





Over the last 150 years, annual reports have been published by the Chief Medical Officer, not every year but most years. These reports provided an important record of the nation's health and the major challenges faced by government in tackling the main problems. In the last twenty years or so, the annual report has also provided detailed accounts of a wide range of initiatives taken by the government on public health and in the National Health Service.

I am the 15th Chief Medical Officer in a line of succession that dates back to 1858. In taking up the post three years ago I recognised that the range of government publications on health topics has greatly expanded in the last few years. I felt that there was now less need to cover in detail, policies and programmes which are contained in other documents and are not central to my areas of responsibility. I could see that with increasing accessibility to the internet, more of this information is now available to people in different ways. I was also producing substantial reports on particular areas of health policy – for example clinical standards, patient safety, stem cell research, retention of organs after post-mortem examination and public health (see reference list).

Finally, I felt that I wanted to write a shorter and more accessible report highlighting each year a number of important health issues which would be clearly visible and upon which action was necessary. This I believe preserves the spirit of this series of Chief Medical Officer's Annual Reports highlighting major problems and calling for action.

In this and future reports I will identify selected health issues. Some topics will be familiar but I aim to provide a new perspective, to remind us of how important they really are and how commitment must be sustained if problems are to be overcome. Some will be a new trend in a disease or health problem which may have serious consequences if it is not addressed. Some will clearly highlight areas where change is supposed to have happened and it has not. Other topics will try to capture a development or an idea which needs fresh thinking or a novel approach if it is to improve people's health or the quality of care received by patients.

This Annual Report is a mixture of all these things but there is a common theme. Each of the topics is one where a great deal of action is already taking place. However, they are all areas of the population's health where change and improvement are difficult to achieve without widespread and sustained commitment.

The most important example of this is the section of the Report dealing with health inequalities. A deep seated and seemingly intractable problem which has been with us for at least a hundred years. The government has made inequalities in health one of its top priorities but everyone – individuals, local communities, statutory authorities, private sector and non-governmental organisations – all need to play their part, and show their commitment to action if the gap in health between the best off and the worst off in our society is ever to be closed.

The statistical analysis showing some of the geographical and social class inequalities is powerful and revealing. To some it will be fascinating. To others it will seem shocking. To each and every person who reads the report it will demonstrate the fundamental challenge of health inequality.

The section of the report dealing with high blood pressure poses a different sort of challenge. Untreated or inadequately treated high blood pressure leaves the person concerned at increased risk of dying before their time from a heart attack or a stroke. Too many people in our country are in just this position – at unnecessary risk of premature death. Things are getting better – high blood pressure is treated more often than in the early 1990s, new standards (National Service Frameworks) are being implemented to improve the care of older people and those with heart disease (including standards for the control of high blood pressure). But there is still much to do – better organisation, rigorous implementation of clinical policies, more public awareness and greater compliance by patients with their medication would all save lives. So too undoubtedly would action by the food and catering industry to reduce the salt content of processed food.

I show a worrying trend upwards in deaths from liver cirrhosis, particularly in younger people. Drinking patterns seem to be the key to understanding this trend but also relevant to serious liver disease are the long term consequences of having been infected with the hepatitis C virus. In the report I call for new strategies to address this worrying problem.

The Lanarkshire *E. coli* O157 outbreak in 1996 in which 17 people died and 496 were made ill was a watershed event. The public and the media saw that food poisoning was not just something that caused the occasional tummy upset. It could kill. Professor Hugh Pennington's excellent report on the Lanarkshire outbreak drew attention to the need for fundamental reform. There have been some improvements but as my report shows the problem is not yet under control five years later. Complacency must not take root – people are still falling victim to *E. coli* O157. Some will continue to die. In the report I call for renewed commitment to turn the tide on this disease.

Finally the section of the Report on epilepsy shows how a disease has remained in the shadows for decades. Five earlier reports have remained largely unimplemented, negative attitudes to epilepsy still persist in our society, and the disease remains an unglamorous area of clinical practice. It is time for a real breakthrough in our approach to epilepsy, one that is modern, enlightened, transforming the lives of the 380,000 or so people in England who have epilepsy. The report spells out how this could be done.

I hope you find the report of interest and value and I would welcome your comments [CMO@doh.gsi.gov.uk].



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Health inequalities  
closing the gap

Newcastle

Carlisle

Middlesbrough

Blackpool

York

Manchester

Leicester

Birmingham

Ipswich

Oxford

Swindon

Reading

London

Bristol

Plymouth

Bournemouth

Brighton

**Inequalities in the health status of people living in different parts of our country are not new. Throughout the 20th Century, parts of northern England have shown consistently higher mortality than other parts of the country.**

### Key Points

/// Throughout the 20th Century, parts of northern England have shown consistently higher mortality than other parts of the country.

/// Despite overall improvements in health the inequalities gap between socially disadvantaged and affluent sections of the population has widened.

/// A new analysis has shown that some communities in England have death rates equivalent to the national average in the 1950s.

/// Men in professional occupations have rates of death which are much the same wherever they live, whereas rates for unskilled working men vary greatly between north and south. This suggests that being poor in the north is worse for your health than being poor in the south, whereas men in professional occupations seem to be able to transcend the north-south divide in health status.

/// Social circumstances throughout life – from birth to late adulthood – influence people’s health. In particular social, economic and environmental deprivation have a profound and overriding impact on health. Lifestyle factors such as smoking, diet, and physical activity are also important.

/// Targeting the poorest sections of the population is important to improve their health but this alone will not close the inequalities gap; many more people at risk of poor health are in manual social classes. Achieving improvements in their health will make a large contribution to reducing inequalities overall.

This pattern of geographical inequalities is still present today. Most major diseases follow it but not all – for example, breast and prostate cancer do not.

In this section of the report, the health of different parts of the country is compared with the national average at various points of time in the past. Essentially, I wanted to find out, for the areas with poorer health, how far they were lagging behind the time trend for the country as a whole.

This is a difficult analysis technically and in some cases, numbers of deaths are small. So we have taken care not to over-interpret the trends. However, the findings are striking and throw a new light on the problem of long-standing geographical health inequalities.

Some smaller populations in this country have the same levels of death as the national average about twenty five years ago and others at levels occurring in the 1950s. Figure 1 shows the enormous range of death rates that prevailed in the populations at ward level in England and Wales in the late 1990s. In the ten per cent of wards with the best level of health the death rate was 28% lower than the England and Wales average for 1996–8. However, the health

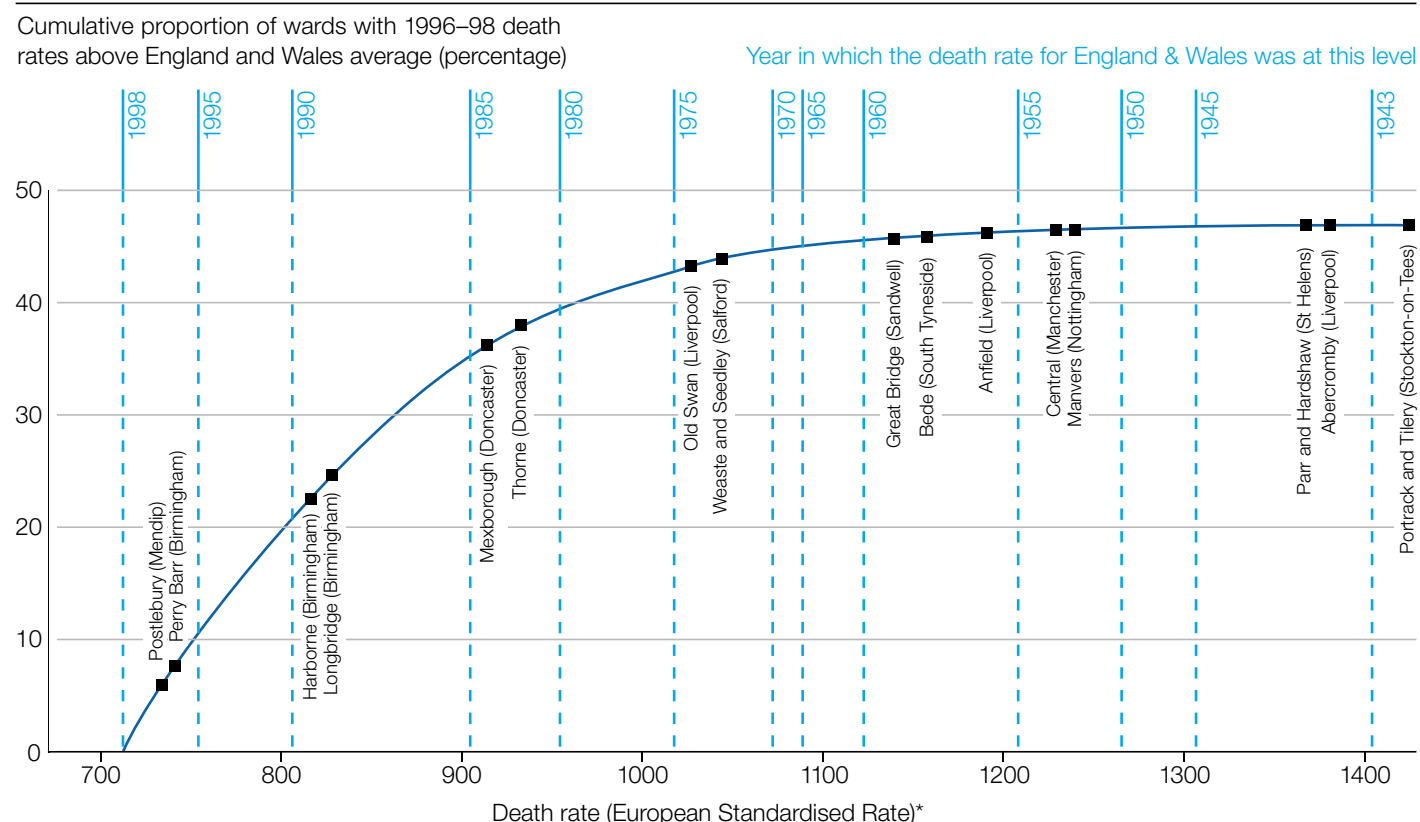
experience of people living in the most deprived areas was in stark contrast. For example in some parts of the North East and North West of England, communities had death rates similar to those prevailing in the 1950s. In other parts of the North and Midlands, death rates equated to the national average more than thirty years ago. The lag in death rates reflects the intense concentration of poverty in the inner city areas.

Although this country has seen increased prosperity and overall reductions in mortality over the last 20 years, the gap in health between those at the top and the bottom of the social scale has widened. Death rates of the most deprived sections of the population declined little in the 1990s, whereas death rates among the more advantaged declined substantially. And diverging trends are also apparent in relation to areas: analysis of the projected trends in life expectancy shows (figure 2) for both men and women, a potential widening of the gap between the 20% of health authorities with the lowest life expectancy and the total population. The projections are simple extrapolations of recent past health inequalities trends. They take no account of the possible effects of current policy initiatives which would be expected to start to reverse the inequalities gap.

Some of these differences in health between advantaged and disadvantaged areas (and individuals) can be explained by behaviour and lifestyle – for example smoking and dietary patterns. Some may reflect systematic differences in health between the health of those who move into or out of deprived regions and neighbourhoods and those who remain in these areas. However, a large part of the difference is due to more profound underlying social, economic and environmental factors.

There is a close relationship between life expectancy, measures of deprivation and other socio-economic indicators at health authority and smaller area levels – areas with high deprivation scores tend to have higher mortality than those with lower deprivation scores. In particular, the 20% of health authorities with the lowest life expectancy are also among those with the largest proportion of their populations in manual social classes, in social housing and with the highest rates of unemployment.

Figure 1: Inequalities timeline: present day death rates in some areas of England match the national average death rate in earlier years of the 20th Century



- Examples of wards with these death rates in 1996–1998
- Ward death rates 1996–1998
- - - Historical death rate for England & Wales

\* The European Standardised Rate (ESR) is a directly age standardised rate based on the European Standard Population. It gives the number of events that would occur per 100,000 persons if the age-specific rates in the population being observed were to apply to a population that had the same age structure as the European Standard. This allows comparisons to be made between areas whose populations differ in size or in their age and sex distributions.

Source: Office for National Statistics

# 4

The most disadvantaged in our society have not been able to benefit from the health gains that have been achieved by the most affluent. People living in the most deprived areas, those who have lowest educational attainment and material resources, have been least able to gain from wider social and environmental improvements, and adopt healthier lifestyles or obtain fair access to services. Other minority groups based on ethnic, religious and cultural grounds have been shown in certain circumstances to be equally vulnerable.

Indeed, a striking feature of the geographical differences such as those shown in figure 1 is the pattern of death by social class. Social class based upon occupation is the traditional way in which health differences between different social groups have been examined. Figure 3 demonstrates that there is no clear difference in death rates between men in social class I living in various parts of the country. In contrast, for men who are in social class V there is a strong geographical gradient with higher death rates in the north than the south. These data suggest that a professional person is largely able to transcend the north-south divide in health status. They also strongly reinforce the proposition that access to better educational and employment opportunities and living in a better quality environment are associated with better health.

Both the characteristics of an area and the level of deprivation of its inhabitants affect health. Figure 4a shows that the difference in mortality between areas in the north west and those in the south east is smallest for the least deprived 20% of areas. It gets progressively larger as the level of deprivation increases. Similarly, Figure 4b shows how the gap in mortality between these areas widens as individual disadvantage (measured by social class) increases.

Health effects of relative inequality apply right across the spectrum of advantage and disadvantage. Efforts to address these cannot be targeted only at the 20% of most deprived areas or people. This is because there are more people affected by inequalities in the middle 60% of deprivation than in the bottom 20%.

For this reason, action targeted at the poorest section of society will improve those people's health but it will not alone reduce the inequalities gap. Action also needs to be targeted at the much larger numbers in the 'blue collar' (i.e. manual workers) section of society where the numbers with potentially poor health are much greater. This is illustrated by looking at smoking behaviour (Figure 5a and 5b). The proportion of smokers is highest within the lowest socio-economic group but the skilled manual socio-economic group contains many more people. So whilst 42% of men and 31% of women in unskilled manual occupations smoke, this adds up to about 650,000 smokers. On the other hand amongst workers in skilled manual occupations the proportions smoking are lower but the total number smoking is over 3.3 million. In other words there are over five times as many smokers who belong to the skilled manual group as belong to the unskilled manual socio-economic group.

Figure 2a: Widening gap in life expectancy amongst males between the 20% of health authorities

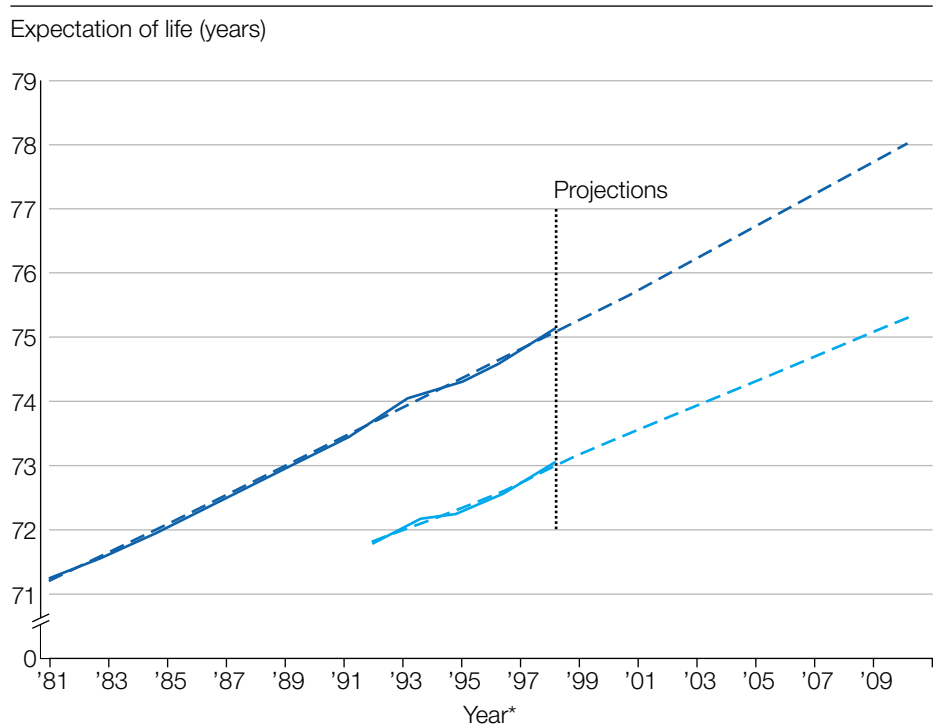
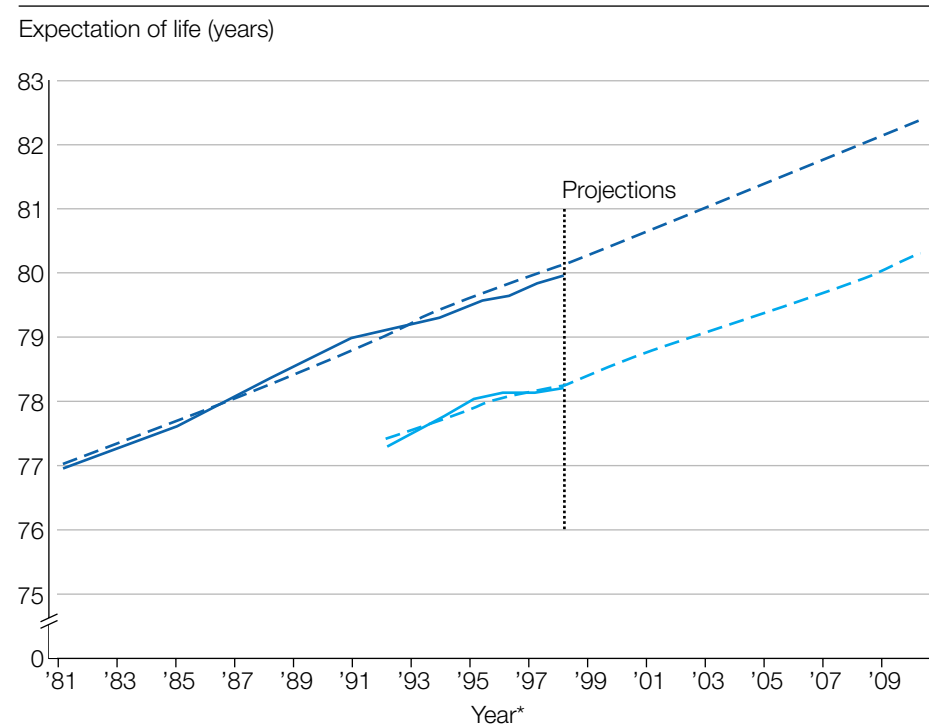


Figure 2b: Widening gap in life expectancy amongst females between the 20% of health authorities



\*Figures are 3-year rolling averages, plotted on middle year.

Source: Office for National Statistics, Government Actuary's Department, Statistics Division in Department of Health

- Worst 20% of Health Authorities
- - - Worst 20% of Health Authorities - exponential projection
- All population
- - - All population - exponential projection

The overall impact on health improvement will be greater if a large population changes their behaviour or receives better treatment than if even big changes are achieved in a very small, albeit extremely high risk, group. Both strategies must sit side by side. Moreover, focus on only the 20% most deprived health authorities would miss the substantial segment of the population living in pockets of deprivation within areas not classified as deprived.

“Social circumstances across the entire life-course – from birth through to late adulthood – influence people’s health and well-being. The characteristics of the areas in which people live, as well as their individual characteristics, influence their health. Health inequalities are produced by the clustering of disadvantage – in opportunity, material circumstances and behaviours related to health – across people’s lives. Health-related behaviours – such as smoking and diet – are strongly influenced by the social environment in which people live.”

Source: Shaw M, Gordon D, Dorling D and Davey Smith G. *The Widening Gap: Health inequalities and policy in Britain*. Bristol: The Policy Press, 1999.

The government-commissioned Acheson Report, published in 1998, showed the importance of social, economic and environmental determinants of health and served as the basis of the White Paper *Saving Lives: Our Healthier Nation*. The document commits the government to addressing the fundamental determinants of poor health.

This is already happening:

/// The Neighbourhood Renewal National Strategy Action Plan aims to deliver economic prosperity, safe communities, high quality schools, decent housing, and better health to the poorest parts of the country. This is a new approach with an emphasis on attacking the core problems of deprived areas, harnessing the power of all the sectors to work in partnership and focussing existing programmes explicitly on deprived areas.

/// National Service Frameworks (NSFs) for Coronary Heart Disease, Mental Health and Older People and the National Cancer Plan address health inequalities and set standards aimed at tackling them. This will be further developed in forthcoming NSFs, for example for children and diabetes.

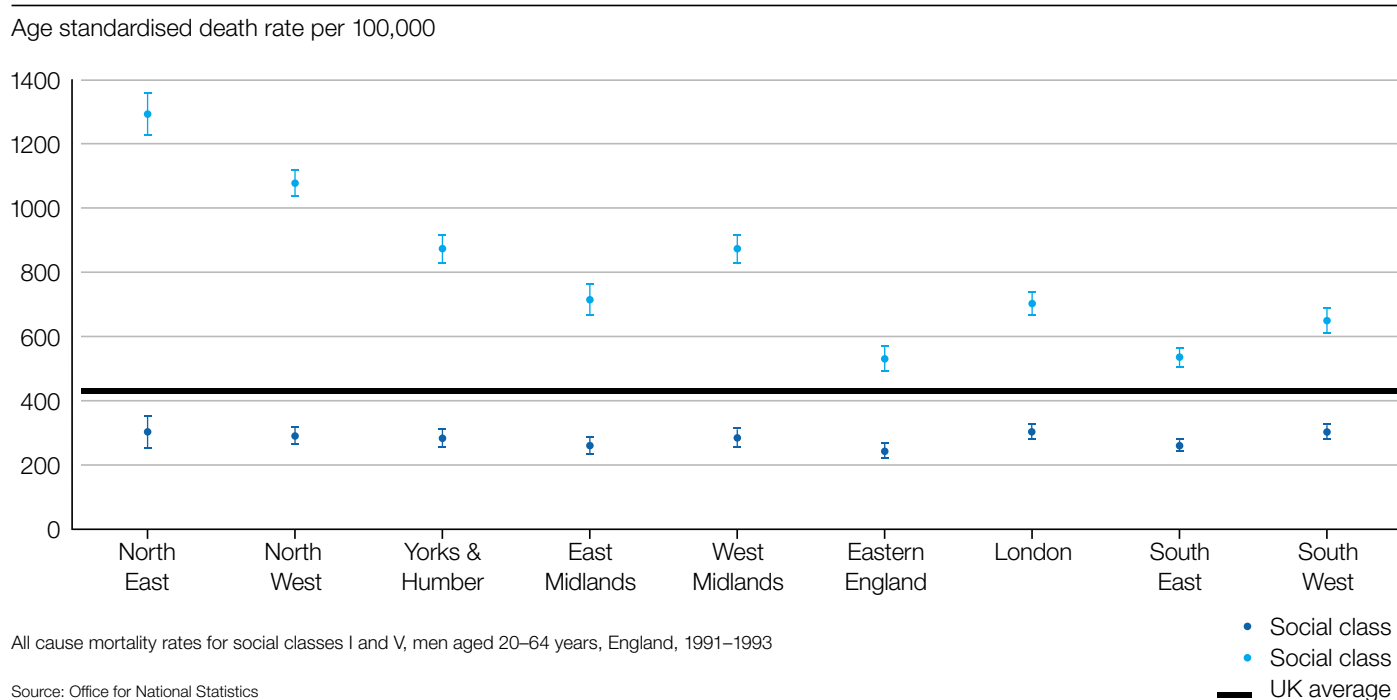
/// The government’s commitment to eradicating child poverty, together with other changes to the tax and social security benefits systems, are already targeting financial help on disadvantaged families.

/// Improvements in education provision, and the extension of the Sure Start scheme, and the establishment of the Children and Young People’s Unit and its Children’s Fund, with prevention fund and local network components, are to help children from disadvantaged backgrounds.

/// Programmes specifically aimed at the most deprived areas including the New Deal for Communities programme to support intensive 10 year regeneration strategies in 39 of the poorest neighbourhoods in the country; the Neighbourhood Renewal Fund for the 88 local authorities in the most deprived areas; a Neighbourhood Management Scheme to help deprived communities and local service providers work together at a neighbourhood level; and a new Community Empowerment Fund to help communities play their part in the strategy.

/// Initiatives aimed at people of working age and in later life (e.g. the Action Team for Jobs Programme, the UK Fuel Poverty Strategy).

Figure 3: Death rates amongst men for all causes combined: for professional men they show little variation across the country, whereas for unskilled men there are higher death rates in the north than in the south



To reinforce and supplement such initiatives the first ever national health inequalities targets were announced in February 2001 (see right). One relates to narrowing the gap in infant mortality between manual groups and the population average. The other is set in terms of narrowing the gap between the 20% of health authorities with the lowest life expectancy and the national average.

These targets complement three other published targets – relating to child poverty, smoking and teenage pregnancy – which will make an important contribution to reducing health inequalities. A basket of indicators is also under development which will enable us to measure a much broader range of factors that influence health and health inequalities. A document *'Tackling Health Inequalities – consultation on a plan for delivery'* was published in August 2001. This addresses the agenda of how the health inequalities targets are going to be achieved and seeks views.

#### Targets relating to health inequalities

New targets announced in February 2001

**Life Expectancy:** starting with Health Authorities, by 2010 to reduce by at least 10% the gap in mortality between the quintile (fifth) of areas with the lowest life expectancy at birth and the population as a whole.

**Children:** starting with children under 1 year, by 2010 to reduce by at least 10% the gap in mortality between manual groups and the population as a whole.

#### Complementary inequalities targets

**Child poverty:** The government is committed to halving child poverty in ten years and eradicating it within a generation.

**Smoking:** To reduce smoking rates among manual groups from 32% in 1998 to 26% by 2010, in order to narrow the health gap.

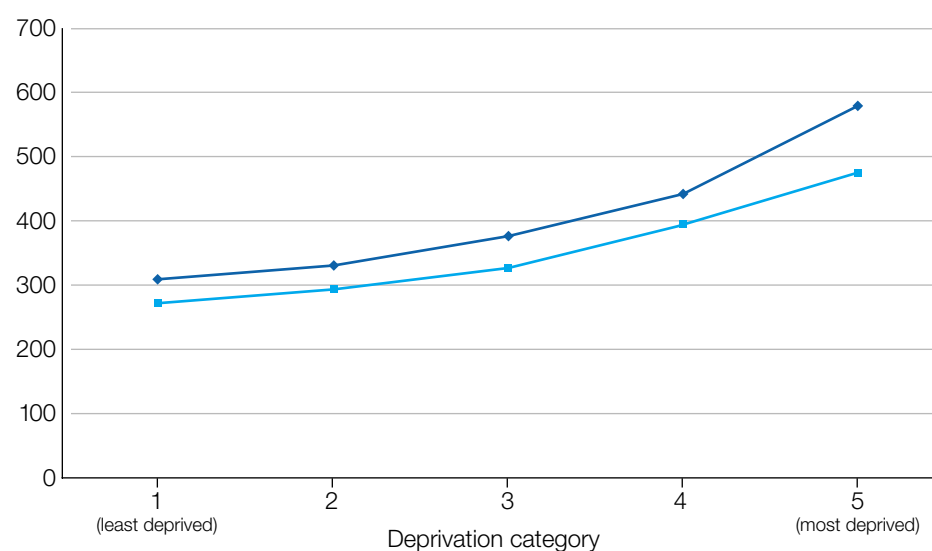
**Teenage pregnancy:** By achieving agreed local conception reduction targets, to reduce the national under 18 years conception rate by 15% by 2004 and 50% by 2010, while reducing the gap in rates between the worst fifth and the average by at least a quarter.

Action to tackle the determinants of unequal health between different populations and groups needs to take place at different levels. This action needs to be sustained and co-ordinated not only across the health and health-care sectors and other sectors in partnership with the public but also between the different levels from the neighbourhood to central government in Whitehall.

The government has now established a clear policy framework for reducing inequalities in health based on the White Paper, *Saving Lives: Our Healthier Nation*, the *NHS Plan*, and most recently *Shifting the Balance of Power*. The recent consultation process on inequalities is generating a wealth of ideas and practical experiences to draw on in making a difference over the medium term. What is now needed is to develop a process where different government departments make explicit their individual contributions to reducing inequalities in health through policies in their own areas of responsibility. The mechanisms for joint policy-making focussed on improved health outcomes should continue to be strengthened. The announcement by the Treasury of a cross-cutting spending review on health inequalities is a very welcome development in this regard.

Figure 4a: Death rates amongst men for all causes combined: the north-south gap is widest in the most deprived populations

Age standardised death rate per 100,000 for men aged 15–64 years



Wards across the country have been divided into fifths according to the level of deprivation. The index is based on 1991 Census measures relating to unemployment, overcrowding, proportion of population in Social Classes IV and V, and access to a car.

—◆— North West  
—■— South East

Source: Office for National Statistics



Regional Directors of Public Health once relocated within the Regional Offices of government have a leadership role in developing a strategic oversight of the implementation and effectiveness of national policies on health and inequalities and their local implementation.

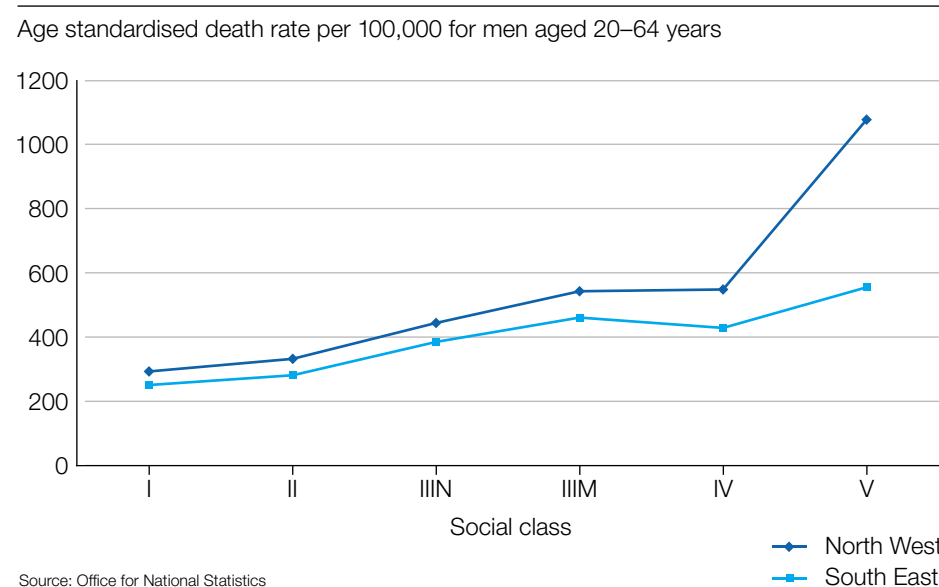
The new Strategic Health Authorities must ensure that within their areas there is a coordinated approach to reducing inequalities in health and the public health capacity to deliver on programmes both inside and outside the NHS; they must ensure the equitable implementation of the national service frameworks. Through their performance management role working with the Regional Directors of Public Health they should ensure that there is a clear picture of progress and that where this is slow appropriate interventions are made.

It is at the local level of the new Primary Care Trusts (PCTs) where inequalities between different areas and groups are most stark. Recognising the causes and tackling it effectively is a core task for these new health organisations and their partners. Public health teams within Primary Care Trusts and the related public health networks have a front line responsibility to

ensure that the local translation of national policies from different government departments places the reduction of inequalities in health at its heart. This applies particularly to Local Strategic Partnerships and such initiatives as the Healthy Communities Collaborative, but also to a range of other government programmes, projects and initiatives including: Sure Start, Health Action Zones, teenage pregnancy, tobacco control, widening access to fruit and vegetables and developing a safer environment.

It is expected that the first reports on public health to Primary Care Trust boards should have a strong focus on reducing inequalities in health.

Figure 4b: Death rates for all causes combined:  
the north-south gap is widest for those in the lowest social class groups



**Action recommended**

/// Existing cross-governmental policies to tackle the root causes of social, economic and environmental disadvantage should be sustained and their impact on narrowing the health inequalities gap monitored. New cross-governmental action should be developed if the gap continues to show no sign of narrowing.

/// All individual government departments should make explicit their specific contributions to the achievement of the national health inequalities targets.

/// The Regional Directors of Public Health based within Regional Offices of Government should draw up an equity profile for their regions and co-ordinate action across all sectors to address the problems identified. Local community plans should be scrutinised to ensure that they tackle health inequalities effectively.

/// Regional Development Agencies should review their economic regeneration strategies and plans to ensure maximum impact upon health inequality targets.

/// As part of the development of community plans and the modernisation review of the NHS, Local Strategic Partnerships and the relevant Primary Care Trusts should produce an equity audit in relation to the health inequalities targets. A plan of action to tackle any identified health inequalities should be presented to the Boards of Primary Care Trusts and Local Strategic Partnerships at the earliest opportunity. Particular attention must be paid to black and ethnic minority groups, taking account of cultural, language and religious needs.

/// The new Strategic Health Authorities should ensure that they develop and manage clinical networks that place high priority on equity of access to services.

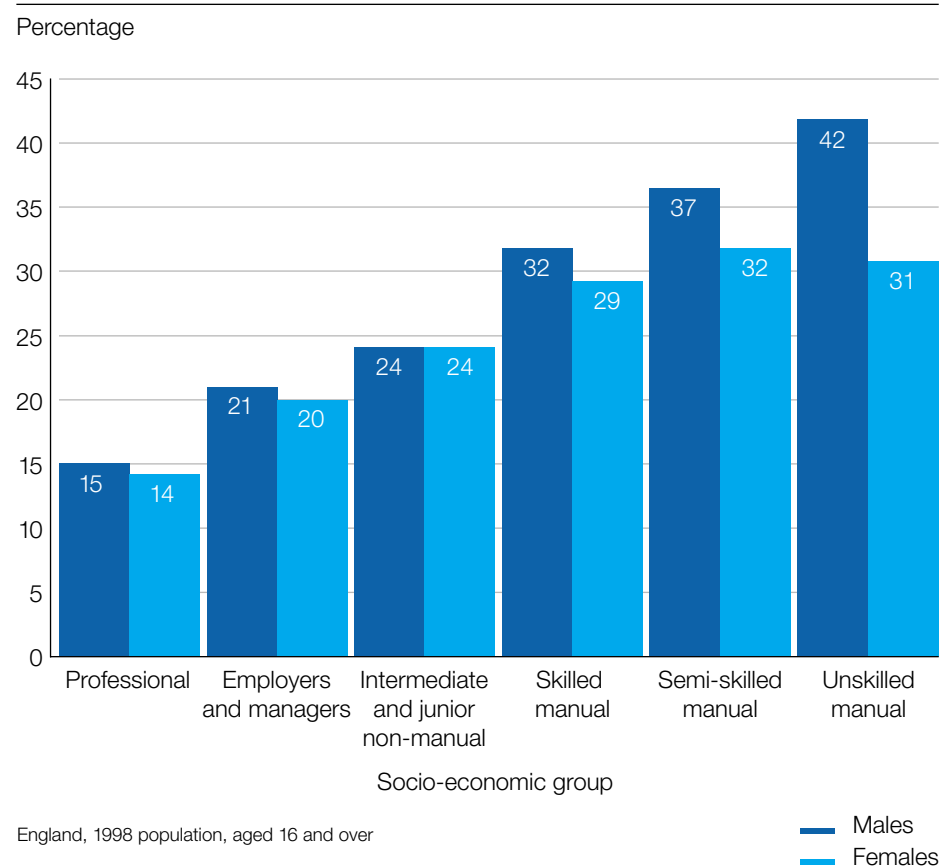
/// National and local programmes aimed at providing opportunities for healthier lifestyles especially in relation to smoking, diet and nutrition and physical activity should be sustained and extended. Targeting of the

programmes to those people who are most disadvantaged is essential but efforts should also be made to create opportunities for healthier lifestyles amongst the large number of people in households where the head is in a manual or 'blue collar' occupation.

/// All new national initiatives in the NHS, including the development of further national service frameworks and further National Institute for Clinical Excellence guidelines, should address how they tackle health inequalities as a key theme. The new National Service Framework for Children should address achievement of the infant mortality target and tackling health inequalities as key themes.

/// Existing government programmes targeting action at particular life stages – infancy and childhood, young people, families and people of working age, pensioners and those in later life – should be continued and strengthened where necessary.

Figure 5a: The proportion of smokers is highest within the lowest socio-economic groups



### Useful web resources

A New Commitment to Neighbourhood  
Renewal: National Strategy Action Plan  
<http://www.cabinet-office.gov.uk/seu/2001/Action%20Plan/default.htm>

Department of Health  
<http://www.doh.gov.uk>

Fuel Poverty Strategy  
<http://www.defra.gov.uk/environment/consult/fuelpov/index.htm>

Healthy Schools programme  
<http://www.wiredforhealth.gov.uk/healthy/healint.html>

Local Government information  
(including Local Strategic Partnerships)  
<http://www.local-regions.dtlr.gov.uk/lsp/guidance/index.htm>

<http://www.local-regions.dtlr.gov.uk/index.htm>

National School Fruit Scheme  
<http://www.doh.gov.uk/schoolfruitscheme/prevention.htm>

National statistics, social class and  
geographic differences in mortality  
<http://www.statistics.gov.uk>

National Strategy for Neighbourhood  
Renewal: Policy Action Team Audit  
<http://www.cabinet-office.gov.uk/seu/2001/PATAudit/default.htm>

New Deal for Communities  
<http://www.regeneration.dtlr.gov.uk/ndc.htm>

Primary Care Trusts  
<http://www.doh.gov.uk/pricare/pcts.htm>

Saving Lives – Our Healthier Nation  
<http://www.ohn.gov.uk>

Shifting the Balance of Power within  
the NHS  
<http://www.doh.gov.uk/shiftingthebalance/shiftingthebalance.pdf>

Sure Start  
<http://www.surestart.gov.uk/home.cfm>

Tackling Health Inequalities: Consultation on  
a Plan for Delivery  
<http://www.doh.gov.uk/healthinequalities>

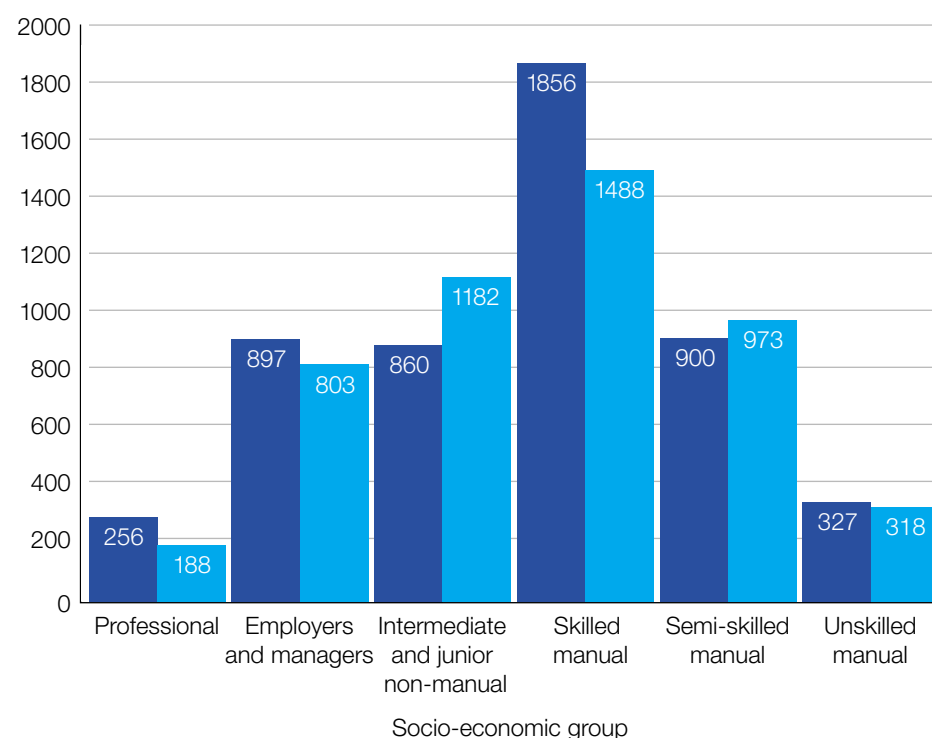
Teenage Pregnancy Unit  
<http://www.teenagepregnancyunit.gov.uk>

The Independent Inquiry into  
Inequalities in Health  
<http://www.official-documents.co.uk/document/doh/ih/contents.htm>

The NHS Plan  
<http://www.doh.gov.uk/nhsplan>

Figure 5b: The number of smokers is highest in the middle socio-economic groups

Number of smokers (thousands)

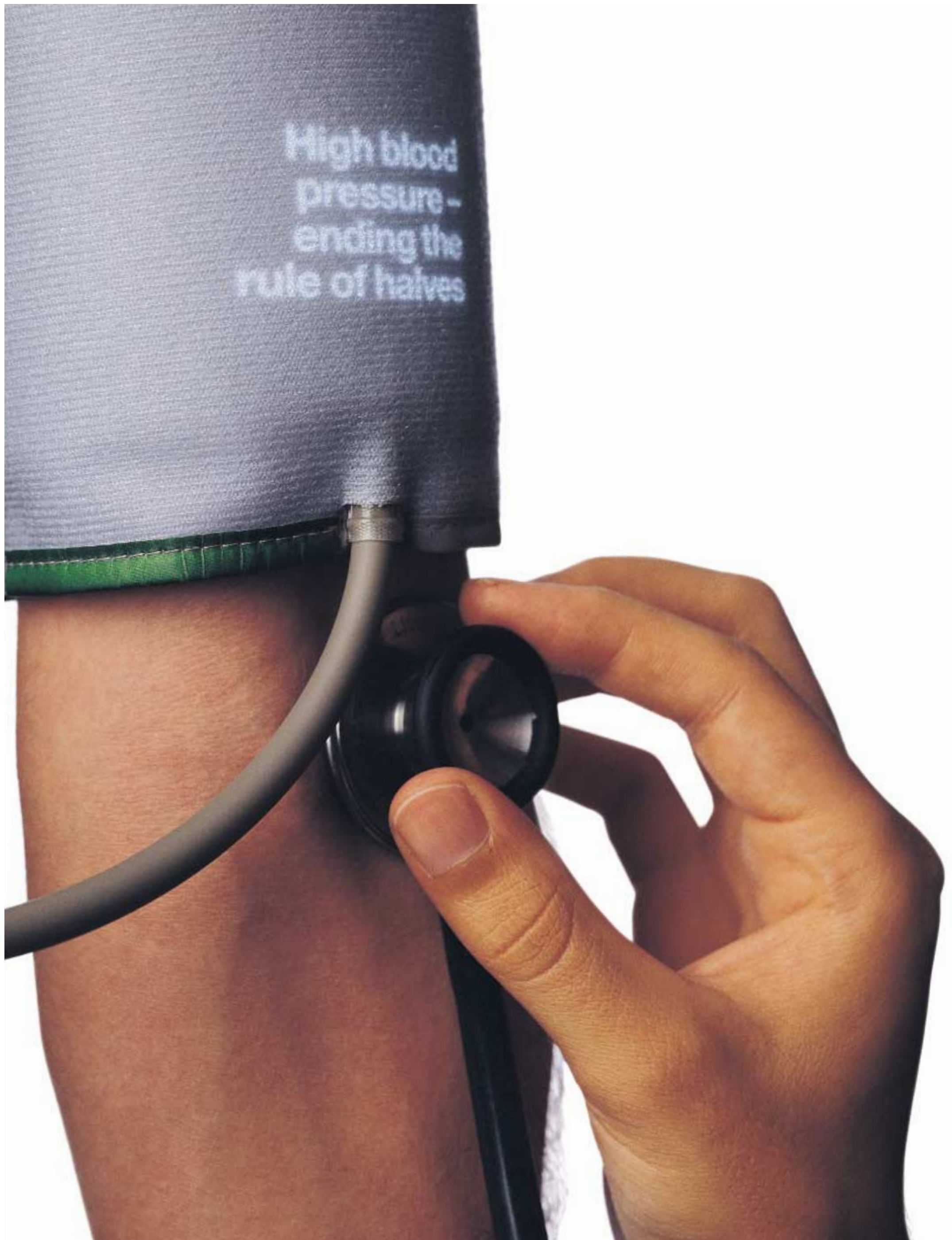


England, 1998 population, aged 16 and over

Source: ONS General Household Survey, 1998

— Males  
— Females

High blood  
pressure -  
ending the  
rule of halves



High blood pressure – hypertension – is a major risk factor for stroke, coronary heart disease and other illnesses such as kidney disease and aortic aneurysm. It is a major cause of illness, disability and premature death. For example, people with high blood pressure are three times more likely to develop heart disease and stroke, and are twice as likely to die from these diseases as people with normal levels. The higher the blood pressure level, the greater the risk.

#### Key Points

/// High blood pressure causes death, chronic illness and disability particularly from stroke, coronary heart disease, heart failure and kidney failure.

/// High blood pressure is the certified cause of around 3,000 deaths per year, but is included on around 20,000 death certificates and is an important contributory factor in the 50,000 deaths from stroke and 100,000 deaths from coronary heart disease each year.

/// Estimating the occurrence of high blood pressure is dependent on the precise definition used – based on the definition used up until recently about one in five of the adult population were classified as having high blood pressure; a new definition now increases that estimate to over a third of the adult population (41% of men and 33% of women).

/// Based on the older definition, about half of adults with high blood pressure are not taking medication for this condition and about a further fifth are treated ineffectively – a total of approximately 5 million people – and so are at unnecessary risk of a stroke or heart attack. Based on the new definition this figure would be substantially greater.

/// Part of the problem of high blood pressure is preventable through lifestyle changes, and particularly improved nutrition – including reductions in salt consumption and an increase in fruit and vegetable consumption – and increased physical activity.

/// Improved detection of people with high blood pressure and effective management would reduce the risk of premature death for many thousands of people.

About 3,000 deaths each year are directly attributable to disease from high blood pressure. High blood pressure is also an important risk factor for cardiovascular diseases. Although death rates from stroke have reduced substantially in the recent past (down by over 40% since 1980), stroke still causes around 50,000 deaths in England each year, as well as substantial illness and disability. Coronary heart disease causes about 100,000 deaths a year.

#### Rates of high blood pressure

The threshold for defining high blood pressure used to be 160mmHg (systolic) and/or 95mmHg (diastolic). However, the suggested threshold has recently been lowered to 140mmHg and/or 90mmHg, which greatly increases the 'pool' of those potentially needing to be treated.

Each year the Health Survey for England includes the measurement of blood pressure and also asks participants about their use of medication. In 1998, the Survey focussed on cardiovascular disease: the overall occurrence of high blood pressure – based on the 'old' definition – was 18.4% in both men and women. However, the more recent definition has increased the 'pool' of those with high blood pressure to about a third of the adult population – 41% of men and 33% of women.

Rates of high blood pressure rise with age (figure 1). In 1998, using the new definition, less than 20% of men and about 5% of women aged under 25 years had high blood pressure, compared with over 70% of those aged 65 years and over – this latter age group comprising almost 8 million people in England. The prevalence of high blood pressure was higher in men than in women up to the age group 55–64 years, while in the older age groups, it was higher in women than in men.

The Health Survey for England also shows marked variations in rates of high blood pressure by ethnic group. For example, Black Caribbean and Pakistani women are more likely to have high blood pressure than other people; and Bangladeshi and Chinese men, and Irish women, are less likely to have high blood pressure. There is little difference in the prevalence of high blood pressure among different social classes, although, among women, levels of high blood pressure increase as income decreases (figure 2).

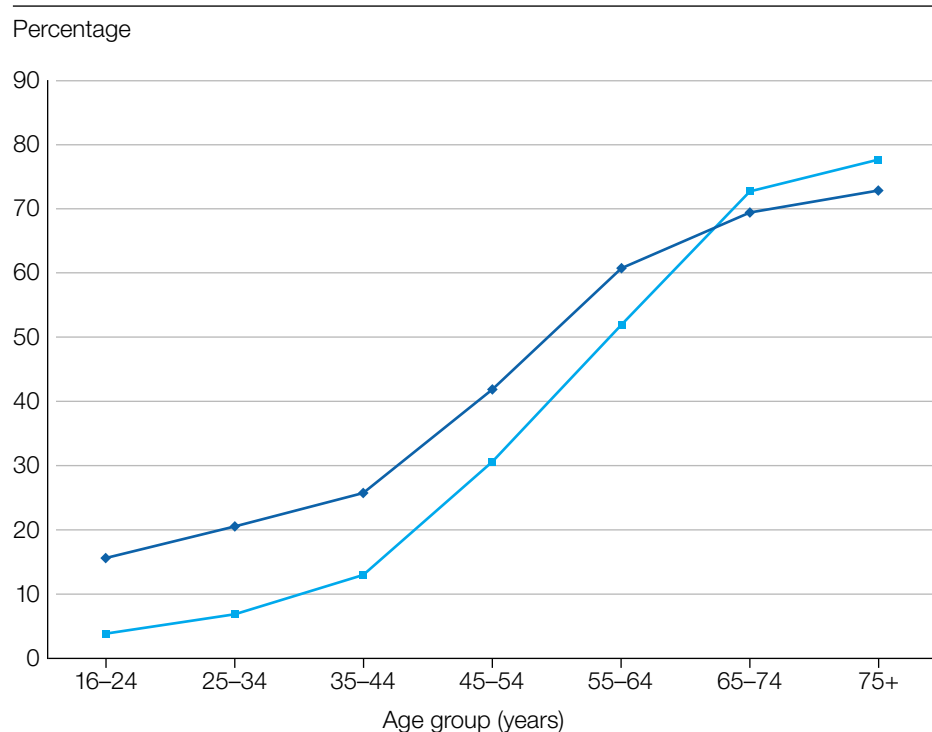


#### Tackling high blood pressure

Tackling cardiovascular disease has been recognised as a priority in the *NHS Plan*, as well as the White Paper *Saving Lives: Our Healthier Nation*. This included a target to reduce the death rate from coronary heart disease and stroke and related diseases in people under 75 years by at least two fifths (40%) between 1995/7 and 2010.

The 'new' definition of high blood pressure was introduced in the late 1990s and classifies a higher proportion of the population as hypertensive. Trend data from the Health Survey for England are only available based on the 'old' definition and at the time of the 1998 Health Survey for England treatment practices would in any case be expected to reflect the 'old' definition. Hence 'treatment' data are presented and assessed based on the 'old' definition.

Figure 1: The occurrence of high blood pressure increases dramatically with age



Men and women aged 16 and over, England 1998  
Using 1998 definition: Systolic bp 140mmHg or over, or Diastolic bp 90mmHg or over, or taking drugs prescribed specifically to lower blood pressure

Source: Health Survey for England 1998, Table 3.60

—◆— Male  
—■— Female

Many cases of stroke and coronary heart disease could be avoided by addressing the important problem of high blood pressure – both through prevention and treatment. High blood pressure can readily be detected. Both lifestyle changes and appropriate use of medication can effectively lower blood pressure. For example, the risk of stroke for people with high blood pressure can be reduced by 37% through appropriate management. This makes it particularly disappointing that high blood pressure so often goes undetected or is inadequately treated.

In the late 1970s, the British Regional Heart Study described a ‘rule of halves’ for high blood pressure in the population of England. Broadly speaking, the rule stated that half the people with high blood pressure were not diagnosed; half the people who were diagnosed did not receive treatment; and half of those who were treated for their condition had not got their blood pressure under control.

Data from the Health Survey for England for 1998 using the old definition of high blood pressure (figure 3) indicate that:

/// among people with high blood pressure, the treatment rate – the proportion of those with survey-defined high blood pressure who were taking medication for this problem – was only about half.

/// among people with high blood pressure about one fifth had blood pressure that was not properly controlled by treatment at the time of measurement.

Data from the Health Survey for England collected during the 1990s suggest that the proportion of people with high blood pressure receiving treatment has risen, and the proportion of those treated whose blood pressure at the time of the survey was controlled has also risen. While this represents progress, there is still great scope for further improvement and lives that could be saved.

High blood pressure is addressed through the National Service Frameworks (NSFs) for Coronary Heart Disease and for Older People. The NSF for Coronary Heart Disease,

published in March 2000, identifies the importance of the prevention, detection and effective treatment of high blood pressure. In addition, the National Institute for Clinical Excellence (NICE) has recently commissioned guidelines on the management of high blood pressure in primary care. Work has already been undertaken by NICE on the production of guidance on high blood pressure in diabetes – a disease where the detection and control of high blood pressure is particularly important.

Under the NSF for Coronary Heart Disease, general practitioners and primary care teams are charged with developing protocols to assess, treat and follow-up people with established coronary heart disease, by April 2002. Under the NSF for Older People primary care trusts will need to ensure that every general practice, using protocols agreed with local specialist services, can identify and treat patients identified as being at risk of a stroke because of high blood pressure, atrial fibrillation or other risk factors by April 2004.

Interventions will include advice and treatment to maintain blood pressure below 140/90mmHg, and primary care teams will need to collect clinical audit data to show that this is actually happening.

Stroke services are part of the National Service Framework for Older People, published in March 2001. This addresses four main components for the development of integrated stroke services: prevention, immediate care, early and continuing rehabilitation, and long-term support. Every general practice will need to have established clinical audit systems for stroke, and all general hospitals which care for people with stroke will need to introduce a specialised stroke service from 2004. There is clear evidence that admission to a specialist stroke unit, following an acute stroke, can significantly improve outcome. Hospitals which care for older people with stroke will need to deliver the Royal College of Physician’s clinical guidelines for stroke care, and have clinical audit systems to make sure that this is happening, by April 2003.

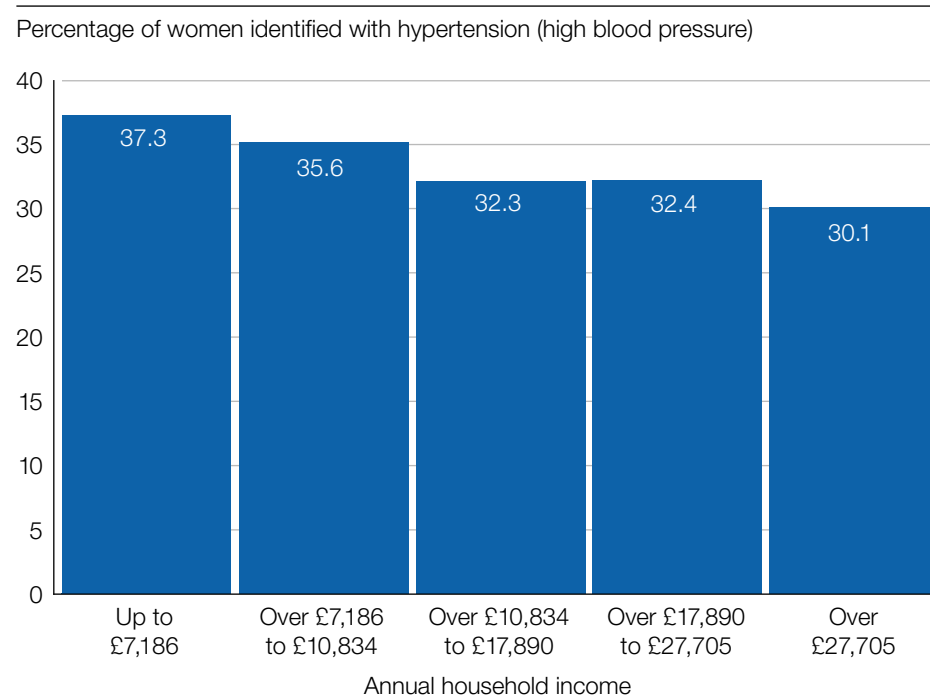
### Prevention of high blood pressure

Both lifestyle changes and appropriate use of medication can effectively lower blood pressure. These include a reduction in salt consumption, increase in fruit and vegetable consumption, reductions in obesity and overweight, and increases in physical activity. Several initiatives are under way to tackle the risk factors associated with high blood pressure.

A large body of scientific opinion acknowledges that a reduction in salt intake will reduce blood pressure levels and will also reduce the increase in blood pressure commonly seen with age. The Committee on Medical Aspects of Food and Nutrition Policy (COMA) recommended a reduction in the average intake of sodium, by reducing salt intake – the principal source of sodium – by a third, from 9 grams a day to 6 grams a day. As Chief Medical Officer I support this target as even a small reduction in sodium intake could help to reduce the burden of high blood pressure in our population. As some 75% of our salt intake is from processed foods, the Department of Health and the Food Standards Agency are currently considering options with the food industry and other stakeholders for reducing the salt content in these foods.

Equally significant is the increased consumption of fruit and vegetables – rich in potassium – which is positively associated with a lower risk of high blood pressure. The Department of Health is promoting the consumption of at least five portions of fruit and vegetables a day through a five-a-day programme, which includes a National School Fruit Scheme, local five-a-day community projects and a communications programme. Over 80,000 school children are already receiving a free piece of fruit each school day, in some 550 schools across England, and community projects to increase access to and awareness of fruit and vegetables are reaching a million people in deprived communities.

Figure 2: The proportion of women with high blood pressure reduces as income rises



Women aged 16 and over, England 1998  
Using 1998 definition: Systolic bp 140mmHg or over, or Diastolic bp 90mmHg or over, or taking drugs prescribed specifically to lower blood pressure

Source: Health Survey for England 1998, Table 3.62

Increasing levels of physical activity and exercise, and reducing obesity and overweight, can also help to reduce blood pressure, and the government has a number of initiatives in place. For example, the Department of Health has recently published a Quality Assurance Framework for Exercise Referral Systems for those working in primary care and in the fitness and leisure services. The Department of Health also links with the Department of Culture, Media and Sport, the Department for Education and Skills, and the Department of Transport, Local Government and the Regions, to promote the health benefits of physical activity, and introduce policies to promote sport and exercise through the Sports Strategy, in school education, and to increase walking and cycling through local transport plans.

At a local level, under the NSF for Coronary Heart Disease, the NHS and other local agencies were required to agree and be contributing to the delivery of local programmes to promote healthy eating, increase physical activity and reduce obesity and the numbers of people who are overweight, as well as to reduce smoking, by April 2001, and to have data on implementing these policies by April 2002.

#### Action recommended

/// Strong and sustained commitment across government and through the NHS to reduce the numbers of people with hypertension, through effective prevention, detection and management of hypertension. General practices and primary care teams need to regularly measure and record blood pressure during routine patient visits, and manage hypertension in a systematic way in accordance with established guidelines, and in the context of the National Service Frameworks for Coronary Heart Disease and Older People.

/// The main professional organisations, including medical and nursing bodies, need to ensure that education and training emphasises the importance and risks of hypertension and measures to prevent, detect and manage it.

/// Greater public and professional awareness of the problems of hypertension is needed, including the links between lifestyle factors such as diet and exercise, and the links with later disease and disability. In particular, people need to be made more aware of the health benefits of eating at least five portions of fruit and vegetables each day, and of reducing the amount of sodium/salt in the diet.

/// A major initiative by the food industry to reduce the salt content of processed and catered foods could help save lives over the long term. Therefore a target reduction in salt intake to six grams a day should be worked towards. Immediate moves to provide clear information for consumers on salt and sodium content of food products would also bring major benefits.

/// The health benefits of physical activity, including links with hypertension and later coronary heart disease and stroke, need to be more widely communicated, and genuine commitment is needed across government and local agencies to increase physical activity levels and reduce obesity.

/// Wherever possible, people who have suffered a stroke should be managed in a dedicated specialist stroke unit.

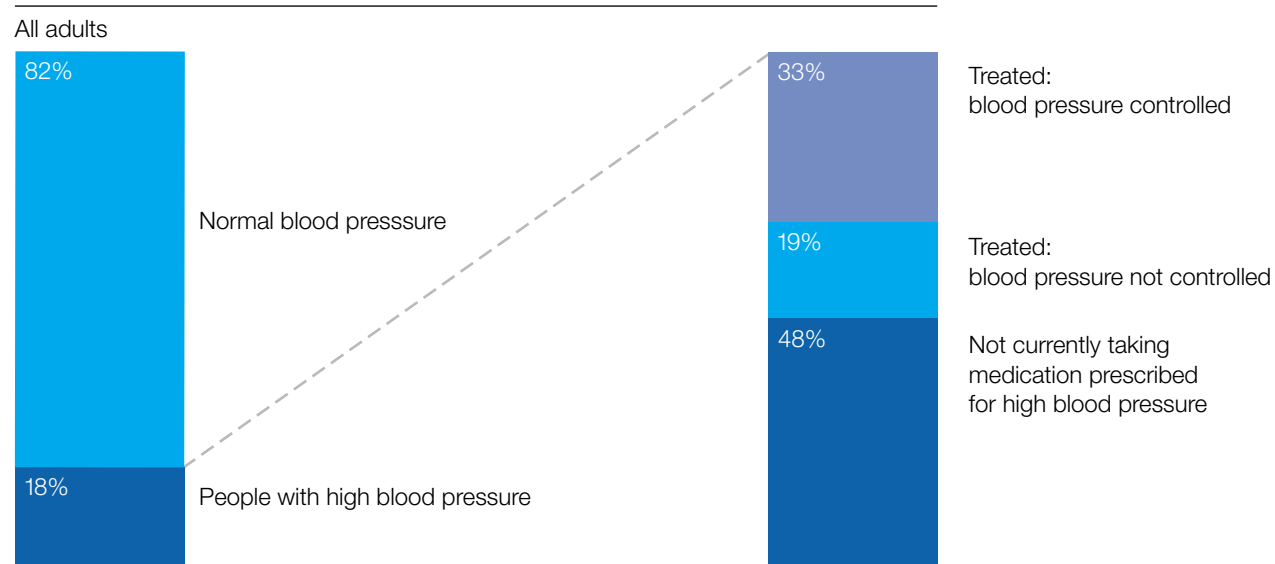
#### Useful web resources

- Health Survey for England:  
<http://www.doh.gov.uk/public/summary.htm>
- Cardiovascular Disease 1998 results:  
<http://www.official-documents.co.uk/document/doh/survey98/hse98.htm>
- Geographic Variations:  
<http://www.doh.gov.uk/public/report.htm>
- The WHO Europe:  
<http://www.who.dk>
- The WHO Health for All (HFA) database:  
<http://www.who.dk/country/country.htm>
- National Statistics:  
<http://www.statistics.gov.uk>
- The British Heart Foundation:  
<http://www.bhf.org.uk>
- The National Heart Forum:  
<http://www.heartforum.org.uk>
- The Stroke Association:  
<http://www.stroke.org.uk>
- Blood Pressure Association:  
<http://www.bpassoc.org.uk>

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- National Service Framework for Older People. London: Department of Health, March 2001.
- The NHS Plan: a plan for investment, a plan for reform. London: The Stationery Office, July 2000.
- Saving Lives: Our Healthier Nation. London: The Stationery Office, July 1999.
- Erens & Primatesta (eds), Health Survey for England: Cardiovascular Disease 1998. London: The Stationery Office, 1999. ISBN 0-11-322307-2.
- Erens, Primatesta & Prior (eds), Health Survey for England: The Health of Minority Ethnic Groups 1999. London: The Stationery Office, 2001. ISBN 0-11-322448-6.
- Guidance for implementing the preventive aspects of the National Service Framework: Health Development Agency, November 2000.

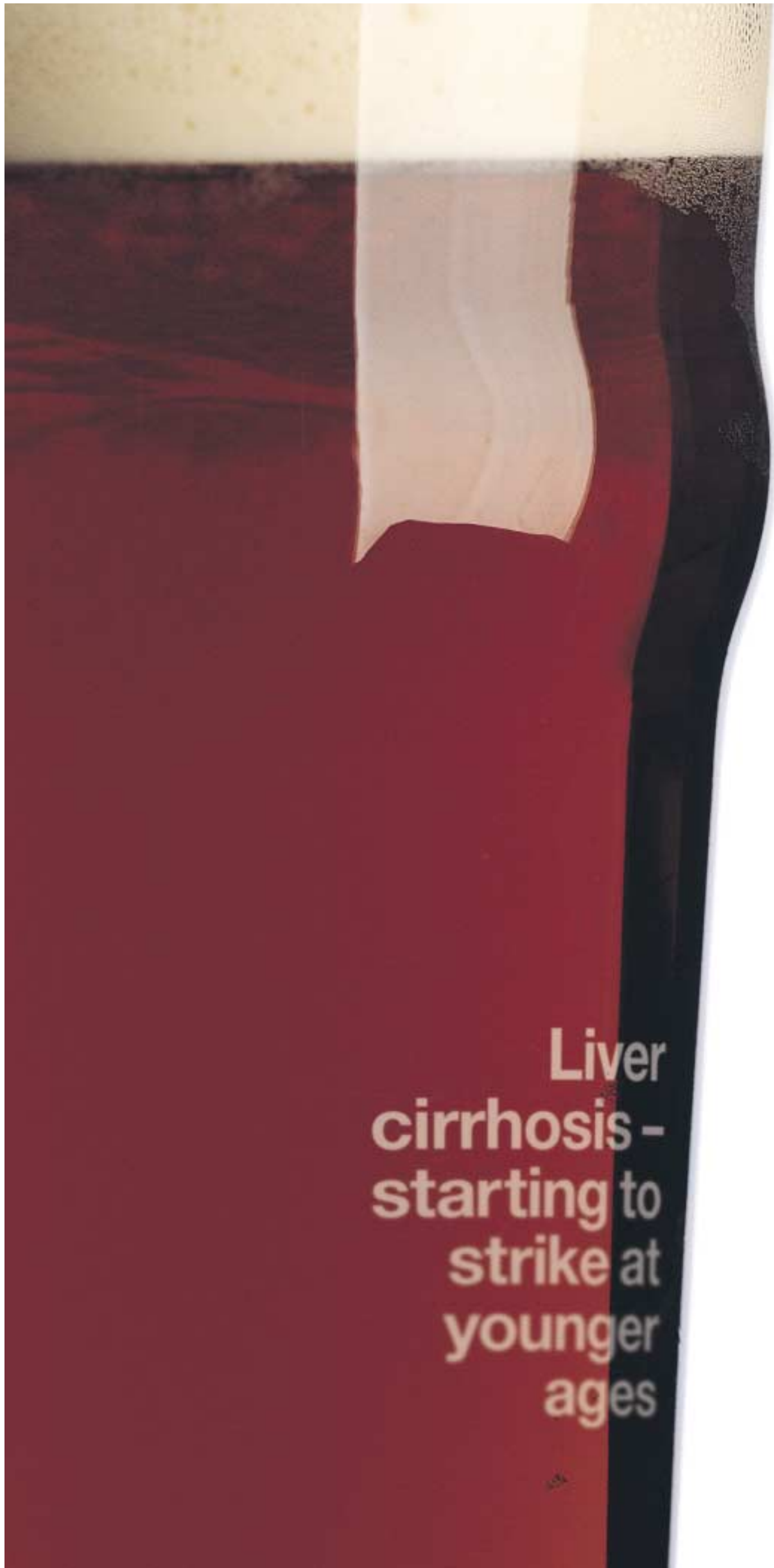
Figure 3: High blood pressure is common and treatment is often absent or ineffective



All adults aged 16 and over, England

All adults aged 16 and over, England  
Using 'old' definition: Systolic bp 160mmHg or over, or Diastolic bp 95mmHg or over, or taking medicine prescribed for high blood pressure

Source: Health Survey for England 1998, Table 3.59



**Liver  
cirrhosis -  
starting to  
strike at  
younger  
ages**



**Cirrhosis, the end result of long term liver damage, has long been an important cause of death in this country. Over 4,000 people died from the disease in the last year of the 20th Century, two thirds of them before their 65th birthday.**

**Key Points**

/// Cirrhosis of the liver is an important cause of illness and death. In 2000 it killed more men than Parkinson's disease and more women than cancer of the cervix.

/// Large rises in death rates from chronic liver disease and cirrhosis have occurred in most age groups. In 45–54 year olds, there has been a greater than 4-fold increase amongst men since the early 1970s and a 3-fold increase in women. In 35–44 year olds, the rise has been even larger: an 8-fold increase in men and approaching a 7-fold increase in women.

/// The rise in deaths from cirrhosis amongst younger people is of particular concern where binge drinking patterns appear to be common. In 2000 cirrhosis accounted for nearly 500 deaths in men aged 25–44 years and nearly 300 deaths in women of this age group.

/// The rising trends in deaths from cirrhosis seen in England are unusual compared with our European Union neighbours. Most European Union countries are showing declining trends although generally at levels still higher than the current England rates.

/// There are many different causes of cirrhosis but it is often due to excess alcohol consumption. Another cause which is increasingly important is chronic viral hepatitis, especially hepatitis C. Alcohol consumption will increase the rate of progression of cirrhosis from whatever cause.

Trends in deaths certified as due to 'chronic liver disease and cirrhosis' have been examined. The analysis shows a striking pattern (figure 1 and table 1). In the last 30 years of the 20th Century deaths from liver cirrhosis steadily increased. Of even greater concern was the death toll in younger people. The largest increases were in people aged 35 to 44 years where the death rate went up 8-fold in men and almost 7-fold in women. Relatively large increases also occurred in younger adults: in 25–34 year-olds a 4-fold increase was seen over the 30 year period.

Signs of this major upturn in the incidence of chronic liver disease and cirrhosis are also reflected in hospital admissions statistics where numbers doubled between 1970 and the mid-1980s and have continued to rise steadily. By 1999, there were about 9,000 admissions with a main diagnosis of alcoholic liver disease and about 3,000 admissions with cirrhosis of the liver.

In 1970, England had a much lower death rate for liver cirrhosis – about seven times lower – than the European Union average (figure 2). Over the 30 years since then the death rate for other countries has fallen and amongst people aged under 65 years the rate for England is now approaching the European average. The latter is still falling, whilst the rate for England is rising.

There are many possible causes of liver cirrhosis – it can be present at birth as an inherited disease, it can be a rare side effect of certain medications, it can be caused by parasitic infections. However, the most common causes are sustained alcohol misuse or the late effects of infection with one of the hepatitis viruses (hepatitis B and C).

Although we cannot be completely certain, by far the most convincing explanation for the increase in death rates from chronic liver disease and liver cirrhosis reported here is higher levels of alcohol consumption.

Cirrhosis takes time to develop, alcohol damage to the liver builds up over many years until the liver starts to malfunction or fail. This is why the trend is so worrying. It suggests that patterns of increased drinking starting at earlier ages are beginning to have serious public health implications.

Statistics show that people's drinking habits have changed over the last 30 years. There was a large increase in the total amount of alcohol consumed in the early 1970s. Average consumption of pure alcohol per person aged over 15 years increased from around 6 litres per year in 1969 to around 9.5 litres per year in 1976, and since this time has remained relatively stable. The current increase in deaths from cirrhosis could in part be explained by longer term trends in consumption but possibly also by changing patterns of consumption.

Recent years have seen an increase in the number of women drinking above previously recommended levels set in terms of weekly consumption. The proportion of women drinking more than 14 units of alcohol a week was 15% in 1998, compared to 10% in 1988. The number of men drinking more than 21 units of alcohol a week has remained at around 27% over this time.

# 15

For both young men and women, however, there is evidence of substantial numbers drinking heavily and in a binge drinking pattern (see below).

Men reporting a maximum daily amount consumed in the last week of more than eight units of alcohol

**All ages 21%**  
**16–24 years 37%**

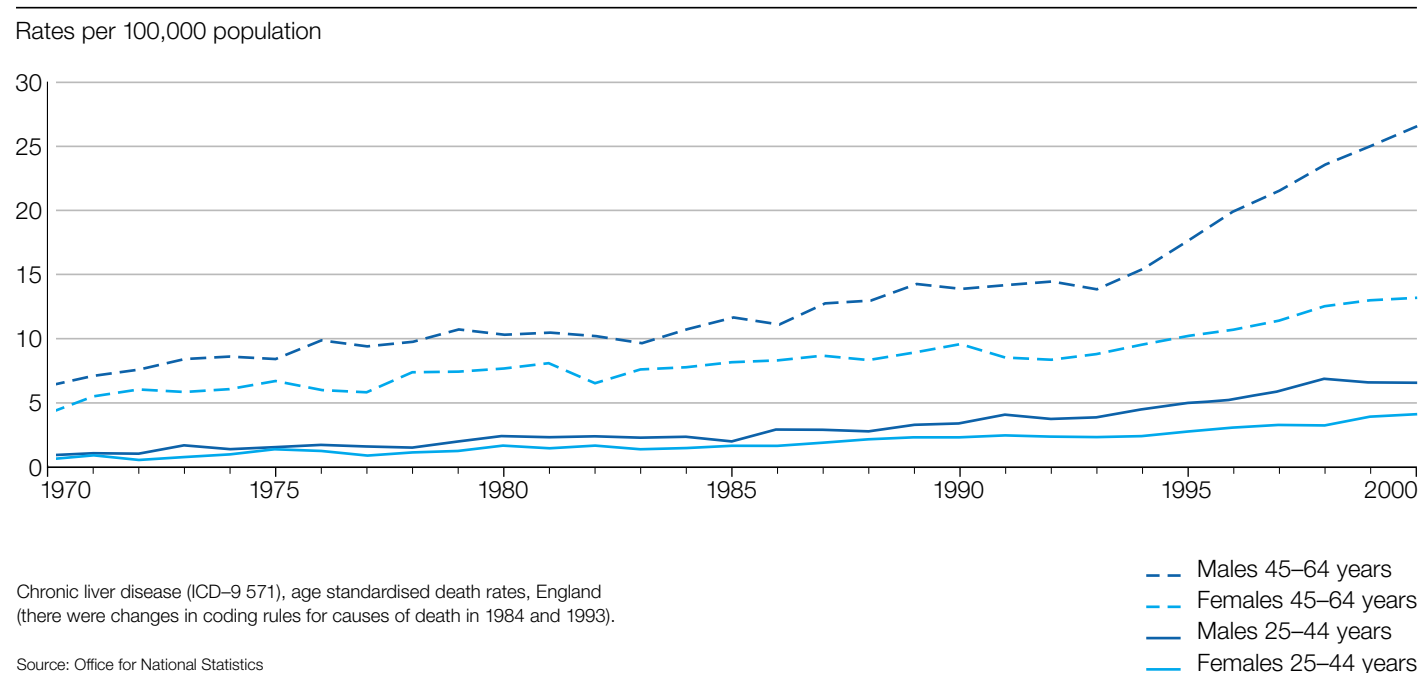
Women reporting a maximum daily amount consumed in the last week of more than six units of alcohol

**All ages 8%**  
**16–24 years 23%**

Source: General Household Survey 1998, Office for National Statistics

There is also a worrying trend for teenagers who drink alcohol to consume larger quantities. In 1998, average consumption among 11–15 year old drinkers was 9.9 units of alcohol a week, compared to 6.0 units a week in 1992. Two major European studies have recently provided comparative international data.

Figure 1: Rising trend in deaths from chronic liver disease



The European School Survey Project on Alcohol and other Drugs (ESPAD) focussing on 15–16 year olds showed that in the UK nearly 40% of young people had been drunk by the time they reached 13 years, and over one fifth of students had been intoxicated three times or more during the previous 30 days. And nearly one third of students reported having five or more drinks in a row (binge drinking) three times or more during the last 30 days. In each case the UK was amongst the worst of the 30 countries studied. The Health Behaviour in School-aged Children (HBSC) study report on drinking among young Europeans showed that the English figure for reporting of 'having been drunk' twice or more often was amongst the highest in Europe in 11, 13 and 15-year-olds, with over 50% reporting this in the oldest age group.

Alcohol is a major contributor to death, injury and illness – the Global Burden of Disease Study (supported by the World Health Organisation and World Bank) showed that amongst established market economies alcohol accounted for 10.3% of DALYs (Disability Adjusted Life Years) compared with 11.7% for tobacco and 2.3% for illicit drugs.

There are many factors which work together to influence how much someone drinks. The acceptability of alcohol and heavy drinking within a culture is important, and drinking has been shown to increase around times of stress and major life events.

Whilst 15% of men of the highest socio-economic group reported a maximum daily amount consumed in the last week of more than eight units of alcohol, more than 23% of unskilled male workers did so.

Occupation and family history can also be important factors in increasing the likelihood of a person drinking heavily. Young people with a family background of problem drinking are more likely to develop a drinking problem. The culture of young people over the last three decades has embraced various patterns and different types of alcoholic

drinks. Many young people now see alcohol as integral to their social life and frequently drink with the express purpose of becoming intoxicated. Recent years have, in particular, seen younger drinkers attracted to new ranges of 'designer' drinks with a relatively high alcohol content.

Often alcohol is used by young people as a means of expressing a reaction to their environment. However, the reasons why some people drink heavily over a long period of time are not clear. Heavy drinkers and binge drinkers both drink in ways which pose a risk to their health and may be described as hazardous drinkers.

This section of the report has highlighted an adverse trend in the occurrence of liver cirrhosis, possibly due to changes in drinking patterns.

The range of adverse consequences of alcohol misuse encompasses not only the effect on people's health, but also social damage such as crime and disorder, accident and injury, and social exclusion. Action to deal with this will therefore need to go beyond action on the part of the NHS. Any solution must focus on changing problematic patterns of drinking. Government, working together with the NHS, non-governmental organisations, the drinks industry and other stakeholders can:

- /// identify early the people who are problematic drinkers, and intervene to help them modify their drinking patterns;
- /// work to change attitudes to problem drinking to make it socially less acceptable;
- /// convey a consistent message on how to minimise the risk of using alcohol;
- /// provide treatment for those who suffer alcohol-related illness or who are chronically alcohol-dependent;
- /// act to limit the social damage, such as violence and disorder, created by alcohol misuse.

There is a clear need for a comprehensive approach, across and beyond government, to address the consequences of problematic drinking. The government has confirmed, in the *NHS Plan*, that its national strategy to tackle alcohol misuse will be being implemented by 2004. A consultative document is expected to be published ahead of the strategy being finalised.

Alcohol places an important burden on the workload of the NHS, but the scale of contact also offers substantial scope for intervention. A recent report from the Royal College of Physicians has identified an alcohol strategy for hospitals and made a series of recommendations regarding early detection, assessment and management of problems in this area. Aside from admissions directly due to alcohol misuse, the report identifies the opportunity to address the approximately 20% of patients admitted to hospital for illnesses unrelated to alcohol, who are consuming alcohol levels potentially hazardous to their health. An example of the impact on a general hospital in Bolton is presented to the right.

### Alcohol related problems amongst patients seen at Royal Bolton Hospital – an example of the impact on a local health service

/// During the month of October 2000 alone, 600 bed days were occupied on the gastroenterology wards by patients with alcohol-related liver and other problems; average length of stay was 18.2 days.

/// In all, 21% of acute psychiatric admissions over a recent six month period were alcohol-related.

/// In a recent one year period 649 patients were referred to the alcohol liaison nurse.

/// In a two month period in summer 2000, of 120 patients referred to an alcohol liaison nurse, 61% had signs of physical dependence and withdrawal symptoms.

Table 1: Number of deaths from chronic liver disease

Year	Men (age in years)				Women (age in years)			
	25–34	35–44	45–54	55–64	25–34	35–44	45–54	55–64
1970	16	33	124	215	7	22	86	154
1985	20	99	233	373	24	72	142	308
2000	68	402	805	721	60	228	405	364

Chronic liver disease (ICD-9 571), England (there were changes in coding rules for causes of death in 1984 and 1993).

Source: Office for National Statistics

Viral infection is also an important cause of cirrhosis. Hepatitis B and C cause inflammation of the liver and this can lead to cirrhosis. Hepatitis C is particularly likely to be associated with chronic disease. Chronic hepatitis C tends to develop slowly and new infections largely occur among injecting drug users. Many people are not aware they have the infection and may live out their normal lifespan. In around 20% however, persistent chronic hepatitis leads to the development of cirrhosis, usually after 20 or 30 years. It's therefore unlikely that viral hepatitis is the major determinant of the rise in cirrhosis deaths seen amongst young adults. The extent of chronic hepatitis C infection is hard to determine because of the level of undiagnosed infection, but is believed to be present in some 250,000 people in England. An increase in infection in the 1960s and 1970s, is likely to result in a rise in illness and death over the next 5 to 10 years.

A range of measures are being implemented to lower the risk of hepatitis and its subsequent progression to chronic liver disease which include: a strategy for hepatitis C; recommendations by the National Institute for Clinical Excellence (NICE) which has published guidance on the use of ribavirin and interferon alpha for hepatitis C; clinical guidelines on the management of hepatitis C have been published by the British Society of Gastroenterology (BSG) and the Royal College of Physicians; guidance on hepatitis C for those working with drug users has recently been published by the Department of Health.

#### Action recommended

/// Concerted and co-ordinated action is needed to reduce the trend towards higher levels of chronic liver disease and cirrhosis, particularly amongst younger people.

/// Public awareness needs to be raised that certain patterns of heavy drinking are potentially dangerous in producing cumulative damage to the liver.

/// The Health Development Agency should advise on the evidence for interventions to protect young people from the harmful consequences of alcohol misuse.

/// A comprehensive strategy is planned to reduce harm produced by alcohol.

/// An integrated approach should be developed for hepatitis C which brings together prevention, control and treatment.

/// All pregnant women should be offered screening for hepatitis B. Immunisation of babies born to infected mothers will largely protect these babies against becoming chronic carriers of the virus and the associated increased risk of developing cirrhosis.

/// The uptake of hepatitis B vaccine among injecting drug users should be improved.

#### Useful web resources

DH Statistical Bulletin  
'Statistics on alcohol: England, 1978 onwards':  
<http://www.doh.gov.uk/public/sb0113.htm>  
WHO Health For All database of international information:  
<http://www.who.dk/country/country.htm>  
Mortality, General Household Survey:  
<http://www.statistics.gov.uk>  
The British Liver Trust gives information on different forms of liver disease, and support services:  
<http://www.britishlivertrust.org.uk>  
National Institute for Clinical Excellence (NICE) and guidance/appraisal on the use of Ribavirin and Interferon Alpha for hepatitis C:  
<http://www.nice.org.uk>  
Guidance on hepatitis C for those working with drug users:  
<http://www.drugs.gov.uk>  
Clinical guidelines on the management of hepatitis C:  
<http://gut.bmjournals.com>  
<http://www.bsg.org.uk>

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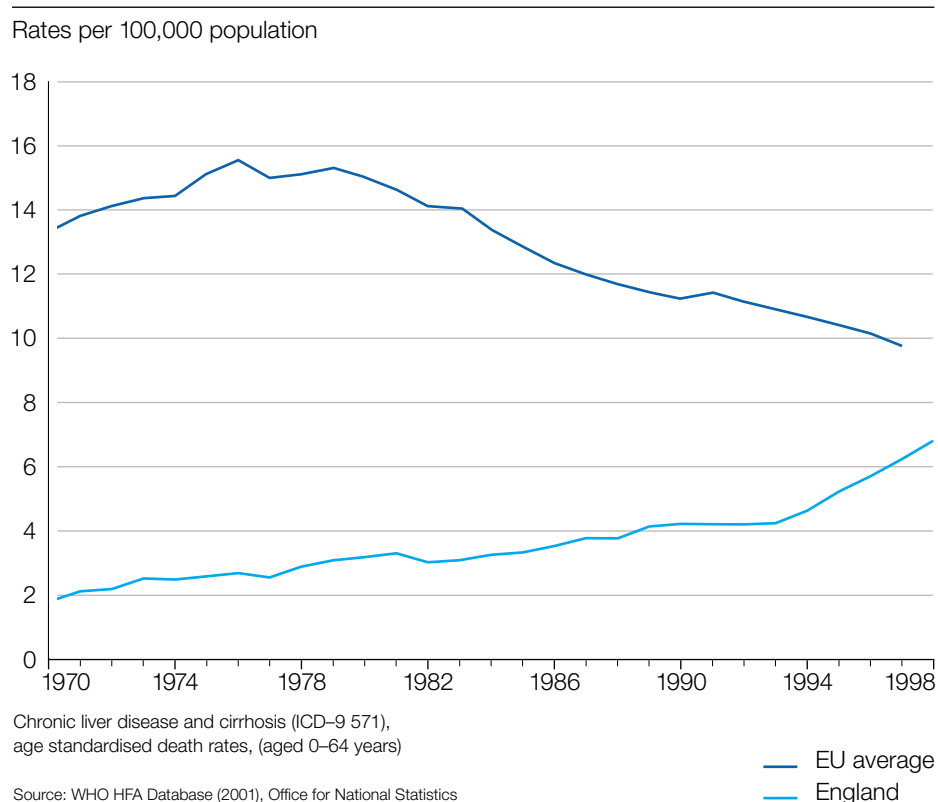
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Figure 2: Narrowing gap between England and European Union average death rates from chronic liver disease





**E Coli O157 -  
the learning from  
Lanarkshire**

In 1996 an outbreak of food poisoning in Lanarkshire, Scotland was responsible for the death of 17 people (according to the Fatal Accident Enquiry) and made 496 others very ill. The organism that caused the outbreak is called Verocytotoxin-producing *E. coli* O157 (VTEC).

#### Key points

/// The number of general outbreaks of *E. coli* O157 in England has risen from five in 1992 to 10 in 2000; the number of reported cases in 2000 was 850, the third highest annual total on record.

/// The disease can cause very serious illness, complications and death particularly in children and older people.

/// Only a small number of organisms appear necessary to cause illness.

/// The main reservoir of infection is cattle; 44% of herds and about 5% of cows were carrying *E. coli* O157 in England and Wales.

/// Infection is transmitted via indirect or direct contact with infected cattle (e.g. petting on farms by children), unpasteurised milk, cheese or other dairy products, undercooked meat and meat products (particularly mince and burgers) and person-to-person transmission following inadequate hygienic practices such as no handwashing (as seems to happen in outbreaks in children's nurseries).

*Escherichia coli* (*E. coli*) is a bacterium found naturally in the gut of people and animals. Most strains of the organism do not cause illness in people but some can release toxins called verocytotoxins. These can cause serious illness and even death. *E. coli* O157 is the most common verocytotoxin-producing *E. coli* in the United Kingdom.

Outbreaks of infection due to *E. coli* O157 were first reported in this country in the early 1980s. Between 1991 and 2000, there were over six thousand (6594) confirmed cases of *E. coli* O157 in England (Figure 1). There is a seasonal pattern in reporting of *E. coli* O157 infection with generally an increase in the months of August and September.

The majority of people who fall ill are not part of large outbreaks of food poisoning. However, the number of general outbreaks of *E. coli* O157 in England has increased from five in 1992 to 10 in 2000. With the exception of the Lanarkshire outbreak the largest outbreak to date was in North Cumbria, England in which 114 people were made ill, 28 of them hospitalised.

The major route for the form of infection which people catch is via human contact directly or indirectly with cattle faeces: a recent study in England and Wales found that 44% of herds and 5% of cows are affected.

Sheep and goats can also act as reservoirs of infection, for example 20 people fell ill with *E. coli* O157 at a scout camp in Aberdeenshire in May of last year. The camp was held on land previously used for grazing sheep and the ground was heavily contaminated with sheep faeces. The subsequent investigation of the outbreak revealed that *E. coli* O157 was isolated from sheep faeces, lying water, soil, wellington boots and debris from a climbing frame on the site. The investigation also showed that camp attendees who did not use cutlery or did not wash their hands were 7–9 times more likely to be ill with *E. coli* O157 than those who did.

The highest risk is from fresh animal faeces. People can be infected in a number of ways: for example, some children have caught *E. coli* O157 after farm visits during which they 'petted' animals; some people have become infected through contamination of the environment by infected cattle faeces (e.g. contaminated water, gates, fence-posts, soil or vegetables). It is also possible for the organism to be spread from an infected person to others by inadequate hand-washing after using the toilet. This is thought to be the route of infection in the

nurseries in which children were infected with *E. coli* O157 (one nursery in 2000 and three in 2001 so far). Most illness could be prevented by basic good hygiene – particularly by simple handwashing.

*E. coli* O157 is an unusual bacterium in that a relatively small number of organisms are able to cause infection. With many bacteria, it is necessary for most people to swallow thousands of organisms before symptoms occur. In the case of *E. coli* O157 fewer than 100 organisms can produce illness.

*E. coli* O157 is not a trivial problem. It is important for people to be aware of the risks and to try to avoid catching it. In some cases it can cause life-threatening colitis (inflammation and severe bleeding of the bowel) and in others it can cause a form of kidney disease called haemolytic uraemic syndrome as well as a blood disorder called thrombotic thrombocytopenic purpura. Both complications can kill or produce long-term damage (e.g. kidney failure), especially in the very young and the elderly (see right).

# 19

#### Recent *E. coli* O157 outbreaks

*E. coli* O157 outbreaks are not declining. Contaminated food remains an important source of outbreaks as does direct animal contact (Figure 2). Reporting up to July 2001 indicates that there have been nine general outbreaks (five of which have yet to be finally confirmed) in the first part of this year in England and Wales. This compares with ten general outbreaks in the whole of 2000.

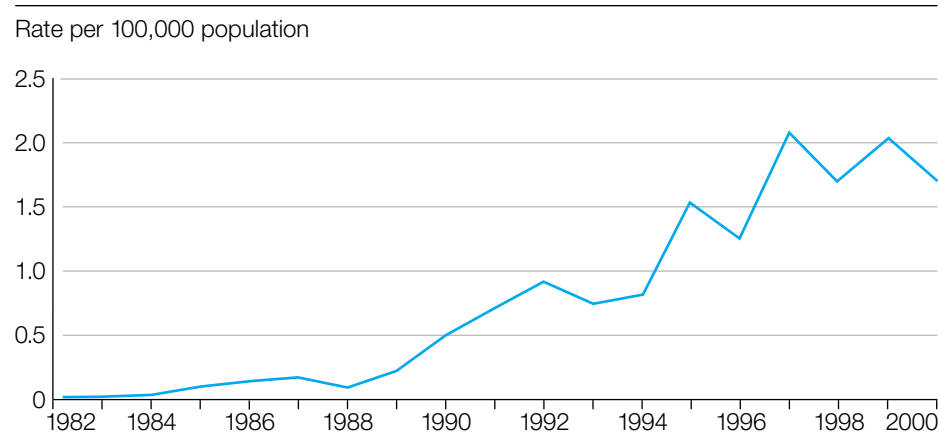
#### Of the confirmed reports:

/// There have been three outbreaks in nurseries already this year compared with only one in the whole of last year.

/// An elderly lady died following an outbreak in East Riding. The lady was one of four people reported ill in the outbreak.

/// An outbreak in a nursery in Suffolk caused 22 people to become ill, of these 10 were admitted to hospital of whom two infants had clinically confirmed haemolytic uraemic syndrome.

Figure 1: Trend in laboratory confirmed cases of *E. coli* O157 in England 1982–2000



Source: Public Health Laboratory Service

# 20

It is food that has been responsible for some of the more serious outbreaks. Particularly high risk foodstuffs are unpasteurised milk, unpasteurised cheese or similar dairy products or under-cooked meat (especially mince or burgers).

In 1991 an outbreak of *E. coli* O157 infection occurring in the Preston area was found to be associated with the consumption of beefburgers from one particular restaurant in a chain. Following this outbreak, meetings were conducted between the Department of Health and representatives of the leading burger restaurant chains in the UK. Subsequently the larger producers have made major changes in their cooking and handling procedures and it is a promising sign that since then there have been no further outbreaks in the UK associated with the consumption of burgers from the major chains. It can be seen that this sector of the food industry has taken the safety of the consumer very seriously, to the extent that restaurants have been retooled and cooking regimes have been revised. It shows what can be achieved by concerted efforts. The data from outbreak investigations demonstrate that food-borne outbreaks are usually associated with smaller food producers, particularly in the dairy sector, or through cross contamination at the retail or catering level.

The Pennington report into the Lanarkshire outbreak identified the way forward. A major focus has now been given to eradicating this disease by the Food Standards Agency /Scottish Executive (FSA/SE) Task Force on *E. coli* O157. Their report, published in June 2001, adds to the lessons of Lanarkshire and subsequent outbreaks.

## Action recommended

/// The public needs to be better informed about the risks of *E. coli* O157 from contact with contaminated food, farm animals and contaminated environments (water, soiled shoes, beaches, paddling pools) and of how to avoid infection. The recommendation from the FSA/SE Task Force are to:

– always wash hands before eating, drinking or smoking i.e. use soap, clean towels and preferably, warm running water;

– ensure adequate supervision of children, particularly those under 5 years of age during farm visits;

– store, handle and cook food correctly.

/// Renewed attention must be given to full and rigorous implementation of known control measures throughout the food industry (most recently spelled out comprehensively in the Advisory Committee on Microbiological Safety of Food and Pennington Reports) covering:

– hygiene practices prior to and during slaughter of food animals;

– the adoption of a Hazard Analysis and Critical Control Point system by all food businesses;

– the complete separation of raw meat from unwrapped cooked meat/meat products and other ready to eat foods at all stages prior to consumption;

– the training requirements for all food handlers particularly those working with vulnerable groups or in sensitive areas such as nursing homes.

/// The Food Standards Agency should aim to reduce the number of cases of food-borne *E. coli* O157 through its foodborne disease target and strategy.

/// Awareness of health professionals needs to be raised on approaches to treatment (spelled out comprehensively in the FSA/SE Task Force Report):

– doctors to consider *E. coli* O157 in their differential diagnosis of disease in patients with bloody diarrhoea;

– doctors to be aware that prescribing antibiotics for *E. coli* O157 may increase the risk of severe kidney disease;

– all diarrhoeal samples to be tested for *E. coli* O157 in accordance with PHLS guidelines.

/// Farmers and farm workers need to be more aware of the risks of *E. coli* O157 and take action to prevent the spread of infection. The FSA/SE Task Force recommended:

– keeping farm animals off the fields for the preceding 3 weeks prior to recreational use of the fields;

– keeping farm animals off fields during recreational use;

– removing any visible droppings, ideally at the beginning of the 3 week period;

– mowing the grass, keeping it short, and removing the clippings before the fields are used for recreation.

/// Other recommendations for farmers and farm workers include:

– good animal husbandry of cattle and sheep;

– providing warnings to the public of the risks on open farms;

– providing adequate handwashing facilities on open farms;

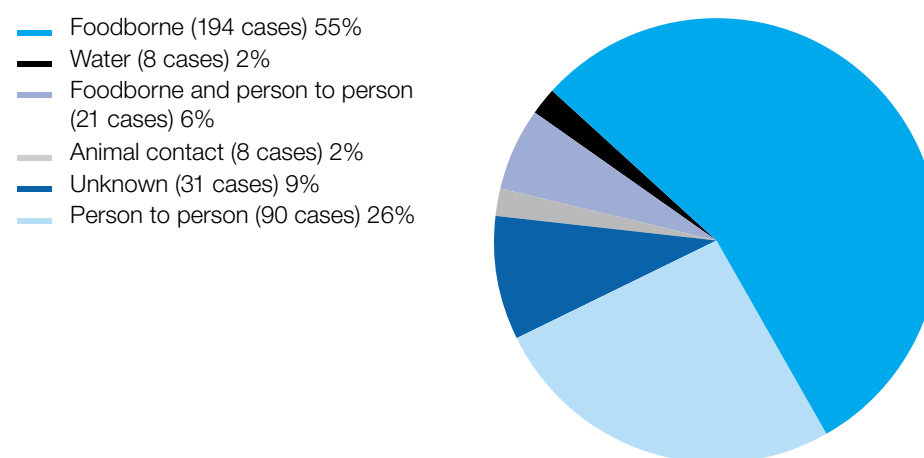
– taking care in the use of untreated slurry or manure.

/// For nurseries, the FSA/SE Task Force recommends:

– consideration should be given to allow for the exclusion of a child on health risk grounds from nursery schools; and exclusion of key contacts from nurseries was also recommended to be part of the licensing conditions for nurseries;

– the importance of handwashing and personal hygiene should be promoted regularly.

Figure 2: Mode of transmission in general outbreaks of *E. coli* O157 infection in England, 1998–2000



Source: Public Health Laboratory Service  
[reported to Communicable Disease Surveillance Centre, England  
1998–2000 (01/01/98–11/08/00)]

**Useful web resources**

Department of Health:  
<http://www.doh.gov.uk>  
 CMO's Update 26 (seasonal increase) and  
 CMO's Update 27 (hazard of treating with  
 antibiotics):  
<http://www.doh.gov.uk/cmo/cmo1.htm>  
 Public Health Laboratory Service:  
<http://www.phls.co.uk>  
 E. coli O157 fact-sheet:  
<http://www.phls.co.uk/facts/index.htm>  
 Communicable Disease Reports weekly  
 and monthly:  
<http://www.phls.co.uk/publications/index.htm>  
 Details on haemolytic uraemic syndrome:  
 NHS Direct:  
<http://www.nhsdirect.nhs.uk>  
 The Caf Directory Online:  
<http://www.cafamily.org.uk/Direct/h17.html>  
 Food Standards Agency:  
<http://www.foodstandards.gov.uk>  
 (See Food Safety Information Bulletins  
 and Press Releases)  
 Report of the Microbiological Safety  
 of Food Funders Group:  
[http://www.foodstandards.gov.uk/pdf\\_files/vtec.pdf](http://www.foodstandards.gov.uk/pdf_files/vtec.pdf)

Department for Environment, Food and  
 Rural Affairs:  
<http://www.defra.gov.uk>  
 Publication of the 1999 UK Zoonoses Report:  
<http://www.defra.gov.uk/animalh/diseases/default.htm>  
 Health and Safety Executive:  
<http://www.hse.gov.uk>  
 HSE Agriculture information sheet on  
 'Avoiding ill-health at open farms, advice to  
 farmers (with a supplement for teachers)':  
<http://www.hse.gov.uk/pubns/agindex.htm>  
 Scottish Centre for Infection and  
 Environmental Health:  
<http://www.show.scot.nhs.uk/scieh/main.html>  
 Haemolytic Uraemic Syndrome Help  
 (H.U.S.H) Charity:  
<http://www.ecoli-uk.co.uk>  
 Heather Preen Trust:  
<http://www.heatherpreentrust.org>

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 Report on verocytotoxin-producing  
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 HMSO 1995.  
 England and Wales Prevalence Study 1999:  
 A study of faecal carriage of E. coli O157  
 in cattle on randomly selected farms – June  
 to December' reported at the Open Forum  
 on Zoonotic Infections in Livestock and the  
 Risk to Public Health: VTEC O157  
 Edinburgh Conference 2000.

A close-up profile of a person's face, showing their eye, ear, and forehead. The person has dark hair and is looking slightly to the left. The text "Epilepsy - death in the shadows" is overlaid on the forehead area in a white, sans-serif font.

Epilepsy -  
death in the  
shadows



Every year in England almost 800 people die during or shortly after an epileptic seizure or fit (Figure 1). Whilst an estimated one in 130 people – around 380,000 people – have epilepsy.

#### Key points

/// Epilepsy is the commonest serious chronic disease of the nervous system affecting approximately 380,000 people in England.

/// The characteristic sign of epilepsy is a sudden, unexpected seizure or fit: each year almost 800 people in England die during or soon after a seizure.

/// Young adults with epilepsy may die suddenly often in their sleep and no other cause of death is established.

/// Epilepsy can have profound adverse physical, psychological and social implications for the individuals who suffer from it.

/// Since 1953, five major reports have made recommendations to improve services for people with epilepsy but they remain patchy and fragmented.

/// People with epilepsy are at triple jeopardy: they suffer social stigma because of their disease, understanding of the illness amongst health professionals is not high and the problem is not addressed by health services with the same commitment as is given to other chronic diseases like diabetes mellitus.

Epilepsy is a major global health problem with an estimated 50 million people worldwide suffering from the disease.

Many people with epilepsy suffer particular hardship: they are at risk physically from unexpected seizures, they have psychological and emotional problems, they experience negative or hostile attitudes from fellow citizens, they may have problems at work or find difficulty getting a job, they may not gain access to health services that would help them.

Epilepsy is the most common serious chronic disease of the nervous system. It is characterised by seizures or fits which occur when there is a burst of abnormal electrical activity in parts of the brain. The underlying cause of epilepsy is never found in many people – without effective treatment, they just continue to experience seizures and other effects of the disease without knowing why. In other cases there may be a specific cause – for example, birth injury, meningitis, head injury, a stroke, genetic disorders or tumours.

Of the people each year who die shortly after an epileptic seizure many do so as a result of complications of seizures, such as from drowning, a burn or an accident. Some die suddenly and no other cause of death is established – the so called 'sudden unexpected death in epilepsy' (or SUDEP). Investigations have shown that many such people die alone or in their sleep. Young adults and those with chronic or severe epilepsy are considered to be most at high risk: over half the SUDEP deaths are aged between 20 and 45 years (Figure 2).

Services for people with epilepsy fall short of what might be expected in modern chronic disease management. In particular:

/// up to 20% of patients may be misdiagnosed and receive inappropriate and unnecessary treatment.

/// approximately 30% of patients with active epilepsy are not receiving treatment from a specialist.

/// one in 12 of people with epilepsy in the United Kingdom are not referred to a specialist at all.

/// on average it takes six months to a year from the onset of a first seizure to definitive diagnosis and treatment.

/// epilepsy in pregnancy is managed to a variable standard.

/// standards of care generally are fragmented and patchy.

Society's attitudes mean that many people with epilepsy will often suffer stigma, feel a degree of shame and want to conceal their problem from others. Remove the gloss of civilisation, and greater tolerance and 21st Century attitudes to epilepsy are not far removed from those of a century ago. Although the range of treatments available to help people with epilepsy has advanced enormously over the last fifty years, it remains an unfashionable area of clinical practice, which has not attracted the same high profile and professional interest as other chronic diseases such as diabetes mellitus. Nor have service planners or policy-makers been moved by the plight of people with epilepsy. Since 1953 there have been five government reports (in 1953, 1956, 1969, 1986 and 1999) which have drawn much the same conclusions about the fragmented

and poorly co-ordinated service provision, yet there has been no major change. This suggests a serious failure to act and underlines the ignorance and apathy towards the needs of people with this common disorder.

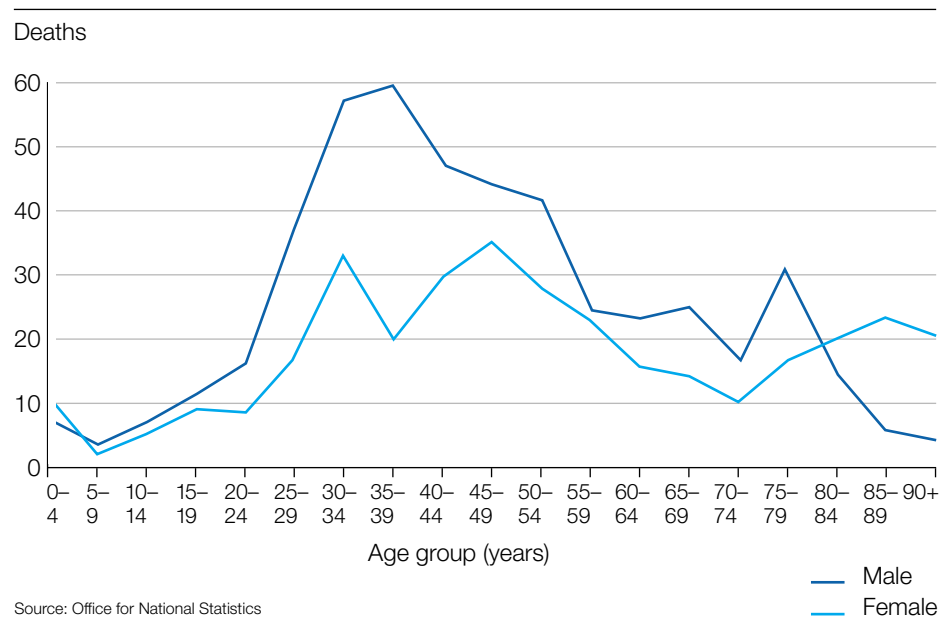
Little wonder that epilepsy has been described as a 'disease in the shadows'.

This can be put right. Much more could be done to improve health care and quality of life for people with epilepsy including raising professional awareness, designing a proper framework of care, ensuring that standards of local services are higher and more consistent and that special groups of people with epilepsy (e.g. young people and pregnant women) have their specific needs addressed.

Epilepsy is in the forefront of this year's World Health Day and Report on Mental and Brain Diseases. Also March 2001 saw the launch of the European White Paper on Epilepsy by the European Parliament. These are welcome developments.



Figure 1: Deaths from epilepsy in England during 1999



Source: Office for National Statistics

The National Service Framework (NSF) for Long Term Health Conditions announced in February 2001 will help to address many of these difficulties. It will have a particular focus on the needs of people with neurological conditions and brain and spinal injury. The NSF will ensure that services are better organised and more focussed towards the needs of people with long term health conditions such as epilepsy. It is due to be implemented from 2005 so in the meantime the Modernisation Agency should be asked to provide advice on the redesign of the pattern of care for people with epilepsy to ensure that they are diagnosed and referred quickly, receive an accurate diagnosis, have their needs addressed and obtain effective treatment and enjoy good continuity of care and support in the management of what may be a life-long illness.

### Action recommended

/// Genuine commitment is needed to put right serious and long-standing weaknesses in the standard of care for people with the commonest serious neurological disorder in this country – epilepsy. This should be addressed through the National Service Framework for Long Term Health Conditions.

/// The new Modernisation Agency should be asked to provide advice on the redesign of the pattern of care for people with epilepsy to ensure that they are diagnosed and referred quickly, receive an accurate diagnosis, have their needs addressed and obtain effective treatment and enjoy good continuity of care and support in the management of what may be a life-long illness. This should be made available to those preparing the National Service Framework.

/// Much greater public and professional awareness is needed about epilepsy – this will not just help to break down ignorance and negative attitudes towards the disease but galvanise greater commitment to helping its sufferers.

/// The number of people who die as a result of epilepsy should be reduced.

/// Local maternity services should examine the quality of care they offer to pregnant women with epilepsy to ensure a service, which is in line with evidence-based best practice.

/// Royal Colleges, other professional bodies, National Workforce Development Board, Workforce Numbers Advisory Board, Caregroup Workforce Teams and 24 Workforce Development confederations established at sub-regional level should ensure that sufficient expertise in epilepsy is contained in general and specialist training programmes.

/// Within three months of completion of the National Sentinel Audit of Sudden Death in Epilepsy an action plan should be in place to cut the level of preventable deaths from this cause.

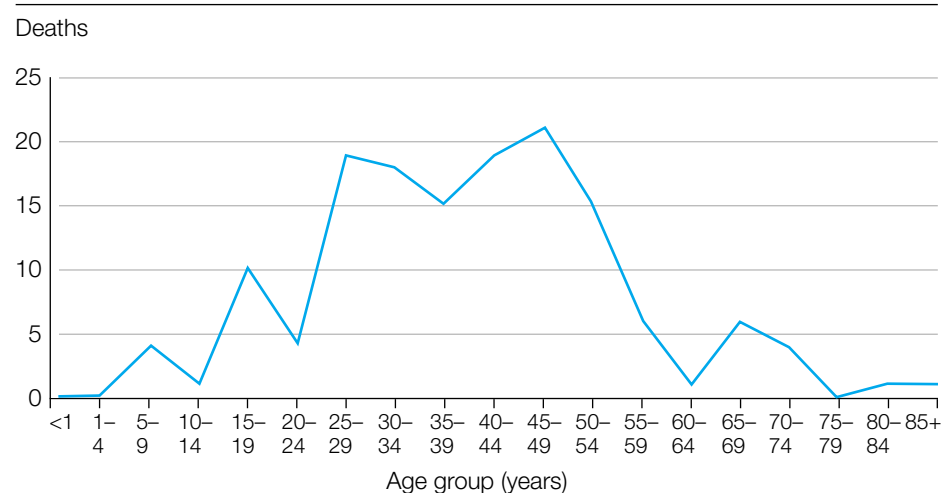
### Useful web resources

- Epilepsy Bereaved:  
<http://ds.dial.pipex.com/epilepsybereaved/eb/ebhome.htm>
- British Epilepsy Association:  
<http://www.epilepsy.org.uk>
- National Society for Epilepsy:  
<http://www.epilepsynse.org.uk>
- Mortality data:  
<http://www.statistics.gov.uk>
- Joint Epilepsy Council for United Kingdom and Ireland:  
<http://www.epilepsy.ie/site%20links/jec.htm>

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Figure 2: Sudden unexpected deaths amongst people with epilepsy in England and Wales over the three year period 1996–1998



Deaths with a mention of 'sudden death in epilepsy' (ICD-9 345)  
 England and Wales, 1996–1998

Source: Office for National Statistics



