornerstone of a future strategy. Indeed if there was a clear commitment to a policy of large, annual increases (in real terms) in tobacco duty for the next 10 years, this could by itself lead to an immediate and sharp drop in smoking prevalence.

TOBACCO PROMOTION

Every year the tobacco industry spends around £113m on advertising and promoting their products.²⁷ The British government has in the past opposed a complete ban on advertising and prefers instead to continue the present system of voluntary controls, or self regulation by the industry. A European Community directive containing new proposals to restrict advertising sponsorship will be debated in November. Meanwhile new voluntary agreements for the United Kingdom have recently been announced; these restrict advertisements and bill boards near schools and playgrounds, tighten up restrictions on cigarette advertisements in women's magazines, reduce the number (but do not specify size) of shopfront advertisements; and require new health warnings but maintain the attribution. The Committee for Monitoring Agreements on Tobacco Advertising and Sponsorship (COMATAS), which comprises equal numbers of representatives from the government and the tobacco industry, monitors whether the agreements are being honoured by the industry.

The basic flaw with a voluntary agreement system is that it leads to a piecemeal approach which is industry led. When steps are taken to tighten up in one way, other ways of promoting tobacco are found. For example, although cigarette advertisements were removed from television in 1965, 65% of children aged between 9 and 15 currently claim to have seen cigarette advertising on television.²⁷ Women's magazines with a large readership of young women (15-24 years) are not allowed to carry cigarette advertisements. Yet one study estimated that about seven million women in this age group are exposed in this way.²⁸

The reasons why children and young people take up

smoking are complex²⁹ and a relation has been shown between awareness of advertising and under age smoking.³⁰ Peer pressure, parental and sibling smoking, desire to look grown up, and availability are all factors. By the age of 10, more than 28% of children have tried their first cigarette.¹³

Glamorous images of smoking portrayed by the industry undermine the influence of health education in schools and help to create the view that smoking is adult and socially acceptable. If the government is serious about achieving the smoking target and protecting children from the promotion of cigarettes it should support the European Community directive for a ban on advertising in November.

On labelling an important step has already been taken. The new regulations requiring tobacco products to carry hard hitting messages such as smoking kills will come into effect in January 1992 and the attribution of this warning to chief medical officers will be dropped.

The Children and Young Persons (Protection from Tobacco) Act, which increases fines for illegal sales of cigarettes to children and outlaws the sale of single cigarettes, has just been ratified. Its success will depend on proper enforcement of the law at local level. Measures to strengthen its enforcement should be included in a future strategy.

SMOKE FREE ENVIRONMENTS

At the European Community Council of Health Ministers in May 1989 a mixed resolution was adopted to ban smoking in enclosed public places by legislative or other means, allowing designated zones to be reserved for smokers. Member states are expected to report on progress every two years. The government has so far not favoured legislation as the best way to make progress in Britain. Smoking policies have been introduced into workplaces over the past 10 years. In a survey of the top 500 companies 79% of personnel directors said they had no smoking areas, and 22% said they had complete smoking bans.³¹

In the NHS 166 out of 190 district health authorities had policies governing smoking on NHS premises,³² whereas less than 10% of primary schools had any policies regulating smoking by staff or by governors (Health Education Authority, unpublished data). Surveys also show that most people, including smokers, favour restricting smoking in places such as restaurants, banks, and post offices and about 60% favour legislation to ban smoking on public transport.³³

Although some progress is clearly being made, a commitment to legislate for smoke free environments or to strengthen existing legislation could speed up the rate of change. This could be particularly important for workplaces with high proportions of manual, part time, and shift workers, where a majority vote may go against the rights of non-smokers to breathe smoke free air. In particular, there should be a central commitment by all government departments to introduce restrictions on smoking in those public places which fall within their remit.

HEALTH PROMOTION

Public education about smoking is a vital element in achieving the smoking target. The methods available include media campaigns such as advertising on television, radio and television programmes, newspaper and magazine articles and personal or group education by health professionals, teachers, or lay people. National and local media provide cost effective ways of raising awareness and motivating large numbers of people to give up smoking. Several studies suggest that with sufficient investment in media campaigns the prevalence of smoking does fall,³⁴ although the picture is less positive for teenagers.³⁵

In the United Kingdom No Smoking Day achieves 90% awareness among smokers and over 85% among the general population and helps to prompt an estimated 50 000 smokers to give up each year (National No Smoking Day Committee, unpublished data). However, we estimate that at least £10 million a year would need to be invested to provide campaigns that are similar to those found to be effective in other countries. This work would need to be supported by a further £10 million for community based interventions.

Media campaigns can also enhance the impact of direct personal education undertaken locally and bring down smoking rates even further.³⁴ Analysis of 40 studies confirmed the importance of advice from general practitioners.⁹ Frequent, consistent advice given opportunistically can result in around 5% of smokers giving up for more than a year.^{36 37} The new general practitioners' contract and the additional investment in health promotion provide a real opportunity to help achieve the smoking target.

However, resources and staff for health promotion during health care need to be deployed flexibly to meet different social needs. Hospital based staff, pharmacists, and many other professionals also have an important part to play. Such people represent trusted and credible sources of information and advice and also come into contact with large numbers of the general public.

At a more strategic level, the new purchasing authorities which were created as a result of the NHS reforms could incorporate into their service specifications and contracts with providers a requirement to provide smoke free environments and patient education on smoking.^{38 39} Neighbourhood targets for reducing smoking or intermediate goals towards this aim could be negotiated with service providers, including general practice based teams through purchasing plans developed jointly between family health services authorities, district health authorities, and general practitioner fundholders.

Monitoring and surveillance

Smoking targets are measurable over time both nationally and locally. The general household survey provides data on smoking every two years, and many regions and districts conduct health and lifestyle surveys, which include information about smoking behaviour.⁴⁰ Some regions are now in a position to agree local smoking targets with their health authorities. Unfortunately, some of the sampling methods and questions that have been used for these surveys are not standardised so it is difficult to make comparisons over time and between different parts of the country.

Introducing annual reports and computerised data collection systems into general practice and district health authorities makes monitoring local trends in smoking prevalence possible. Central guidance and support on how to collect reliable smoking data at local or practice level would prove useful.

Problems in implementing a smoking strategy

International experience shows that there are no valid reasons why a drop in smoking prevalence to 21% by the year 2000 should not be possible, providing the right measures are taken.

The habit of smoking is undoubtedly associated with the problems of poverty, unemployment, and other kinds of deprivation but there is a worrying tendency for public health activists to use this association as an excuse for inaction. We need to remember that there are still more than 12 million regular cigarette smokers in England (14 million in the United Kingdom), most of whom (61%) are light smokers (<20 cigarettes a

day)¹⁷ and do not live in conditions of poverty. Thus the scope for further change is considerable, and most smokers do want to give up.

People who, because of their material or social circumstances, will find it more difficult to give up or indeed stop their children from smoking will need additional help. It is difficult, but possible, to use community based approaches to tackle both the short term problems of smoking and the longer term problems of poverty for those who are most vulnerable to their smoking habit. Another problem is of professionals' lack of confidence that they can make an important contribution. Professional training bodies, colleges, and institutes could do more to help clinicians, nurses, and other staff promote health more effectively.

Surprisingly, NHS managers seem to be unaware that investment in smoking prevention programmes can contribute to their agenda of "health gain," and that patient education on smoking should be provided by all NHS services and not just the staff who work in their health education units.

A different problem is the tendency at national level to think separately about smoking education strategies for children and for adults. Stopping adults from smoking and preventing children from smoking are two sides of the same coin. One cannot be achieved without the other. Investment in health education programmes which are targeted at particular groups will be really cost effective only if they are conducted within the context of a whole population's approach. (Reid D, Killoran A, McNeill A, unpublished work.)

We also need to remember that many of the measures adopted in other countries have come about only as a result of a carefully orchestrated, broadly based health lobby and that the skills to do this in Britain are relatively poorly developed. The institutions and traditions of our professions do not encourage the view that lobbying is part of their job—in fact such behaviour is often frowned on as disruptive and difficult. Contacting the local press, speaking on the radio, and meeting members of parliament or councillors are not skills which are actively developed in training. This is a pity as it is often the younger members of the profession who have the energy and enthusiasm to work towards this kind of goal.

Finally, the additional measures which government itself is prepared to adopt to reduce smoking prevalence should be made explicit in a future white paper—for nowhere is the need for a central role more obvious. Time and effort need to be put into securing the commitment of all government departments to achieving the smoking target, and someone needs to take on responsibility for doing this.

Expectations have been raised by the consultation process, many look forward to seeing what is proposed. For some the measures which are set out for tobacco will be a kind of litmus test of government intent—an important sign that its desire to improve the health of the nation is sincere.

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- 1 Secretary of State for Health. *The health of the nation*. London: HMSO, 1991. (Cm 1523.)
- 2 Currie E. Parliamentary written answer. *House of Commons Official Report (Hansard)* 1987 November 16;122:col 280. (No 44.)
- 3 Roberts JL, Graveling PA, eds. *The big kill: smoking epidemic in England and Wales*. London: Health Education Council, 1985.
- 4 Independent Scientific Committee on Smoking and Health. *Fourth report*. London: HMSO, 1988.
- 5 Maynard A, Harchman G, Wheelen A. Data note 9. Measuring the social costs of addictive substances. *Br J Addict* 1987;82:701-6.
- 6 Royal College of Physicians. *Health or smoking?* London: Pitman, 1983.
- 7 Doll R, Peto R. Mortality in relation to smoking 20 years' observations on male British doctors. *BMJ* 1976;ii:1525-30.
- 8 Cock DG, Pocock SJ, Shaper AG, Kussick SJ. Giving up smoking and the risk of heart attacks. A report from the British regional heart study. *Lancet* 1986;ii:1376-80.

- 9 Jajich CL, Ostfeld AM, Freeman DH. Smoking and coronary heart disease—mortality in the elderly. *JAMA* 1984;252:2831-4.
- 10 Kottke TE, Battista RN, DeFries GH, Brekke ML. Attributes of successful smoking cessation interventions in medical practice. *JAMA* 1988;259:2882-9.
- 11 Fiore M, Novotny TE, Pierce JP, Giovino GA, Hatziandreu EJ, Newcombe PA, et al. Methods used to quit smoking in the United States. Do cessation programs help? *JAMA* 1990;263:2760-5.
- 12 Pierce J, Macaskill P, Hill D. Long term effectiveness of mass media led anti smoking campaigns in Australia. *Am J Public Health* 1990;80:565-9.
- 13 Health Education Authority. *Young people's health and lifestyles survey carried out by MORI*. London: HEA (in press).
- 14 Raw M, White P, McNeill A. *Clearing the air: a guide for action on tobacco*. London: British Medical Association, 1990.
- 15 Ryder R. Parliamentary written answer. *House of Commons Official Report (Hansard)* 1990 February 8;166:col 713. (No 47.)
- 16 Graham H. Women's smoking and family health. *Soc Sci Med* 1987;25:47-56.
- 17 Office of Population of Censuses and Surveys. *General household survey, 1988*. London: HMSO, 1990.
- 18 Shaper AG, Pocock SJ, Wallar M, Cohen NW, Wale CJ, Thomson AG. British Regional Heart Study: cardiovascular risk factors in middle-aged men in 24 towns. *BMJ* 1981;283:179-86.
- 19 *Setting targets for coronary heart disease—a discussion document*. London: Health Education Authority, 1990.
- 20 Gunning-Schepers L. The health benefits of prevention: a simulative approach to health policy. Vol 12. No 1-2. Amsterdam: Elsevier Science, 1989.
- 21 California Department of Health Services. *Tobacco use in California 1990. A preliminary report documenting the decline of tobacco use*. San Diego: University of San Diego, 1991.
- 22 Department of National Health and Welfare. *Canadians and smoking: an update*. Canada: Minister of Supply and Services, 1991.
- 23 Godfrey C, Maynard A. Economic aspects of tobacco use and taxation policy. *BMJ* 1988;297:339-43.
- 24 Townsend J. Cigarette tax economic welfare and social class patterns of smoking. *Applied Economics* 1987;19:335-65.
- 25 Townsend J. Economic measures to reduce cigarette smoking in the UK and projections of reduced premature mortality. London: Health Education Authority, 1991.
- 26 Mgzah R. Battle lines drawn for smoking war. *Marketing Week* 1988 October 21:23.
- 27 Roberts JL. *Beating the ban*. London: Health Education Authority, 1990.
- 28 Amos A. Selling tobacco to children. *BMJ* 1990;301:1173-4.
- 29 Goddard E. *Why children start smoking*. London: HMSO, 1990.
- 30 Aitken P. *Pushing smoke*. Copenhagen: World Health Organisation Regional Office for Europe, 1988.
- 31 *Survey of Britain's personnel directors. Research study conducted for BUPA*. London: MORI, 1990.
- 32 Batten L. *Managing change—smoking policies in the NHS*. London: Health Education Authority, 1990.
- 33 Consumers' Association. *Passive smoking in public. Which? Way to Health*. 1991;February:14.
- 34 Flay BR. Mass media and smoking cessation: a critical review. *Am J Public Health* 1987;77:153-60.
- 35 Bauman KE, LaPrelle J, Brown JD, Koch GG, Pagett CA. The influence of three mass media campaigns on variables related to adolescent cigarette smoking: results of a field experiment. *Am J Public Health* 1991;81:597-604.
- 36 Russell MAH, Wilson C, Taylor C, Baker CD. Effect of GPs advice against smoking. *BMJ* 1979;ii:231-5.
- 37 Jamrozick RK, Venev M, Fowler G, Wald N, Parker G, Van Vunakis H. Controlled trial of three different anti-smoking interventions in general practice. *BMJ* 1984;288:1499-503.
- 38 Health Education Authority. *NHS white paper. Implications for health promotion/disease prevention*. London: HEA, 1990.
- 39 Killoran AJ. A healthy start? *Health Services Journal* 1991;29 August:14-6.
- 40 Health Education Authority/Office of Population Censuses and Surveys. *Health and lifestyle surveys*. London: HEA, 1990.

Medical genetics

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Molecular genetics has been responsible for some of the most striking recent developments in medicine. Enormous new opportunities result from the human genome project, with virtually all single gene diseases already mapped to their chromosomal locations. The application of the information gained in this project to clinical practice should be consistent with the aims of medical genetics, which are:

- To ensure the maximum range of options for those at risk of genetic disease by providing accurate diagnosis and screening, empathic genetic counselling, and support
- To prevent genetic disease and unnecessary anxiety by facilitating personal informed choices from among these options
- To aid appropriate clinical management of genetic disease and to identify preventable complications by early and accurate diagnosis.

Below I discuss why medical genetics should be recognised as a key area in the consultations initiated by *The Health of the Nation*.¹

The case for genetics

Genetic diseases and congenital malformations fulfil all three of the government's criteria for a key area. They are an important cause of premature death and avoidable ill health, there are interventions offering scope for improvement in health, and it is possible to set targets and then to monitor them.

Five per cent of the population will have a genetic disorder by the age of 25. This figure rises to 65% in a lifetime if common diseases with a strong genetic predisposition are included. In addition, 2-3% of couples are at high risk of having handicapped offspring.^{2,3} There is also the fear and anxiety generated by recurring genetic disease among relatives at risk of such diseases.

SPECIFIC VULNERABLE GROUPS

The green paper calls for "specific initiatives to address the health needs of particularly vulnerable

groups." In medical genetics these groups are pregnant women, neonates, people from ethnic minorities, and those who are found to be positive for genetic defects in population screening programmes.

People with a family history of serious genetic disease are a special group because many common genetic disorders within families can now be avoided. Consistent with the aims of medical genetics, genetic family registers of those at highest risk are the most effective way of assisting relatives of patients with severe genetic disease including hereditary cancer, Duchenne muscular dystrophy, Huntington's chorea, and adult polycystic kidney disease. In the future additional vulnerable groups may be recognised as knowledge grows about the genetic predisposition to common disease (cancer, coronary artery disease, diabetes mellitus, psychosis, etc).

INTERVENTIONS OFFERING IMPROVEMENTS IN HEALTH

There are well established programmes for preventing genetic and congenital disorders, notably Down's syndrome, neural tube defect, thalassaemia, Tay-Sachs disease, and phenylketonuria. The cost-effectiveness of these programmes has been studied. Screening with ultrasound and of maternal serum α fetoprotein concentrations has contributed to the dramatic reduction in the number of babies born with neural tube defect, while screening based on maternal age and biochemical markers is capable of identifying at least 60% of pregnancies with fetuses affected with Down's syndrome.⁴

New techniques in genetics may facilitate and simplify existing procedures and are often effective in more than one laboratory discipline. Thus the polymerase chain reaction has revolutionised molecular genetics and has applications throughout laboratory medicine. Non-isotopic in situ hybridisation offers greater safety than conventional isotopic methods and has wide applicability in cytogenetics, molecular genetics, and biochemical genetics.

Medical genetics is a dynamic subject in which change occurs very rapidly. Screening for the following

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