

Sign **Against** Stroke

in Atrial Fibrillation

About Atrial Fibrillation and Stroke

What is atrial fibrillation?

Atrial fibrillation or AF is the most common sustained abnormal heart rhythm, or arrhythmia, worldwideⁱ. This dangerous arrhythmia causes the two upper chambers of the heart (the atria) to quiver instead of beating effectively, resulting in blood not being completely pumped out, which in turn causes pooling and can lead to clotting. These clots can travel to the brain, block an artery and interrupt the brain's blood supply. This can trigger a major and often fatal strokeⁱⁱ. AF increases the risk of potentially disabling or deadly ischaemic stroke (stroke caused by a blood clot) by nearly 500 percentⁱⁱⁱ.

What causes atrial fibrillation?

Common underlying causes of AF include high blood pressure, heart valve defects, rheumatic heart disease and diabetes. Dietary and lifestyle factors such as emotional and physical stress and excessive caffeine, alcohol or illicit drug intake also contribute to the risk of developing AF^{iv}.

What are the symptoms of atrial fibrillation?

An easily identifiable sign of AF is an irregular pulse. Symptoms of AF may include palpitations, chest pain or discomfort, shortness of breath, dizziness and fainting^v. However, many people with AF have no symptoms or vague non-specific symptoms.

How many people have atrial fibrillation?

AF affects more than six million people in Europe^{vi}, over five million people in the U.S.^{vii}, almost two million people in Brazil and Venezuela, up to eight million people in China, and more than 800,000 people in Japan^{viii}. These numbers are predicted to increase 2.5-fold by 2050 due to an ageing population, improved survival of people with conditions which predispose AF (e.g. heart attack) and increased incidence of AF itself.

Alarming, AF is under-diagnosed and under-treated even though it causes severe strokes, many of which can be prevented.

What is the likelihood of having atrial fibrillation?

The likelihood of developing AF increases with age. After the age of 40 our lifetime risk of developing AF is 1 in 4^x. The important public health burden posed by AF can better be understood when compared with the lifetime risk for other major conditions. For example, the lifetime risk for breast cancer for women aged 40 and over is 1 in 8^x and the lifetime risk of dementia in middle-aged individuals is approximately 1 in 6^{xi}.

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How can atrial fibrillation effect your life?

An AF patient may LOOK well however they may feel VERY UNWELL. AF can impact on many aspects of a patient's life:

- Emotional well-being and depression
- Independence
- Career
- Finances
- Social life
- Sports /activities
- Travel
- Relationships
- For some, the devastation of stroke precedes diagnosis of AF

What is stroke?

A stroke is the rapidly developing loss of brain function(s). Strokes are caused by a lack of oxygen supply to the brain due to a blood clot or a leakage of blood from a blood vessel (haemorrhage), causing rapid brain-cell death.

There are two major kinds of stroke:

Ischaemic stroke, is the more common type accounting for approximately 85% of all strokes and is caused by a blood clot in the brain^{xii}. The blood clot may have developed in the brain or travelled from elsewhere in the body. AF causes approximately 20% of all ischaemic strokes.

Haemorrhagic strokes are caused by bleeding from a blood vessel in the brain^{xiii}.

Stroke is the most common cardiovascular disorder after heart disease accounting for 5.7 million deaths annually worldwide (9.7% of all deaths)^{xiv} and 5 million stroke survivors being left disabled^{xv}.

What is the impact of a stroke?

Stroke can affect virtually all human functions, making it difficult for many survivors to get out of bed, walk short distances and perform basic daily activities. As well as impairing speech and physical functioning stroke can have a negative impact on mental health. Because its onset is sudden, the person affected by a stroke and their family are often poorly prepared to deal with the consequences of stroke^{xvi}.

Stroke not only has a devastating personal impact on people it also costs the health system a significant amount. For example, the total cost of stroke in the EU was calculated to be 38 billion Euros in 2006^{xvii}. 1786 billion Yen (US\$22 billion) in 2009 in Japan^{xviii}. In the United States the total cost of stroke is estimated to be 43 billion Dollars per year. This is projected to reach a staggering 2.2 trillion Dollars by 2050^{xix, xx}.

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Why is AF-related stroke particularly devastating?

AF-related stroke is more severe and is associated with more ill health than stroke unrelated to AF^{xxc, xxi, xxii, xxiii}. For example:

- AF has been found to increase the risk of remaining disabled after a stroke by 50%^{xxiv}.
- Loss of ability to perform normal daily activities, difficulty in swallowing, loss of brain function have all been found to be significantly worse in people with AF compared to those without AF both immediately after the stroke and after rehabilitation^{xxv}.
- AF is associated with a 20% increase in length of hospital stay and a 40% decrease in the likelihood of discharge to home^{xxvi}.
- Moreover, previously undiagnosed AF is a probable cause of many strokes of unknown origin (so-called 'cryptogenic' strokes), and stroke may be the first manifestation of AF^{xxvii}.

However, importantly, with earlier detection and diagnosis and optimal management most AF-related stroke can be prevented.

Current Treatments and Clinical Challenges

If you have atrial fibrillation you are at an increased risk of stroke due to the formation of blood clots in the heart. So what can be done to reduce this risk?

Current Clinical Guidelines state that anticoagulation with oral anticoagulants (OACs) is the cornerstone of stroke prevention. Medications known as vitamin K antagonists (VKAs), which reduce blood clotting, are widely regarded as the current standard of care.

Vitamin K antagonists are very effective with long-term use, preventing two out of three strokes in patients with atrial fibrillation^{xxviii}. Despite this effectiveness, the limitations of VKAs undermine long-term efforts to protect patients with AF from stroke. Problems with VKAs include unpredictable levels of anticoagulation, the need for frequent blood monitoring and dose adjustments, drug-drug interactions and dietary restrictions^{xxix}.

Recent developments have resulted in non-VKA oral anticoagulants that can be used as alternatives to vitamin K antagonists. Currently these include a direct thrombin inhibitor and a direct Factor Xa inhibitor. These non-VKA drugs have significantly fewer interactions and consequently do not require monitoring.

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