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Definition

Hypertension is persistently raised arterial blood pressure. It can be primary (also known as essential or idiopathic) where there is no identifiable cause, which accounts for about 90 percent of those with hypertension. Alternatively, it can be secondary hypertension, which is as a result of a known underlying cause, for example, diabetic nephropathy, hormone conditions or kidney disease.¹

'White coat' hypertension sometimes occurs during consultations with clinicians. 'White coat' hypertension is defined as a discrepancy of more than 20/10 mmHg between clinic and average daytime ambulatory blood pressure monitoring (ABPM) or average home blood pressure monitoring (HBPM) blood pressure measurements at the time of diagnosis.² This leads to a falsely high blood pressure reading when taken in a clinic setting. A true blood pressure reading can be obtained by ABPM or HBPM.

The National Institute for Health and Care Excellence (NICE) uses the following blood pressure measurements to define hypertension:²

Stage 1 hypertension	Clinic blood pressure is 140/90 mmHg or higher and subsequent ABPM daytime average or HBPM average blood pressure ranges from 135/85 mmHg to 149/94 mmHg.
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 120 mmHg or higher.

Further information can be found in the European Society of Cardiology (ESC) and the European Society of Hypertension (ESH) 2018 ESC/ESH **Guidelines for the management of arterial hypertension** under Section 3, *Definition, classification, and epidemiological aspects of hypertension*.

The definition of severe hypertension differs between the NICE and 2018 ESC/ESH guidelines. The **2018 ESC/ESH guidelines** define severe hypertension at a diastolic pressure equal to or above 110 mmHg.

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Prevalence and incidence

The prevalence of hypertension in adults in England in 2015 was 31 percent in men and 26 percent in women, with incidence rising with age such that over 50 percent of people aged over 60 years have hypertension.³

Public Health England's guidance **Health matters: combating high blood pressure** outlines how providers and commissioners can reduce the population average blood pressure through improved prevention, detection and management. The first section, *Scale of the problem*, discusses the number of people who are affected by high blood pressure.

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Signs and symptoms

Primary hypertension is usually asymptomatic.⁴

In the following British Heart Foundation video, we hear about how Adam only found out he had high blood pressure after he experienced a stroke.

British Heart Foundation - Adam's stroke: a missed case of high blood pressure

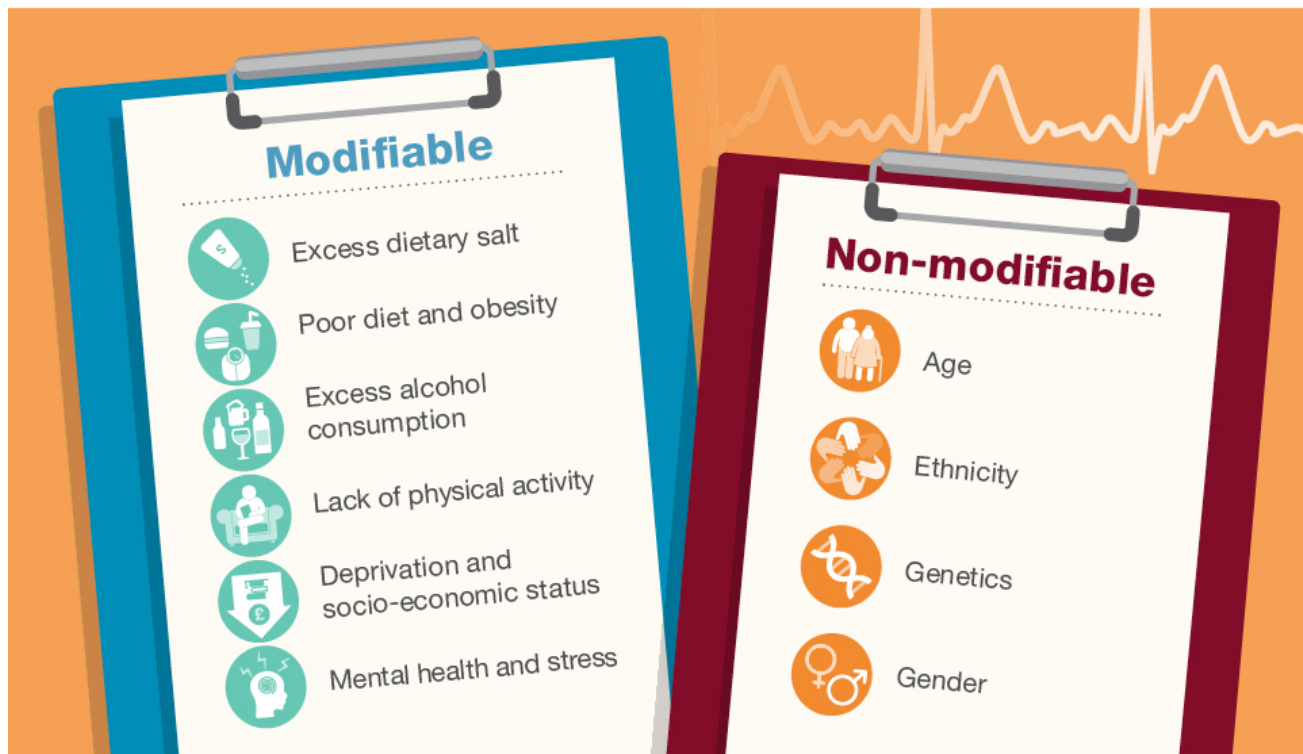


The underlying causes of **secondary hypertension** may have signs and symptoms. More information about this can be found in *Table 26* in Section 8.2, *Secondary hypertension*, of the 2018 ESC/ESH ***Guidelines for the management of arterial hypertension***.

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Causes/risk factors

There are a number of factors that increase the risk of hypertension. These can be classified as modifiable and non-modifiable.



Taken from Public Health England's *Health matters: combating high blood pressure*.

Read the *Preventing high blood pressure* section of Public Health England's *Health matters: combating high blood pressure* to learn more about each of these risk factors.

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Pathophysiology (mechanism of disease)

The pathophysiology of hypertension is not fully understood. It is thought to be due to the derangement of several physiological mechanisms.⁵

The following *Nature Reviews Disease Primers* article (which requires a subscription) explores the mechanisms/pathophysiology of hypertension along with the epidemiology, diagnosis, screening and prevention of hypertension, management of hypertension, and quality of life and outlook for those who have hypertension: **Hypertension**.

Alternatively, this open access *British Medical Journal* article focuses on the pathophysiology of hypertension: **ABC of hypertension, The pathophysiology of hypertension**.

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Prognosis and complications

Hypertension is the single biggest risk factor for cardiovascular disease and related disability, and at least half of all heart attacks and strokes are associated with hypertension.

Additionally, hypertension increases the risk of the following conditions:

- heart failure
- coronary heart disease
- chronic kidney disease
- peripheral arterial disease
- vascular dementia.⁶

For more information about the way in which blood pressure affects risk, visit NICE clinical knowledge summary (CKS) [Hypertension, Complications and prognosis](#).

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Diagnosis/detection

Healthy adults aged over 40 are advised to have their blood pressure checked at least once every five years. Those at increased risk are advised to have their blood pressure checked more often; ideally, once a year.⁷

The **NHS Health Check** programme, which includes blood pressure measurement, provides an ideal opportunity for people to have their blood pressure tested. NHS Health Checks have been reported to pick up 38 new cases of high blood pressure in every 1000 checks.⁸ They have also been shown to pick up 50 percent more new cases of hypertension in attendees compared to non-attendees.⁹ For more information about the NHS Health Check, visit the CPPE **Health Check** gateway page.

Hypertension is diagnosed by measuring blood pressure. The definitions box at the start of Section 1, Sections 1.1 *Measuring blood pressure* and 1.2 *Diagnosing hypertension* of the NICE guideline **Hypertension in adults: diagnosis and management [NG136]** cover the staging of hypertension, how blood pressure should be measured and how these measurements can aid diagnosis.

Cardiovascular risk assessment

Managing hypertension should not be considered in isolation and appropriate cardiovascular risk assessment should be undertaken.

Section 1.3, *Assessing cardiovascular risk and target organ damage*, of **Hypertension in adults: diagnosis and management [NG136]** covers how to assess cardiovascular risk and links to further relevant NICE guidance including **Cardiovascular disease: risk assessment and reduction, including lipid modification [CG181]**.

Risk assessment tools for primary prevention

Section 1.1, *Identifying and assessing cardiovascular disease (CVD) risk*, of **Cardiovascular disease: risk assessment and reduction, including lipid modification [CG181]** discusses the use of risk assessment tools and their limitations. This guidance recommends the use of the QRISK®2 risk calculator. Since this guidance was released and updated, the **QRISK®3 risk calculator** has been launched. An alternative tool

is the **Joint British Societies recommendations on the prevention of Cardiovascular Disease – JBS3 risk calculator**.

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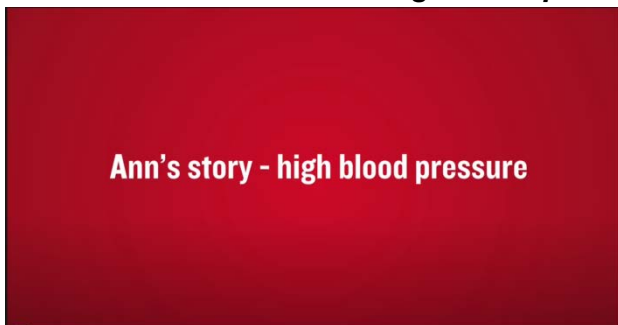
Non-pharmacological treatment

Information about a healthy lifestyle should be offered to people diagnosed with hypertension. Section 1.4, *Treating and monitoring hypertension*, of the NICE guideline **Hypertension in adults: diagnosis and management [NG136]** covers the information that should be delivered, along with links to other relevant NICE guidance.

Leaflets such as **Understanding blood pressure** from the British Heart Foundation, and **Hypertension and diet** from the Association of British Dietitians may be helpful resources.

In the following British Heart Foundation video, Ann shares her story about how she made lifestyle changes to reduce her high blood pressure.

British Heart Foundation – High blood pressure and heart disease



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Pharmacological treatment

NICE guidance

Section 1.4, *Treating and monitoring hypertension*, of NICE guideline **Hypertension in adults: diagnosis and management [NG136]** outlines the NICE recommendations for pharmacological treatment in hypertension. The information from Section 1.4 is also set out in the NICE **Hypertension in adults: diagnosis and treatment** visual summary.

People with comorbidities

Two out of three people with hypertension have a comorbidity.¹⁰ There are several NICE guidelines which make recommendations about blood pressure management in those with comorbidities, including:

- [Chronic kidney disease: assessment and management \[NG203\]](#)
- [Hypertension in adults: diagnosis and management \[NG136\]](#)
- **Type 1 diabetes in adults: diagnosis and management [NG17]** (specifically Section 1.13 *Control of cardiovascular risk*)
- **Chronic heart failure in adults: diagnosis and management [NG106]** (specifically Section 1.4 *Treating heart failure with reduced ejection fraction*)

- [Atrial fibrillation: diagnosis and management \[NG196\]](#)

Therapeutic options

The British and Irish Hypertension Society offer *Therapeutics* information that outlines the mechanism of action, pharmacokinetics, adverse effects and practical issues associated with the following groups of medicines used to treat hypertension.

- **Alpha-adrenoceptor antagonists**
- **Angiotensin-converting enzyme inhibitors (ACE inhibitors)**
- **Angiotensin receptor blockers (ARBs)**
- **Beta-adrenoceptor antagonists (beta-blockers)**
- **Calcium-channel blockers (CCBs)**
- **Centrally-acting agents**
- **Direct renin inhibitors**
- **Thiazide and thiazide-like diuretics**
- **Other diuretics**
- **Potent direct vasodilators**

The following *British Journal of Anaesthesia* article focuses on the applied pharmacology of agents commonly encountered in UK clinical practice, their therapeutic effects, side effects, drug interactions and implications for anaesthesia and surgery: **Antihypertensive drugs**.

The *British National Formulary (BNF)* also offers a treatment summary on the topic of **Hypertension** which covers blood pressure targets, treatment options and options for different groups of people.

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Patient support

Blood Pressure UK is a charity dedicated to lowering the nation's blood pressure to prevent disability and death from stroke and heart disease.

The British Heart Foundation offers a **High blood pressure** page.

The NHS have a dedicated **High blood pressure (hypertension)** page.

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Further resources

CPPE's **Hypertension** gateway page offers further learning on the topic of hypertension.

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External websites

CPPE is not responsible for the content of any non-CPPE websites mentioned on this page or for the accuracy of any information to be found there.

All web links were accessed on 23 October 2021.

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