



# Lifestyle management of hypertension

Nancy Huang, National Manager – Clinical Programs, National Heart Foundation of Australia, Melbourne; Karen Duggan, Director, Hypertension Service, South Western Sydney Area Health Service, and Chair, National Blood Pressure and Vascular Disease Advisory Committee; and Jenni Harman, Medical Writer, Meducation, Sydney

## Summary

**Recently updated Australian guidelines recommend that advice on smoking, nutrition, alcohol use, physical activity and body weight should be part of routine management of hypertension for all patients, regardless of drug therapy. Smoking cessation is recommended to reduce overall cardiovascular risk. Healthy eating, reducing dietary sodium and alcohol intake, regular physical activity and achieving a healthy body weight are all effective in lowering blood pressure.**

Key words: alcohol, cardiovascular disease, diet, physical activity, smoking cessation.

(*Aust Prescr* 2008;31:150–3)

## Introduction

Hypertension is a major risk factor for stroke and coronary heart disease, and is a major contributor to the onset and progression of chronic heart failure and chronic kidney failure. Guidelines by the National Heart Foundation of Australia<sup>1</sup> recommend that doctors caring for patients with hypertension should routinely provide advice on smoking, nutrition, alcohol use, physical activity and body weight.

Lifestyle modification is indicated for all patients with hypertension, regardless of drug therapy, because it may reduce or even abolish the need for antihypertensive drugs. In addition to the immediate goal of lowering blood pressure, the recommended lifestyle changes confer a range of health benefits, including better outcomes of common chronic diseases. Effective approaches to promoting lifestyle changes in primary care are listed in Box 1.

## Smoking

Smoking is a strong independent risk factor for cardiovascular disease. Quitting is acknowledged to be one of the most effective lifestyle interventions for preventing cardiovascular disease and premature deaths.

Smoking causes an immediate increase in blood pressure and heart rate that persists for more than 15 minutes after one cigarette. People who smoke show higher ambulatory blood pressure levels than non-smokers.<sup>2</sup>

Elevated blood pressure and smoking are the two most important risk factors for subarachnoid haemorrhage in the Asia-Pacific region. The risk of myocardial infarction is 2–6 times higher and the risk of stroke is three times higher in people who smoke, compared with non-smokers.<sup>1</sup>

Smoking cessation markedly reduces overall cardiovascular risk, including the risk of coronary heart disease and stroke, compared with continued smoking. In patients with coronary heart disease, smoking cessation is associated with a 36% reduction in the risk of all-cause mortality.<sup>3</sup> Although smoking is known to increase the risk of developing hypertension, there is currently no evidence that smoking cessation directly reduces blood pressure in people with hypertension.<sup>2</sup>

## Nutrition

Determining the influence of various nutrients on blood pressure and cardiovascular risk is a complex and evolving research area. While some relationships between food and cardiovascular health have not yet been clearly quantified, there is sufficient evidence to recommend that people with hypertension should avoid salty foods and aim for a healthy eating pattern.

### **Restricting salt intake**

High dietary sodium intake is associated with an increased incidence of stroke, and with increased risk of death due to coronary heart disease or cardiovascular disease.<sup>4</sup> Reducing dietary sodium by approximately 1700 mg (75 mmol) per day can lower systolic blood pressure by 4–5 mmHg in hypertensive individuals and 2 mmHg in normotensive individuals.<sup>4,5</sup> This may reduce the need for antihypertensive drugs. Responses vary between individuals and are generally greatest among the elderly and those with severe hypertension.

There is weak evidence suggesting that weight loss combined with reduced dietary sodium may be more effective at lowering blood pressure than salt avoidance alone.<sup>4</sup> Reduced-salt diets in combination with thiazide diuretics may predispose elderly patients to hyponatraemia, so electrolytes should be monitored regularly.

### **Dietary potassium**

Some clinical trials suggest that increasing dietary potassium by approximately 2100 mg (54 mmol) per day can reduce systolic

## Box 1

### Lifestyle recommendations for lowering blood pressure

#### Smoking

Give all patients clear, unambiguous advice to stop smoking. Assess for nicotine dependence (e.g. time of last cigarette, withdrawal symptoms) and offer counselling, support services and pharmacotherapy as appropriate.

#### Nutrition

Advise patients to limit salt intake to 4 g/day (65 mmol/day sodium) or less by choosing foods normally processed without salt, foods labelled 'no added salt' or 'low salt' (or 'reduced salt' products when other options are unavailable). High-salt processed foods (ham, bacon, sausages, canned or packet soups, stock cubes), salty snacks, takeaway foods high in salt, or salt added during cooking or at the table should be avoided.

Advise patients to eat a diet that includes mainly plant-based foods (e.g. fruits, vegetables, pulses and a wide selection of wholegrain foods, moderate amounts of low-fat or reduced-fat dairy products), moderate amounts of lean unprocessed meats, poultry and fish, moderate amounts of polyunsaturated and monounsaturated fats (e.g. olive oil, canola oil, reduced-salt margarines).

Patients with hypertension who are not taking potassium-sparing

diuretics and have normal renal function can be advised to increase potassium intake by eating a wide variety of fruits and vegetables, plain unsalted nuts (limit quantity and frequency to avoid excess kilojoules), and legumes (e.g. beans, lentils, dried peas).

#### Alcohol

Advise patients to limit alcohol intake to a maximum of two standard drinks per day (men) or one standard drink per day (women) and have at least two alcohol-free days per week.

#### Physical activity

Advise patients to become physically active. Aim for 30 minutes of moderate intensity\* physical activity on most, if not all, days of the week.<sup>1</sup> The daily dose can be accumulated in shorter bouts (e.g. three 10-minute walks). Advise against isometric exercise routines that may raise blood pressure (e.g. weightlifting), except within professionally supervised programs.

#### Body weight

Advise patients with hypertension how to achieve and maintain a healthy body weight target<sup>†</sup>: waist circumference less than 94 cm (men) or less than 80 cm (women) and body mass index (BMI) less than 25 kg/m<sup>2</sup>.

\* 'Moderate' means any activity sufficiently intense to cause a slight increase in breathing and heart rate, and may cause light sweating (e.g. brisk walking, lawn mowing, low-paced swimming, cycling, gentle aerobics).

† Targets are based on data from European populations and may not be appropriate for all ages and ethnocultural groups. Compared with Europeans, the BMI cut-point associated with increased risk of type 2 diabetes and cardiovascular disease is typically higher for Polynesian populations and lower for Aboriginal and Torres Strait Islander populations and some Asian populations.

blood pressure by 4–8 mmHg in hypertensive individuals and 2 mmHg in normotensive individuals. Potassium-rich whole foods, such as bananas, kiwi fruit, avocado, potatoes (with skin), nuts and yoghurt, are more effective in reducing blood pressure than potassium supplements, which are potentially toxic.<sup>4</sup>

High potassium intake can produce hyperkalaemia in people with impaired renal function. It should be recommended only for those with known normal renal function.

### Healthy eating

Blood pressure reductions in people with and without hypertension can be achieved by a healthy eating pattern based on the Dietary Approach to Stop Hypertension (DASH) diet, in addition to reduced salt intake.<sup>4</sup> The DASH diet emphasises fruits, vegetables, whole grains, low-fat dairy products and dietary fibre, while being low in dietary sodium, cholesterol and saturated fat.<sup>6</sup>

High-dose (at least 3 g/day) omega-3 polyunsaturated fatty acid supplement (fish oil) may also lower blood pressure in

hypertensive individuals.<sup>2</sup> Evidence is insufficient to recommend calcium and magnesium supplements or increasing dietary fibre intake alone (for example, taking supplemental fibre rather than increasing fruit and vegetable intake) to reduce blood pressure.

### Alcohol

Evidence for cardiovascular benefits of light drinking has been challenged by a recent meta-analysis.<sup>2</sup> Regardless of this debate, evidence is emerging that all levels of alcohol intake increase blood pressure. Moderate drinking can increase blood pressure, while binge drinking appears to increase the risk of hypertension.<sup>1</sup> Epidemiological data show a linear relationship between alcohol consumption and hypertension prevalence.<sup>2</sup> Reducing alcohol consumption can lower systolic blood pressure by an average of 3.8 mmHg in patients with hypertension.<sup>7</sup> The Heart Foundation recommends that patients with hypertension limit their alcohol intake to a maximum of two standard drinks per day for men, and one standard drink per day for women.<sup>1</sup>

## Physical activity

It is clear that physical activity lowers resting and daytime ambulatory blood pressure.<sup>1</sup> In clinical trials of people with hypertension, regular aerobic activity reduced systolic blood pressure by an average of 6.9 mmHg and diastolic blood pressure by 4.9 mmHg.<sup>8</sup>

Regular physical activity has an independent cardioprotective effect.<sup>1</sup> Regular exercise is associated with an increase in high-density lipoprotein cholesterol and with reductions in body weight, waist circumference, percentage body fat, insulin resistance, systemic vascular resistance, plasma noradrenaline and plasma renin activity.<sup>8</sup>

## Body weight

There is a direct association between blood pressure and body weight and/or abdominal adiposity. Weight loss studies show that clinically significant blood pressure reductions can be achieved by modest weight loss in people with and without hypertension and that blood pressure reduction is proportional to weight loss.<sup>2</sup> Every 1% reduction in body weight lowers systolic blood pressure by an average of 1 mmHg.<sup>1</sup> Losing 4.5 kg reduces blood pressure or prevents hypertension in a large proportion of overweight people, while losing 10 kg can reduce systolic blood pressure by 6–10 mmHg.<sup>1</sup> In overweight patients with hypertension, weight-reducing diets can achieve a 3–9% decrease in body weight and may reduce systolic and diastolic blood pressure by approximately 3 mmHg.

Weight reduction confers a range of other cardiovascular health benefits including reduced insulin resistance and hyperlipidaemia, and reduced risk of left ventricular hypertrophy and obstructive sleep apnoea.<sup>2</sup>

## Integrating lifestyle advice into clinical management

Practical resources are now widely available to help Australian health professionals effectively promote positive lifestyle changes (see Box 2). These encourage and support health professionals to take a systematic approach, by providing a simple framework for broaching the subject with patients, negotiating goals, giving tailored advice including written information, and referring patients to more information and other medical and support services.

The '5As' approach – Ask, Assess, Advise, Assist and Arrange – is often advocated as a useful framework for primary care health professionals to provide brief interventions for lifestyle modification in the clinical setting.

## Conclusion

Current Australian guidelines for the management of hypertension recommend lifestyle modification as an important

and effective first-line treatment strategy. In addition to the significant lowering of blood pressure achieved through changes to eating patterns, moderating alcohol intake, weight loss and regular physical activity, lifestyle measures (including smoking cessation) confer other significant cardiovascular health benefits. Regardless of other treatments indicated, all patients who need to lower their blood pressure should be given advice and support to achieve and maintain healthy behaviours.

### Box 2

#### Resources for promoting lifestyle management to patients

- Heart Foundation's Heart Health Information Service – for professional and consumer resources phone 1300 36 27 87.
- Lifescripts (including resources developed for Aboriginal and Torres Strait Islander people and pregnant women) <http://www.agpn.com.au>
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- Quit resources: <http://www.quit.org.au>

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*Conflict of interest: none declared*

## Self-test questions

*The following statements are either true or false (answers on page 167)*

3. There is evidence that smoking cessation reduces blood pressure in people with established hypertension.
4. A low potassium diet may help to reduce blood pressure in patients with hypertension.

## Dental notes

*Prepared by Dr M McCullough, Chair, Therapeutics Committee, Australian Dental Association*

### New guidelines for infective endocarditis prophylaxis

Therapeutic Guidelines has revised the guidelines for the use of antibiotics for prophylaxis against infective endocarditis (see [www.tg.org.au/Prevention\\_of\\_endocarditis\\_update](http://www.tg.org.au/Prevention_of_endocarditis_update)). The major change is that antibiotic prophylaxis is no longer indicated in patients with aortic stenosis, mitral stenosis, or symptomatic or asymptomatic mitral valve prolapse.

The justifications and reasoning behind these changes have been reviewed in the *Australian Dental Journal*.<sup>1</sup> These new guidelines take into consideration the guidelines of the American College of Cardiology/American Heart Association, as well as the British Society for Antimicrobial Chemotherapy and the UK National Institute for Health and Clinical Excellence. The most recent UK guidelines do not recommend antibiotic prophylaxis for any cardiac risk group. Prophylaxis is also not indicated in adolescents and young adults with heart valve disease, apart from indigenous Australians.

The Australian infective endocarditis prophylaxis guidelines differ from the American and UK guidelines in two specific ways:

- The consensus was that, as there is a high incidence of rheumatic heart disease among indigenous Australians

and the outcomes of this disease in this population are considered to be significant, indigenous Australians with rheumatic heart disease require prophylaxis.

- Very clear guidelines are given for dental procedures that always require antibiotic prophylaxis for patients with specific cardiac conditions. Further, these guidelines clearly outline dental procedures for which, irrespective of the patient in question, prophylaxis is never required. Finally, dental procedures are outlined where antibiotic prophylaxis should be considered if multiple procedures are being undertaken or the procedure is expected to be prolonged.

Doctors and dentists need to be prepared to discuss the updated guidelines as these changes are bound to concern patients who previously received prophylaxis. The changes may be more of a slow evolution as both patients and clinicians come to appreciate the lack of evidence for a benefit of antibiotic prophylaxis.

### Reference

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See also National Prescribing Service (NPS) patient information leaflet 'Preventing infections of the heart' at [www.nps.org.au/health\\_professionals/patient\\_resources/patient\\_leaflets](http://www.nps.org.au/health_professionals/patient_resources/patient_leaflets)