
Heart conditions - atrial fibrillation

Summary

- Atrial fibrillation (AF) is a type of arrhythmia, which means that the heart beats fast and irregularly.
 - The risk of AF increases markedly with age.
 - Some of the known causes of AF include chronic high blood pressure, heart valve diseases and hyperthyroidism.
 - Treatment includes medication to slow and stabilise the heart rate and reduce the risk of forming blood clots, and surgical procedures to destroy the area of heart tissue responsible for the irregular heart rhythm.
 - The use of anticoagulation medications (blood thinners) can very significantly reduce the risk of stroke associated with AF.
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Atrial fibrillation (AF) is a type of arrhythmia, which means that the heart beats in an irregular fashion. This is caused by a distortion of electrical messages that control the steady rhythm of the heart, which we know as the 'heartbeat'. AF is the most common arrhythmia of those that last more than a few seconds. Overall, AF affects around two in every 100 people. It is uncommon in people under the age of 50 (less than 1 per cent) but common in people over the age of 75 (around 10 per cent of people in this age bracket are affected). Symptoms are not always obvious but may include palpitations or a fluttering heartbeat, irregular heartbeat, chest pains, dizziness and fainting spells. Treatment is important, even if the AF does not present with any symptoms. The increase in the risk of stroke can occur with AF whether or not a person has symptoms of AF.

AF is a problem with the heart's pacemaker

Normally, the heart's electrical system causes its chambers to contract and relax, following a steady rhythm. Electrical messages are sent from the heart's top two chambers (atria), in an area known as the sinus node (the heart's 'pacemaker'). This causes the atria to contract. These electrical messages then pass from the sinus node to another area of the heart called the atrioventricular node and cause the bottom two chambers (ventricles) to contract. In AF, a problem with the sinus node causes the atria to twitch or 'shiver' rather than contract. This distorts the electrical messages sent to the atrioventricular node and causes the ventricles to contract in a fast and irregular manner. This adversely affects the heart's ability to pump efficiently and also increases the chance of blood clots being formed in the heart and travelling up to the brain.

What are the symptoms of atrial fibrillation (AF)?

Atrial fibrillation often has no obvious symptoms and can remain undetected for long periods of time. If symptoms occur, they may include:

- sensations of a 'fluttering' heartbeat (palpitations)
- irregular heartbeat (detected by checking the pulse)
- angina (chest pains)
- general malaise
- dizziness
- inability to tolerate exercise
- fainting spells.

Types of AF

The three main types of AF are:

- **one-off** – the heart has a single episode of irregular beating (this is sometimes due to excessive alcohol intake).

- **occasional** – the heart is prone to repeat episodes of irregular beating, for short periods of time. This is known as ‘paroxysmal AF’.
- **persistent** – the heart beats irregularly all the time. This is known as ‘permanent AF’, ‘sustained AF’ or ‘chronic AF’.

Stroke is a possible complication of AF

More persistent types of AF are associated with an increased risk of stroke. A stroke can occur when an artery in the brain is blocked by a blood clot (embolus). People with AF are at increased risk of stroke because the irregularly beating atria are prone to developing blood clots. The incomplete contraction of the atria allows blood to pool, stagnate and congeal into a clot.

A blood clot can break free from the atria and circulate in the bloodstream until it reaches a blood vessel in the brain. Untreated, the risk of stroke is quite high. Other risk factors (such as diabetes, hypertension or prior stroke) further increase the risk of stroke in people with AF.

The risk of heart problems, such as heart attack and particularly heart failure, is also increased in people with AF.

Causes of AF

AF is commonly triggered by another chronic illness or event that irritates the heart. Some of the known causes of AF include:

- chronic high blood pressure (hypertension)
- heart valve diseases that interfere with the direction of blood flow in the heart
- heart failure (when the heart’s contraction or relaxation is impaired)
- overactive thyroid gland (hyperthyroidism)
- chest surgery
- chest trauma
- excessive intake of ‘social’ drugs such as alcohol
- certain prescribed drugs
- certain illnesses such as pneumonia
- obesity
- lack of exercise
- extreme exercise
- sleep apnoea.

Sometimes, a single cause cannot be found. The occurrence of AF increases with age (and, therefore, ageing of the heart), even without the above risk factors.

Diagnosis of AF

Tests used to diagnose AF may include:

- physical examination
- medical history
- use of a Holter monitor – this is a portable device that can record the electrical activity of the heart for a long period of time (for example, 24 hours)
- electrocardiogram (a graph of the heart’s electrical activity)
- echocardiogram (a special ultrasound of the heart)
- blood tests.

Treatment for AF

Treatments for AF include:

- medications to reduce the risk of stroke

- medications to normalise the heart's rhythm
- medications to slow the heart rate
- electric shock therapy to the heart (electrical cardioversion).

Medications to reduce the risk of stroke

The use of anticoagulation medications (blood thinners) is the most important aspect of the treatment of AF. These medications significantly reduce the risk of stroke in people with AF and are the only therapies that have been shown to prevent serious medical events and to prolong life.

The term 'blood thinners' is often used for medications including aspirin and clopidogrel but these medications are completely ineffective in reducing the risk of stroke in AF and should not be prescribed for this reason alone.

The effective anticoagulant treatments for AF are warfarin and the newer warfarin-like medications called NOACS (novel oral anti-coagulants). These include dabigatran, apixaban and rivaroxaban. There is little difference between these medications in terms of effectiveness and the small differences in each can be discussed with your doctor.

The use of all anticoagulants comes with a risk of bleeding (including very serious bleeding). Consequently, these medications can cause strokes as well as prevent them, although the benefits most often outweigh the risks.

Careful attention should be given to the decision as to whether the benefits of anticoagulation outweigh the risks. Factors can be used to estimate the risk of stroke including previous stroke, heart failure, high blood pressure, age, gender, diabetes and vascular disease.

Medications to normalise the heart's rhythm

Medications to normalise the heart's rhythm include 'anti-arrhythmic' agents such as sotalol, flecainide and amiodarone. These may be given as injections or tablets. As some medications may cause toxicity (poisoning), regular tests to check liver and thyroid function may be required.

Medications to slow the heart rate

Medications to slow the heart rate include beta-blockers (such as atenolol and metoprolol, amongst others), some calcium channel blockers (diltiazem and verapamil) and digoxin.

Electric shock therapy to the heart (electrical cardioversion)

Given under general anaesthesia, an electrical shock to the chest helps to 'reset' the heart's electrical system. However, long-term medication may be needed to keep the heart beating normally.

Surgery for AF

Most people with AF respond to non-surgical forms of treatment. However, severe cases of AF that do not respond to medication or electric shock therapy may need to be surgically treated. Options include:

- **catheter ablation** – in this procedure, a cardiologist first makes an incision in the upper thigh or groin. A thin tube (catheter) is inserted into a main blood vessel and pushed along until it reaches the heart. The tip of the catheter is fitted with an electrode. Once in position, the electrode is activated. Radio frequency waves destroy the small area of heart tissue responsible for causing the AF.
- **maze operation** – this is a similar procedure to catheter ablation, but produces a 'maze' of small scars that 'traps' the source of atrial fibrillation and allows the sinus node to take control. Most commonly, this procedure is done as part of cardiac surgery performed for other reasons.

Changes to lifestyle with AF (atrial fibrillation)

As described above, AF is strongly associated with hypertension (high blood pressure), sedentary behaviour and obesity. Lifestyle changes can help to prevent and manage AF and reduce the risk of subsequent ill health.

Your doctor may suggest that you:

- take measures to control high blood pressure
- lose weight

- reduce alcohol consumption
- exercise regularly
- aim to best control diabetes
- quit smoking.

Where to get help

- Your GP (doctor)
- **Cardiologist**
- **Heart Foundation** Tel. 1300 362 787
- **Medicines Line (Australia)** Tel. 1300 MEDICINE (1300 633 424) – for information on prescription, over-the-counter and complementary medicines

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