



Cardiovascular disease risk assessment in primary care: **managing blood pressure**

KEY MESSAGES:

- Lifestyle interventions are recommended for every patient with a blood pressure $\geq 130/80$ mmHg
- Calculate the patient's five-year cardiovascular risk to inform decisions about blood pressure-lowering medicines:
 - Blood pressure-lowering medicines are not recommended in patients with a risk $< 5\%$
 - Discussions with patients about the benefits and harms of blood pressure-lowering medicines are appropriate in those with a risk $5\% - 15\%$ and a blood pressure $\geq 140/90$ mmHg
 - Blood pressure-lowering medicines are strongly recommended for patients with a risk $\geq 15\%$ and blood pressure $\geq 130/80$ mmHg
 - Blood pressure-lowering medicines are recommended for patients with a blood pressure $\geq 160/100$ mmHg regardless of cardiovascular risk
- If blood pressure-lowering medicines are initiated, a target $\leq 130/80$ mmHg is recommended, however, this target should be approached with caution in older frail patients
- Angiotensin converting enzyme (ACE) inhibitors, angiotensin II receptor blockers (ARBs), calcium channel blockers and thiazide diuretics are all first-line blood pressure-lowering medicines

The recently released Cardiovascular Disease Risk Assessment and Management for Primary Care consensus statement provides updated guidance on blood pressure management. Key changes include a lower risk threshold at which discussions with patients about the benefits of blood pressure-lowering medicines should begin, revised risk thresholds from which point blood-pressure lowering medicines are recommended and a new treatment target.

👁️ This is the second article in a series updating the cardiovascular guidelines for primary care. Information on performing cardiovascular risk assessments and a discussion about communicating cardiovascular risk is available from: "What's new in cardiovascular disease risk assessment and management for primary care clinicians", www.bpac.org.nz/2018/cvd.aspx



Blood pressure management continues to be based on five-year cardiovascular risk

A risk-based approach to blood pressure management is recommended in the Cardiovascular Disease Risk Assessment and Management for Primary Care consensus statement (2018). This involves calculating the patient's five-year CVD risk and using it to predict the likely benefits of blood pressure lowering interventions. This approach is preferred over the use of blood pressure measurement in isolation to guide management because **the greatest absolute reduction in cardiovascular risk occurs in patients with the highest risk.**

In patients with elevated blood pressure, for every 10 mmHg reduction in systolic blood pressure there is a 20% relative reduction in cardiovascular events.¹ The benefits of lowering blood pressure are greatest in patients with multiple risk factors, e.g. hyperlipidaemia, diabetes, older age, rather than those with the highest blood pressure.² This finding is similar to that seen in patients taking statins to reduce LDL cholesterol.³ Furthermore, as blood pressure-lowering medicines and statins work independently to reduce cardiovascular risk,⁴ the benefit is greatest if both medicines are used together.

Out-of-office blood pressure measurements may be indicated

Out-of-office blood pressure monitoring, i.e. ambulatory testing or home-based monitoring, is considered to be "an important adjunct" to clinic-based blood pressure measurements, particularly if white-coat hypertension is suspected, which may occur in 25% of patients (see: "Guidance on home-based blood pressure monitoring").⁴

Out-of-office blood pressure monitoring should be considered when:⁴

- White-coat hypertension is suspected
- There is marked variation between office-based measurements or between clinic and home-based measurements
- Medicine-induced hypotension is suspected
- The patient is not responding to blood pressure-lowering treatments, i.e. resistant hypertension is suspected

Guidance on home-based blood pressure monitoring

Home-based monitoring of blood pressure requires the use of a validated device, and measurements must be taken in a consistent manner, usually over one week. Devices which measure blood pressure at the brachial artery are generally considered to be more reliable than those that measure at the wrist or finger, however, using an appropriate cuff size is important for accuracy of readings, therefore a validated wrist device may be necessary for patients with a large arm circumference.

In general, out-of-office systolic blood pressure readings are 5–10 mmHg lower and diastolic measurements 5 mmHg lower than clinic-based measurements.⁴

Advise patients performing home-based blood pressure monitoring to:⁴

- Take measurements after sitting for five minutes
- Record two consecutive measurements, one minute apart
- Take morning measurements before breakfast and before taking any medicines
- Take evening measurements before going to bed and after taking medicines
- Record any obvious reasons for variations, e.g. illness, caffeine intake, smoking or recent exercise

A home blood pressure level can be calculated for the patient using the average of their measurements, removing results that are likely to have been affected by other factors.

👁 For further information on out-of-clinic blood pressure monitoring, see: <https://bpac.org.nz/BPJ/2016/May/blood-pressure.aspx>

👁 The British and Irish Hypertension Society has a list of independently validated blood pressure monitors for home and specialist use. To check if a blood pressure device is validated, see: <https://bihsoc.org/bp-monitors/>



Table 1: Thresholds for blood-pressure lowering interventions in patients aged under 75 years based on five-year cardiovascular risk⁴

| New thresholds (based on NZ Primary Prevention equations) | Old thresholds (based on Framingham equations) | Recommendation |
|---|--|---|
| < 5% | < 10% | Lifestyle modifications are recommended for all patients with a blood pressure \geq 130/80 mmHg. Blood pressure-lowering medicines are not recommended. |
| 5 – 15% | 10 – 20% | Discuss the benefits and harms of initiating blood pressure-lowering medicines for patients with a blood pressure persistently \geq 140/90 mmHg |
| \geq 15% | \geq 20% | Blood pressure-lowering medicines are strongly recommended for patients with a blood pressure persistently \geq 130/80 mmHg |
| \geq 160/100 mmHg with any level of cardiovascular risk | | Blood pressure-lowering medicines are generally recommended |

When to recommend blood pressure-lowering medicines

Blood pressure-lowering medicines are generally not recommended for patients with a five-year cardiovascular risk less than 5% (Table 1).⁴

Discuss the benefits of medicines for patients with a 5 – 15% five-year risk

The benefits and harms of blood pressure-lowering medicines should be presented and discussed with all patients with a five-year cardiovascular risk of 5 – 15% who persistently have an office-based systolic blood pressure \geq 140 mmHg and/or a diastolic blood pressure \geq 90 mmHg (or equivalent out-of-office measurement).⁴

Blood-pressure lowering medicines are recommended for patients with a \geq 15% five-year risk

Blood pressure-lowering medicines and lifestyle modifications are strongly recommended for patients with a five-year cardiovascular risk \geq 15% who have a persistent office blood pressure \geq 130/80 mmHg (or equivalent out-of-office measurement).⁴

Blood pressure-lowering medicines are recommended \geq 160/100 mmHg regardless of cardiovascular risk

If a patient has a systolic blood pressure greater than 160 mmHg and/or a diastolic pressure greater than 100 mmHg after lifestyle modifications have been trialled, blood pressure-lowering medicines are recommended, regardless of the patient's cardiovascular risk.

Managing elevated blood pressure

Lifestyle interventions to reduce blood pressure

Lifestyle interventions are recommended for every patient with a blood pressure \geq 130/80 mmHg.⁴

Reducing salt intake can result in clinically significant reductions in blood pressure after approximately four weeks. The ideal daily intake of salt is thought to be 3 g; a meta-analysis of trials found that the average daily intake of salt in patients with hypertension is 9.5 g.⁵ On average, reducing daily salt intake to 4.4 g corresponds to a reduction in systolic blood pressure of 5.4 mmHg and a reduction in diastolic pressure of 2.8 mmHg.⁵

Regular exercise of moderate intensity, e.g. walking for 30 minutes per day, can reduce systolic blood pressure by 4 – 10 mmHg and diastolic pressure by 3 – 8 mmHg regardless of the patient's age or sex.⁶

Frequent alcohol consumption may increase systolic blood pressure by 5 – 10 mmHg in some people.⁷ To minimise the effects of alcohol on blood pressure, intake should be limited to:⁸

- Two standard drinks* per day for women and no more than 10 standard drinks per week
- Three standard drinks per day for men and no more than 15 standard drinks per week
- At least two alcohol-free days per week

* A standard drink is approximately 330 mL of 4% beer or 100 mL of 12.5% wine

Table 2: Secondary causes of elevated blood pressure⁴

| Common secondary causes of elevated blood pressure | Rarer secondary causes of elevated blood pressure |
|---|--|
| <ul style="list-style-type: none"> ■ Excessive alcohol intake ■ Chronic kidney disease ■ Sleep apnoea ■ Medicines, e.g. non-steroidal anti-inflammatory drugs (NSAIDs), oestrogen, glucocorticoids, cyclosporine, methylphenidate | <ul style="list-style-type: none"> ■ Coarctation of the aorta ■ Renal artery stenosis ■ Pheochromocytoma ■ Cushing syndrome ■ Conn syndrome |

Selecting the most appropriate blood pressure-lowering medicine

In patients with uncomplicated hypertension, ACE inhibitors or ARBs, calcium channel blockers and thiazide diuretics are all suitable first-line antihypertensive drugs. They can be used either as monotherapy or in some combinations, unless contraindicated.⁴ In people at high risk of diabetes, consider ACE inhibitors as the first-line choice as thiazide diuretics (and beta-blockers) are associated with a higher risk of developing diabetes.

The blood pressure target needs to be appropriate for the patient

If blood pressure-lowering medicines are initiated, a treatment target less than 130/80 mmHg is broadly recommended.^{1,4,9} However, consideration should also be given to individual clinical circumstance when deciding on treatment targets.⁴ For example, caution is recommended when lowering blood pressure in patients with diabetic neuropathy, especially if postural hypotension and a history of hypoglycaemia is present.⁴

Managing blood pressure in older patients

Caution is required when considering blood pressure-lowering medicines and setting treatment targets in older patients, who are often taking multiple medicines and have an increased risk of orthostatic hypotension. An increased risk of falls and fractures is associated with blood pressure-lowering medicines, however, the risk is greatest shortly after initiation and it may be attenuated once treatment is stabilised.¹⁰ The long-term use of some antihypertensive medicines, e.g. ACE inhibitors, ARBs and calcium channel blockers, has been associated with a reduced risk of falls and fractures in some older patients living in the community.¹⁰

 Further discussion on individualising blood pressure management is available from: “Go low or no? Managing blood pressure in primary care”, <https://bpac.org.nz/2017/blood-pressure.aspx>

When to consider secondary causes of elevated blood pressure

In patients with uncontrolled hypertension, treatment non-adherence and white-coat hypertension should be considered. Secondary causes of elevated blood pressure are more likely in younger patients with elevated blood pressure or in patients with uncontrolled blood pressure despite adherence to treatment with multiple blood pressure-lowering medicines (Table 2).⁴

Perform an annual review once blood pressure has stabilised

Blood pressure monitoring is appropriate when treatment is being initiated or doses adjusted. Once the patient’s blood pressure has stabilised below 130/80 mmHg (or their individual target), blood pressure should be reviewed at least annually.⁴ Home-based blood pressure monitoring with electronic communication with the health professional (i.e. email or text) may be appropriate for patients with stable blood pressure who are comfortable with this approach.⁴

 Further information on managing elevated blood pressure is available from: “Hypertension in adults: The silent killer”, www.bpac.org.nz/BPJ/2013/August/hypertension.aspx

Acknowledgement: This article was prepared in conjunction with the Heart Foundation of New Zealand.



This article is available online at:
www.bpac.org.nz/2018/bp.aspx

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