Outpatient Anticoagulant Service

Atrial Fibrillation, Oral Anticoagulant Therapy and Cardioversion

What is Atrial Fibrillation?

Atrial fibrillation (also called AF) is a description of the most common abnormal heart rhythm. It occurs when your heart beat is very fast, uncontrolled and irregular. It is the result of disorganised electrical activity in one of the small chambers in the heart (atrium).

Normally, electrical impulses start in the pacemaker in the right atrium; these make the hearts upper chambers (atria) contract. Each atrial contraction is followed by ventricular (lower chamber) contraction as the impulse is passed through the hearts conducting system. In atrial fibrillation there is no single pacemaker starting the process. So the atria fails to contract regularly; instead they twitch or quiver weakly, randomly and rapidly. When this happens the ventricles (the larger chambers in the heart) respond inefficiently and erratically. They pick up only some of these electrical impulses and cannot pump blood efficiently to the rest of the body. In atrial fibrillation the pumping function of the heart is not working properly. This can lead to clot formation as blood is not emptied from the hearts chambers and so pooling (collects) occurs. When the heart rhythm returns to normal, these clots can be dislodged from the atria, moving into the circulation. This can result in clots going to any organ of the body causing a variety of problems. AF increases the risk of stroke by approximately five times.

Atrial Fibrillation has three stages:

Paroxysmal – episodes of brief arrhythmias that resolve spontaneously.
Persistent – the episodes require intervention to return to normal heart rhythm (sinus rhythm).
Permanent – where intervention restores normal rhythm only for a short time.

The cause of atrial fibrillation in many people is unknown. Mitral valve disease is often associated with AF. Patients with weak heart muscle may also develop AF: as the atria enlarge it is difficult to maintain electrical efficiency. Patients with arterial blockages,

with lung disease or an overactive thyroid may also be at increased risk of developing atrial fibrillation. Infections, mainly pneumonia, may also cause AF.

AF is becoming increasingly common as the population ages. As treatment continues to advance and improve people with heart disease are living long enough to develop atrial fibrillation. Up to 1.5% of the general population are thought to be affected by AF, although the prevalence may be as high as 1 in 10 in the over 75's.

What are the symptoms?

Many patients tolerate atrial fibrillation without symptoms. Symptoms may include:

- palpitations and irregular heart beat; both of these symptoms may make some patients feel anxious.
- shortness of breath
- dizziness
- chest discomfort
- others may feel weak due to the heart's reduced pumping ability.

Atrial Fibrillation can be diagnosed by

a) Listening to the hearts rhythm with a stethoscope.
b) An electrocardiogram (ECG) confirms cardiac arrhythmias; if these occur intermittently then a 24-hour recording may be necessary to confirm the diagnosis. This allows the medical staff to assess how well the heart muscle is pumping, if there is any valve disease and if any clots are present in the heart.
c) A chest x-ray may rule out other abnormalities.
d) Lung function tests may also be obtained.
e) Blood testing is performed for electrolyte balance and thyroid function.

What is the treatment?

There are several treatment options for atrial fibrillation:

Medication can be effective in controlling the rate of AF.

- Beta-Blockers may be used to slow the heart rate; by reducing the ability of the pacemaker to pass these electrical signals and therefore slowing the rate that the ventricles contract.
- Digoxin effectively slows the heart rate by reducing the rate the impulses are sent from the upper to lower chambers.
- Anti-arrhythmia drugs chemically convert AF back to sinus rhythm by slowing the electrical impulses to the heart muscle and keeping it in normal rhythm. (These drugs may also be referred to as medical cardioversion).

- Oral anticoagulant therapy (OAT) can reduce the risk of stroke associated with AF. OAT makes blood take longer to clot and in patients with AF this reduces the risk of blood clots forming in the heart. Patients in AF who take OAT usually take it until their heart returns to a normal sinus rhythm either naturally, with assistance, or until their risk of bleeding on OAT is thought to be a bigger risk than of thrombus formation. Patients are usually anticoagulated to a target INR 2.5 (international normalised ratio) – reports the results of blood coagulation test).

Cardiac ablation is a medical procedure to prevent abnormal impulses developing.

- The precise area in the heart where abnormal signals start is located. The area of tissue that is causing the arrhythmia is eliminated using radio frequency delivered from a catheter.
- A pacemaker may be implanted to regulate the ventricular beat at an adequate pace. A pacemaker stimulates a regular beat; it stops the heart from going too slowly.

Cardioversion means to change an irregular heartbeat to a normal one.

- External electrical cardioversion is a well-established procedure performed on an elective basis. An electrical current is sent through the heart using a defibrillator.
- This procedure can convert AF back into a normal heartbeat.
- The procedure is usually performed as a day case.
- The patient is given a short general anaesthetic.
- Two external electrodes (paddles) are placed on the patient's chest (or chest and back) before delivering a modest dose of electricity through the paddles to the heart (in step with patients heart beat). This will jolt it out of AF and into normal rhythm.
- It is often used in conjunction with medication.
- Not all patients are suitable for this treatment particularly if AF has been present for so long that the atria will not be able to maintain sinus rhythm.
- To prevent the procedure from sending clots that may form in the atrium around the body, patients awaiting cardioversion should be anticoagulated with warfarin for at least four weeks.
- Cardiologists usually recommend an INR range of 2.0 to 4.0 prior to the procedure and weekly INR testing to ensure anticoagulation is maintained.
- Post cardioversion patients continue OAT for up to three months. During this time the cardiologist reviews them. If they remain in sinus rhythm their OAT is discontinued. If the patient reverts to AF then OAT continues indefinitely.

Internal electrical cardioversion is a similar procedure but uses a small wire inserted through a vein to the heart. The wire is used to deliver the electrical energy

to the inside of the heart to stop AF. This procedure is carried out as an inpatient and is an alterative to cardioversion.

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Bengali

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