

## Learning points

# Diagnosing and managing hypertension can help minimise the risk of cardiovascular disease

In the last article of the year in our *Learning points* series Candy Norris refreshes our knowledge on the diagnosis and management of hypertension

### Introduction

As a major modifiable contributory factor in cardiovascular disease, the management of high blood pressure is an important way that pharmacists can help patients to minimise this risk. However, to best achieve this you will need to know the blood pressure targets in different patient groups and how to implement evidence-based treatments. Learning is best assisted through participation and to this end questions have been included throughout this article that will help you think about hypertension and its management. After reading through the case study and associated questions — which you are encouraged to attempt to answer — you should:

- understand the different blood pressure targets that relate to different patient groups
- have increased awareness of the approved methods and monitors for the management of blood pressure
- be able to describe how a pharmacist can implement evidence-based pharmacological and non-pharmacological treatments for hypertension.

### Case

A 62 year-old man was referred to a pharmacist-led hypertension clinic held in secondary care in February 2007 for intensive control of his hypertension. He has a past medical history of type 2 diabetes, ischaemic heart disease and a

myocardial infarction (MI) in 2004. On referral his blood pressure was 174/91 mmHg, his total cholesterol was 2.8 mmol/L and his serum creatinine (SrCr) was 146micromol/L.

He was not a smoker and drank within normal limits. He weighed 105Kg and did not do regular exercise because of pressure on his ankles and knees.

Drugs on referral were:  
Aspirin 75mg daily



*above: Although patients might not feel anxious about having their blood pressure measured, some patients do experience a significant rise in blood pressure simply because they are attending a clinic. This 'white coat' hypertension is sometimes incorrectly interpreted as genuine hypertension.*

Furosemide 40mg daily  
Atenolol 25mg daily  
Atorvastatin 20mg at night  
Irbesartan 300mg daily  
Quinine 200mg at night  
Omeprazole 20mg daily  
Glimepiride 4mg daily  
Insulin Glargine daily  
Latanoprost 1 drop both eyes at night.

He had no allergies but had intolerances to spironolactone, metformin, co-codamol, doxazosin and ramipril.

### Question 1:

In view of his renal impairment and raised microalbuminuria/creatinine ratio of 7, what would be a target blood pressure for this patient and what guidance is this based upon?

The target blood pressure given by NICE in their *Clinical Guideline H* (October 2002)<sup>1</sup> for people with diabetes is <140/80 mmHg, and if they also have microalbuminuria or proteinuria a target of <135/75 mmHg is given.

In view of his renal issues, specialist guidance is taken from the *Chronic kidney disease in adults: UK guidelines* (March 2006).<sup>2</sup> These recommend a target of <130/80mmHg for patients with microalbuminuria or proteinuria and for those with total proteinuria of >1g per day the target should be 125/75mmHg. The target recommended for this patient is <130/80mmHg.

## Learning points

It is understood that as many as 10-20% of patients labelled as having hypertension using conventional blood pressure measurement may instead have 'white coat hypertension' and may not require blood pressure lowering drugs.

### Question 2:

Why would this patient be at risk of 'white coat hypertension' and how should the measurement of his blood pressure be carried out to minimise this?

The patient could be at risk of white coat hypertension because he is attending a secondary care clinic and, therefore, visiting outpatients at hospital. Although patients will state that they do not feel anxious when attending their appointment, this form of hypertension can be automatic in some patients. It is understood that as many as 10–20% of patients labelled as having 'hypertension' using conventional blood pressure measurement may instead have 'white coat hypertension' and may not require blood pressure lowering drugs.<sup>3</sup>

To minimise this, the patient's blood pressure measurement should not be taken until the patient has had time to relax (approximately two minutes), and more than one measurement should be taken at intervals of at least one minute.

Ambulatory blood pressure monitoring is the most effective method of determining whether blood pressure elevation is the result of 'white coat hypertension' or genuine hypertension.

### Question 3:

At the initial visit where should his blood pressure be taken and how should the results be interpreted?

At the initial assessment blood pressure should be measured in both arms in the sitting position in all patients who are

thought to have raised blood pressure. This is to check for any differences that are greater than 20mmHg (systolic) and 10mmHg (diastolic). Large differences could suggest the possibility of coarctation of the aorta, anatomical variants and alterations to pulse after surgical or cardiological procedures, such as cardiac catheterisation. Any of these concerns should be referred to medical staff for further investigation.



*above: Blood pressure readings should be made in both arms with the patient seated at the initial assessment. This is important to check whether there are any differences that might suggest co-existing disease or anatomical variation. The blood pressure readings should then be repeated with the patient in the standing position to check for postural changes.*

Where differences are smaller than the systolic or diastolic differences described, then the arm that has given the higher blood pressure reading should be used for follow-up appointments.

In addition to the blood pressures taken in the sitting position, at the initial visit blood pressure should be taken in the standing position. This is so that any degree of postural drop can be assessed and taken into consideration in the drug management of the patients.

### Question 4:

What additional lifestyle measures should be put in place for this patient?

The British Hypertension Society Guidelines include detailed guidance on lifestyle advice.<sup>4</sup> The guidelines point out

that dependence on drug therapy alone will result in prolonged drug therapy for a large portion of the adult population, and consideration should also be given to lifestyle.

This patient needs to address his obesity problem and lack of exercise. Unfortunately, these two lifestyle factors often go hand-in-hand, and because he is also taking insulin, starting a weight loss programme could seem to be an uphill struggle.

Dietary sodium intake has been highlighted as a key factor in hypertension,<sup>4</sup> and therefore he needs to have his diet reviewed.

Exercise has proved difficult but it may be that there are some gentle exercises that might help and these also need to be reviewed with the patient. He is a non-smoker but does drink some alcohol, which is also a risk factor.

Effective lifestyle modifications may lower blood pressure as much as a single blood pressure lowering drug.<sup>4</sup> Combinations of two or more lifestyle modifications could achieve even better results. However, in practice it still seems that many patients find the theory easier to get to grips with than the application of it, and this is one area that pharmacists could help to encourage patients to address.



*above: This patient is overweight, does little exercise and does drink some alcohol. Helping him to consider lifestyle factors, such as his diet, drinking habits and exercise, might therefore, make a significant impact on his blood pressure.*

### Question 5:

In relation to current guidelines how well do you feel his hypertension has been managed to date?

The first line agent for patients with microalbuminuria is ramipril.<sup>1</sup> Unfortunately this patient had been intolerant to ramipril in the past, complaining of dizziness.

It may be worthwhile investigating this problem and considering re-challenging with ramipril if appropriate. However, he is taking an angiotensin receptor blocking agent (Irbesartan) — and is taking this second line drug at the maximum evidence-based dose for this group of patients.

He also has ischaemic heart disease and is taking atenolol, which is an appropriate second line drug. The dose is 25mg daily, and so it may be possible to increase this dose so long as his rate allows. His creatinine clearance was 36ml/min, which precludes the use of bendroflumethiazide.<sup>5</sup> He is not taking a calcium channel blocker, which would be the next choice.

### Question 6:

What would be the next step in his drug treatment for hypertension?

As discussed above, the next step would be to add a dihydropyridine calcium-channel blocker. In our practice, amlodipine is added at 5mg daily for four weeks and then increased to the maximum of 10 mg daily.

Although it may be tolerated in this patient, there are often problems with the side-effect of swollen ankles in females. In many cases this is unacceptable.

### Question 7:

Is it appropriate to consider rimonabant for this patient at this stage?

Rimonabant is indicated as an adjunct to diet and exercise for the treatment of obese patients (BMI>30kg/m<sup>2</sup>), or overweight patients (BMI>27kg/m<sup>2</sup>) with associated risk factors, such as type 2 diabetes or dyslipidaemia.

It is, however, cautioned in patients with depressive disorders and suicidal ideations and should not be used unless the benefits of treatment are considered to outweigh the risks.

Although the patient is not currently taking any antidepressant medication, careful investigation should be made to ascertain whether the patient has had a



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**above:** Weighing patients regularly may help them to address their obesity problem and adhere to a healthy diet to keep their weight down.

depressive disorder in the past, before initiating a prescription.

The patient has impaired renal function and although rimonabant can be used at normal dosing in patients with mild or moderate renal impairment, it should not be used in patients with severe renal impairment.<sup>6</sup> In this patient it would be appropriate to use the drug.

A Cochrane Review reports on four studies evaluating rimonabant 20mg versus placebo in addition to a hypocaloric diet.<sup>7</sup> In addition to weight loss, the one-year results showed improvements in waist circumference, high-density lipoprotein cholesterol, triglyceride levels and systolic and diastolic blood pressure. This underlines the appropriateness of this drug for this patient.

The case demonstrates the potential

Combinations of two or more lifestyle modifications could help lower blood pressure. However, in practice it seems that many patients find the theory easier to get to grips with than the application of it, and this is one area where pharmacists could help.

complexity of managing patients with hypertension. Additionally, there are constant changes in recommendations due to updated guidelines. The most recent guidance from NICE was issued because recent large clinical outcome trials had provided new information.<sup>8</sup> A major change is that of beta-blockers being no longer a preferred initial treatment for hypertension. However, unless there are good reasons for discontinuing beta-blockers in patients already stabilised, it is not recommended that they are stopped. There is no new information in the guidance about target blood pressures. ❖

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