

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 factsheet explains what atrial fibrillation is and the treatments available. It also provides sources of support and further information.

What is a stroke?

A stroke happens when the **blood supply to part of your brain is cut off**.

This could be due to a blockage – called an ischaemic stroke, or bleeding in the brain – called a haemorrhagic stroke.

A **transient ischaemic attack (TIA)** is sometimes called a mini stroke. It is similar to a stroke, but the symptoms are temporary. They may last anything from a few minutes to 24 hours.

The FAST test (shown on the right) can help you to recognise the symptoms of a stroke or TIA. Other symptoms include sudden weakness or numbness on one side of the body, sudden loss or blurring of vision in one or both eyes, or sudden confusion, dizziness or unsteadiness.

What is atrial fibrillation?

Atrial fibrillation is the most common type of **irregular heartbeat**. It affects over 980,000 people in the UK and is more common in older people. Atrial fibrillation increases your risk of stroke by up to five times. If you have this condition, it's important that you get the right treatment – both to control it and to reduce your risk of stroke. **Atrial fibrillation is often called AF and we will use this term throughout this factsheet.**

- F** **acial weakness**
Can the person smile?
Has their mouth or eye drooped?
- A** **rm weakness**
Can the person raise both arms?
- S** **peech problems**
Can the person speak clearly and understand what you say?
- T** **ime to call 999**

A stroke is a medical emergency.

If you see any one of these signs, seek immediate medical attention.

How does your heart work?

Your heart is a muscle that **pumps blood** around your body. It is made up of four chambers – two upper chambers (the left and right atria), and two lower chambers (the left and right ventricles).

When your heart beats normally, its muscle walls tighten and 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 is regular and between 60 and 100 beats per minute.

Why does AF increase your risk of stroke?

If you have AF your **heart is not pumping as well as it should**. The upper chambers of your heart contract and relax in an uncoordinated and irregular way due to abnormal electrical activity. Your heart may beat up to 140 times a minute if you have AF.

If your heartbeat is irregular and fast, your heart may not have a chance to relax and empty properly before filling up with blood again. Blood can collect and pool 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 caused a blockage in an artery leading to your brain, it could cause a stroke or TIA.

What causes AF?

Some **medical conditions** increase your chances of developing AF. These include heart problems such as coronary heart disease, or disease of your heart's valves. It can also be caused by other conditions including an overactive thyroid gland, high blood pressure, lung infections like pneumonia, or a blood clot in the lung (pulmonary embolism).

Drinking too much alcohol or caffeine, taking illegal drugs, such as cocaine or amphetamines, or smoking can also 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 often AF is only diagnosed during a general medical check-up.

There are **three different types** of AF:

- **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 when you have AF episodes that last more than seven days and it is unlikely that they will stop on their own. You will need treatment to restore your normal heart rhythm.
- **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 (see page 4) hasn't helped.

Atrial fibrillation (AF) and stroke

As well as these three types, a small number of people may be diagnosed with 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 sometimes people 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. The same tests and treatments for AF are used for atrial flutter, which also increases your risk of stroke.

How is AF diagnosed?

A simple way to check if you have AF is to have your pulse checked.

AF can 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 ECG (electrocardiogram)** – This 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** – This uses sound waves to check your heart's structure and how it's working.
- **Blood tests** – They check for conditions

that can cause AF like an overactive thyroid gland, anaemia, or any problems with your kidney function.

- **A chest x-ray** – This checks your lungs in case a lung problem could have caused the 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.

You may be referred to a heart specialist called a cardiologist. They can decide which types of medication are right for you and monitor them. They can also perform some procedures to treat AF, including cardioversion (see page 4).

You may also be referred to an electro-physiologist who offers another type of treatment for AF called catheter ablation.

Many hospitals now have arrhythmia nurse specialists (ANS) who can offer you and your family information and guidance about your treatment.

Which treatments are available?

If you have AF, you will usually need treatment to control the condition as well as treatment to **reduce your risk of stroke**.

Controlling AF may involve:

- treating your heart rhythm to make it more regular
- treating your heart rate to slow it down.

The treatment you will have will depend on

many different factors, including the type of AF you have, how long you have had the condition, whether you have any other medical conditions, and whether you have been treated for AF in the past.

Treating your heart rhythm

To treat your heart rhythm you may be prescribed **anti-arrhythmic drugs**. These drugs help your heart to beat more regularly. 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 which 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. There is a risk however that your AF will return.

Regulating your heart rate

If your heart rhythm cannot be brought back to normal with cardioversion or medication, or these treatments are unsuitable, you will usually be given **medication to control your heart rate**. This means your heart will beat slower, even though it may still be irregular.

The aim of this type of treatment is to help your heart to work more effectively. Some types of medication used to regulate your heart rate are the same as those used to control your heart rhythm.

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

Other treatments

There are other treatments for AF, which may involve specific surgical procedures for example.

For more information about other treatments, contact the Atrial Fibrillation Association. Their contact details are listed in the 'Useful organisations' section at the end of this factsheet.

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.

If you have AF, your risk of stroke is usually assessed using a scoring technique called **CHADS 2***. Using this scale (below), you are given points depending on different factors.

The CHADS 2 scale

Factor	Score
Congestive heart failure	1
High blood pressure	1
Age – if you are over 75	1
Diabetes	1
Stroke – if you have already had a TIA or stroke	2

*Some doctors use a more detailed version of this scale.

If you have a score of 1 or more, your doctor will usually discuss the use of a blood-thinning (anticoagulant) medication to reduce your risk of stroke.

If your score is 0, your doctor may assess your risk in more detail using a more complex

scoring system and may still wish to discuss the use of a blood-thinning medication. If your doctor feels you have a low risk then you will probably not be offered any treatment as the risk of treatment will outweigh the benefits.

Your risk of stroke changes with age and other medical problems. Therefore, you should be regularly reassessed to see if you need treatment to reduce your risk of stroke.

Anticoagulants

The main group of drugs used to treat AF are anticoagulants. They increase the time it takes for your blood to form a clot. They do this by stopping certain proteins involved in the clotting process from forming. By taking an anticoagulant, your blood is less likely to clot and so your risk of stroke is reduced.

Warfarin is the **most common type of anticoagulant** medication used to reduce your risk of stroke if you have AF. There are also other new anticoagulants which work differently to warfarin such as **dabigatran**, **rivaroxaban** and **apixaban**.

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 which in turn, slows down the making of the protein (prothrombin). This means it will take longer for blood clots to form. Warfarin has been shown to reduce the risk of stroke in people with AF by about 60%.

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. This is because warfarin changes how long it takes for your blood to clot. Regular tests will make sure your blood is not becoming too thin as there may be a risk of bleeding if this happens. The test checks how quickly your blood clots at a particular stage in the process and compares it to 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 1. If you have AF and are on warfarin your blood should be two to three times thinner than normal, so an INR value of 2 to 3 is aimed for. The lower your INR level, the more quickly the blood clots. The higher your INR, the longer it takes the blood to clot or the thinner the blood is.

You will need to attend an anticoagulation clinic weekly when you first start taking warfarin so the dose can be adjusted to suit you. When it is stable, you will probably need to attend a clinic every 6-8 weeks for blood tests.

When you are first prescribed warfarin you should receive a **pack from your GP or hospital** which contains a credit-card sized **alert card**, a booklet called Oral Anticoagulant Therapy, and a record card. 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 enough medication for your whole trip and take your alert card with you.

Self-monitoring

It is possible to **monitor your own INR** with a machine you can keep at home. Your GP would provide you with test strips to use, but you would have to buy the machine yourself. These cost about £300 and some companies will let you spread the payments over one or two years. Research shows that self-monitoring may be more beneficial than having your INR tested at a clinic, however it is not suitable for everyone. About half of all people taking warfarin are able to do these blood tests at home.

You would need some initial training on how to test your own INR levels. You would have to arrange with your clinic what to do if your INR is outside the recommended range for you, and how you can contact them if necessary.

Warfarin and food

If you are taking warfarin, you need to be mindful of the foods you are eating. Certain foods contain high levels of vitamin K. Too much vitamin K can affect how well warfarin works meaning your blood can clot more quickly.

If you take warfarin avoid drinking cranberry juice as it can affect your INR levels.

Some foods that contain high levels of vitamin K include green leafy vegetables, broccoli, Brussels sprouts, mature cheese, blue cheese, egg yolks, chick peas, liver, olive oil and cereals containing wheat, bran and oats.

Try to eat the same amount of these foods on a regular basis. Your warfarin dose is

usually adjusted to compensate for the level of vitamin K in your diet.

Soya bean products, avocados and large amounts of ice cream have also been reported to affect how well warfarin works.

In general, **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 types of medication 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.

Warfarin is not suitable for everyone and should not be taken if you have very high blood pressure (severe hypertension) or peptic ulcers. It should also be avoided if you are pregnant. Minor side effects of this drug include rashes, nausea, vomiting and diarrhoea. The main side effect of warfarin is bleeding. **Anyone experiencing bleeding**

should seek medical attention and have an urgent blood test.

Dabigatran etexilate (Pradaxa)

Dabigatran etexilate works by attaching itself to a protein (called thrombin) in the blood, making the blood less likely to form a clot. It is given as a tablet, usually prescribed at a dose of 150mg or 110mg. It is taken twice a day with or without food. The dose you are given will usually stay the same.

If you take dabigatran etexilate, you do not need to have regular blood tests, as it works in a different way to warfarin. If you are prescribed this drug, you may need to have occasional blood tests to make sure your kidneys are working well. 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, in particular certain types of antibiotics, anti-arrhythmic drugs, anticonvulsants, aspirin and anti-inflammatory medication. The herbal remedy St John's Wort can also interact.

Always check any medication you plan to take with your GP or pharmacist before taking it. You should also read the patient information leaflets.

Side effects of dabigatran etexilate include bleeding, diarrhoea, indigestion, nausea and stomach pain. You should **seek urgent medical attention** if you have severe or uncontrollable bleeding, unusual bruising, unexpected pain, or headaches accompanied by dizziness or weakness.

You should be given a **patient alert card** before you start taking dabigatran etexilate.

Always carry this with you in case of an emergency. You should also tell your dentist you are taking this medication before you have any treatment.

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.

Rivaroxaban is usually prescribed at a dose of 20mg and must be taken with food. If you have kidney problems, you will usually be given a reduced dose of 15mg. It is advisable to take it at the same time each day.

Rivaroxaban is not usually recommended to be taken during pregnancy or while breast feeding. It also **interacts with other types of medication** such as antifungal agents, anticonvulsants, heparin, anti-inflammatory medication, medicines that affect blood clotting and herbal remedies such as St John's Wort. **Always check any medication you plan to take with your GP or pharmacist before taking it. You should also read the patient information leaflets.**

Side effects of rivaroxaban include bleeding, constipation, diarrhoea, dizziness and fainting. You should **seek medical attention** if you notice any of the following symptoms: unexplained dizziness or weakness; swelling and discomfort; a sudden, severe headache; unusual bruising; nosebleeds; bleeding gums, or cuts that take a long time to heal.

You should be given a **patient alert card** before you start taking rivaroxaban. Always carry this with you in case of an emergency. Also, tell your dentist you are taking this medication before you have any treatment.

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.

Apixaban is usually prescribed at a dose of 5mg, twice a day. It can be taken with or without food. If you have kidney problems, you will usually be given a reduced dose of 2.5mg. It is also advisable to take this medication at the same time each day.

Apixaban is not usually recommended to be taken during pregnancy or while breast feeding. It also **interacts with other types of medication** such as antifungal agents, anticonvulsants, anti-inflammatory medication, medicines that affect blood clotting and herbal remedies such as St John's Wort.

Always check any medication you plan to take with your GP or pharmacist before taking it. You should also read the patient information leaflets.

The main **side effect** of apixaban is bleeding. **Seek medical attention** if you notice any of the following symptoms which may mean you are allergic to apixaban: swelling of the face, mouth, lips or tongue or difficulty breathing.

You should be given a **patient alert card** before you start taking apixaban. Always carry this with you in case of an emergency. You should also tell your dentist you are taking this medication before you have any treatment.

Which anticoagulant should I take?

The most commonly prescribed anticoagulant is warfarin, but it does require careful monitoring. The advantages of the newer types of medication (dabigatran, rivaroxaban and apixaban) are 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. You and your doctor should discuss which type of anticoagulant medication is most suitable for you.

The NHS has produced an online tool to help you think about which is the best option for you. You can find this Decision Aid at: sdm.rightcare.nhs.co.uk/pda/stroke-prevention-for-atrial-fibrillation

Anticoagulants and medical procedures

If you need a medical procedure, **your anticoagulant medication may need to be stopped beforehand**. 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 by your doctor who will assess 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, discuss them with your doctor.

What else do I need to know?

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

Tell your doctor about any new medication you are taking. Your pharmacist may also be able to give you advice about your medication.

Never stop taking your medication if you feel unwell. Always contact your GP for advice – stopping medication suddenly can be dangerous. In a medical emergency, always call 999.

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 (see box below). **We have factsheets on all these issues, so contact us for more information.**

Tips for reducing your risk

- Stop smoking.
- Limit the amount of alcohol you drink.
- Follow a healthy diet.
- Exercise regularly.
- Have regular check-ups with your GP.
- Manage any other medical conditions you have such as high cholesterol or diabetes. Take any medication you are prescribed for them and follow any lifestyle advice.

Useful organisations

All organisations are UK wide unless otherwise stated.

Stroke Association

Stroke Helpline: 0303 3033 100

Email: info@stroke.org.uk

Website: stroke.org.uk

Contact us for information about stroke, emotional support and details of local services and support groups. We have a range of factsheets on the effects of stroke and reducing your risk of stroke.

Anticoagulation Europe

Tel: 020 8289 6875

Website: www.anticoagulationeurope.org

They provide information and support for people on anticoagulant medications.

Arrhythmia Alliance

Tel: 01789 450 787 (24 hour)

Website: www.heartrhythmcharity.org.uk

They support people with all types of heart arrhythmias.

Atrial Fibrillation Association

Tel: 01789 451 837 (24 hour)

Website: www.atrialfibrillation.org.uk

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

British Heart Foundation

Tel: 0300 330 3311

Website: www.bhf.org.uk

They provide information and support on heart issues, including AF and warfarin.

Atrial fibrillation (AF) and stroke

NHS Choices (England and Wales)

Website: www.nhs.uk

They offer general information on all aspects of health, including stroke and AF, and treatments.

NHS Scotland

NHS Inform Helpline: 0800 22 44 88

They offer information on health conditions, treatments and health services in Scotland.

Northern Ireland (NI) Direct Government Services

Website: www.nidirect.gov.uk

They offer information on health and well-being.

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

Glossary of terms

Anticoagulant = a type of blood-thinning medication

Apixaban (Eliquis) = a new 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

Cardiologist = a heart specialist

Cardioversion = a procedure which returns the heart rate to normal

Dabigatran etexelate = a new anticoagulant medication used to reduce the risk of stroke in people with AF

ECG = electrocardiogram – a test of the electrical activity of your heart

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

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

INR (international normalised ratio) = a measure of how your blood clots

Rivaroxiban = a new anticoagulant medication used to reduce the risk of stroke in people with AF

Warfarin = an anticoagulant medication often used to reduce the risk of stroke in

Produced by the Stroke Association's Information Service.

For sources used, visit stroke.org.uk

© Stroke Association

Factsheet 26, version 1 published

June 2013 (next review due March 2015).

Item code: **A01F26**



The Stroke Association is a company limited by guarantee, registered in England and Wales (No 61274).

Registered office: Stroke Association House, 240 City Road, London EC1V 2PR. Registered as a charity in England and Wales (No 211015) and in Scotland (SC037789). Also registered in Northern Ireland (XT33805), Isle of Man (No 945) and Jersey (NPO 369).