

## Blood Thinning and Atrial Fibrillation

### Introduction

Atrial Fibrillation (AF) is a heart rhythm problem (cardiac arrhythmia) that makes the pulse irregular. AF is the most common significant arrhythmia. It can occur in the young but becomes much more common with age. More than 1 in 10 Australians over 75 have AF

Symptoms from AF include palpitation, shortness of breath, chest discomfort, light-headedness, fainting or fatigue. However some have no symptoms. Whether AF causes symptoms or not it raises an individual's risk of stroke. A person who has had AF has a one in three life-time risk of suffering a stroke.

The main goals of treatment of AF are to reduce symptoms and risk of stroke.

### Stroke and AF

The heart has a natural rhythm: a pacemaker called the sinus node in the right upper chamber (atrium) of the heart stimulates this. This pacemaker triggers a coordinated contraction of the heart. Contraction starts in the atrium, forcing the blood smoothly into the lower pumping chamber (ventricle). While the ventricle is contracting the upper chamber relaxes to allow the returning blood to be stored for a moment until the ventricle is ready to receive it.

In AF the coordinated contraction of the atrium is lost. The atria appear to shake like a jelly. The ventricles follow irregularly and this causes the irregular pulse. Reduced flow in a side chamber of the left atrium called the 'left atrial appendage' can result in clots there and these can move out from the heart to the body. The area of most concern where such clots can lodge is in the smaller blood

vessels of the brain. When this happens, a part of the brain is damaged and function or feedback from part of the body is (sometimes permanently) lost. This is known as a stroke.

### Blood Clotting

The clotting of the blood is a complex process. This is so the blood clots rapidly when required to stop bleeding but remains fluid at other times. The process is often referred to as the 'Clotting Cascade' involving both substances in the blood known as clotting factors and small cells found in the blood called platelets. When platelets are triggered to heal a leak in the circulation they become tacky and stick together. As they stick together they trigger yet more platelets to become active and stick together, involving the circulating clotting factors, and in this way they form a clot.

### Stroke Prevention

There are two primary ways to reduce the risk of stroke in AF by reducing the tendency of the blood to clot. Of course, reducing clotting will increase the risk of bleeding.

Anticoagulant medication affects various points of the clotting cascade. The best known anticoagulant is the tablet warfarin (see Fact Sheet), with various types of heparin also used, but requiring injection and primarily given in hospital. There are exciting new developments in this area, especially dabigatran.

Antiplatelet medication reduces platelet stickiness and thus tendency to clot. The main medications in this area are aspirin and clopidogrel, sometimes used together.

Removal of the left atrial appendage, where

clots usually form in AF, can be undertaken at the time of heart surgery being undertaken for other reasons. Techniques have been developed to block off the appendage with devices placed through veins rather than requiring open heart surgery but the role of these is as yet not clear and they are currently reserved for those who cannot take or tolerate warfarin.

### Who requires blood thinning?

The treatments used to reduce the risk of stroke can also cause problems, especially bleeding. As with any treatment it is important to judge when the benefit of is greater than the risk. In AF, those with a very low risk of stroke may require no blood thinning, those with a low risk will be considered for Aspirin and people with a moderate or high risk are considered for anticoagulants.

### Your personal stroke risk

By following large groups of people who have ever had AF and seeing who develops stroke it has become possible to identify certain factors that increase the risk of this. The most widely used assessment is the “CHADS<sub>2</sub> score”. Your score is calculated as the total obtained by adding 1 or 2 point for each of the following 5 factors you have:

Age over 75?	1 point
High Blood Pressure (even if normal on treatment)	1 point
Diabetes?	1 point
Have you had heart failure?	1 point
Have you had a stroke (even mild or a “TIA”)	2 points

Your annual risk of stroke rises from less than 2% a year for a score of 0 to over 10% a year for a score of 5 or 6.

Most experts agree that a CHADS<sub>2</sub> score indicating a benefit from anticoagulation medication which exceeds its risks, is 2 or above. However, there are situations where your doctor may recommend that using anticoagulants may be of value despite what appears to be a low score (0 or 1). Conversely, you doctor might assess your risk from anticoagulants to be higher than usual and not recommend them despite a score of 2 or above. Your doctor will discuss what is best for you.

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