Summary of recommendations

Measuring blood pressure (BP)

	Page
Use the recommended technique at every BP reading to ensure accurate measurements and avoid common errors. Pay particular attention to the following: • Measure BP with a regularly serviced mercury sphygmomanometer, or regularly validate your instrument against a mercury sphygmomanometer. • At the patient's first BP assessment, measure BP on both arms. Thereafter, use the arm with the higher reading. • In patients who may have orthostatic hypotension (e.g. the elderly, those with diabetes), measure BP in sitting position, and repeat after the patient has been standing for at least 2 minutes.	5
If possible, obtain BP measurements outside the clinic (by ambulatory BP monitoring or self-measurement), particularly for patients with any of the following: • unusual variation between BP readings in the clinic • suspected 'white coat hypertension' (e.g. clinic hypertension in a person without known cardiovascular risk factors) • hypertension that is resistant to drug treatment • suspected hypotensive episodes (e.g. in those who are elderly or have diabetes). Interpret ambulatory BP profiles using standard reference values for daytime (awake), night-time (asleep) and 24-hour means.	6

Diagnosis and classification of hypertension

The diagnosis of hypertension should be based on multiple BP measurements taken on separate occasions.	8
Recheck BP regularly, at intervals determined by both BP category and absolute cardiovascular risk.	8

Evaluation in patients with confirmed hypertension

In all patients with hypertension, perform a clinical assessment (including a careful history, physical examination, initial investigations and further investigations as required) in order to: • identify all cardiovascular risk factors • detect end-organ damage and related or comorbid clinical conditions • identify causes of secondary hypertension.	9
If secondary hypertension is suspected, consider specialist referral.	11
Assess absolute cardiovascular risk in all patients with hypertension in order to determine the optimal management plan.	11
Available absolute risk calculators may significantly underestimate cardiovascular risk in Aboriginal, Torres Strait Islander, Maori, and Pacific Islander peoples.	11

When to intervene in patients with confirmed hypertension

The decision to intervene and the development of a comprehensive management plan (including lifestyle advice and drug treatment) should be based on a thorough clinical investigation to identify associated clinical conditions and/or end-organ damage and assessment of absolute cardiovascular risk.	**12**
Advise lifestyle risk reduction for all patients, especially those with high-normal BP or hypertension.	**12**
Initiate antihypertensive drug treatment immediately in patients with any of the following: • grade 3 hypertension or isolated systolic hypertension with widened pulse pressure (SBP ≥ 160 mmHg and DBP ≤ 70 mmHg) • associated conditions or evidence of end-organ damage (regardless of BP) • high absolute risk of cardiovascular disease, based on the presence of markers of high risk or as estimated using a risk calculator.	**12**
Also consider drug therapy for: • patients with moderate risk of cardiovascular disease as estimated using a risk calculator • Aboriginal and Torres Strait Islander adults.	**12**
Explain the health implications of current risk and the potential benefits of the recommended treatment.	**12**

Lifestyle modification

Manage identified lifestyle risk factors in all patients, whether or not BP is elevated.	**13**
Advise patients to aim for healthy targets: • At least 30 minutes of moderate-intensity physical activity on most, if not all, days of the week (daily total can be accumulated e.g. three 10-minute sessions). Advise patients of all ages to become more active. • Smoking cessation. Refer patients to Quitline. Consider recommending nicotine replacement therapy and/or prescribing oral therapy (bupropion or varenicline) in patients who smoke more than 10 cigarettes per day and have no contraindications. • Waist measurement < 94 cm for men and < 80 cm for women, body mass index (BMI) < 25 kg/m^2. When recommending weight loss, advise patients on reducing kilojoule intake as well as increasing physical activity. • Dietary salt restriction: ≤ 4 g/day (65 mmol/day sodium). Recommend low-salt and reduced-salt foods as part of a healthy eating pattern. • Limited alcohol intake: ≤ two standard drinks per day for men or ≤ one standard drink per day for women.	**13**

Drug treatment

Initiating drug therapy	**18**
For patients with uncomplicated hypertension, begin antihypertensive monotherapy with any of these agents: • angiotensin-converting enzyme (ACE) inhibitors (or angiotensin II receptor antagonists) • calcium channel blockers • thiazide diuretics (consider for patients 65 years or older only).	**18**
For patients with comorbid or associated conditions, consider: • the benefits, contraindications and cautions associated with specific agents • potential drug–drug interactions.	**19**
Begin antihypertensive therapy with the lowest recommended dose.	**18**
Attaining targets	**18**
For all patients, arrange regular follow-up to reassess drug treatment and adjust the management plan to achieve targets for BP (Table 6) and other modifiable risk factors.	**18**
If the initial agent is not tolerated, change to a drug of a different class.	**18**
If target BP is not achieved, add a second low-dose agent from a different pharmacological class (see recommended combinations, page 23) before increasing doses. If target is not achieved and both drugs are well tolerated, increase dose/s.	**18**
Use up to four antihypertensive drugs in combination, if necessary to achieve target.	**23**
Avoid these combinations: • ACE inhibitor (or angiotensin II receptor antagonist) plus potassium-sparing diuretic • beta-blocker plus verapamil.	**23**
Trial each regimen change for at least 6 weeks.	**24**
Non-responsive hypertension	**27**
If BP remains elevated despite maximal doses of at least two appropriate agents, reassess for: • non-adherence • undiagnosed secondary hypertension • hypertensive effects of other drugs • treatment resistance due to sleep apnoea • undisclosed use of alcohol or recreational drugs • unrecognised high salt intake (particularly in patients taking ACE inhibitors or angiotensin II receptor antagonists) • 'white coat' hypertension • technical factors affecting measurement • volume overload, especially with chronic kidney disease (CKD).	**27**

Table 2. Classification and follow-up of blood pressure levels in adults

Diagnostic category*	Systolic (mmHg)	Diastolic (mmHg)	Follow up
Normal	< 120	< 80	**Recheck in 2 years** (or earlier as guided by patient's absolute cardiovascular risk).†
High-normal	120–139	80–89	**Recheck in 1 year** (or earlier as guided by patient's absolute cardiovascular risk).†
Grade 1 (mild) hypertension	140–159	90–99	**Confirm within 2 months.** See *When to intervene* (page 12)
Grade 2 (moderate) hypertension	160–179	100–109	**Reassess or refer within 1 month.** See *When to intervene* (page 12)
Grade 3 (severe) hypertension	≥ 180	≥ 110	**Reassess or refer within 1–7 days as necessary.** See *When to intervene* (page 12)
Isolated systolic hypertension	≥ 140	< 90	**As for category corresponding to systolic BP.**
Isolated systolic hypertension with widened pulse pressure	≥ 160	≤ 70	**As for grade 3 hypertension.‡**

* When a patient's systolic and diastolic BP levels fall into different categories, the higher diagnostic category and recommended action/s apply.

† See *Assessing absolute cardiovascular risk* (page 14)

‡ In middle-aged and elderly patients with cardiovascular risk factors or associated clinical conditions, isolated systolic hypertension with large pulse pressure indicates high absolute risk for cardiovascular disease.[3]

Table 6. Treatment targets in adults

Patient group	Target (mmHg)
People with proteinuria >1 g/day (with or without diabetes)	< 125/75
People with associated condition/s or end-organ damage:* • Coronary heart disease • Diabetes • Chronic kidney disease • Proteinuria (> 300 mg/day) • Stroke/TIA	< 130/80
People with none of the following: • Coronary heart disease • Diabetes • Chronic kidney disease • Proteinuria (> 300 mg/day) • Stroke/TIA	< 140/90 or lower if tolerated

* Specific lower BP targets have not been established for other high-risk groups (e.g. those with peripheral arterial disease, those with familial hypercholesterolaemia or those at high absolute risk of cardiovascular disease) due to the current lack of evidence from clinical trials. Targets will be set when evidence becomes available.

Combination therapy

An estimated 50–75% of patients with hypertension will not achieve BP targets with monotherapy.[49] For most patients, a combination of antihypertensive drugs from two or more pharmacological classes is needed.

Occasionally a combination of more than three antihypertensive drugs may be required to achieve adequate BP control.

Based on the best available evidence, the most effective combination is:			
ACE inhibitor or angiotensin II receptor antagonist*	**plus**	calcium channel blocker	*(particular role in the presence of diabetes or lipid abnormalities)*[50]

Other effective combinations include:			
ACE inhibitor or angiotensin II receptor antagonist*	**plus**	thiazide diuretic	*(particular role in the presence of heart failure or post stroke)*
ACE inhibitoror or angiotensin II receptor antagonist*	**plus**	beta-blocker	*(recommended post myocardial infarction or in people with heart failure)*
beta-blocker	**plus**	dihydropyridine calcium channel blocker	*(particular role in the presence of coronary heart disease)*
thiazide diuretic	**plus**	calcium channel blocker	
thiazide diuretic	**plus**	beta-blocker	*(not recommended in people with glucose intolerance, metabolic syndrome, or established diabetes)*

Avoid the following combinations:			
ACE inhibitor or angiotensin II receptor antagonist	**plus**	potassium-sparing diuretic	*(due to risk of hyperkalaemia)*
verapamil	**plus**	beta-blocker	*(due to risk of heart block)*

* ACE inhibitors and angiotensin II receptor antagonists have been shown to be equally efficacious in prevention of combined end points of cardiovascular disease death, myocardial infarction, stroke and heart failure admissions in patients at high risk due to past cardiovascular events.[43]