

## High blood pressure and stroke

High blood pressure usually has no symptoms but it is the biggest risk factor for stroke. Both lifestyle changes and medication can help to lower your blood pressure and so reduce your risk of stroke. This factsheet explains what high blood pressure is, the types of medication used to treat it and what you can do to lower your blood pressure.

### What is high blood pressure?

Your heart pumps blood all around your body through your arteries. Blood pressure is a measure of how strongly the blood presses against the walls of your arteries. If this pressure is too high it puts a strain on your arteries and your heart, which makes it more likely that you will suffer health problems such as stroke, a heart attack, or kidney disease.

Your blood pressure varies throughout the day. It can go down if you are asleep or sitting quietly, and can go up if you are rushing about or stressed. **High blood pressure develops when the pressure of the blood running through your arteries is consistently too high.** The medical term for high blood pressure is **hypertension**.

High blood pressure is a common problem, affecting about 10 million people in the UK. It **often has no symptoms**; so having it measured is the only way to tell if your blood pressure is high.

Do you know what your blood pressure is? Ask your doctor or pharmacist to check it for you.

### What is the link between high blood pressure and stroke?

If you have high blood pressure and it is not treated and kept under control, it increases your risk of having a stroke. In fact, **high blood pressure is the single biggest risk factor for stroke**, causing about 50 per cent of strokes due to a blockage (ischaemic strokes). It also increases the risk of bleeding in the brain (called a haemorrhagic stroke).

High blood pressure puts a strain on all the blood vessels throughout your body, including the ones leading to the brain. As a result, your heart has to work much harder to keep the blood circulation going. This strain can damage your blood vessels, causing them to become harder and narrower, a condition called **atherosclerosis**. This makes a blockage more likely to occur, which could cause a stroke or transient ischaemic attack (TIA, sometimes called a mini stroke).

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On rare occasions, this extra strain may cause a blood vessel to weaken and burst inside the brain, causing **bleeding** into surrounding tissues. This is called a haemorrhagic stroke.

### What causes high blood pressure?

High blood pressure can develop for a variety of reasons. **Lifestyle factors** such as being overweight, smoking, drinking too much alcohol, not exercising and eating an unhealthy diet can all lead to high blood pressure.

Blood pressure tends to **rise as we get** older so high blood pressure is more common in middle-aged and elderly people.

High blood pressure may be caused by another **underlying health condition**, such as certain kidney disorders.

Some people are also more at risk than others. Blood pressure problems can run in families, and certain **ethnic groups**, such as South Asian people and African-Caribbean people, are more at risk (see our factsheets *F32, Stroke in South Asian people* and *F21, Stroke in African-Caribbean people* for more information).

### How is blood pressure measured?

**Measuring your blood pressure is quick, simple and painless**, and can be carried out at your doctor's surgery or at some pharmacies. A cuff is placed around your arm and then inflated, while a machine records your blood pressure. Sometimes the doctor will use a stethoscope to listen to your blood flow. This is a more reliable method than using a machine if you have a type of

irregular heartbeat called atrial fibrillation.

### When you have your blood pressure checked, you will be given two numbers.

The first number is the pressure when your heart beats (this is called systolic pressure) and the second number is the pressure when your heart relaxes between beats (diastolic pressure). Both pressures are measured in millimetres of mercury, written as 'mmHg'.

The lower your blood pressure is the better. The optimal blood pressure is less than 120/80 mmHg.

### How often should my blood pressure be checked?

**All adults should have their blood pressure checked regularly.** If you have normal blood pressure, that means at least once every five years, preferably more often. **Your blood pressure should be checked more frequently if it is nearer 140/90mmHg**, as you have a higher risk of developing high blood pressure. If you've had a high or borderline reading in the past, but you are not currently having treatment, your blood pressure should be measured at least once a year.

Women taking the contraceptive pill, who are pregnant or taking hormone replacement therapy (HRT), and some people taking specific medicines, also need to have their blood pressure checked more often.

And if you are already **taking medication** to control your blood pressure, you will probably need to have it checked four times a year.

You may be advised to buy an electronic blood pressure monitor so you can **check**

**your own blood pressure at home.** In this case, you will need to have a machine that meets the standard set by the British Hypertension Society. The Blood Pressure Association (see *Useful organisations*) has a list of validated monitors. Your doctor or nurse will also need to check it for accuracy. If you are using a machine at home, you will usually be advised to take your blood pressure twice a day, at the beginning and the end of the day.

### How is high blood pressure diagnosed?

You are usually diagnosed with high blood pressure if it is consistently higher than 140/90mmHg.

If you have **diabetes**, you will usually be treated with medication if your blood pressure is consistently above 130/80 mmHg.

Before being diagnosed with high blood pressure, your doctor may take a few readings over a period of days or weeks to make sure that the high reading is consistent, and was not a reaction to being at the surgery or in hospital. Some people feel anxious about having their blood pressure taken and have a high reading then, when at other times their blood pressure is normal. This condition is sometimes called white coat hypertension.

You may also be given a special machine that records your blood pressure at home at regular intervals over a 24 hour period. You will then have a follow-up appointment with your doctor to discuss the results.

### How is it treated?

Most people with high blood pressure will need to **take medication** to reduce it. **Changing your lifestyle** can also help to bring it down.

Your doctor will usually aim to reduce the upper figure of your blood pressure to below 140 (below 150 if you are aged over 80) and the lower figure to below 90.

**If you have diabetes or have already had a stroke or heart attack**, the aim will be to reduce your blood pressure even further to below 130/80 mmHg. This is not always possible, but even small reductions in your blood pressure can significantly reduce your risk of having a stroke.

### Medication for high blood pressure

There are five main groups of blood pressure medication:

- ACE (angiotensin-converting enzyme) inhibitors
- angiotensin-2 receptor blockers
- beta-blockers
- calcium channel blockers
- thiazide-like diuretics.

These are the most commonly used ones, but other types are also available.

The medication you take will be **tailored to your individual needs**. Most people need to take more than one medication to control their blood pressure, and you may need to

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try several different types before you find the ones that suit you best.

For some people, it is difficult to lower their blood pressure and keep it under control. If you need to take four or more different types of medication to control your blood pressure, you should be referred to see a **specialist**.

If you are **pregnant or breastfeeding**, most of the following types of medication will be unsuitable for you. However you may be able to take a calcium channel blocker. Your doctor will be able to advise you further.

Most people will need to continue taking medication for high blood pressure for the rest of their lives.

### Types of medication

#### ACE inhibitors

These drugs are usually the **first choice of treatment for people aged under 55 who are not of African-Caribbean origin**. Angiotensin is a hormone which regulates blood pressure. ACE inhibitors stop the production of this hormone and relax your arteries, so your blood pressure falls.

ACE inhibitors seem to work better at lowering your blood pressure if you also **reduce the amount of salt you eat**.

Examples of ACE inhibitors include enalapril, lisinopril, perindopril and ramipril.

Possible **side effects** include dizziness, tiredness, weakness, rash, headaches and changes to your sense of taste. The most common side effect is a persistent dry cough. If this is troublesome, you may be

advised to try an angiotensin-2 receptor blocker medication (see below) which works in a similar way.

ACE inhibitors can cause unpredictable effects if they are taken with other types of medication including some over the counter ones. **Check with your GP or pharmacist before taking any other types of medication** if you take an ACE inhibitor.

#### Angiotensin-2 receptor blockers

Like ACE inhibitors, these work on the hormone angiotensin by blocking its effects. They are usually used instead of an ACE inhibitor if you are not able to tolerate one.

These drugs are usually recommended for **people aged under 55 years who are not of African-Caribbean origin**. They can be useful if you have **diabetes or kidney disease** as well as high blood pressure. This is because these types of drug can protect your kidneys.

Examples include candesartan, losartan and valsartan.

Possible **side effects** are usually mild and include dizziness, headache or cold or flu-like symptoms.

#### Beta-blockers

Beta-blockers work by making your heart beat more slowly and with less force, which reduces your blood pressure. They are **usually only recommended if other treatments haven't worked** because they are less effective than other treatments.

It is important that you **do not suddenly stop taking this type of medication**

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without seeking medical advice first. These drugs would need to be tailed off gradually. Stopping suddenly can lead to serious side effects such as a rise in blood pressure or an angina attack.

Examples of beta-blockers include atenolol, oxprenolol, and propranolol.

Possible **side effects** include slowing of the heart rate, heart failure, wheezing, cold fingers and toes, stomach upsets, asthma, tiredness and disturbed sleep.

### Calcium channel blockers

These drugs are particularly effective in controlling high blood pressure in **people aged over 55 and in African-Caribbean people of any age**. They stop calcium from entering the muscle cells in your heart and blood vessels. This widens your arteries and lowers your blood pressure.

Examples of calcium channel blockers include amlodipine, diltiazem and nifedipine.

Possible **side effects** include swollen ankles, ankle or foot pain, constipation, skin rashes, a flushed face, headaches, dizziness and tiredness.

You should **avoid drinking grapefruit juice** while taking some types of calcium channel blockers as it can increase the amount of medication in your bloodstream. This can make your blood pressure drop suddenly and increase your risk of side effects. Ask your doctor for advice.

### Thiazide-like diuretics

Diuretics are also known as water pills because they work by flushing out excess

water and salt from the body through urine. This class of drug is often very successful in lowering blood pressure, especially in **older people**.

Blood tests are usually needed around three to four weeks after you start treatment to check that there are no harmful effects on your kidneys and that the potassium levels in your blood have not dropped.

Examples of thiazide-like diuretics include chlortalidone and indapamide.

Possible **side effects** include an increased need to go to the toilet, feeling thirsty, dizziness, weakness, feeling lethargic or sick, muscle cramps, skin rash, an increase in uric acid (a chemical in the body that can cause kidney problems and gout), raised blood sugar levels and for men, problems with getting an erection.

### Other drugs

Other drugs that may be used to control blood pressure include doxazosin and terazosin (which belong to a group called alpha-blockers), and clonidine and methyldopa (which belong to a group called centrally acting drugs). They are only usually recommended if other treatments haven't worked.

Recent research has highlighted that it can be important to stabilise blood pressure as well as trying to lower it. The implications of this research are not yet clear.

## Helping yourself

To give yourself the best possible chance of lowering your blood pressure, **take your medication according to the packet's**

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### instructions and as advised by your doctor.

If you have trouble remembering to take it, ask your GP for your medication to be given to you in **pre-filled boxes** with times clearly marked on them. You could also ask a friend or relative to help you to remember, or use an alarm as a reminder.

Continue to **have your blood pressure regularly monitored** to check that it does not rise again. Ask your doctor how often you should have it checked and remember to make an appointment at the correct time.

There is strong evidence that regularly taking medication for high blood pressure will considerably reduce your risk of having a stroke.

Although most people do not experience any problems with their medication, some people will experience side effects. These usually lessen in time.

**Ask your doctor** about any symptoms you have, and any possible side effects of your medication. For most people side effects will be minor, but if you are reacting badly to your blood pressure medication or start to feel unwell, make an appointment with your doctor or nurse as soon as you can. There are lots of different types of medication to try.

### What can I do to help lower my blood pressure?

- Reduce your salt intake. Salt raises your blood pressure, particularly if you are of African-Caribbean descent. Don't add salt to your food and avoid processed foods that contain a lot of salt.

- Eat at least five portions of fruit and vegetables each day.
- Lose weight if you need to.
- Limit the amount of fat you eat.
- Limit the amount of sugar you eat.
- Give up smoking.
- Reduce your alcohol intake and avoid binge drinking.
- Be more active.
- Reduce your stress levels and take time to relax.

Contact us for further information about these topics.

### Questions to ask your doctor

You may also like to ask your doctor the following questions to help you stay informed:

- What is my blood pressure now?
- What is the right blood pressure for my age and health?
- How often should I have my blood pressure checked?
- What type of medication am I taking?
- What are the possible side effects?
- What should I do if I experience side effects

- Do I need to take other types of medication to reduce my risk of stroke, for example to lower my cholesterol?
- Will the different types of medication I am taking interact?
- What else can I do to reduce my blood pressure?

## Useful organisations

All organisations are UK wide unless otherwise stated.

### Stroke Association

**Stroke Helpline:** 0303 3033 100

**Email:** [info@stroke.org.uk](mailto:info@stroke.org.uk)

**Website:** [stroke.org.uk](http://stroke.org.uk)

Contact us for information about stroke, emotional support and details of local services and support groups.

### Blood Pressure Association

**Tel:** 0845 241 0989

**Website:** [www.bpassoc.org.uk](http://www.bpassoc.org.uk)

Provides a wide range of information on living with high blood pressure, types of medication and lifestyle changes. You can become a member and receive regular magazines and information updates.

### British Heart Foundation (BHF)

**Heart Helpline:** 0300 330 3311

**Website:** [www.bhf.org.uk](http://www.bhf.org.uk)

The Heart Helpline provides information from cardiac nurses on heart and health issues.

**Disclaimer:** The Stroke Association provides details of other organisations for information only. Inclusion in this factsheet does not constitute a recommendation or endorsement.

## Glossary of terms

**ACE Inhibitor** = a group of drugs used to lower blood pressure.

**Angiotensin-2 receptor blockers** = group of drugs used to lower blood pressure.

**Beta-blockers** = a group of drugs used to lower blood pressure.

**Calcium channel blockers** = a group of drugs used to lower blood pressure.

**Diastolic pressure** = your blood pressure when your heart relaxes between beats. The second figure of your blood pressure reading.

**Hypertension** = the medical term for high blood pressure.

**Systolic pressure** = your blood pressure when your heart beats. The first figure of your blood pressure reading.

**Thiazide-like diuretics** = a group of drugs used to lower blood pressure.

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For sources used, visit [stroke.org.uk](http://stroke.org.uk)

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