

# Hypertension

## Clinical case scenarios for primary care

Implementing NICE guidance

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NICE clinical guideline 127



These clinical case scenarios accompany the clinical guideline 'Hypertension: clinical management of primary hypertension in adults' (available online at [www.nice.org.uk/guidance/CG127](http://www.nice.org.uk/guidance/CG127)).

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Updated October 2013 to include more reference to the lifestyle interventions recommendations and details of the NICE quality standard for hypertension. The guideline has not changed

This is a support tool for implementation of the NICE guidance.

It is not NICE guidance.

Implementation of the guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement this guidance, in their local context, in light of their duties to avoid unlawful discrimination and to have regard to promoting equality of opportunity. Nothing in the guidance should be interpreted in a way that would be inconsistent with compliance with those duties.

### **What do you think?**

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We value your opinion and are looking for ways to improve our tools. Please complete this [short evaluation form](#).

If you are experiencing problems accessing or using this tool, please email [implementation@nice.org.uk](mailto:implementation@nice.org.uk)

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## Introduction

Clinical case scenarios are an educational resource that can be used for individual or group learning. Each question should be considered by the individual or group before referring to the answer.

These five clinical case scenarios have been compiled to improve and assess users' knowledge of the diagnosis and management of hypertension and its application in practice. They illustrate how the recommendations from 'Hypertension: clinical management of primary hypertension in adults' (NICE clinical guideline, 127 available at [www.nice.org.uk/guidance/CG127](http://www.nice.org.uk/guidance/CG127)) can be applied to the care of adults presenting in primary care. This guidance updates and replaces NICE clinical guideline 34 (published in 2006). NICE clinical guideline 34 updated and replaced NICE clinical guideline 18 (published in 2004).

The original 2004 guideline was developed by the Newcastle Guideline Development and Research Unit. The guideline was updated by the National Collaborating Centre for Chronic Conditions [NCC-CC] (now the National Clinical Guideline Centre ([NCGC])) in collaboration with the British Hypertension Society (BHS) in 2006 and by the NCGC in 2011.

The recommendation numbers from the NICE guideline are included, and updated recommendations are indicated by dates in bold at the end of the recommendation.

Recommendations are marked as **[2004]**, **[2004, amended 2011]**, **[2006]**, **[2008]**, **[2009]**, **[2010]** or **[new 2011]**.

- **[2004]** indicates that the evidence has not been updated and reviewed since 2004
- **[2004, amended 2011]** indicates that the evidence has not been updated and reviewed since 2004 but a small amendment has been made to the recommendation
- **[2006]** indicates that the evidence has not been updated and reviewed since 2006

- **[2008]** applies to recommendations from ‘Lipid modification’ (NICE clinical guideline 67), published in 2008
- **[2009]** applies to recommendations from ‘Medicines adherence’ (NICE clinical guideline 76), published in 2009
- **[2010]** applies to recommendations from ‘Hypertension in pregnancy’ (NICE clinical guideline 107), published in 2010
- **[new 2011]** indicates that the evidence has been reviewed and the recommendation has been updated or added.

Recommendations that are key priorities for implementation are indicated by **[KPI]**.

Each case scenario includes details of the person’s initial presentation, their medical history and their care. Clinical decisions about diagnosis and management are then considered using a “question and answer” approach that relates to the recommendations in the NICE guideline. However, in practice other factors may be taken into account when considering a person’s care; care should always be approached holistically. Additionally, although not mentioned specifically in these cases, it is important to ensure that treatment and care take into account people’s needs and preferences.

This tool is available in two formats: this PDF version, which is useful for individual learning, and a [slide set](#) to facilitate group learning. Users can add the clinical case scenario slide set to the standard [‘awareness raising’ slide set](#) produced for the guideline. You will find it helpful to look at the quick reference guide for the guideline to help you decide what to do in each case scenario, so make sure that copies are available. Relevant recommendations from the NICE guideline are quoted in the text, with corresponding recommendation numbers.

[The guideline](#) is available in a variety of formats including a quick reference guide and a version written for patients and carers.

The recommendations from this guideline have been incorporated into a [Hypertension NICE pathway](#). NICE pathways are an online tool which provides quick and easy access, topic by topic, to the range of guidance from NICE,

including quality standards, technology appraisals, clinical and public health guidance and NICE implementation tools.

## **Definitions used in these clinical case scenarios**

### **Definitions**

**Stage 1 hypertension** Clinic blood pressure is 140/90 mmHg or higher **and** subsequent ambulatory blood pressure monitoring (ABPM) daytime average or home blood pressure monitoring (HBPM) average blood pressure is 135/85 mmHg or higher.

**Stage 2 hypertension** Clinic blood pressure is 160/100 mmHg or higher **and** subsequent ABPM daytime average or HBPM average blood pressure is 150/95 mmHg or higher.

**Severe hypertension** Clinic systolic blood pressure is 180 mmHg or higher **or** clinic diastolic blood pressure is 110 mmHg or higher.

**White-coat effect** A discrepancy of more than 20/10 mmHg between clinic and average daytime ABPM or average HBPM blood pressure measurements at the time of diagnosis

# Clinical case scenarios for primary care

## *Clinical case scenario 1: Mary*

### **Presentation**

Mary is 38 years old. She is attending for a routine appointment about her contraception, for which she uses a diaphragm.

### **Medical history**

From her records you notice that Mary's blood pressure has increased since her last check twelve months ago.

She does not smoke, drinks 10-12 units of alcohol a week and has no notable medical history.

### **On examination**

Mary's first clinic blood pressure measurement is 158/94 mmHg. Her heart rate is 72 beats per minute and regular

Please note: when using automated devices to measure blood pressure, palpate the radial or brachial pulse before measuring blood pressure. If pulse irregularity is present, measure blood pressure manually using direct auscultation over the brachial artery.

You are considering a diagnosis of hypertension and therefore take another reading in Mary's other arm. There is no notable difference between readings.

### **Next steps for diagnosis**

#### ***Question 1.1***

What would you do next?

### **Answer 1.1**

You would take Mary's blood pressure a third time during the consultation.

The third reading is 149/93 mmHg.

#### **Relevant recommendations**

- Because automated devices may not measure blood pressure accurately if there is pulse irregularity (for example, due to atrial fibrillation), palpate the radial or brachial pulse before measuring blood pressure. If pulse irregularity is present, measure blood pressure manually using direct auscultation over the brachial artery. **[new 2011] [1.1.2]**
- When considering a diagnosis of hypertension, measure blood pressure in both arms.
  - If the difference in readings between arms is more than 20 mmHg, repeat the measurements.
  - If the difference in readings between arms remains more than 20 mmHg on the second measurement, measure subsequent blood pressures in the arm with the higher reading. **[new 2011] [1.2.1]**
- If blood pressure measured in the clinic is 140/90 mmHg or higher:
  - Take a second measurement during the consultation.
  - If the second measurement is substantially different from the first, take a third measurement.

Record the lower of the last two measurements as the clinic blood pressure. **[new 2011] [1.2.2]**

### **Question 1.2**

You suspect hypertension – what would you do next?



## **Answer 1.2**

You organise for Mary to receive ambulatory blood pressure monitoring (ABPM) through your GP practice. If you are responsible for setting up the monitoring device, you ensure that at least two measurements per hour are taken during Mary's usual waking hours (for example, between 8 am and 10 pm). You would use the average value of at least 14 measurements taken during Mary's usual waking hours to confirm a diagnosis of hypertension.

At the same time you would also carry out investigations for target organ damage (such as left ventricular hypertrophy, chronic kidney disease and hypertensive retinopathy). You would:

- test for the presence of protein in the urine by sending a urine sample for estimation of the albumin:creatinine ratio and test for haematuria using a reagent strip
- take a blood sample to measure plasma glucose, electrolytes, creatinine, estimated glomerular filtration rate, serum total cholesterol and HDL cholesterol
- examine the fundi for the presence of hypertensive retinopathy
- arrange for a 12-lead electrocardiograph to be performed.

You would also carry out a formal assessment of cardiovascular risk (Mary's clinic blood pressure must be used in the calculation of cardiovascular risk) using a cardiovascular risk assessment tool, in line with [Identification and assessment of CVD risk](#) in 'Lipid modification' (NICE clinical guideline 67).

Additionally, you would also ascertain information about lifestyle in areas such as diet, exercise, alcohol, smoking and caffeine consumption and dietary sodium intake and offer appropriate lifestyle advice

Record the results of all investigations and assessment in Mary's notes.

## Relevant recommendations

- If the clinic blood pressure is 140/90 mmHg or higher, offer ambulatory blood pressure monitoring (ABPM) to confirm the diagnosis of hypertension. **[new 2011] [KPI] [1.2.3]**
- When using ABPM to confirm a diagnosis of hypertension, ensure that at least two measurements per hour are taken during the person's usual waking hours (for example, between 08:00 and 22:00). Use the average value of at least 14 measurements taken during the person's usual waking hours to confirm a diagnosis of hypertension. **[new 2011] [1.2.9]**
- While waiting for confirmation of a diagnosis of hypertension, carry out investigations for target organ damage (such as left ventricular hypertrophy, chronic kidney disease and hypertensive retinopathy) (see recommendation 1.3.3) and a formal assessment of cardiovascular risk using a cardiovascular risk assessment tool<sup>1</sup> (see recommendation 1.3.2) **[New 2011] [1.2.6]**
- Estimate cardiovascular risk in line with the recommendations on [Identification and assessment of CVD risk](#) in 'Lipid modification' (NICE clinical guideline 67)<sup>1</sup>. **[1.3.2] [2008]**
- For all people with hypertension offer to:
  - test for the presence of protein in the urine by sending a urine sample for estimation of the albumin:creatinine ratio and test for haematuria using a reagent strip
  - take a blood sample to measure plasma glucose, electrolytes, creatinine, estimated glomerular filtration rate, serum total cholesterol and HDL cholesterol
  - examine the fundi for the presence of hypertensive retinopathy
  - arrange for a 12-lead electrocardiograph to be performed. **[2004, amended 2011] [1.3.3]**

<sup>1</sup> Clinic blood pressure measurements must be used in the calculation of cardiovascular risk

### **Relevant recommendations**

- Lifestyle advice should be offered initially and then periodically to people undergoing assessment or treatment for hypertension. [2004] **[1.4.1]**
- Ascertain people's diet and exercise patterns because a healthy diet and regular exercise can reduce blood pressure. Offer appropriate guidance and written or audiovisual materials to promote lifestyle changes. [2004] **[1.4.2]**

### **Related recommendations**

- See lifestyle intervention recommendations 1.4.1 – 1.4.9

### **Additional information**

The BHS have developed a [section of their website](#) to assist in the setting up and management of an Ambulatory Blood Pressure Monitoring clinic.

### **Question 1.3**

You identify her dietary sodium intake is greater than recommended levels. NICE PH25 on [prevention of cardiovascular disease](#) recommends that as part of preventing cardiovascular disease at a population level there should be a reduction in salt intake. By 2015 an adults maximum intake of salt per day should not exceed 6g and by 2025 this should be reduced to 3g. Additionally, Mary's exercise patterns are not in line with national guidance. (For the Chief Medical Office current recommendations for physical activity see [UK physical activity guidelines](#))

What advice would you offer?

### **Answer 1.3**

You would advise that healthy diet and regular exercise can reduce blood pressure. You would also encourage her to keep her dietary sodium intake low as this can reduce blood pressure. You should also inform her about local initiatives

#### **Relevant recommendations**

- Ascertain people's diet and exercise patterns because a healthy diet and regular exercise can reduce blood pressure. Offer appropriate guidance and written or audiovisual materials to promote lifestyle changes. **[2004] [1.4.2]**
- Encourage people to keep their dietary sodium intake low, either by reducing or substituting sodium salt, as this can reduce blood pressure. **[2004] [1.4.6]**
- A common aspect of studies for motivating lifestyle change is the use of group working. Inform people about local initiatives by, for example, healthcare teams or patient organisations that provide support and promote healthy lifestyle change. **[2004] [1.4.9]**

**Question 1.4**

The result of Mary's ABPM shows daytime average blood pressure of 145/92 mmHg.

What would your diagnosis and your next steps be?

### **Answer 1.4**

This result shows that Mary has stage 1 hypertension.

If you had not already done so (answer 1.2), you would:

- test for the presence of protein in the urine by sending a urine sample for estimation of the albumin:creatinine ratio and test for haematuria using a reagent strip
- take a blood sample to measure plasma glucose, electrolytes, creatinine, estimated glomerular filtration rate, serum total cholesterol and HDL cholesterol
- examine the fundi for the presence of hypertensive retinopathy
- arrange for a 12-lead electrocardiograph to be performed.

You would use the results of the cardiovascular risk assessment to discuss prognosis and healthcare options with Mary.

Continue to ascertain information about her lifestyle in order to provide tailored lifestyle advice in accordance with the guideline on areas such as diet (including sodium and caffeine intake) and exercise and alcohol consumption.

See the [definitions section](#) for ABPM diagnosis criteria

### **Relevant recommendations**

- Use a formal estimation of cardiovascular risk to discuss prognosis and healthcare options with people with hypertension, both for raised blood pressure and other modifiable risk factors. **[2004] [1.3.1]**
- Estimate cardiovascular risk in line with the recommendations on [Identification and assessment of CVD risk](#) in 'Lipid modification' (NICE clinical guideline 67)<sup>1</sup>. **[2008] [1.3.2]**
- For all people with hypertension offer to:
  - test for the presence of protein in the urine by sending a urine sample for estimation of the albumin:creatinine ratio and test for haematuria using a reagent strip
  - take a blood sample to measure plasma glucose, electrolytes, creatinine, estimated glomerular filtration rate, serum total cholesterol and HDL cholesterol
  - examine the fundi for the presence of hypertensive retinopathy
  - arrange for a 12-lead electrocardiograph to be performed. **[2004, amended 2011] [1.3.3]**
- Lifestyle advice should be offered initially and then periodically to people undergoing assessment or treatment for hypertension. **[2004] [1.4.1]**
- Ascertain people's diet and exercise patterns because a healthy diet and regular exercise can reduce blood pressure. Offer appropriate guidance and written or audiovisual materials to promote lifestyle changes. **[2004] [1.4.2]**

### **Related recommendations**

- See lifestyle interventions recommendations 1.4.1 – 1.4.9

<sup>1</sup> Clinic blood pressure measurements must be used in the calculation of cardiovascular risk.

**Question 1.5**

The results of the investigations for target organ damage and formal assessment of cardiovascular risk are:

- no evidence of target organ damage
- 10-year cardiovascular risk less than 20%.

Nothing abnormal was detected in the other investigations you organised.

What is your next step and what treatment and follow up would you offer?



## **Answer 1.5**

### **Further assessment**

You would consider seeking specialist evaluation of secondary causes of hypertension and a more detailed assessment of potential target organ damage. This is because 10-year cardiovascular risk assessments can underestimate the lifetime risk of cardiovascular events in these people. Additionally, people under 40 years with stage 1 hypertension are less likely to have overt evidence of target organ damage or vascular disease.

#### **Relevant recommendations**

- For people aged under 40 years with stage 1 hypertension and no evidence of target organ damage, cardiovascular disease, renal disease or diabetes, consider seeking specialist evaluation of secondary causes of hypertension and a more detailed assessment of potential target organ damage. This is because 10-year cardiovascular risk assessments can underestimate the lifetime risk of cardiovascular events in these people. **[new 2011] [1.5.3] [KPI]**

### **Assessment result and treatment**

Mary does not have target organ damage, established cardiovascular disease, renal disease, diabetes or a 10-year cardiovascular risk equivalent to 20% or greater, therefore you would not offer antihypertensive drug treatment.

You would continue to provide further tailored lifestyle advice (recommendation 1.4.1 – 1.4.9) periodically in accordance with the NICE clinical guideline. The NICE clinical guideline recommends that you would provide Mary with an annual review of care to monitor blood pressure, provide her with support and discuss her lifestyle and symptoms.

#### **Relevant recommendations**

- Provide an annual review of care to monitor blood pressure, provide people with support and discuss their lifestyle, symptoms and medication. **[2004] [1.7.3]**
- See recommendations **1.4.1 to 1.4.9** for lifestyle interventions

### **Question 1.6**

If Mary had been eligible to receive antihypertensive drug treatment, what should you consider when prescribing antihypertensive drugs for a woman of child-bearing potential?

## **Answer 1.6**

There is an increased risk of congenital abnormalities if women take angiotensin-converting enzyme (ACE) inhibitors or angiotensin II receptor blockers (ARBs) during pregnancy, and it is important that women of child-bearing age know this. If the woman is planning a pregnancy she should discuss this with you. If a woman taking ACE inhibitors or ARBs becomes pregnant, these antihypertensive drugs should be stopped and alternatives offered.

### **Relevant recommendations**

- Tell women who take angiotensin-converting enzyme (ACE) inhibitors or angiotensin II receptor blockers (ARBs):
  - that there is an increased risk of congenital abnormalities if these drugs are taken during pregnancy
  - to discuss other antihypertensive treatment with the healthcare professional responsible for managing their hypertension, if they are planning pregnancy. [recommendation **1.2.1.1** in NICE clinical guideline 107]
  - Stop antihypertensive treatment in women taking ACE inhibitors or ARBs if they become pregnant (preferably within 2 working days of notification of pregnancy) and offer alternatives. [**1.2.1.2** NICE clinical guideline 107]
- Offer antihypertensive drug treatment to women of child-bearing potential in line with the recommendations on [Management of pregnancy with chronic hypertension](#) and [Breastfeeding](#) in 'Hypertension in pregnancy' (NICE clinical guideline 107). [**2010** **1.6.5**]

Use the hyperlinks in recommendation 1.6.5 above to see other related recommendations concerning pre pregnancy advice for other antihypertensive medications and recommendations about management of chronic hypertension in women who are pregnant or in the post natal period.

**Question 1.7**

What are the key points to remember when measuring blood pressure to ensure that the reading is as accurate as possible?

### **Answer 1.7**

- Ensure that staff measuring blood pressure are trained.
- Ensure the person having their blood pressure measured has a regular pulse before using an automated blood pressure monitoring device.
- Ensure automated devices are validated, maintained and regularly recalibrated. Although not a NICE recommendation, expert opinion would suggest that devices should be maintained annually and there should be a person accountable for recalibrating the devices in order to ensure consistency.
- Provide a relaxed environment for the person whose blood pressure is being measured.
- Ensure the use of an appropriate cuff size.

Relevant recommendations are on the next page

### Relevant recommendations

- Healthcare professionals taking blood pressure measurements need adequate initial training and periodic review of their performance. **[2004] [1.1.1]**
- Because automated devices may not measure blood pressure accurately if there is pulse irregularity (for example, due to atrial fibrillation), palpate the radial or brachial pulse before measuring blood pressure. If pulse irregularity is present, measure blood pressure manually using direct auscultation over the brachial artery. **[new 2011] [1.1.2]**
- Healthcare providers must ensure that devices for measuring blood pressure are properly validated, maintained and regularly recalibrated according to manufacturers' instructions. **[2004] [1.1.3]**
- When measuring blood pressure in the clinic or in the home, standardise the environment and provide a relaxed, temperate setting, with the person quiet and seated, and their arm outstretched and supported. **[new 2011] [1.1.4]**
- If using an automated blood pressure monitoring device, ensure that the device is validated<sup>1</sup> and an appropriate cuff size for the person's arm is used. **[new 2011] [1.1.5]**

<sup>1</sup>A list of validated blood pressure monitoring devices is available on the British Hypertension Society's website (see [www.bhsoc.org](http://www.bhsoc.org)). The British Hypertension Society is an independent reviewer of published work. This does not imply any endorsement by NICE.

## ***Clinical case scenario 2: Danny***

### **Presentation**

Danny is a 39-year-old black male of Caribbean family origin. He presents to you with a sore ankle after 'going over' on it.

### **Medical history**

Danny has no significant past medical history. Previous presentations have been related to coughs and colds.

He smokes 25 cigarettes a day, alcohol consumption around 20 units/week and has done for 18 years. He works shifts and says that he considers his diet to be unhealthy as a result.

### **On examination**

You conclude that Danny's ankle is sprained. As part of your routine examination you measure his blood pressure. The first measurement in his left arm is 150/92 mmHg, the second measurement in his right arm is 149/91 mmHg and the third measurement in his left arm is 151/92 mmHg.

#### **Relevant recommendations**

- When considering a diagnosis of hypertension, measure blood pressure in both arms.
  - If the difference in readings between arms is more than 20 mmHg, repeat the measurements.
  - If the difference in readings between arms remains more than 20 mmHg on the second measurement, measure subsequent blood pressures in the arm with the higher reading. **[new 2011]**
- If blood pressure measured in the clinic is 140/90 mmHg or higher:
  - Take a second measurement during the consultation.
  - If the second measurement is substantially different from the first, take a third measurement.

Record the lower of the last two measurements as the clinic blood pressure. **[new 2011]** **[1.2.2]**

**Question 2.1**

What would you do next?



### **Answer 2.1**

You would record Danny's clinic blood pressure as 149/91 mmHg. In order to diagnose hypertension, you organise ambulatory blood pressure monitoring (ABPM) to confirm a diagnosis of hypertension. When organising this you ensure that at least two measurements per hour are taken during Danny's usual waking hours. You would use the average value of at least 14 measurements taken during Danny's usual waking hours to confirm a diagnosis of hypertension.

At the same time you would also carry out investigations for target organ damage (such as left ventricular hypertrophy, chronic kidney disease and hypertensive retinopathy). You would:

- test for the presence of protein in the urine by sending a urine sample for estimation of the albumin:creatinine ratio and test for haematuria using a reagent strip
- take a blood sample to measure plasma glucose, electrolytes, creatinine, estimated glomerular filtration rate, serum total cholesterol and HDL cholesterol
- examine the fundi for the presence of hypertensive retinopathy
- arrange for a 12-lead electrocardiograph to be performed.

You would also carry out and a formal assessment of cardiovascular risk (Danny's clinic blood pressure must be used in the calculation of cardiovascular risk) using a cardiovascular risk assessment tool, in line with the recommendations on [Identification and assessment of CVD risk](#) in 'Lipid modification' (NICE clinical guideline 67).

Additionally, you would ascertain information about lifestyle in areas such as diet, exercise, alcohol, smoking and caffeine consumption and dietary sodium intake and offer appropriate lifestyle advice. Given the history provided you ensure that you include lifestyle advice about smoking, alcohol consumption and diet and exercise

Record the results of the investigations and assessments in Danny's notes.

### Relevant recommendations

- If blood pressure measured in the clinic is 140/90 mmHg or higher:
  - Take a second measurement during the consultation.
  - If the second measurement is substantially different from the first, take a third measurement.

Record the lower of the last two measurements as the clinic blood pressure. **[new 2011] [1.2.2]**

- If the clinic blood pressure is 140/90 mmHg or higher, offer ambulatory blood pressure monitoring (ABPM) to confirm the diagnosis of hypertension. **[new 2011] [KPI] [1.2.3]**
- When using ABPM to confirm a diagnosis of hypertension, ensure that at least two measurements per hour are taken during the person's usual waking hours (for example, between 08:00 and 22:00). Use the average value of at least 14 measurements taken during the person's usual waking hours to confirm a diagnosis of hypertension. **[new 2011] [1.2.9]**
- While waiting for confirmation of a diagnosis of hypertension, carry out investigations for target organ damage (such as left ventricular hypertrophy, chronic kidney disease and hypertensive retinopathy) (see recommendation 1.3.3) and a formal assessment of cardiovascular risk using a cardiovascular risk assessment tool<sup>1</sup> (see recommendation 1.3.2) **[New 2011] [1.2.6]**
- Estimate cardiovascular risk in line with the recommendations on [Identification and assessment of CVD risk](#) in 'Lipid modification' (NICE clinical guideline 67)<sup>1</sup>. **[1.3.2] [2008]**

<sup>1</sup> Clinic blood pressure measurements must be used in the calculation of cardiovascular risk.

### **Relevant recommendations continued**

- For all people with hypertension offer to:
  - test for the presence of protein in the urine by sending a urine sample for estimation of the albumin:creatinine ratio and test for haematuria using a reagent strip
  - take a blood sample to measure plasma glucose, electrolytes, creatinine, estimated glomerular filtration rate, serum total cholesterol and HDL cholesterol
  - examine the fundi for the presence of hypertensive retinopathy
  - arrange for a 12-lead electrocardiograph to be performed. **[2004, amended 2011] [1.3.3]**
- Lifestyle advice should be offered initially and then periodically to people undergoing assessment or treatment for hypertension. **[2004] [1.4.1]**
- Ascertain people's diet and exercise patterns because a healthy diet and regular exercise can reduce blood pressure. Offer appropriate guidance and written or audiovisual materials to promote lifestyle changes. **[2004] [1.4.2]**
- Ascertain people's alcohol consumption and encourage a reduced intake if they drink excessively, because this can reduce blood pressure and has broader health benefits. **[2004] [1.4.4]**
- Discourage excessive consumption of coffee and other caffeine-rich products. **[2004] [1.4.5]**
- Encourage people to keep their dietary sodium intake low, either by reducing or substituting sodium salt, as this can reduce blood pressure. **[2004] [1.4.6]**
- Offer advice and help to smokers to stop smoking. **[2004] [1.4.8]**
- A common aspect of studies for motivating lifestyle change is the use of group working. Inform people about local initiatives by, for example, healthcare teams or patient organisations that provide support and promote healthy lifestyle change. **[2004] [1.4.9]**

**Additional information**

The BHS have developed a [section of their website](#) to assist in the setting up and management of an Ambulatory Blood Pressure Monitoring clinic.

**Question 2.2**

ABPM indicates that Danny's daytime average blood pressure is 147/89 mmHg.

There is no evidence of target organ damage, cardiovascular disease, renal disease or diabetes. You identify a 10-year cardiovascular risk equivalent to under 20%.

With this information, what is your diagnosis and what would you do next?

## **Answer 2.2**

You would diagnose stage 1 hypertension. If you had not already done so (answer 2.1) you would also:

- test for the presence of protein in the urine by sending a urine sample for estimation of the albumin:creatinine ratio
- test for haematuria using a reagent strip
- take a blood sample to measure plasma glucose, electrolytes, creatinine, estimated glomerular filtration rate, serum total cholesterol and HDL cholesterol
- examine the fundi for the presence of hypertensive retinopathy
- arrange for a 12-lead electrocardiograph to be performed.

You would use the results of the initial cardiovascular risk assessment to discuss prognosis and healthcare options with Danny.

You would also offer Danny lifestyle advice in accordance with the guideline on areas such as diet (including sodium and caffeine intake), exercise, alcohol consumption and smoking.

See the [definition section](#) for ABPM diagnosis criteria

See section 1.4 of the NICE guideline for recommendations about lifestyle interventions

### Relevant recommendations

- Use a formal estimation of cardiovascular risk to discuss prognosis and healthcare options with people with hypertension, both for raised blood pressure and other modifiable risk factors. **[2004] [1.3.1]**
- Estimate cardiovascular risk in line with the recommendations on [Identification and assessment of CVD risk](#) in 'Lipid modification' (NICE clinical guideline 67)<sup>1</sup>. **[2008] [1.3.2]**
- For all people with hypertension offer to:
  - test for the presence of protein in the urine by sending a urine sample for estimation of the albumin:creatinine ratio and test for haematuria using a reagent strip
  - take a blood sample to measure plasma glucose, electrolytes, creatinine, estimated glomerular filtration rate, serum total cholesterol and HDL cholesterol
  - examine the fundi for the presence of hypertensive retinopathy
  - arrange for a 12-lead electrocardiograph to be performed. **[2004, amended 2011] [1.3.3]**
- See section 1.4 for lifestyle intervention recommendations

<sup>1</sup> Clinic blood pressure measurements must be used in the calculation of cardiovascular risk.

**Question 2.3**

The results of the tests you arranged (presence of protein in the urine, estimation of the albumin:creatinine ratio, haematuria, plasma glucose, electrolytes, creatinine, estimated glomerular filtration rate, cholesterol, hypertensive retinopathy, 12-lead electrocardiograph) have been returned. All are normal with the exception of cholesterol which was total cholesterol = 5.6mmol/L, HDL cholesterol 1.1mmol/L.

What would you consider next in order to help you decide on the best management strategy for Danny?

### **Answer 2.3**

You would consider seeking specialist evaluation of secondary causes of hypertension and a more detailed assessment of potential target organ damage. This is because 10-year cardiovascular risk assessments can underestimate the lifetime risk of cardiovascular events in these people. Additionally, people under 40 years with stage 1 hypertension are less likely to have overt evidence of target organ damage or vascular disease.

You decide to refer Danny for the specialist assessment.

#### **Relevant recommendations**

- For people aged under 40 years with stage 1 hypertension and no evidence of target organ damage, cardiovascular disease, renal disease or diabetes, consider seeking specialist evaluation of secondary causes of hypertension and a more detailed assessment of potential target organ damage. This is because 10-year cardiovascular risk assessments can underestimate the lifetime risk of cardiovascular events in these people. **[new 2011] [1.5.3] [KPI]**



**Question 2.4**

The results of the specialist assessment are returned. There are no secondary causes of hypertension; however, he was noted to have left ventricular hypertrophy and early evidence of impaired diastolic relaxation on his echocardiogram. The report suggests that these changes are most likely related to hypertension. Thus, Danny has evidence of target organ damage. What would you do next?

#### **Answer 2.4**

You would offer Danny treatment with a calcium-channel blocker, for example amlodipine. You would also offer him appropriate information about the drug and unwanted side effects.

You would see the results of the more detailed cardiovascular risk assessment, which included the cholesterol levels to discuss prognosis and healthcare options with Danny (detailed in answer 2.2).

As appropriate, you would repeat the lifestyle advice that was given in answers 2.1 and 2.2 in accordance with the guideline on areas such as diet (including sodium and caffeine intake), exercise, alcohol consumption and smoking. As Danny's cholesterol level is marginally elevated, you would also enquire about the fat content of his diet and recommend that he reduces his fat intake. You would note that his cholesterol needs rechecking.

You would ask Danny to return to your practice in 4 weeks for a review of his blood pressure.

Please note Danny's case is similar to Case 1 (Mary). Danny has been offered antihypertensive drug treatment whereas Mary was not. This is because Mary did not have target organ damage, established cardiovascular disease, renal disease, diabetes or a 10-year cardiovascular risk equivalent to 20% or greater whereas Danny has target organ damage.

### **Relevant recommendations**

- Offer antihypertensive drug treatment to people aged under 80 years with stage 1 hypertension who have one or more of the following:
  - target organ damage
  - established cardiovascular disease
  - renal disease
  - diabetes
  - a 10-year cardiovascular risk equivalent to 20% or greater.

**[new 2011] [1.5.1] [KPI]**

- Use clinic blood pressure measurements to monitor the response to antihypertensive treatment with lifestyle modifications or drugs. **[new 2011] [1.5.4]**
- Where possible, recommend treatment with drugs taken only once a day. **[2004] [1.6.1]**
- Prescribe non-proprietary drugs where these are appropriate and minimise cost. **[2004] [1.6.2]**
- Offer step 1 antihypertensive treatment with a calcium-channel blocker (CCB) to people aged over 55 years and to black people of African or Caribbean family origin of any age. If a CCB is not suitable, for example because of oedema or intolerance, or if there is evidence of heart failure or a high risk of heart failure, offer a thiazide-like diuretic.

**[new 2011] [KPI] [1.6.8]**

Please see recommendations **1.4.1 to 1.4.9 and 1.7.1 to 1.7.4** in the NICE guideline for further details on the information and advice that should be offered to people with hypertension.

**Question 2.5**

You have previously concluded that Danny's sprained ankle has healed and all swelling had cleared. Danny returns to the clinic and you notice both ankles are very swollen, which are new to him. This is likely to indicate that he is not tolerating his calcium-channel blocker.

His clinic blood pressure is 135/86 mmHg.

Would you consider that his blood pressure has been controlled? What would you do next?

### **Answer 2.5**

Danny's blood pressure has been controlled as his clinic blood pressure is now below 140/90 mmHg which is what you were aiming for. However, he was not tolerating the calcium channel blocker. You would change the calcium-channel blocker to a thiazide like diuretic such as indapamide 2.5 mg once daily. You would arrange for him to return to clinic to check his blood pressure again in 4 weeks.

#### **Relevant recommendations**

- Aim for a target clinic blood pressure below 140/90 mmHg in people aged under 80 years with treated hypertension. **[new 2011] [1.5.5]**
- If diuretic treatment is to be initiated or changed, offer a thiazide-like diuretic, such as chlortalidone (12.5–25.0 mg once daily) or indapamide (1.5 mg modified-release once daily or 2.5 mg once daily) in preference to a conventional thiazide diuretic such as bendroflumethiazide or hydrochlorothiazide. **[new 2011] [KPI] [1.6.9]**
- For people who are already having treatment with bendroflumethiazide or hydrochlorothiazide and whose blood pressure is stable and well controlled, continue treatment with the bendroflumethiazide or hydrochlorothiazide. **[new 2011] [KPI] [1.6.10]**

### ***Clinical case scenario 3: Doris***

#### **Presentation**

Doris is an 81-year-old female non-smoker. She was diagnosed with stage 2 hypertension, by a practice colleague 1 month ago. It is thought the cause is probably arterial stiffening. Her clinic blood pressure was 174/100 mmHg and her ABPM average was 170/95 mmHg She was not identified as having '[white-coat](#)' hypertension. She has now returned to the practice after your colleague requested she return for a follow up appointment.

#### **Medical history**

Doris has no significant medical history.

#### **Question 3.1**

What would you have expected your colleague to have initiated with Doris?

### **Answer 3.1**

You would have expected your colleague to have:

- Arranged and reviewed the results of all appropriate tests for target organ damage and cardiovascular risk assessment<sup>1</sup> in line with the NICE guideline.
- Provided tailored advice about lifestyle interventions
- Started treatment with a calcium-channel blocker.
- Offered Doris information and guidance about her diagnosis and treatment options.
- Asked Doris to return to your practice clinic in 1 month to check her blood pressure (this is the purpose of her current visit to you).

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<sup>1</sup> Please note some cardiovascular risk assessments have a maximum age and may not be applicable for use with Doris. Additionally, given her age, Doris will score very highly in all cardiovascular risk assessments.

## Relevant recommendations

See **answers 1.1, 1.2, 2.1 and 2.2** for further details on the diagnosis.

- Offer antihypertensive drug treatment to people aged under 80 years with stage 1 hypertension who have one or more of the following:
  - target organ damage
  - established cardiovascular disease
  - renal disease
  - diabetes
  - a 10-year cardiovascular risk equivalent to 20% or greater.

**[new 2011] [KPI] [1.5.1]**

- Offer antihypertensive drug treatment to people of any age with stage 2 hypertension. **[new 2011] [KPI] [1.5.2]**
- Use clinic blood pressure measurements to monitor the response to antihypertensive treatment with lifestyle modifications or drugs. **[new 2011] [1.5.4]**
- Offer people aged 80 years and over the same antihypertensive drug treatment as people aged 55–80 years, taking into account any comorbidities. **[new 2011] [KPI] [1.6.4]**
- Offer step 1 antihypertensive treatment with a calcium-channel blocker (CCB) to people aged over 55 years and to black people of African or Caribbean family origin of any age. If a CCB is not suitable, for example because of oedema or intolerance, or if there is evidence of heart failure or a high risk of heart failure, offer a thiazide-like diuretic.

**[new 2011] [KPI] [1.6.8]**

Please see recommendations **1.4.1 to 1.4.9 and 1.7.1 to 1.7.4** in the NICE guideline for further details on the information and advice that should be offered to people with hypertension.



### **Question 3.2**

From Doris' notes you can see that your colleague had initiated the management plan in line with the NICE clinical guideline and as identified in answer 3.1.

Doris is taking the calcium channel blocker. You have checked adherence with step 1 treatment and do not believe there is anything you can do, for instance, modify dosing regimen, provide a record for her to monitor her medicine taking, to help enhance adherence further.

Doris's total cholesterol is 4.8mmol/L and her HDL is 1.6mmol/L. Glucose is normal. There is no left ventricular hypertrophy or atrial fibrillation on ECG. Her 10-year cardiovascular risk is greater than 20%. (using QRISK2)

You measure her clinic blood pressure and it is 165/95 mmHg.

What would you do next?

### **Answer 3.2**

Doris's blood pressure is not controlled.

Check her adherence to the regimen and provide interventions to specific needs.

You would offer step 2 hypertensive treatment with the addition of an ACE or a low cost ARB inhibitor. You would follow local protocols for checking bloods prior to commencing and following initiation of the ACE inhibitor or low cost ARB for a diagnosis of hypertension<sup>2</sup>.

#### **Relevant recommendations**

- Aim for a target clinic blood pressure below 150/90 mmHg in people aged 80 years and over, with treated hypertension. **[new 2011] [1.5.6]**
- If blood pressure is not controlled by step 1 treatment, offer step 2 treatment with a CCB in combination with either an ACE inhibitor or an ARB<sup>1</sup>. **[new 2011] [1.6.13]**
- Do not combine an ACE inhibitor with an ARB to treat hypertension. **[new 2011] [1.6.7]**
- Because evidence supporting interventions to increase adherence is inconclusive, only use interventions to overcome practical problems associated with non-adherence if a specific need is identified. Target the intervention to the need. Interventions might include:
  - suggesting that patients record their medicine-taking
  - encouraging patients to monitor their condition
  - simplifying the dosing regimen
  - using alternative packaging for the medicine
  - using a multi-compartment medicines system.

(This recommendation is taken from '[Medicines adherence](#)', NICE clinical guideline 76). **[2009] [1.7.4]**

For further details of recommendations regarding patient adherence to treatment, please see recommendations **1.7.1 to 1.7.3** in NICE guideline

<sup>1</sup>Choose a low-cost ARB.

<sup>2</sup> NICE clinical guideline 108, [Chronic Heart Failure](#) and NICE clinical guideline 73, [Chronic Kidney Disease](#) contain recommendations about practicalities of initiating an ACE inhibitor  
Clinical case scenarios: Hypertension (2013)

**Question 3.3**

Doris returns to the clinic one month later. Her clinic blood pressure is 154/90 mmHg and her blood results are acceptable. What would you do next?

### **Answer 3.3**

You would review Doris's antihypertensive medication and ensure that it is at the optimal or best tolerated dose.

You would also consider her adherence to the drug regimen and ensure that any factors that may reduce her adherence are managed.

At her next clinic appointment Doris's blood pressure is 145/85 mmHg.. This is an acceptable blood pressure for a person over 80. Doris can stay on current treatment.

#### **Relevant recommendations**

- Aim for a target clinic blood pressure below 150/90 mmHg in people aged 80 years and over, with treated hypertension. **[new 2011] [1.5.6]**
- Before considering step 3 treatment, review medication to ensure step 2 treatment is at optimal or best tolerated doses. **[new 2011] [1.6.16]**
- Because evidence supporting interventions to increase adherence is inconclusive, only use interventions to overcome practical problems associated with non-adherence if a specific need is identified. Target the intervention to the need. Interventions might include:
  - suggesting that patients record their medicine-taking
  - encouraging patients to monitor their condition
  - simplifying the dosing regimen
  - using alternative packaging for the medicine
  - using a multi-compartment medicines system.

(This recommendation is taken from '[Medicines adherence](#)', NICE clinical guideline 76). **[2009] [1.7.4]**

For further details of recommendations regarding patient adherence to treatment for hypertension, please see recommendations **1.7.1 to 1.7.3** in NICE guideline 127.

## ***Clinical case scenario 4: Derek***

### **Presentation**

Derek is a 53-year-old male

### **On examination**

His clinic blood pressures is 176/108 mmHg. Additionally, you have identified left ventricular hypertrophy on ECG. You are unable to confirm the diagnosis of hypertension with ambulatory blood pressure monitoring (ABPM) because Derek has refused it because he is a bus driver and it would interfere with his driving.

### **Question 4.1**

What alternative test could you use to diagnose hypertension?

### **Answer 4.1**

You could offer Derek home blood pressure monitoring (HBPM).

#### **Relevant recommendation**

- If a person is unable to tolerate ABPM, home blood pressure monitoring (HBPM) is a suitable alternative to confirm the diagnosis of hypertension. **[new 2011] [1.2.4]**

**Question 4.2**

When instructing Derek in how to use HBPM, what instructions should you give him and what measurements would you base your diagnosis on?

## Answer 4.2

You should ensure that each blood pressure recording is based on two consecutive measurements taken at least one minute apart with Derek seated.

You should ask Derek to record his blood pressure twice daily (ideally in the morning and evening) and this should continue for at least four days and ideally for seven days.

To diagnose hypertension based on HBPM, you discard the measurements taken on the first day and take an average of all of the remaining measurements.

### Relevant recommendations

- When using HBPM to confirm a diagnosis of hypertension, ensure that:
  - for each blood pressure recording, two consecutive measurements are taken, at least 1 minute apart and with the person seated **and**
  - blood pressure is recorded twice daily, ideally in the morning and evening **and**
  - blood pressure recording continues for at least 4 days, ideally for 7 days.
- Discard the measurements taken on the first day and use the average value of all the remaining measurements to confirm a diagnosis of hypertension. **[new 2011] [KPI] [1.2.10]**

## Question 4.3

The average HBPM results was 155/97 mmHg. You therefore note Derek has a [‘white-coat effect’](#). However despite this, his HBPM measurements indicate a diagnosis of stage 2 hypertension and he had target organ damage.. You offer lifestyle interventions in line with recommendations 1.4.1 to 1.4.9 in the guideline and start Derek on step 1 treatment.

What drug regimen would you offer Derek and how would you monitor his response to treatment?



### **Answer 4.3**

You would offer Derek treatment with an ACE inhibitor or a low cost ARB and use HBPM to monitor his response to treatment. You would follow local protocols for checking bloods prior to commencing and following initiation of the ACE inhibitor or low cost ARB for a diagnosis of hypertension<sup>3</sup>.

#### **Relevant recommendations**

- Offer antihypertensive drug treatment to people aged under 80 years with stage 1 hypertension who have one or more of the following:
  - target organ damage
  - established cardiovascular disease
  - renal disease
  - diabetes
  - a 10-year cardiovascular risk equivalent to 20% or greater. **[new 2011] [1.5.1]**
- For people identified as having a 'white-coat effect'<sup>1</sup> consider ABPM or HBPM as an adjunct to clinic blood pressure measurements to monitor the response to antihypertensive treatment with lifestyle modification or drugs. **[new 2011] [KPI] [1.5.7]**
- Offer people aged under 55 years step 1 antihypertensive treatment with an angiotensin-converting enzyme (ACE) inhibitor or a low-cost angiotensin II receptor blocker (ARB). If an ACE inhibitor is prescribed and is not tolerated (for example, because of cough), offer a low-cost ARB. **[new 2011] [1.6.6]**

<sup>1</sup> A discrepancy of more than 20/10 mmHg between clinic and average daytime ABPM or average HBPM blood pressure measurements at the time of diagnosis.

### **Question 4.4**

Derek has returned to you with the results of his monitoring HBPM following step 1 treatment. During the past week, his average blood pressure was 150/94 mmHg. What is the target blood pressure for HBPM when monitoring response to treatment and what would you do about this result?

<sup>3</sup> NICE clinical guideline 108, [Chronic Heart Failure](#) and NICE clinical guideline 73, [Chronic Kidney Disease](#) contain recommendations about practicalities of initiating an ACE inhibitor  
Clinical case scenarios: Hypertension (2013)

#### **Answer 4.4**

For people aged under 80 the target HBPM blood pressure is below 135/85 mmHg.

Derek's blood pressure is not controlled so you would offer him step 2 treatment with a calcium-channel blocker in addition to his current ACE inhibitor or low cost ARB.

#### **Relevant recommendations**

- When using ABPM or HBPM to monitor the response to treatment (for example, in people identified as having a 'white-coat effect'<sup>1</sup> and people who choose to monitor their blood pressure at home), aim for a target average blood pressure during the person's usual waking hours of:
  - below 135/85 mmHg for people aged under 80 years
  - below 145/85 mmHg for people aged 80 years and over. **[new 2011] [1.5.8]**
- If blood pressure is not controlled by step 1 treatment, offer step 2 treatment with a CCB in combination with either an ACE inhibitor or an ARB. **[new 2011] [1.6.13]**

<sup>1</sup> A discrepancy of more than 20/10 mmHg between clinic and average daytime ABPM or average HBPM blood pressure measurements at the time of diagnosis.

#### **Question 4.5**

When he returns to you 1 month later, Derek's HBPM result is still above 135/85 mmHg. What would you do next?

### **Answer 4.5**

You would check Derek's adherence to treatment in line with recommendations 1.7.1 to 1.7.4 of the guideline.

You would review his medication to ensure that step 2 treatment is optimal.

#### **Relevant recommendation**

- Before considering step 3 treatment, review medication to ensure step 2 treatment is at optimal or best tolerated doses. **[new 2011] [1.6.16]**

### **Question 4.6**

Derek's medication adherence is good and step 2 treatment is optimal. What would you do next?

### **Answer 4.6**

You would offer Derek a thiazide-like diuretic in addition to his ACE inhibitor and calcium-channel blocker.

#### **Relevant recommendations**

- If treatment with three drugs is required, the combination of ACE inhibitor (or angiotensin-II receptor blocker), calcium-channel blocker and thiazide-like diuretic should be used. **[2006] [1.6.17]**

### **Question 4.7**

Derek returns to your clinic and his blood pressure is still not controlled. What would you do next?

**Answer 4.7**

You would check that Derek has received optimal medication at step 3 and reassess his adherence to his antihypertensive medication.

You would ensure that Derek has been involved in treatment decisions throughout his care and that you have adapted your consultation style in order to facilitate this involvement.

You would review Derek's knowledge, understanding and concerns about his antihypertensive medication and explore whether or not Derek believes that he needs the medication.

If you identify practical problems, you would consider interventions such as suggesting Derek records his medicine-taking and monitors his condition, simplifying the dosing regimen, using alternative packaging for the medicine or using a multi-compartment medicines system.

You would ensure that Derek has received appropriate guidance and materials about the benefits of the drugs and unwanted side effects.

You would repeat all of these actions on a regular basis when reviewing or prescribing antihypertensive drug treatment for Derek.

### Relevant recommendations

- Provide appropriate guidance and materials about the benefits of drugs and the unwanted side effects sometimes experienced in order to help people make informed choices. **[2004] [1.7.1]**
- People vary in their attitudes to their hypertension and their experience of treatment. It may be helpful to provide details of patient organisations that provide useful forums to share views and information. **[2004] [1.7.2]**
- Provide an annual review of care to monitor blood pressure, provide people with support and discuss their lifestyle, symptoms and medication. **[2004] [1.7.3]**
- Because evidence supporting interventions to increase adherence is inconclusive, only use interventions to overcome practical problems associated with non-adherence if a specific need is identified. Target the intervention to the need. Interventions might include:
  - suggesting that patients record their medicine-taking
  - encouraging patients to monitor their condition
  - simplifying the dosing regimen
  - using alternative packaging for the medicine
  - using a multi-compartment medicines system. **[2009] [1.7.4]**

Please also see '[Medicines adherence](#)' (NICE clinical guideline 76) for further recommendations regarding medicines adherence.

### **Question 4.8**

You conclude that Derek is adherent to his medication regime and that he is on the optimal doses of the ACE inhibitor, calcium channel blocker and thiazide-like diuretic. What would you do next?

### **Answer 4.8**

You seek a specialist opinion for Derek. You anticipate he will be started on step 4 treatment.

#### **Relevant recommendations**

- Regard clinic blood pressure that remains higher than 140/90 mmHg after treatment with the optimal or best tolerated doses of an ACE inhibitor or an ARB plus a CCB plus a diuretic as resistant hypertension, and consider adding a fourth antihypertensive drug and/or seeking expert advice. **[new 2011] [1.6.18]**
- For treatment of resistant hypertension at step 4:
  - Consider further diuretic therapy with low-dose spironolactone (25 mg once daily)<sup>1</sup> if the blood potassium level is 4.5 mmol/l or lower. Use particular caution in people with a reduced estimated glomerular filtration rate because they have an increased risk of hyperkalaemia.
  - Consider higher-dose thiazide-like diuretic treatment if the blood potassium level is higher than 4.5 mmol/l. **[new 2011] [1.6.19]**
- When using further diuretic therapy for resistant hypertension at step 4, monitor blood sodium and potassium and renal function within 1 month and repeat as required thereafter. **[new 2011] [1.6.20]**

## ***Clinical case scenario 5: Philip***

### **Presentation**

Philip is a 56-year-old male who presents to you with feelings of dizziness every time he stands up.

### **Medical history**

Philip has migraines and takes propranolol modified-release 160 mg daily, which has reduced the frequency.

He attends the GP surgery's weight loss clinic. He has lost four stones in 12 months as part of a controlled weight loss programme .

### **On examination**

Philip's ECG is normal and his blood pressure is 126/82 mmHg.

### ***Question 5.1***

What would you do next to investigate the cause of Philip's dizziness?



### **Answer 5.1**

As he was seated for the first readings, you would ask Philip to stand up for one minute and then measure his blood pressure again.

#### **Relevant recommendations**

- In people with symptoms of postural hypotension (falls or postural dizziness):
    - measure blood pressure with the person either supine or seated
    - measure blood pressure again with the person standing for at least 1 minute prior to measurement. **[2004, amended 2011]**
- [1.1.6]**

### **Question 5.2**

Philip's standing blood pressure is 90/50 mmHg.

What would you do next?

### **Answer 5.2**

You would review Philip's medication. His recent weight loss may mean that the dose of beta-blocker needs to be reduced

You would note the postural hypertension in Derek's records so that colleagues measuring his blood pressure in the future are aware that they should measure his standing blood pressure, as well

If changes to the migraine prophylaxis do not relieve Derek's dizziness you would consider referral to a specialist.

#### **Relevant recommendations**

- If the systolic blood pressure falls by 20 mmHg or more when the person is standing:
  - review medication
  - measure subsequent blood pressures with the person standing
  - consider referral to specialist care if symptoms of postural hypotension persist. **[2004, amended 2011] [1.1.7]**

## Other implementation tools

NICE has developed a range of tools to help organisations implement this guideline, which can be found on the NICE website

([www.nice.org.uk/guidance/CG127](http://www.nice.org.uk/guidance/CG127)).

- Costing tools – a costing report gives the background to the national savings and costs associated with implementation, and a costing template allows you to estimate the local costs and savings involved.
- Audit support and an electronic audit tool for local clinical audit.
- Baseline assessment tool – to help review current practice and plan activity needed to meet recommendations.
- Implementation advice – on how to increase capacity for ABPM in order to facilitate implementation of the ABPM recommendations in practice.
- Slide set – presents key messages from the guidance. It can be downloaded and adapted for local use.

## Related NICE guidance

[NICE quality standard for hypertension](#), March 2013.

In March 2013 NICE published the [quality standard for hypertension](#). This quality standard covers the management of primary hypertension in adults, including diagnosis and investigations, treatment to reduce risk of cardiovascular disease, monitoring of treatment efficacy, and specialist referral. The quality standard defines clinical best practice within this topic area. It provides specific, concise quality statements, measures and audience descriptors to provide the public, health and social care professionals, commissioners and service providers with definitions of high-quality care. The quality standard contains six quality statements

### Other published NICE guidance

- Chronic heart failure. NICE clinical guideline 108 (2010). Available from [www.nice.org.uk/guidance/CG108](http://www.nice.org.uk/guidance/CG108)
- Hypertension in pregnancy. NICE clinical guideline 107 (2010). Available from [www.nice.org.uk/guidance/CG107](http://www.nice.org.uk/guidance/CG107)

- Prevention of cardiovascular disease at population level. NICE public health guidance 25 (2010). Available from [www.nice.org.uk/guidance/PH25](http://www.nice.org.uk/guidance/PH25)
- Type 2 diabetes. NICE clinical guideline 87 (2009). Available from [www.nice.org.uk/guidance/CG87](http://www.nice.org.uk/guidance/CG87)
- Medicines adherence. NICE clinical guideline 76 (2009). Available from [www.nice.org.uk/guidance/CG76](http://www.nice.org.uk/guidance/CG76)
- Chronic kidney disease. NICE clinical guideline 73 (2008). Available from [www.nice.org.uk/guidance/CG73](http://www.nice.org.uk/guidance/CG73)
- Stroke. NICE clinical guideline 68 (2008). Available from [www.nice.org.uk/guidance/CG68](http://www.nice.org.uk/guidance/CG68)
- Lipid modification. NICE clinical guideline 67 (2008). Available from [www.nice.org.uk/guidance/CG67](http://www.nice.org.uk/guidance/CG67)
- Continuous positive airway pressure for the treatment of obstructive sleep apnoea/hypopnoea syndrome. NICE technology appraisal guidance 139 (2008). Available from [www.nice.org.uk/guidance/TA139](http://www.nice.org.uk/guidance/TA139)
- MI: secondary prevention. NICE clinical guideline 48 (2007). Available from [www.nice.org.uk/guidance/CG48](http://www.nice.org.uk/guidance/CG48)
- Obesity. NICE clinical guideline 43 (2006) Available from [www.nice.org.uk/guidance/CG43](http://www.nice.org.uk/guidance/CG43)
- Atrial fibrillation. NICE clinical guideline 36 (2006). Available from [www.nice.org.uk/guidance/CG36](http://www.nice.org.uk/guidance/CG36)

### **Evidence updates**

Evidence Updates are publications produced by NICE that provide a summary of selected new evidence published since a literature search was last conducted for the accredited guidance in a particular field. They identify new evidence that might reinforce or generate future change to the practice laid out in the guidance, and should be read in conjunction with the relevant clinical guideline. Evidence Updates do not replace current accredited guidance and do not provide formal practice recommendations. An [evidence update for hypertension](#) was published in March 2013.

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## **What do you think?**

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