

High blood pressure and stroke



Stroke Helpline: 0303 3033 100
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High blood pressure is the biggest single risk factor for stroke. This guide explains why high blood pressure can cause a stroke, and what you can do about it.

High blood pressure plays a part in about half of all strokes. But although high blood pressure is a serious condition, there are things you can do to reduce your risk of a stroke.

Staying healthy and reducing high blood pressure

If you're diagnosed with high blood pressure after a stroke, it may come as a shock. Many people with high blood pressure need to take long-term medication and make some healthy lifestyle changes to reduce the risk of another stroke or transient ischaemic attack (TIA or mini-stroke).

High blood pressure usually has no symptoms, so you probably won't feel any different when you're taking medication. But medication is highly effective at lowering your blood pressure and reducing your risk of a stroke.

For more information, turn to 'How is high blood pressure treated?' on **page 2**.

Small change: big reduction in stroke risk

If you can lower your blood pressure by just 10 mmHg, you cut your risk of stroke by over 25%.

What is high blood pressure?

Your heart pumps blood all around your body through a network of blood vessels. Blood pressure is a measure of how strongly the blood presses against the walls of your blood vessels.

Your blood pressure goes up and down over the course of a day. For example, it changes depending if you're active, resting, calm or stressed. A diagnosis of high blood pressure means that your blood pressure stays high over a long period. The medical term for this is hypertension.

High blood pressure is very common, with around 13.5 million people diagnosed in England alone, and even more who don't know they have it.

What is the link between high blood pressure and stroke?

High blood pressure can lead to stroke in different ways. It can lead to blood clots in the brain, and can damage the tiny blood vessels deep inside the brain. It can also make a stroke due to bleeding in the brain more likely.

Strokes due to a clot (ischaemic stroke)

High blood pressure damages your blood vessels by making them become narrower and stiffer, and causing a build-up of fatty material. This process is called atherosclerosis. Clots can form on the areas of fatty material, and if a clot travels to the brain it causes a stroke or transient ischaemic attack (TIA or mini-stroke).

Stroke and cognitive problems due to small vessel disease

Small vessel diseases means having damage to the tiny blood vessels deep inside the brain. This makes a stroke more likely, and it can affect your thinking ability (cognitive problems). It's often caused by high blood pressure.

Stroke due to bleeding in or around the brain (haemorrhagic stroke)

High blood pressure can damage blood vessels inside the brain, causing bleeding in the brain. This is called a haemorrhagic stroke.

How is high blood pressure treated?

Your GP will advise you about reducing your blood pressure, including medication and lifestyle changes. Lowering your blood pressure, even by a small amount, can help you stay healthy.

Medication for high blood pressure

If you're diagnosed with high blood pressure and your GP thinks you are at risk of a stroke, they will recommend a medication they think will work for you.

For details about the different types of blood pressure medication available, turn to our 'Quick guide to blood pressure medication' on **page 5**.

Whether you're offered medication depends on your individual risk of a stroke. Things that increase your risk include a previous stroke, heart problems, diabetes and taking certain medications.

Before starting medication you will have blood and urine tests, and you may have an electrocardiogram (ECG) to check for heart problems.

If you are aged under 40 and you're diagnosed with high blood pressure, you should be referred for checks to look for the causes of your high blood pressure.

Tailoring your treatment

There are several different types of medication for high blood pressure, and we know that age, ethnicity and family history affect how they work. Other medications can also affect how they work. So your GP works with you to make sure your prescription is tailored to your needs.

You might need to try different doses or take more than one type, depending how you respond. Blood pressure medications can be more effective in combination.

But if you are taking four different types and your blood pressure remains high, you should be referred to see a specialist.

Getting started with your medication

It can sometimes take a while to adjust to taking a long-term medication. You will have regular blood pressure checks, and you may be able to monitor your blood pressure at home.

Your pharmacist can give you advice and support with taking medicines, such as practical tips for taking tablets, and advice about side effects.

Pharmacy-based support service (England only)

In England, you can join the New Medicines Service (NMS) by asking your local pharmacist. This gives you three appointments with your pharmacist in a private consultation room. The service helps you with getting started, and supports you with solving any problems. The aim is to make it easier to keep taking the medications in the long term.

How long will I be on medication?

The aim of the medication is to keep your blood pressure low and stable over many years. Some people may be advised to continue taking medication for high blood pressure for the rest of their lives. Alongside treatment, you should have advice and support with lifestyle changes. Things like quitting smoking, getting active and healthy eating can all help reduce blood pressure. With support from a GP or pharmacist, some people may eventually be able to reduce or stop their medication.

Side effects and drug interactions

Like all medications, blood pressure medications can cause side effects. Always check with your GP or pharmacist before taking new types of medication, including any over-the-counter treatments and supplements.

Lifestyle changes



On top of medication, healthy lifestyle changes can often help to lower your blood pressure even more.

When you're diagnosed with high blood pressure, you should be given advice about any lifestyle changes you need to make. It's not always easy to do things like changing your diet or being more active, and people tell us that getting support can really help.

Ask your GP or pharmacist about local support services. Free help is available with quitting smoking, and you may also find support or apps you can use for help with eating healthily, losing weight, getting more active, cutting down on drinking, and reducing stress and anxiety.

Visit our free online self management tool to hear how others manage their risk of a stroke [mystrokeguide.com](https://www.mystrokeguide.com)

Lifestyle changes quick guide

- Reduce your salt intake. Have a look at our guide to healthy eating after stroke for some ideas on how to do this.
- Get help with quitting smoking.
- Eat plenty of fruit and vegetables.
- Lose weight if you need to.
- Reduce your alcohol intake and avoid binge drinking.
- Be more active.
- Reduce your stress levels and take time to relax.
- Try to get at least six hours sleep a night.

For more information read 'How to reduce your risk of a stroke' [stroke.org.uk/reduce-my-risk](https://www.stroke.org.uk/reduce-my-risk).

How is high blood pressure diagnosed?

You might have your blood pressure taken at a clinic, or you may be given a machine that records your blood pressure at home at regular intervals over a 24-hour period. You often need a few readings to check the reading over time, as blood pressure varies during the day.

How is blood pressure measured?

Measuring your blood pressure is quick and simple. An inflatable cuff is wrapped around your arm. This tightens and then slowly deflates. Your blood pressure reading shows up on an electronic screen.

Understanding your blood pressure reading

Your blood pressure reading is recorded as two numbers.

- **Systolic:** the pressure when your heart beats.
- **Diastolic:** the pressure in between heartbeats.

Both numbers are equally important, and blood pressure is counted as being high if either number is high.

What do the numbers mean?

Blood pressure is measured in "millimetres of mercury", written as 'mmHg'. For example: 90/60 mmHg.

The ideal blood pressure is between 90/60 mmHg and 120/80 mmHg.

High blood pressure is diagnosed if:

- It's consistently above 140/90 mmHg.
- You're over 80, and your blood pressure is over 150/90 mmHg.
- It's consistently above 135/85 when you measure it at home.
- It's over 180/120, only one test is needed.

If you have diabetes or other conditions like kidney disease, you might be offered medication at 130/80.

If your blood pressure is usually between 120/80 and 140/90 it's considered a high-normal, or pre-high blood pressure. Ask your GP for advice about getting back to a normal level.

Why is the target level lower for home blood pressure testing?

Some people can have a higher reading if they are feeling anxious about seeing a medical professional. This is sometimes called the 'white coat effect'. Home blood pressure test results are likely to be lower, so the cut-off point for diagnosis needs to be lower.

Monitoring your blood pressure

How often should I get checked?

- If your blood pressure is usually at the high end of normal (between 120/80 and 140/90), you should have an annual check.
- If you have been diagnosed with high blood pressure, you should be monitored until you reach your target blood pressure. Afterwards you should have an annual check.
- All adults should have their blood pressure checked at least every five years.

Home blood pressure monitoring

It's possible to monitor your own blood pressure at home. In some areas of England, your GP may be able to let you have a home blood pressure monitor.

Some fitness trackers and mobile devices can measure blood pressure and heart rate. These can be useful for keeping an eye on your blood pressure, but most of these are not as accurate as a medical device. Ask your GP if they can use readings made by your device.

If you are thinking of buying a home monitor, ask your GP for advice about how and when to use it. The British Hypertension Society has a list of reliable monitors at bihsoc.org/bp-monitors.

Who can get high blood pressure?

The chance of having high blood pressure goes up as we get older. You're more likely to develop it if you have a family history of high blood pressure. And people of black African or black Caribbean origins are more likely to have high blood pressure than the rest of the population.

Some things that put you at greater risk of high blood pressure include:

- Eating too much salt.
- Being inactive.
- Being overweight.
- Drinking more than the safe limits for alcohol.

Some health conditions can cause high blood pressure, including:

- Kidney disease.
- Diabetes.
- Obstructive sleep apnoea (interrupted breathing during sleep).
- Lupus (immune disorder).

Some medications can affect blood pressure including the combined oral contraceptive pill (combi pill) and steroids. Illegal drugs such as cocaine and amphetamines can also raise blood pressure.

Stress and high blood pressure

Feeling stressed can raise your blood pressure for a short time, but it isn't a direct cause of high blood pressure. However, if you're under stress you might eat unhealthy food, drink too much or lose out on sleep.

All these things can eventually lead to high blood pressure. So it is a good idea to reduce your stress levels as part of a healthy lifestyle.

High blood pressure in pregnancy

If you have high blood pressure during pregnancy, your blood pressure will be monitored during pregnancy, labour and after the birth. If it's very high you may need to stay in hospital until it improves.

The most commonly used medication for high blood pressure in pregnancy is labetalol. If you can't take labetalol, methyldopa and nifedipine are possible alternatives. These are not licensed for use in pregnancy, but they can be offered along with advice about the risks and the reasons for using it.

If you were already on blood pressure medication before becoming pregnant, you might need to change to a different type as some types are not safe to use in pregnancy. You should speak to your doctor to discuss the best way to manage your blood pressure during pregnancy.

Quick guide to blood pressure medication

This guide can only give general information. You should always get individual advice about your own health and any treatment you may need from a medical professional such as a GP or pharmacist.

The main groups of blood pressure medication are:

1. ACE inhibitors. Abbreviated from angiotensin-converting enzyme.
2. Angiotensin-2 receptor blockers (ARB).
3. Calcium channel blockers.
4. Thiazide-like diuretics.
5. Other types of medication.

1. ACE inhibitors

ACE inhibitors work by relaxing your blood vessels. Examples of ACE inhibitors include enalapril, lisinopril, perindopril and ramipril.

Who can and can't take it?

They are often used with people aged 55 or under, who are not of black African or black Caribbean origin. But they can still be an option for other people. They can be used in combination with some other blood pressure medications, but if you're taking them with diuretics you need regular checks on your kidney function.

How to take it

They are usually taken as a tablet once a day. You'll have a blood test soon after starting ACE inhibitors, to check kidney function. They are more effective if you eat less salt. Using potassium-based salt substitutes can raise blood potassium levels, so check with your GP or pharmacist before using them.

Common side effects

The most common side effect is a persistent dry cough. Other side effects include dizziness, tiredness, weakness, rash, headaches and changes to your sense of taste.

2. Angiotensin-2 receptor blockers (ARB)

Like ACE inhibitors, these work on the hormone angiotensin-2 by blocking its effects. Examples include candesartan, irbesartan, losartan, valsartan and olmesartan.

Who can and can't take it?

These drugs are usually used instead of an ACE inhibitor if you are not able to tolerate one. The two types of medication should not be used together. They are mainly used with people under 55, who are not of black African or black Caribbean origin.

But they can still be an option for other people. They can help to protect your kidneys if you have diabetes or kidney disease.

How to take it

They are usually taken as a tablet once a day. Try to take it at the same time every day.

Common side effects

Possible side effects are usually mild and include dizziness, headache or nausea.

3. Calcium channel blockers

They stop calcium from entering the muscle cells in your heart and blood vessels. This relaxes your arteries and lowers your blood pressure. Examples of calcium channel blockers include amlodipine, felodipine and nifedipine, as well as the less commonly used diltiazem and verapamil.

Who can and can't take it?

These medications are particularly effective in people aged over 55, or in black African and black Caribbean people of any age.

How to take it

They are usually taken as a tablet once a day. 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 GP or pharmacist for advice.

Common side effects

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

4. Thiazide-like diuretics

Thiazide-like diuretics are the diuretics most commonly used to treat high blood pressure. Diuretics are also known as water pills because they work by flushing out excess water and salt from the body through urine. Examples include indapamide, bendroflumethiazide, chlortalidone and cyclopenthiiazide.

Who can and can't take it

Diuretics are often used with people over 55, and people of black African and black Caribbean origins. They can also be an option for other people, and they may be used if calcium channel blockers cause side-effects.

How to take it

They are usually taken as a tablet once a day. It can be helpful to take them in the morning, as taking them in the evening can mean you need a wee during the night. You may need to have regular blood tests after you start treatment to check potassium levels and blood sugar. You should have a blood test every year.

Common side effects

Possible side effects include needing to wee more often, thirst, dizziness, weakness, feeling lethargic or sick, muscle cramps and skin rash.

5. Other types of medication**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 on their own.

It is important that you do not suddenly stop taking this type of medication without seeking medical advice first. Examples of beta-blockers include labetalol, atenolol, and bisoprolol.

Possible side effects include slowing of the heart rate, cold fingers and toes, nausea, diarrhoea, tiredness and sleep problems. It can make asthma worse, or affect your breathing if you have heart failure.

Other medication groups

Other medications that may be used to control blood pressure include doxazosin and terazosin (which belong to a group called alpha-blockers), and clonidine and methyl dopa (which belong to a group called centrally acting drugs). Another type of diuretic called spironolactone can also be used at low doses. These medications are only usually recommended if other treatments have not worked.

Where to get help and information**From the Stroke Association****Helpline**

Our Helpline offers information and support for anyone affected by stroke, including family, friends and carers.

Call us on **0303 3033 100**, from a textphone **18001 0303 3033 100**
Email helpline@stroke.org.uk.

Read our information

Get more information about stroke online at stroke.org.uk, or call the Helpline to ask for printed copies of our guides.

My Stroke Guide

The Stroke Association's online tool My Stroke Guide gives you free access to trusted advice, information and support 24/7. My Stroke Guide connects you to our online community, to find out how others manage their recovery.

Log on to mystrokeguide.com today.

Other sources of help and information

Blood Pressure UK

Helpline: **020 7882 6255**

Website: **bloodpressureuk.org.uk**

Provides a wide range of information on high blood pressure.

British Heart Foundation (BHF)

Website: **bhf.org.uk**

Heart Helpline: **0300 330 3311**

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

British Hypertension Society

Website: **bhsoc.org/bp-monitors**

Publishes a list of blood pressure monitors approved for home use.

About our information

We want to provide the best information for people affected by stroke. That's why we ask stroke survivors and their families, as well as medical experts, to help us put our publications together.

How did we do?

To tell us what you think of this guide, or to request a list of the sources we used to create it, email us at **feedback@stroke.org.uk**.

Accessible formats

Visit our website if you need this information in audio, large print or braille.

Always get individual advice

This guide contains general information about stroke. But if you have a problem, you should get individual advice from a professional such as a GP or pharmacist. Our Helpline can also help you find support. We work very hard to give you the latest facts, but some things change. We don't control the information provided by other organisations or websites.

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Every five minutes, stroke destroys lives. We need your support to help rebuild them. Donate or find out more at **stroke.org.uk**.

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