

Optimising the management of hypertension

Recommendations for managing hypertension are changing, with a move towards using absolute risk for cardiovascular events as the basis for decision making.

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Who should we be treating?

Over the past decade, guidelines for the detection and management of hypertension have been landing on the desks of clinicians from various local and international groups,¹⁻⁴ each aiming to provide practical recommendations for those working in the time-poor general practice environment. Essentially, these guidelines attempt to consolidate findings from observational studies and randomised controlled trials and provide evidence based advice for the prevention, detection and management of high blood pressure and raised cardiovascular risk. Although they are not entirely consistent in their recommendations, the guidelines share certain themes. For example:

- lowering blood pressure in patients with elevated blood pressure (>140/90 mmHg) is beneficial in reducing the risk of heart attack and stroke
- risk factors other than raised blood pressure may greatly influence an individual's absolute cardiovascular risk – e.g. cigarette smoking, dyslipidaemia (high LDL and low HDL

cholesterol), diabetes, overweight or obesity, and physical inactivity

- the choice of first line therapy to lower blood pressure is probably less critical, as all classes of antihypertensive therapy appear to have similar benefits, but should depend on the risk or presence of comorbidity
- many patients will require more than one antihypertensive agent to achieve the current recommended blood pressure treatment targets.

As guidelines have evolved over time, another common thread has emerged: optimal or target blood pressure levels following treatment are becoming lower. The recent US guidelines now define a 'prehypertensive' state (systolic 120 to 139 mmHg; diastolic 80 to 89 mmHg), which recognises that the risk of death due to heart disease begins to rise even at these levels.³ Australia's National Heart Foundation has resisted this recommendation because of the risk of medicalising most of the adult population to the detriment of those at highest risk.⁴

Recommendations for managing patients in

IN SUMMARY

- Data from the BEACH study of Australian general practice activity show that cardiovascular problems account for 20.5 per 100 encounters, with hypertension contributing to 46% of these.
- Recommendations for managing patients with hypertension are changing, with a move towards using absolute risk for cardiovascular events (rather than an isolated risk factor such as blood pressure) as the basis for decision making.
- There is increasing evidence for the value of ambulatory or home blood pressure monitoring in the diagnosis and management of high blood pressure.
- The current major issue in hypertension management relates to the 'lost therapeutic benefit' associated with lack of adequate attainment of blood pressure levels that have been linked to optimal reduction in cardiovascular risk.

these various blood pressure categories have become more logical, with a move towards using absolute risk for cardiovascular events (rather than an isolated risk factor such as blood pressure) as the basis for decision making.^{4,5} With age as the primary driver for absolute risk and absolute risk levels often portrayed over five-year periods, many people in their middle years who would previously have been managed with drugs for mildly elevated blood pressure would now not be considered to have an absolute risk level to warrant such treatment. However, an absolute risk approach can be seen to be democratic but inequitable, as it treats cardiovascular events in middle age and old age with equal importance.⁶ Clinicians (and indeed society) value prevention more in younger age groups – this was reflected in a recent survey showing that GPs are more likely to value the prevention of a fatal myocardial infarction in a 45-year-old father of four than the same outcome in a 75-year-old.⁷

Absolute risk can be calculated using the risk calculator developed by the New Zealand Heart Foundation and New Zealand Guidelines Group. The calculator is available online (see www.nzgg.org.nz) and is reproduced in modified form in *Hypertension Management Guide for Doctors 2004*.⁴ Table 1 outlines the current classification for blood pressure levels used in Australia, while the associated clinical conditions and target organ disease known to increase absolute risk that influence management decisions for hypertensive patients are summarised in Table 2. The assessment of absolute risk requires that the individual has not had a previous diagnosis of cardiovascular disease. If existing disease is present, the individual should be considered to be at high cardiovascular risk.

Ambulatory and home blood pressure monitoring

Ambulatory blood pressure monitoring is more closely associated with target organ damage than office measurements of blood pressure, and appears to be a better predictor of clinical outcomes.⁸ Night time blood pressure, in particular, may be an important marker for cardiovascular risk.⁹

'Normal' ambulatory blood pressure values for adults are:

- <135/85 mmHg during the day
- <120/75 mmHg during the night
- <130/80 mmHg over 24 hours.¹⁰

Hypertension

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Overall, rates of detecting and treating hypertension in Australian general practice appear to be high. Recommendations for managing patients with raised blood pressure are becoming more logical, with a move towards using absolute risk for cardiovascular events (rather than an isolated risk factor such as blood pressure) as the basis for decision making.

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Note that cardiovascular risk is increased if the difference in day–night mean blood pressure values is less than 10%.¹¹

Ambulatory blood pressure monitoring can be particularly useful for identifying the influence of physical activity and daily life stress on blood pressure, assessing apparent drug-resistant hypertension, and reinforcing the requirement for anti-hypertensive drug therapy to keep blood pressure levels within appropriate ranges.⁸ It is also helpful in identifying patients with white coat hypertension.

Recently, self-measurement of blood pressure at

continued

Table 1. Current Australian classification of blood pressure levels*

Category [†]	Systolic (mmHg)	Diastolic (mmHg)
Normal	<120	<80
High-normal	120 to 139	80 to 89
Grade 1 hypertension (mild)	140 to 159	90 to 99
Grade 2 hypertension (moderate)	160 to 179	100 to 109
Grade 3 hypertension (severe)	≥180	≥110
Isolated systolic hypertension	≥140	<90

* National Heart Foundation classification (see reference 4), which was developed after an assessment of updated classifications in the United States and Europe.

[†] If an individual's systolic and diastolic blood pressures fall into different categories, the higher risk category should apply.

home has become recognised as a predictor of cardiovascular mortality, and it may be a useful addition to clinic blood pressure measurements in identifying patients at increased risk of cardiovascular death. In an Italian study conducted in the general population, blood pressure values showed an association with risk of cardiovascular death, with the strength of the association being highest for ambulatory, intermediate for home, and lowest for office values (Figure 1).¹² Self-measurement of blood pressure is a way of involving patients in

monitoring, and may be useful in determining response to treatment.

Given these associations and benefits, ambulatory and home blood pressure monitoring should be considered in the diagnosis and management of high blood pressure.⁴

Lifestyle modifications for hypertension

The cornerstone of any management plan for the reduction of blood pressure and cardiovascular risk should include consid-

eration of nonpharmacological (lifestyle) strategies. Smoking is a key modifiable factor and smoking cessation will provide major benefits for reducing cardiovascular risk, independent of a blood pressure lowering effect.

With the current emphasis on directing pharmacological treatment towards patients with high absolute risk of cardiovascular events, lifestyle management in patients with mild to moderate hypertension who are at moderate risk is becoming particularly important. This is necessary because patients with moderate risk are the most likely to progress to have high risk with advancing age.

The lifestyle strategies outlined in Table 3 have been shown to reduce blood pressure, often with an interactive or additive effect – the combination of exercise plus weight loss is a good example.¹³ With the obesity epidemic and role of excess weight as an independent risk factor for cardiovascular disease and other constituent cardiovascular disease risk factors (including hypertension), there is an urgent need to develop, refine and improve strategies to help patients in achieving lifestyle modification.¹⁴ GPs are influential in encouraging behaviour change in regard to lifestyle habits.¹⁵

Table 2. Markers for high or very high absolute risk of cardiovascular event*

Associated clinical conditions

- Diabetes
- Cerebrovascular disease
- Heart disease
- Chronic kidney disease
- Aortic disease
- Peripheral arterial disease

Target organ disease

- Left ventricular hypertrophy
- Microalbuminuria
- Atherosclerotic plaque
- Hypertensive retinopathy (grade II or more)

* Adapted from reference 4.

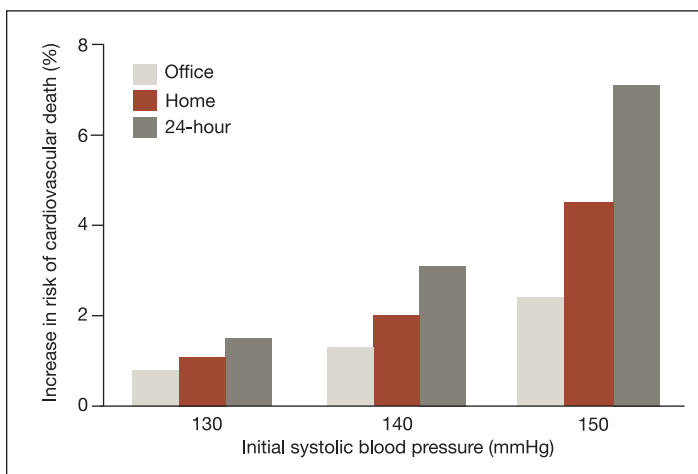


Figure 1. Increase in 11-year risk of cardiovascular mortality for office, home and ambulatory measurements of initial systolic blood pressure (adapted from reference 12).

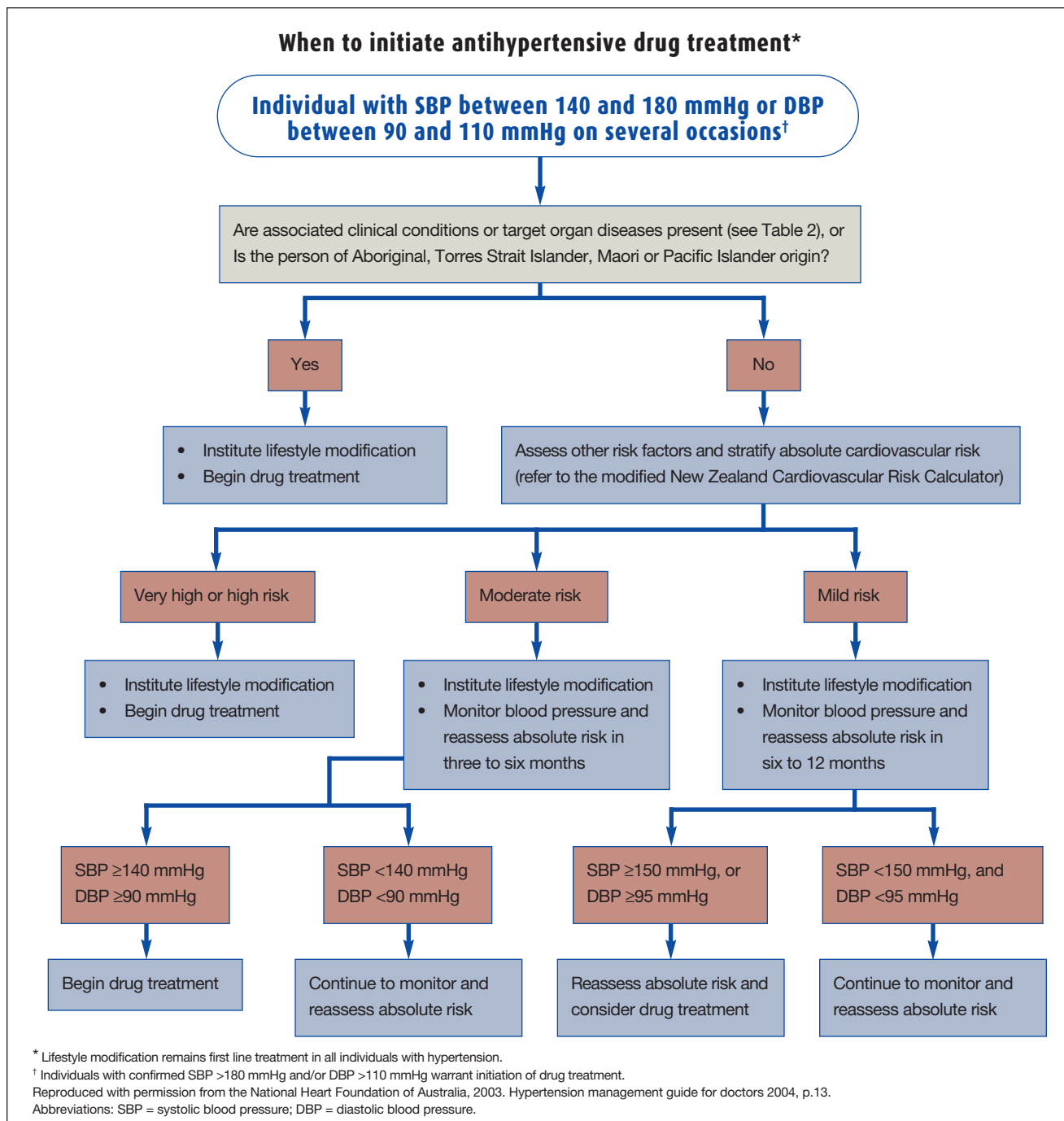
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Providing information and resources, facilitating access to allied health professionals, and actively supporting an individual's behaviour change efforts are important aspects of nonpharmacological prevention.¹⁶

Antihypertensive therapies

Five major classes of antihypertensive agents are commonly used as first line therapy in the management of hypertension: low dose thiazide diuretics, beta blockers, angiotensin converting enzyme inhibitors,

calcium channel blockers, and angiotensin II receptor antagonists. Major studies have shown that these drugs assist in reducing the risk of heart attack and stroke in hypertensive subjects.^{17,18} The choice of starting agent will be influenced by the presence of



continued

Table 3. Lifestyle strategies effective in lowering blood pressure*

Strategy	Target	Blood pressure reduction effect	Tips for maintenance [†]
Exercise	Three to four times per week at moderate intensity of 30 to 45 minutes	Systolic: about 4 mmHg Diastolic: about 2 mmHg	Tailor programs to individual patient needs
Weight loss	Healthy weight (BMI <25 kg/m ²)	Systolic: about 2 mmHg for each 1 kg of weight loss	Give regular encouragement
Sodium restriction	About 100 mmol sodium per day	Systolic: 5 to 7 mmHg	Provide specific written instructions
Alcohol restriction	<4 drinks per day for men and <2 per day for women	Systolic: 3 to 4 mmHg	Review progress regularly
Dietary saturated fat restriction	<10% of total calorie intake	Systolic: 2 to 3 mmHg	Consider input from allied health professionals

* Adapted from reference 1. † These tips could also be applied to all of the listed strategies.
Note: Smoking cessation does not lower blood pressure but is essential for reducing cardiovascular risk.

target organ disease, clinical coexisting conditions and the possibility of interactions with coprescribed drugs. For many patients, cost is also a consideration.

The flowchart on page 16 outlines the process for initiating antihypertensive drug therapy. Factors that must be taken into account include an individual's blood pressure level, absolute cardiovascular risk, associated clinical conditions, presence of target organ damage and effect of lifestyle intervention.

How effective is current management?

What is the state of blood pressure detection and control in general practice? Some answers may be obtained from the recently conducted Second Australian National Blood Pressure Study, which involved screening 54,288 patients over the age of 65 years.¹⁸ Of these, 58% were identified as being hypertensive (defined as either receiving treatment or known to have blood pressure over 140/90 mmHg), and 4% who were newly identified with hypertension and previously untreated went on to have blood pressure confirmed as being over 140/90 mmHg on multiple occasions. This suggests that detection of hypertension in general practice is high (at

least in the elderly), and that constant monitoring for newly identified hypertension appears to be worthwhile.

A recent clinical audit conducted in 1836 general practices across Australia identified 36,755 patients at risk of cardiovascular disease due to hypertension.¹⁹ Although over 90% of these subjects were receiving antihypertensive drug treatment, only 45.6% were achieving a blood pressure level of less than 140/90 mmHg. This suggests that although the majority of patients with hypertension are being managed for the condition, there is a large 'lost therapeutic benefit'. As the benefits of antihypertensive drug treatment are linked to blood pressure lowering, with the optimal target being below 140/90 mmHg, many patients receiving medication may not be gaining the associated benefit.²⁰

Although the clinical audit identified the existence of a therapeutic benefit gap in treated hypertensive patients, it did not provide information on the cause. Possible reasons include treatment issues (such as inadequate dosing of a single agent, or lack of a second or third agent when required) or patient-centred issues (such as noncompliance). Whatever the reason, strategies need to be developed to identify contributing factors and address them – the use of

ambulatory or home blood pressure monitoring may be one of these strategies.

Final comments

Data from the BEACH study of Australian general practice activity show that cardiovascular problems account for 20.5 per 100 encounters, with hypertension contributing to 46% of these.²¹ Overall, rates of detecting and managing hypertension in Australian general practice appear to be high. The current major management issue relates to the 'lost therapeutic benefit' associated with lack of adequate attainment of blood pressure levels that have been linked to optimal reduction in cardiovascular risk. Further investigation into the contributing factors is warranted so that maximum benefits associated with blood pressure control can be gained. **MT**

A list of references is available on request to the editorial office.

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