Prescribing lifestyle changes for hypertension

Environmental factors are major determinants of hypertension, and patients can achieve significant reductions in blood pressure by making appropriate changes to their lifestyle. Family doctors should be able to assist by providing effective advice that complements any necessary pharmacotherapy.

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Although antihypertensive drug therapy represents one of the major success stories in the prevention of cardiovascular disease, the pharmacological approach to management does have limitations if used in isolation. Even in the ideal setting of a randomised controlled trial, stroke rates are reduced by less than 45% by this approach, while antihypertensive therapy *per se* reduces coronary death rates by less than 25%. In Australia, as in many other countries, over 75% of patients with hypertension have poorly controlled blood pressure. More often than not, multiple drugs are required to achieve good control, and in the real world of family practice there are major issues associated with the high costs and side effects of drug therapies and with poor adherence to treatments.

Population studies as well as randomised controlled trials show that environmental factors are major determinants of hypertension. The most important of these factors are:

- excess body fat
- a sedentary lifestyle
- alcohol consumption, and
- dietary factors.

Prolonged psychological stress may amplify the effects of any of these factors. In patients with established hypertension, smoking will raise blood pressure further and will triple coronary events and stroke rates. It has been estimated that lifestyle factors contribute to 80% or more of the prevalence of hypertension.

Normal blood pressure and the grades of hypertension discussed in this article are defined in the Table. Note, however, that these definitions are arbitrary and based on repeated 'clinic' or 'office' measurements, taken in patients who are seated after five minutes of quiet rest, and that 24-hour ambulatory blood pressures are frequently lower.

How much can lifestyle changes lower blood pressure?

Trials conducted mainly in middle-aged subjects with mild hypertension have indicated that a fall in systolic blood pressure of 5 to 6 mmHg is achieved by each of the following:

- losing 5 kg of body weight in patients who are overweight or obese
- changing a sedentary lifestyle into a

IN SUMMARY

- **First line management of patients with uncomplicated mild hypertension should include information about lifestyle risk factors; drugs need not be prescribed routinely. With appropriate advice from their doctor, patients can reduce blood pressure by 5 to 15 mmHg.**
- **Nonpharmacological management is indicated for all hypertensive patients. The approach complements pharmacotherapy while enabling drug requirements to be minimised.**
- **Lifestyle changes for hypertension tackle additional risk factors for cardiovascular disease and provide additional health benefits, such as reduced risks of atherosclerosis and diabetes.**
- **Prescribing lifestyle changes helps hypertensive patients take responsibility for their health.**

physically active one
- reducing a daily intake of 40 to 50 g of alcohol (four to five standard drinks) to 10 to 20 g of alcohol (one to two standard drinks)
- halving salt intake from 180 to 90 mmol per day
- adopting dietary changes as described in the 'DASH' diet (see the discussion of dietary factors beginning on page 23).

Several of these effects appear to be additive. For example, a reduction in systolic blood pressure of 10 to 14 mmHg has been seen when weight loss is combined with one of each of the following changes: reducing salt intake, moderating alcohol consumption, eating fish regularly or increasing physical activity. Moreover, the higher the initial blood pressure then the greater the effects.

Helping patients manage lifestyle factors

With these facts in mind, there are three main reasons why doctors need to be able to provide effective advice on lifestyle factors for hypertensive patients.

First, lifestyle changes have the potential to normalise blood pressure levels in patients with mild to moderate hypertension and may obviate the need for antihypertensive drugs.

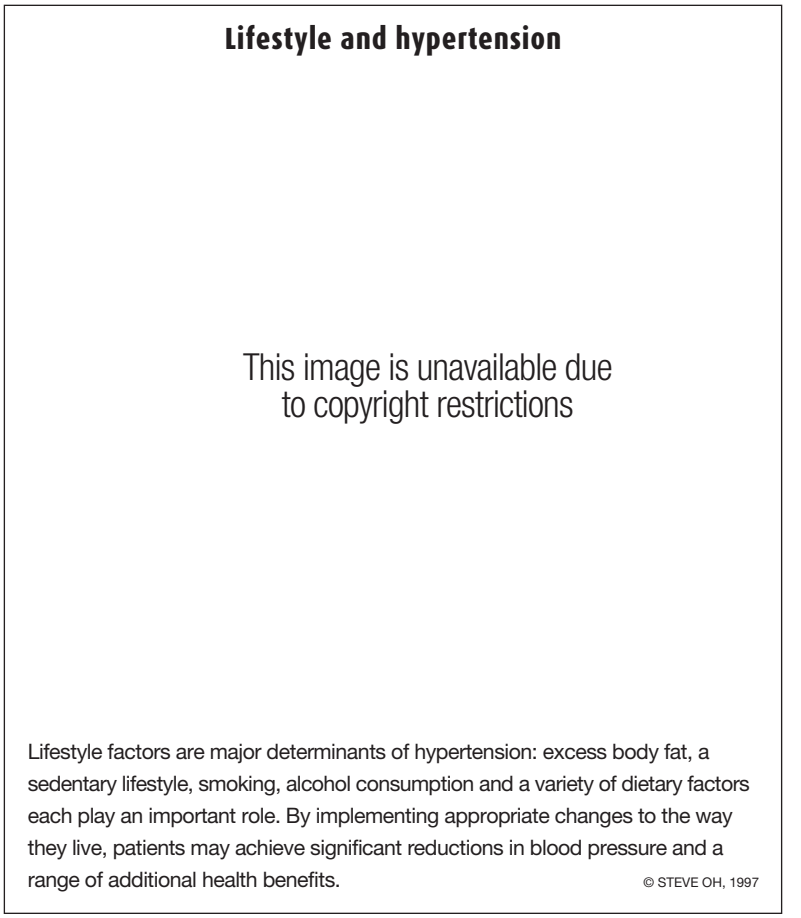
Second, lifestyle changes can improve blood pressure control and minimise drug requirements in patients with hypertension of any severity.

Third, and most important, lifestyle changes can improve cardiovascular health by means other than a reduction in blood pressure, an issue pertinent to the majority of hypertensive patients with multiple factors or behaviours that put them at risk of coronary events and stroke (see Figures 1a and b). The situation is seen most clearly in an overweight hypertensive patient with the 'metabolic syndrome' of dyslipidaemia and impaired glucose tolerance or diabetes. Add to these problems the risks of cigarette smoking, a sedentary existence and a typical Western diet, and you have a patient with a potentially lethal combination of risk factors for whom lifestyle changes are an absolute priority, with any relevant drug therapy.

Overweight and obesity

Excess body fat remains the single most important factor contributing to hypertension. The problem is not just for the morbidly obese: blood pressure increases progressively for every kilogram of excess body fat, and, in fact, most hypertensive patients are overweight. The problem is rapidly becoming more prevalent in societies worldwide as a result of an increasingly sedentary lifestyle and ready access to high-kilojoule fast foods.

Lifestyle and hypertension



Lifestyle factors are major determinants of hypertension: excess body fat, a sedentary lifestyle, smoking, alcohol consumption and a variety of dietary factors each play an important role. By implementing appropriate changes to the way they live, patients may achieve significant reductions in blood pressure and a range of additional health benefits.

Table. Definitions of normal and high blood pressure*

Risk category†	Systolic (mmHg)	Diastolic (mmHg)
Normal blood pressure	<130	<85
High-normal blood pressure	130 to 139	85 to 89
Mild hypertension	140 to 159	90 to 99
Moderate hypertension	160 to 179	100 to 109
Severe hypertension	≥180	≥110

* Modified from: 1999 World Health Organization–International Society of Hypertension guidelines for the management of hypertension. J Hypertens 1999; 17(2): 151-183.
† The higher risk category is used when an individual's systolic and diastolic blood pressures fall in different categories.

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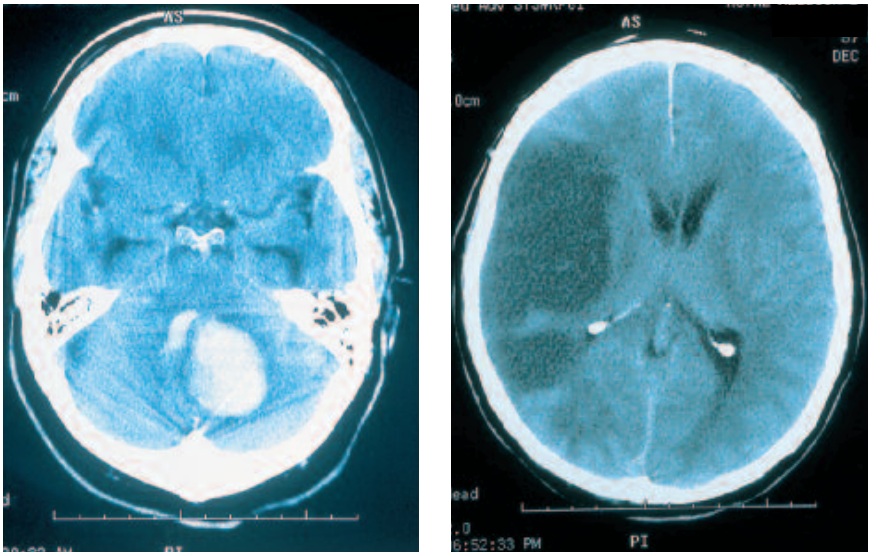

Figures 1a and b. Hypertension is a risk factor for both haemorrhagic and ischaemic stroke. a (left). An area of haemorrhage appears white on a CT scan. b (right). Cerebral infarcts appear darker than normal brain, but may not be evident on the scan until several days after the acute stroke.

By the time they reach the age of 50 years, many Australians weigh 20 kg more than they did in their early twenties, and the majority of these people will be overweight or obese (i.e. have a BMI >25 kg/m^2). Rates of obesity and diabetes in Australian adults have doubled over the last 20 years, and unless this trend is halted we are likely to see a reversal of the reductions in coronary and stroke rates that have occurred in recent decades.

Weight reduction reduces blood pressure and improves the effectiveness of drug therapy, but it also helps to correct other problems seen in the metabolic syndrome – that is, dyslipidaemia, either impaired glucose tolerance or diabetes, left ventricular hypertrophy and increased blood coagulability. Combining a 3 to 4 kg weight loss with even a modest reduction in sodium intake has been shown to enable many older people with hypertension to stop single drug therapy without adverse effects. Other benefits of weight reduction include improved mobility and ability to control weight, as well as a reduced risk of osteoarthritis.

Sedentary lifestyle

How much exercise is needed to achieve cardiovascular benefits? It seems that even the equivalent of brisk walking three times a week for a total of three hours or more can produce significant falls in blood pressure in otherwise sedentary individuals. The US Nurses' Health Study showed that those who reported walking briskly had a 40 to 50% reduction in coronary risk compared with those who just strolled for the same period of time, an effect that is as great as that seen with vigorous exercise.

Lack of time is one of the more common excuses that busy workers give for not exercising. People should be encouraged to view an increase in their physical activity as an investment in their health. They may need help to plan a variety of activities that suit their circumstances; emphasis should be placed on increasing activity within daily work and leisure routines and for taking every opportunity to move rather than sit.

Increased physical activity has benefits beyond blood pressure reduction. For example, exercise will reduce the risk of developing diabetes, heart attack and stroke, and helps maintain weight loss. As people become physically fitter they feel better and sleep better, and are less prone to depression; consequently, they become more able to heed advice on other aspects of lifestyle changes and to adhere to any necessary lifelong drug therapy. Other benefits include an improved lipid profile and reduced risk of osteoporosis.

Smoking

Smoking increases the risk of heart attack or stroke at least threefold in hypertensive patients, an effect that can almost be abolished if smoking is ceased. GPs have been shown to have the most effective frontline role in advising patients about ceasing smoking and providing resources to do so.

The effects of smoking on blood pressure are complex and have become better understood as a result of information gained from ambulatory blood pressure monitoring. Smoking raises blood pressure acutely, an effect that is enhanced and prolonged by concurrent consumption of caffeine. Although casual blood pressure measurements taken at the clinic may increase when a patient first stops smoking, daytime ambulatory blood pressure falls because the repeated acute pressor effects of smoking are removed. However, the weight gain that occurs when patients stop smoking often leads to a later rise in blood pressure, so it is vital to counsel patients about increasing their activity level and using alternatives to high kilojoule substitutes for tobacco. The substantial noncardiovascular health benefits of smoking cessation scarcely need mention.

Alcohol consumption

Heavy alcohol consumption is an important factor in resistant hypertension and stroke. Even an average of three standard drinks per day increases blood pressure and will double an individual's risk of developing hypertension.

It is important to obtain an accurate history of alcohol consumption and to

pick up any laboratory clues of heavier consumption, such as a high mean corpuscular volume or otherwise unexplained raised plasma levels of ALT (alanine trans - aminase) or GGT (gamma glutamyltransferase). Hypertensive patients who drink should be advised to limit their daily consumption to two standard drinks (for men) or one (for women) and to avoid binge drinking; with this level of alcohol consumption, people are likely to retain any cardioprotective effects while minimising the risks. Whether red wine offers additional advantages for cardiovascular health over other alcoholic beverages is still debatable but seems increasingly unlikely. People who have difficulty limiting their consumption and those who have severe resistant hypertension should abstain.

The benefits of moderating alcohol consumption extend beyond the effects on blood pressure. Examples include reductions in the risk of stroke, arrhythmias, cardiomyopathy, cirrhosis, certain cancers and trauma.

Dietary factors

The traditional preoccupation with the role of single nutrients in hypertension has been replaced by recognition that many complex dietary factors are involved. The same factors predispose individuals to atherosclerosis and diabetes.

Hypertensive patients can reduce their systolic blood pressure by between 7 and 11 mmHg by changing from a typical Western eating pattern to a healthier DASH type diet that includes:

- increased consumption of fresh fruit, vegetables and nuts
- a low intake of total and saturated fat
- increased intake of low fat dairy products and monounsaturated fats (e.g. olive oil)
- increased consumption of fish (three to four times per week) and lean meat
- avoidance of added salt and high salt foods.

Such dietary changes also reduce LDL cholesterol levels and usually promote some weight loss, and are generally more acceptable than strict vegetarian diets that reduce blood pressure. An increase in the consumption of fruit and vegetables enhances an individual's intake of antioxidants, potassium and fibre and has other likely health benefits, including a reduced risk of stroke and diabetes.

Hypertensive patients who adopt the DASH diet can reduce blood pressure further by decreasing their salt intake from 150 mm/day (the population average) to 100 or 50 mmol/day. Restricting sodium intake to around 100 mmol/day can be achieved by not adding salt to cooked foods, avoiding foods that are obviously highly salted, and by using salt substitutes for taste. Achieving a greater reduction in salt intake is difficult unless low salt breads and spreads are used. A high intake of potassium enhances the blood pressure lowering effect of a reduced salt intake and may independently protect against stroke, and is best achieved by dietary means rather than by taking potassium supplements.

Dietary fish and omega-3 fatty acids in fish oil supplements can reduce blood pressure in their own right. In a study of overweight patients receiving treatment for hypertension, a 6 kg weight loss diet that incorporated a daily fish meal reduced daytime systolic and diastolic blood pressure by 13 and 9 mmHg, respectively, compared with controls. However, even relatively small amounts taken as fish oil supplements (1.5 g/day) or as two to three fish meals a week appear to be protective against coronary deaths and ischaemic stroke.

Recent population data have suggested that diets low in protein and fibre increase blood pressure. This observation has been confirmed in a randomised, controlled trial of patients being treated for hypertension which demonstrated that simultaneously increasing intake of soy protein and soluble fibre reduced systolic blood pressure by 10 mmHg, compared with a background diet that was low in total protein and fibre. This observation is particularly relevant to elderly patients and to people of lower socioeconomic status who are more likely to skimp on foods containing protein and fibre.

Patients need simple lists to guide them in choosing foods and sample menus for healthier meals. The Heart Foundation of Australia produces some useful resources – phoning 'Heartline' (1300 362 787) or visiting the Foundation's website (www.heartfoundation.com.au) will provide patients with access to a range of materials.

Conclusion

Recent guidelines on the management of hypertension from the World Health Organization, the International Society for Hypertension and Australia's National Heart Foundation recognise the complementary nature of nonpharmacological approaches to management and pharmacotherapy. For doctors and hypertensive patients who have placed reliance on drug therapy alone, developing the skills to apply the nonpharmacological approach presents a challenge. However, lifestyle changes can achieve significant reductions in blood pressure and have a range of additional health benefits, and therefore doctors must be able to advise their patients accordingly. MT