

Reducing the burden: tackling hypertension

B

This section of the toolkit looks at ways of reducing the burden of hypertension through prevention and control. It considers the broad principles involved and some of the evidence supporting particular approaches.

There are two basic elements to any strategy to tackle hypertension and reduce its burden:

- preventing it developing in the first place by reducing the modifiable risk factors, and
- detecting, treating and controlling hypertension in those who already have the condition.

Preventing hypertension

There are two broad approaches to preventing hypertension:

- the whole population approach, and
- the 'at-risk' individual or group approach.

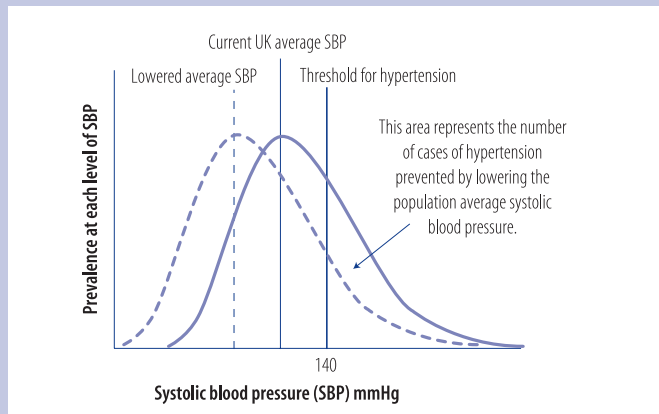
These two approaches are not mutually exclusive, and it has been argued that both are necessary in any comprehensive strategy.¹

The whole population approach

The aim of this approach is to prevent hypertension by lowering average blood pressure by a relatively small amount across a whole population. It has been estimated that a reduction as small as 2mmHg in the average adult's systolic blood pressure could save more than 14,000 UK lives per year.²

By encouraging enough people to change their lifestyles sufficiently to lower their blood pressure, large numbers are shifted to below the threshold for hypertension (140/90mmHg) (see Figure 5). In other words, many cases of hypertension are prevented.

Figure 5 How reducing the population average blood pressure can prevent hypertension



Source: Adapted from Rose, 1992¹

The main lifestyle changes required to achieve this are:

- reduce the population average intake of salt to 6g per day as recommended by the Scientific Advisory Committee on Nutrition³ (see Tool H9: *Salt and hypertension*, on page 87)
- increase potassium intake (by increasing fruit and vegetable intake to at least five portions a day – excluding potatoes)
- control weight (to achieve a 10% weight loss in overweight/obese people)
- increase habitual physical activity (to a total of at least 30 minutes a day of at least moderate intensity activity, on five or more days of the week for adults, and at least 60 minutes each day for children)
- keep alcohol intake within recommended benchmark limits for either sex.

Advantages of this approach are:

- Large numbers of people can benefit.
- The lifestyle changes required are modest and achievable.
- Many different sectors and agencies can play a part.
- It may be relatively low cost.

Barriers include:

- People are often resistant to changes in lifestyle.
- The main determinants are often beyond an individual's scope for control. (For example, as 65%-70% of salt intake is from processed foods,³ individuals will find it difficult to make significant reductions in salt unless there are across-the-board reductions in salt content.)
- The process may be very long-term.

The 'at-risk' individual or group approach

This approach focuses on people known to be at higher risk of developing hypertension than the general population. The risk factors described on page 15 can be used to identify individuals and groups in this category. For example, efforts could be focused on older people, people who are obese, or those from particular ethnic communities such as black Caribbean or black African people.

Advantages of this approach are:

- Resources can be focused on those most likely to benefit.

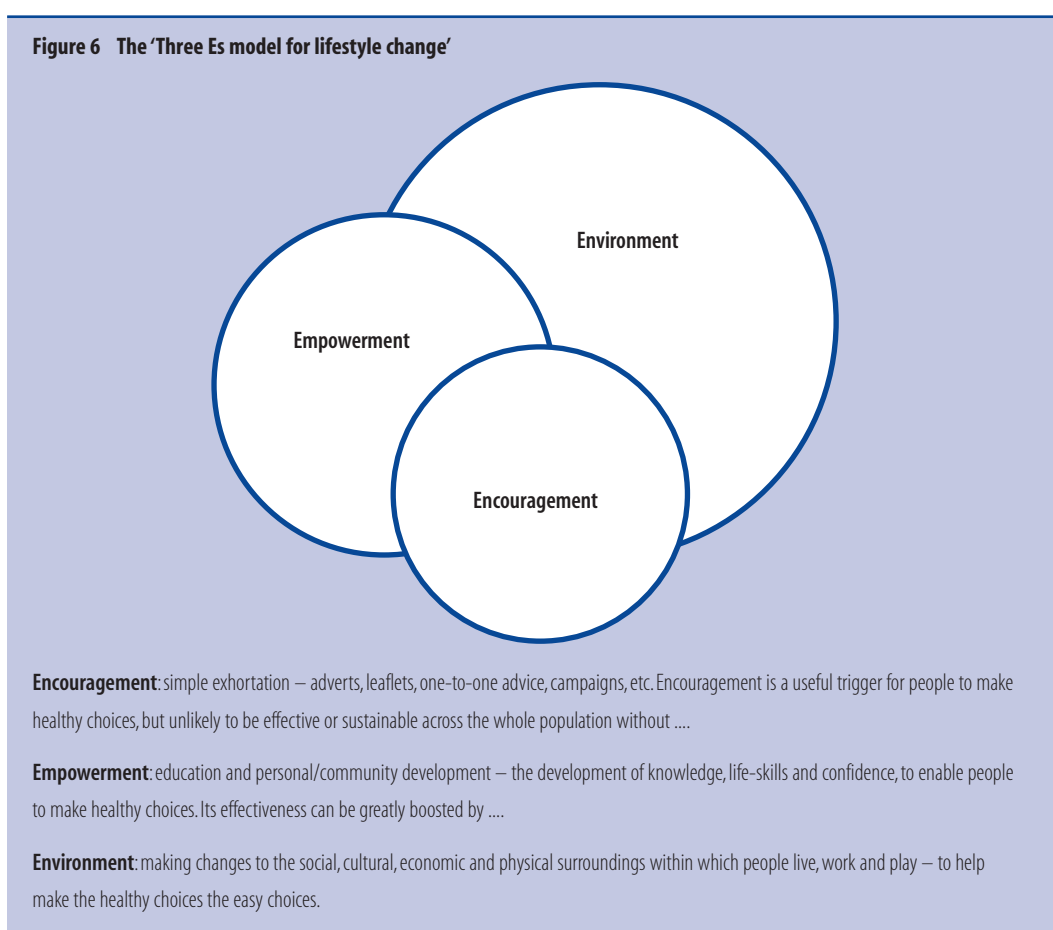
- People who are at risk are usually more motivated to make lifestyle changes.
- It is easier to attribute effects to efforts.
- The evidence of effectiveness is stronger than for the whole population approach.
- Performance management and remuneration systems can be set to encourage its adoption.

Barriers include:

- One-to-one or group work is usually more resource-intensive.
- There may be an element of ‘victim-blaming’ – placing all the responsibility on the ‘at-risk’ individual.

Achieving lifestyle change

To help people change their lifestyles and health behaviours it is important to recognise the part played by sociocultural influences and environments. This can be demonstrated by the ‘Three Es model for lifestyle change’ (see Figure 6).



Source: Adapted from Maryon-Davis, 2003⁴

For hypertension prevention and control, this model can help to identify the many determinants which influence people’s lifestyle choices. For example, with regard to reducing salt consumption: *encouragement* might comprise an awareness-raising campaign; *empowerment* might be through easy-to-understand food labelling; and *environment* might be, for example, through gradually reducing the salt content of all foods and the provision of low-salt choices in supermarkets and catering outlets.

B

Reducing
the burden:
tackling
hypertension

Evidence for prevention

There is an increasing body of evidence to support various lifestyle changes to prevent hypertension, either in 'at-risk' groups or the wider population. Useful summaries can be found in the *Nutrition and Food Poverty* toolkit⁵ and the *Let's Get Moving*⁶ physical activity toolkit.

A number of large-scale trials of lifestyle interventions in whole populations have led to significant reductions in average blood pressure.⁷⁻¹⁰ However, in general, the quality of the evidence concerning prevention appears less robust than the evidence for treatment and control. This is mainly because designing and carrying out randomised controlled trials (RCTs) of lifestyle interventions in healthy populations over extended periods of time is difficult – it is far easier to do an RCT of a new antihypertensive drug in a sample of patients. Instead, much of the evidence for prevention comes from observational studies rather than trials. However, it is important to remember that a lack of strong trial evidence of effectiveness does not necessarily mean evidence of ineffectiveness – it simply means that more research is needed and better methods for evaluating interventions need to be developed. In its recent public health white paper, *Choosing Health – Making Healthy Choices Easier*, the Department of Health (England) has acknowledged the lack of investment in public health research and has pledged to increase support for investigations into the effectiveness (and cost-effectiveness) of different preventive strategies.¹¹

Detecting and controlling hypertension

Benefits

There is substantial evidence that lowering blood pressure in people with hypertension is associated with a reduction in cardiovascular risk. For example, according to a recent large-scale meta-analysis of observational prospective studies,¹² among patients aged 40 to 69 years with hypertension, a 20mmHg lower systolic blood pressure is associated with:

- less than half the risk of dying from a stroke, and
- half the risk of dying from coronary heart disease.

Smaller differences in blood pressure are associated with smaller differences in death rates from stroke and coronary heart disease (see Table 4). The difference in risk varies with age, diminishing in older people, particularly with regard to stroke.

Difference in systolic blood pressure from coronary heart disease	% difference in mortality from stroke	% difference in mortality
-20mmHg	-50%	->50%
-10mmHg	-30%	-40%
-2mmHg	-7%	-10%

Source: Prospective Studies Collaboration, 2002¹²

These data are observational only – they do not represent the results of intervention trials. However, a large meta-analysis of evidence from trials involving antihypertensive drugs has demonstrated significant reductions in overall cardiovascular risk with reduced blood pressure.¹³

Risk assessment

Clinical decisions about whether and how to treat hypertension in individuals should be based on both their blood pressure level and their overall cardiovascular risk – not on blood pressure alone. Some of the practical aspects of risk assessment are covered in section C:

Developing a local hypertension strategy.

Methods of blood pressure control

There are two main types of therapeutic intervention to control blood pressure in people with hypertension:

- lifestyle interventions including advice and support on, for example, diet, weight control and promoting physical activity, and
- drug treatment for hypertension.

Lifestyle interventions for people with hypertension

A review by NICE of randomised controlled trials of lifestyle interventions for people with hypertension has shown significant reductions in systolic and diastolic blood pressure as a result of a healthy, weight-reducing diet, regular aerobic physical activity, reduced sodium and alcohol intake, and relaxation therapies¹⁴ (see Table 5).

Lifestyle intervention	Average reduction in systolic and diastolic blood pressure	Percentage who achieve a reduction in systolic blood pressure of 10mmHg or more
Healthy, weight-reducing diet	5-6mmHg	40%
Regular aerobic exercise	2-3mmHg	30%
Combined diet and exercise	4-5mmHg	25%
Relaxation techniques	3-4mmHg	33%
Alcohol within recommended limits	3-4mmHg	30%
Salt reduction to a maximum of 6g per day	2-3mmHg	25%

Source: Management of Hypertension in Adults in Primary Care (NICE guideline), 2004¹⁴

There is some evidence that using reduced-sodium salt as a substitute in cooking and at the table can be effective in lowering raised blood pressure.¹⁴ However, reduced-sodium salt is not suitable for everyone and a reduction in salt added to food is the preferred general approach.

A meta-analysis of weight reduction programmes has shown that 1kg weight loss leads to a 1mmHg reduction in systolic blood pressure. This effect is for people of all ages, at all levels of blood pressure, and whatever their initial body mass index.¹⁵

According to the NICE guideline,¹⁴ lifestyle advice (ie advice on smoking cessation, healthy eating, restricting sodium intake, regular exercise and avoiding excessive alcohol) should be an initial aspect of care for patients with hypertension. In some cases changes in lifestyle may remove or delay the need to use drugs, or help to reduce or stop drug therapy.

Drug treatment for hypertension

National and international guidelines provide clinical protocols for instituting drug therapy to control hypertension. In the UK, two sets of national clinical guidelines were published in 2004:

- British Hypertension Society guidelines,¹⁶ and
- NICE guidelines.¹⁴

B

Reducing the burden: tackling hypertension

Both guidelines offer similar advice regarding thresholds for drug treatment but differ to some extent with regard to the order in which particular types of drug should be used. Both guidelines advise that antihypertensive medication should be offered to patients with:

- persistent high blood pressure of 160/100mmHg or above, or persistent isolated systolic hypertension (systolic blood pressure 160mmHg or above)
- raised cardiovascular risk (10-year risk of a cardiovascular event of 20% or above, or existing cardiovascular disease, or target-organ damage) with persistent blood pressure of more than 140/90mmHg.

NICE recommends that drug therapy, adding different drugs if necessary, should aim to achieve a target of 140/90mmHg and should be given until further treatment is inappropriate or declined. Appropriate guidance and materials about the benefits of drugs, and about the unwanted side-effects sometimes experienced, should be provided in order to help patients make informed choices.

According to NICE, in trials aiming to reduce blood pressure to below 140/90 mmHg using stepped medication regimens, between one-half and three-quarters of patients achieved target blood pressure.

The North of England Hypertension Guideline Development Group, which developed the NICE guideline for hypertension, estimated that, in England alone, the cost of drugs used for lowering blood pressure is £840 million per year – almost 15% of the total annual cost of drugs in primary care.¹⁷ This is compounded by poor adherence of patients to prescribed drug treatments, as discussed below. There is therefore a strong case for bringing about lifestyle changes across the population to prevent the occurrence of hypertension in the first place.

Access and adherence to treatment

Although there are effective interventions to treat and control hypertension, many people with the disorder go untreated or receive inadequate treatment. In both England¹⁸ and Scotland¹⁹ it is estimated that almost two-thirds of men and over half of women with hypertension are untreated. The proportion of those whose hypertension is untreated tends to be higher in older people and those in intermediate or manual socioeconomic groups. (Comparable figures for Wales and Northern Ireland are not available.)

These low treatment rates are due to the condition not being detected and diagnosed, partly because of lack of access to a primary care professional, and partly due to insufficient attention being given to measurement of blood pressure when a patient does see a GP or nurse. The National Service Frameworks for coronary heart disease and for older people (in England and Wales), and the GMS contract, contain targets and incentives for addressing these issues. (See Tools H2 and H11 for further information.)

Of those patients who are detected, diagnosed and treated, two out of three still have hypertension. In the UK only 10% of individuals with hypertension are controlled to the target of 140/90 mmHg.²⁰ This is due to poor understanding by practitioners of effective treatment regimens for lowering blood pressure, and to poor patient adherence (not taking the medication as prescribed). The currently available clinical guidelines (from NICE,¹⁴ the British Hypertension Society¹⁶ and SIGN²³) address treatment regimens in different ways.

It is estimated that between 50% and 80% of patients with hypertension do not take all of their prescribed medication.^{21,22} According to the Health Survey for England, the proportion of those who are treated but whose blood pressure remains inadequately controlled tends to be higher in older people, women, and people in intermediate or routine/manual socioeconomic groups.¹⁸

Understanding patients' reasons for not taking medications, and implementing effective strategies to overcome barriers to taking prescribed medication, are therefore crucial aspects in

the management of hypertension. According to the North of England Hypertension Guideline Development Group,¹⁷ adherence to prescribed drug treatments can be improved by improving patient education, providing counselling, and involving families and other members of the healthcare team. Greater adherence may also be achieved if healthcare professionals seek to explore and discuss a patient's reasons for not taking medication and any reservations they may have. (For a fuller discussion on this, see page 50 in section C: *Developing a local hypertension strategy*.)



The challenge is, therefore, to implement effective prevention and treatment strategies for hypertension at local level. Section C of this toolkit, *Developing a local hypertension strategy*, gives practical guidance on how to do this.

B

Reducing
the burden:
tackling
hypertension

References

- 1 Rose G. 1992. *The Strategy of Preventive Medicine*. Oxford: Oxford University Press.
- 2 Critchley J, Capewell S. 2003. Substantial potential for reductions in CHD mortality in the UK through changes in risk factor levels. *Journal of Epidemiology and Community Health*; 57: 243-47.
- 3 Scientific Advisory Committee on Nutrition. 2003. *Salt and Health*. London: Department of Health.
- 4 Maryon-Davis A. 2003. Oral evidence given to the House of Commons Select Committee on Health. *Minutes of Evidence*. 6 November 2003, HC 23II, Q519. London: The Stationery Office.
- 5 Press V, on behalf of the National Heart Forum, Faculty of Public Health, Government Office for the North West, Government Office for the West Midlands, and the West Midlands Public Health Observatory. 2004. *Nutrition and Food Poverty: A Toolkit for Those Involved in Developing or Implementing a Local Nutrition and Food Poverty Strategy*. London: National Heart Forum.
- 6 Maryon-Davis A, Sarch L, Morris M, Laventure R. 2001. *Let's Get Moving: A Physical Activity Handbook for Developing Local Programmes*. London: Faculty of Public Health Medicine.
- 7 World Health Organization. 1981. *Community Control of Cardiovascular Diseases*. Copenhagen: World Health Organization.
- 8 Farquhar JW. 1978. The community-based model of life style intervention trials. *American Journal of Epidemiology*; 108: 103-11.
- 9 Wagner EH. 1982. The North Karelia project: what it tells us about the prevention of cardiovascular disease. *American Journal of Public Health*; 72: 51-53.
- 10 MRFIT Research Group. 1982. Multiple Risk Factor Intervention Trial: risk factor changes and mortality results. *Journal of the American Medical Association*; 248: 1465-77.
- 11 Department of Health. 2004. *Choosing Health – Making Healthy Choices Easier*. London: Department of Health.
- 12 Prospective Studies Collaboration. 2002. Age-specific relevance of usual blood pressure to vascular mortality: a meta-analysis of individual data for one million adults in 61 prospective studies. *Lancet*; 360: 1903-12.
- 13 Blood Pressure Lowering Treatment Trialists' Collaboration. 2003. Effects of different blood-pressure-lowering regimens on major cardiovascular events: results of prospectively-designed overviews of randomised trials. *Lancet*; 362: 1527-45.
- 14 National Institute for Clinical Excellence. 2004. *Management of Hypertension in Adults in Primary Care. Clinical Guideline 18*. London: National Institute for Clinical Excellence.
- 15 Neter JE, Stam BE, Kok FJ et al. 2003. Influence of weight reduction on blood pressure: a meta-analysis of randomised controlled trials. *Hypertension*; 42 (5): 878-84.
- 16 Williams B, Poulter NR, Brown MJ et al. 2004. Guidelines for management of hypertension: report of the fourth working party of the British Hypertension Society, 2004-BHS IV. *Journal of Human Hypertension*; 18: 139-85.
- 17 North of England Hypertension Guideline Development Group. 2004. *CG18 Hypertension (Persistently High Blood Pressure) in Adults – Full Guideline*. Newcastle: Centre for Health Services Research.
- 18 Joint Health Surveys Unit. 2004. *Health Survey for England 2003. Volume 2 Risk Factors for Cardiovascular Disease*. London: The Stationery Office.
- 19 Joint Health Surveys Unit, on behalf of Scottish Executive Department of Health. 2000. *The Scottish Health Survey 1998*. London: The Stationery Office.
- 20 Brown MJ, Cruickshank JK, Dominiczak AF. 2003. Better blood pressure control: how to combine drugs. *Journal of Human Hypertension*; 17: 81-86.
- 21 Luscher TF, Vetter H, Siegenthaler W et al. 1985. Compliance in hypertension: facts and concepts. *Journal of Hypertension*; 3: S3-9.
- 22 Royal Pharmaceutical Society of Great Britain Working Party. 1996. *Partnership in Medicine Taking: A Consultative Document*. London: Royal Pharmaceutical Society of Great Britain and Merck Sharpe and Dohme.
- 23 Scottish Intercollegiate Guidelines Network (SIGN). 2001. *Hypertension in Older People. A National Clinical Guideline. SIGN Publication No. 49*. Edinburgh: SIGN.