

## Atrial fibrillation (AF) and stroke

Atrial fibrillation is a type of irregular heartbeat. It means that your heart may not be pumping as well as it should. As a result, blood clots are more likely to form in your heart, increasing your risk of having a stroke. This guide explains what atrial fibrillation is, how it is treated, and how the risk of a stroke can be reduced. It also provides sources of support and further information.

### What is atrial fibrillation (AF)?

Atrial fibrillation is the most common heart rhythm disturbance. There are 1.2 million people with AF in the UK, and it is a factor in up to one in five strokes in the UK.

Atrial fibrillation makes your risk of a stroke five times higher. So if you have AF, it's important that you get the right treatment to control your heartbeat, and reduce your risk of stroke.

### What is a stroke?

A stroke is a brain attack. It happens when the blood supply to part of your brain is cut off. It can be caused by a blockage in one of the blood vessels leading to the brain or by a bleed in the brain. Blood carries essential nutrients and oxygen to your brain. Without blood your brain cells can be damaged or die.

### How does AF affect your heart?

The heart is a muscle that pumps blood around your body. It is made up of four chambers: the two upper chambers are called the left and right atria, and the two

lower chambers are called the left and right ventricles. Atrial fibrillation happens when the two upper chambers, or atria, don't work properly.

When your heart beats normally, its muscle walls squeeze (contract) to force blood out of the heart and around the body. They then relax so your heart can fill with blood. This action is controlled by small electrical impulses and this process is repeated every time your heart beats.

It is your heart pumping blood around your body that produces your pulse. You can feel your pulse by pressing your fingers on your wrist.

A normal pulse when you are resting should feel regular, and there should be between 60 and 100 beats per minute. Your heart may beat considerably more than 100 times per minute if you have AF.

### Why does AF increase your risk of stroke?

If you have atrial fibrillation your heart is not pumping as well as it should. The upper

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chambers of your heart contract and relax in an uncoordinated and irregular way due to abnormal electrical activity.

If your heartbeat is irregular and fast, your heart may not have a chance to empty properly before filling up with blood again. Blood can collect inside the upper chamber of the left side of the heart, and this increases the risk of blood clots forming.

If blood clots form in your heart, there is a risk they can travel in your bloodstream towards your brain. If a clot blocks one of the arteries leading to your brain, it could cause a stroke or TIA.

### What causes AF?

Atrial fibrillation can happen to anyone, but some things increase your chances of developing it. These include heart disease and high blood pressure. It can also be caused by other conditions including an overactive thyroid gland, lung infections, or a blood clot in the lung (pulmonary embolism). AF is more common in older people.

Drinking too much alcohol, taking illegal drugs, such as cocaine or amphetamines, or smoking can trigger an episode of AF.

### What are the symptoms?

Palpitations (being aware of your heart beating fast), breathlessness, chest pain or fatigue are common symptoms of AF. However, some people do not have any symptoms at all, and AF is often only diagnosed during a medical check-up or after a stroke.

### AF is usually described by how long it has lasted:

- **Paroxysmal AF** comes and goes – it's not there all the time. Your heart goes back to its normal rhythm without any treatment, usually within 48 hours.
- **Persistent AF** is where you have AF episodes that last more than seven days and it is unlikely that they will stop on their own. You may need treatment to restore your normal heart rhythm.
- **Long-standing persistent AF** means you have had continuous atrial fibrillation for a year or longer.
- **Permanent AF** is there all the time. You might be diagnosed with permanent AF if you've had it for more than one year and treatment with cardioversion hasn't helped.

You might also hear your condition described as "lone" AF. This is when doctors cannot find what is causing your AF, or you don't have any risk factors for it.

### Atrial flutter

Atrial flutter is a similar condition to AF, and you can have both at the same time. With atrial flutter, your upper heart chambers (atria) beat very fast, but regularly. Your heart may beat up to 150 times a minute and this can cause similar symptoms to AF, such as shortness of breath and fatigue.

Atrial flutter can be caused by the same conditions that can cause AF. Similar tests and treatments for AF are also used for atrial flutter. Like AF, atrial flutter increases your risk of stroke.

## How is AF diagnosed?

AF can sometimes be detected by a healthcare professional checking your pulse. If your pulse feels very fast and/or irregular, they may refer you for further tests to confirm whether you have AF, and if so, what type you have. These tests may include the following:

- An electrocardiogram (ECG) tests the electrical activity of your heart. It's painless and usually takes less than 10 minutes. It may be done by your GP or in hospital.
- An echocardiogram uses sound waves to check your heart's structure and how it's working.
- Blood tests check for conditions that can cause AF like an overactive thyroid gland, anaemia, or any problems with your kidney function.
- A chest X-ray will check whether a lung problem could have caused your AF.

AF that comes and goes can be hard to detect. To help diagnose it, you may be asked to wear a portable ECG monitor for 24 hours or more to check how your heart works over a longer period of time.

## How is AF treated?

If you have AF, you should consider with your doctor whether you need treatment to reduce your risk of stroke. You may also require treatment to help your heart beat more effectively. This often means medication to regulate your heart rate, or treatments to change your heart rhythm back to normal.

## Regulating your heart rate

AF may make your heart beat too quickly. If this is the case, you will usually be offered medication to control your heart rate. This means your heart beats at a normal speed, although it may still to beat irregularly.

The aim of this type of treatment is to help your heart to work more effectively. Most medication used to regulate your heart rate will not change the rhythm back to normal. However, some types of medication used to control your heart rate are the same as those used to control your heart rhythm, including some types of beta blocker.

You may need to try several types of medication before you find the right one for you. Speak to your doctor if you have any side effects. You should also have regular check-ups to check your blood pressure and your heart rate.

## Regulating your heart rhythm

To get your heart beating with a normal rhythm you may be prescribed anti-arrhythmic drugs. There are different types and they work in different ways. Beta-blockers are one example. Your doctor will talk to you about which treatment will be best for you.

Cardioversion is a treatment that uses medication or a brief electrical shock (sometimes both), to help your heart return to its normal rhythm. It is more likely to work if you have not had AF for very long, and there is a risk that your AF will return.

## Other treatments

There are other treatments for AF, including surgical procedures such as catheter ablation where radio frequency energy is used to remove the area of the heart causing the abnormal rhythm. For more information about these other treatments, contact the Atrial Fibrillation Association. See 'Other sources of help and information' for details.

## Treatments to reduce your risk of stroke

As well as treatment for your AF, you may also need treatment to reduce your risk of stroke. Doctors assess your stroke risk using a scoring system called CHA<sub>2</sub>DS<sub>2</sub>-VASc. Using this scale (below), you are given points depending on whether or not you have each of the different factors. This can help you and your doctor to decide on your treatment together.

### The CHA<sub>2</sub>DS<sub>2</sub>-VASc scale

| Factor                                       | Score  |
|--|--------|
| Congestive heart failure                     | 1      |
| High blood pressure                          | 1      |
| Age – if you are over 75<br>if you are 65–74 | 2<br>1 |
| Diabetes                                     | 1      |
| Previous Stroke or TIA                       | 2      |
| Vascular disease                             | 1      |
| If you are female                            | 1      |

If you have a score of two or more, your doctor will usually discuss the use of a blood-thinning (anticoagulant) medication to reduce your risk of stroke. If you are male

and your score is one, your doctor may still wish to discuss the use of a blood-thinning medication. If you have a low risk then you will probably not need any blood-thinning treatment, as the risk of treatment will outweigh the benefits.

However, your risk of stroke changes with age and other medical problems and should be regularly reassessed to see if you need treatment to reduce your risk of stroke. And if you do start to take anticoagulants you should continue to be assessed at least once a year to make sure that your treatment is still suitable.

### Are you taking aspirin?

Aspirin used to be prescribed to people with AF, but this is no longer recommended. However, aspirin is still prescribed for other conditions. If you have AF and take aspirin, you should discuss with your doctor whether it is the best treatment for you. Some people will need to switch to an anticoagulant, but do not stop taking any treatments without speaking to your doctor.

## Anticoagulants

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 type of drug used to reduce the risk of stroke in AF is anticoagulant medication. They reduce your risk of stroke by slowing down the clotting process and making a clot less likely to form.

There are risks to taking anticoagulants. Because they make your blood less likely to

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clot, you can be at risk of excessive bleeding, particularly if you fall or hurt yourself. It can be very serious if there is bleeding in the brain, but this is very rare. In most people the benefits of taking anticoagulants outweigh the risks. Your doctor will assess your risk of bleeding before recommending you take anticoagulants and should talk through all the benefits and risks of the medication with you before you start to take it.

Warfarin is a common type of anticoagulant medication used to reduce your risk of stroke if you have AF. Other anticoagulants are increasingly being used that work differently to warfarin. These include dabigatran etexilate, rivaroxaban, apixaban and edoxaban. All these drugs are administered orally.

### Apixaban (Eliquis)

Apixaban makes the blood less likely to clot by blocking a protein (Factor Xa) in the blood. This protein plays a key role in the blood clotting process. Like the other alternatives to warfarin, you will not need to have regular blood tests.

Apixaban can be taken with or without food. If you have kidney problems, you will usually be given a reduced dose.

Apixaban is not usually recommended if you are pregnant or breastfeeding. If you are taking any other prescribed medicines, or herbal remedies, please check with your doctor whether it is safe to continue doing so.

The main side effects of apixaban are bleeding and anaemia. Seek urgent medical attention if you experience any unusual bleeding.

### Dabigatran etexilate (Pradaxa)

Dabigatran etexilate attaches itself to a protein (called thrombin) in your blood, making your blood less likely to form a clot. You should take dabigatran etexilate exactly as your doctor prescribes.

If you take dabigatran etexilate, you do not need to have regular blood tests, as it works in a different way to warfarin. However, you may need to have occasional blood tests. Your doctor will tell you when these tests should take place. Dabigatran etexilate is not usually prescribed if you are pregnant or breastfeeding.

Some types of medication can interact with dabigatran etexilate. Check with your doctor whether it is safe to take any other prescribed or herbal remedies, such as anti-inflammatory medication or St John's Wort. Aspirin and ibuprofen should not be taken with dabigatran etexilate.

Side effects of dabigatran etexilate include bleeding, diarrhoea, indigestion, nausea and stomach pain. You should seek urgent medical attention if you experience any unusual bleeding.

If you are having an operation or dental treatment, ensure the medical professionals are aware that you are taking dabigatran etexilate.

### Edoxaban (Lixiana)

Edoxaban makes the blood less likely to clot by blocking a blood protein called factor Xa. This protein is a key part in the blood clotting process. Like the other alternatives to warfarin, if you are taking edoxaban you will not need to have regular blood tests. Edoxaban is taken once a day, either with or without food. The drug is not used if you are

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pregnant or breastfeeding. It can interact with other medicines, although always check with your doctor whether it is safe to continue taking other prescribed medicines or herbal remedies.

The main side effect of edoxaban is bleeding, but patients may also experience nausea, or itchiness. Seek urgent medical attention if you experience any unusual bleeding.

### Rivaroxaban (Xarelto)

Rivaroxaban makes the blood less likely to clot by blocking a protein (Factor Xa) in the blood. This protein plays a key role in the blood clotting process. Like with dabigatran etexilate, it works in a different way to warfarin so you will not have to have regular blood tests. Rivaroxaban should be taken exactly as prescribed by your doctor. If you have kidney problems, you will usually be given a reduced dose.

Rivaroxaban is not usually recommended to be used if you are pregnant or breastfeeding. Ask your doctor whether it is safe to take Rivaroxaban with any other prescribed medicines or herbal remedies you may be taking.

Side effects of rivaroxaban include bleeding, constipation, diarrhoea, dizziness and fainting. You should seek urgent medical attention if you experience any unusual bleeding, high temperature or rash.

### Warfarin

Vitamin K plays an important role in the blood clotting process. It helps to produce a protein (called prothrombin), which helps your blood to clot.

Warfarin slows down the way vitamin K is made. This, in turn, slows down the making of the protein (prothrombin). This means

it will take longer for blood clots to form.

Warfarin is given in tablet form and the dose needs to be tailored to you individually.

This is because people respond to warfarin differently and it is not easy to predict.

You need to have regular blood tests if you take warfarin.. The tests check to make sure your blood is not becoming too thin, which would increase the risk of excessive bleeding. The test checks how quickly your blood clots at a particular stage in the process and compares it to a normal sample. The result is called the international normalised ratio (INR).

INR is expressed as a value. A normal INR value for blood (when you are not taking anticoagulants) is around one. If you have AF and are on warfarin your blood should be two to three times thinner than normal, so an INR value of two to three is recommended. The lower your INR level, the more quickly your blood clots. The higher your INR, the longer it takes your blood to clot or the thinner your blood is.

You will need to attend an anticoagulation clinic weekly when you first start taking warfarin, as the dose will need to be adjusted to suit you. When it is stable, you will probably need to attend a clinic every six to eight weeks for blood tests.

When you are first prescribed warfarin you may receive a pack from your GP or hospital which contains a credit card-sized alert card, a yellow booklet to record your INR results. You should carry your alert card at all times in case of a medical emergency.

Your dentist will need to see a recent INR result before carrying out any treatment. If you are travelling, make sure you have

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enough medication for your whole trip and take your alert card with you.

### Self-monitoring

For some people, monitoring your own INR at home may be an option. Self-monitoring is more convenient, and can be as effective at controlling INR compared to going to a clinic, but it is not suitable for everyone.

You would normally have to pay for the machine yourself. The test strips you need are often available on prescription but you need to ask your GP whether you can get them in your area. Test results may be delivered to a clinic via telephone or an app.

Before buying a self-testing machine, speak to your GP or anticoagulation clinic. You can work with them to find out what is possible for you, and whether they can support you to use the machine.

### Warfarin and food

If you are taking warfarin, you need to be mindful of the foods you eat. Certain foods contain high levels of vitamin K. Too much vitamin K can affect how warfarin works.

Some foods that contain high levels of vitamin K include green leafy vegetables, broccoli, Brussels sprouts, liver, vegetable oil and cereals containing wheat bran and oats. If you take warfarin avoid drinking cranberry juice as it contains a lot of vitamin K.

Your warfarin dose is usually adjusted to compensate for the level of vitamin K in your diet. You should not make sudden changes to your usual diet, as this could affect your INR level.

If you want to change your diet you should consult a doctor and your anticoagulation clinic so you can be monitored more closely

and your warfarin dose can be changed if necessary.

Other things to consider when taking warfarin:

- Keep alcohol to a minimum as it makes your blood thinner and increases your risk of a serious bleed. Binge drinking is particularly dangerous.
- Some medications and herbal remedies can interact with warfarin and can affect your INR levels.

Always tell your doctor or pharmacist if you are on warfarin before taking any new medication, particularly antibiotics, antidepressants, aspirin, statins or ulcer medicines. Always check any medication you plan to take with your GP or pharmacist, and read the patient information leaflets. Avoid taking aspirin or ibuprofen unless prescribed by a professional, although it is safe to take paracetamol at the recommended dose.

Warfarin is not suitable for everyone and should not be taken if you have very high blood pressure (severe hypertension), peptic ulcers or haemophilia. It should also be avoided if you are pregnant.

The main side effect of warfarin is bleeding. Anyone experiencing unusual bleeding should seek medical attention urgently. If you have any signs of a stroke, call 999.

### Which anticoagulant medication should I take?

One commonly prescribed anticoagulant is warfarin, which requires careful monitoring. The advantage of newer anticoagulants (dabigatran etexilate, rivaroxaban, apixaban and edoxaban) is that their effect on your blood is more stable and they are not affected by any foods that you eat, so they do not need to be monitored as carefully.

Your doctor should talk to you about all the available treatment options, along with their risks and benefits. You should then decide together which one would be the most suitable for you.

### What else do I need to know?

Please note that we have not provided an exhaustive list of side effects and drug interactions in this guide. Always refer to the patient information leaflet that comes with your medication for a full list.

Never stop taking your medication if you feel unwell. Always contact your GP for advice before stopping, because your risk of a stroke may rise, and some medicines cause withdrawal symptoms if you stop suddenly. In a medical emergency, always call 999.

If you are taking anticoagulants, you must always check any medication you plan to take with your GP or pharmacist before taking it. You should also read the patient information leaflets that come with your medication.

You should be given a patient alert card before you start taking an anticoagulant. Always carry your alert card with you in case of an emergency. You should also tell

your dentist you are taking anticoagulant medication before you have any treatment.

### Anticoagulants and medical procedures

If you need a medical procedure, your anticoagulant medication may need to be stopped beforehand. Make sure that the healthcare professionals treating you are aware of your medication. If you are taking warfarin you may be given an alternative medication such as heparin until you can take warfarin again.

This decision should be made with your doctor, and by looking at the potential risks of having the procedure and stopping your medication.

If you need an emergency operation, and you are taking an anticoagulant, you may need treatment beforehand to reverse the effects of your anticoagulant so you don't bleed too much during the procedure.

If you have any concerns about the medication you are taking, make sure you discuss them with your doctor.

### What else can I do to reduce my risk of stroke?

There are many things you can do to lower your chances of having a stroke. These include:

- Managing any other medical conditions you have, for example high cholesterol or diabetes.
- Having treatment for high blood pressure.
- Stopping smoking.
- Limiting the amount of alcohol you drink.
- Following a healthy diet.
- Exercising regularly.
- Having regular check-ups with your GP.

#### FAST test



##### Face

Can the person smile? Has their face fallen on one side?



##### Arms

Can the person raise both arms and keep them there?



##### Speech

Can the person speak clearly and understand what you say? Is their speech slurred?



##### Time

If you see any of these three signs, it's time to call **999**.

### Spotting the signs of a stroke

The FAST test (below) helps to spot the three most common symptoms of stroke. But there are other signs that you should always take seriously. These include:

- Sudden weakness or numbness on one side of the body, including legs, hands or feet.
- Difficulty finding words or speaking in clear sentences.  
  
Sudden blurred vision or loss of sight in one or both eyes.
- Sudden memory loss or confusion, and dizziness or a sudden fall.
- A sudden, severe headache.

Stroke can happen to anyone, at any age. Every second counts. If you spot any of these signs of a stroke, don't wait. Call 999 straight away.

A transient ischaemic attack or TIA is the same as a stroke but the symptoms last for a short amount of time. In a TIA, a blood vessel in the brain gets blocked, but the blockage clears by itself. A TIA is a major warning sign of a stroke, and if you spot any signs of stroke or TIA you should call **999**.

## Where to get help and information

### From the Stroke Association

#### Talk to us

Our Stroke Helpline is for anyone affected by a stroke, including family, friends and carers. The Helpline can give you information and support on any aspect of stroke.

Call us on **0303 3033 100**, from a textphone **18001 0303 3033 100** or email [helpline@stroke.org.uk](mailto:helpline@stroke.org.uk)

#### Read our information

Get detailed information about stroke online at [stroke.org.uk](http://stroke.org.uk), or call the Helpline to ask for printed copies.

#### 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](http://mystrokeguide.com) today.

## Other sources of help and information

### Anticoagulation UK

**Website:** [anticoagulationuk.org](http://anticoagulationuk.org)

**Tel:** 020 8289 6875

Provide information and peer support for people on anticoagulant medications.

### Arrhythmia Alliance

**Website:** [hearhythmalliance.org](http://hearhythmalliance.org)

**Helpline:** 01789 867 501

Support people with all types of heart arrhythmias.

### Atrial Fibrillation Association

**Website:** [hearhythmalliance.org](http://hearhythmalliance.org)

**Tel:** 01789 867 502

Support people with AF, offering a range of leaflets on AF, treatments and types of medication, plus details of AF specialists

### British Heart Foundation

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

**Heart Helpline:** 0300 330 3311

Provide information and support on heart issues, including a nurse-led helpline..

### NHS Choices

**Website:** [nhs.uk/af](http://nhs.uk/af)

Information about atrial fibrillation and treatments.

### Glossary

**Anticoagulant** = a type of blood-thinning medication.

**Apixaban (Eliquis)** = an anticoagulant medication used to reduce the risk of stroke in people with AF.

**Atrial flutter** = a condition similar to AF, with a fast but regular heartbeat.

**Cardioversion** = a procedure that returns the heart rate to normal.

**Catheter ablation** = removal of tissue via a catheter, using an electrical current.

**Congestive heart failure** = when your heart doesn't pump blood around your body as well as it should.

Dabigatran etexilate (Pradaxa) = an anticoagulant medication used to reduce the risk of stroke in people with AF.

**ECG = electrocardiogram.** A test to measure the electrical activity of your heart.

**Echocardiogram** = a test using sound waves to check the structure and function of your heart.

**Edoxaban (Lixiana)** = an anticoagulant medication used to reduce the risk of stroke in people with AF.

**Electrophysiologist** = a heart specialist that carries out some treatments including catheter ablation.

**Heparin** = an anticoagulant medication administered by injection.

**INR** = international normalised ratio. This is a measure of how quickly your blood clots.

**Rivaroxaban (Xarelto)** = an anticoagulant medication used to reduce the risk of stroke in people with AF.

**Vascular disease** = a wide-ranging term that includes diseases of arteries, veins, and the rest of the body's system of blood vessels. It can happen when parts of the system become 'furred up' with fatty deposits, making them more likely to become blocked.

**Warfarin** = an anticoagulant medication commonly used to reduce the risk of stroke in people with AF.

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## 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](mailto: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](http://stroke.org.uk).

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