

## Arrhythmia Treatment Fact Sheet

There are several different forms of arrhythmia and the symptoms, typically palpitations, vary in severity from person to person and can have a profound effect on quality of life.<sup>1</sup> Although some patients have benign rhythm disturbances that respond to simple reassurance or medication, significant developments in recent years have provided clinicians with a number of treatment options for patients with more serious arrhythmias. These include implantable cardioverter defibrillators (ICDs), sophisticated pacemakers and catheter ablation.<sup>1</sup>

The treatment a patient receives is dependent on the type and severity of the arrhythmia they have. Where possible, catheter ablation should be used as a first line therapy as it often cures arrhythmias.<sup>2</sup> Arrhythmias can sometimes be treated with drug therapy and in certain patients, the implantation of an electrical device such as a pacemaker or ICD is essential to manage them safely. Combinations of treatments are often needed.<sup>1</sup>

Doctors with expertise in the treatment of arrhythmias, called 'electrophysiologists' are skilled in assessing the best treatment for patients with cardiac arrhythmias.<sup>2</sup>

### Catheter Ablation

Catheter ablation is a procedure that was first used in 1982 and can be used to treat most arrhythmias.<sup>3</sup> The techniques, success rates and risks vary according to the type of arrhythmia. The common arrhythmias treated with catheter ablation are atrial flutter, supraventricular tachycardia and atrial fibrillation.

#### ***Atrial Flutter and Supraventricular Tachycardia***

- Using local anaesthetic and sedation, small tubes are inserted in the veins in the groin and fine wires are passed up to the heart<sup>2</sup>
- The abnormal area of the heart is mapped<sup>2</sup>
- The procedure then involves delivering a form of energy down the wire to the target area within the heart<sup>4,5</sup>
- Most commonly, the energy used is a heat source, such as radio-frequency energy, which is a type of diathermy<sup>2,6</sup>
- Other types may be used such as cryotherapy, which freezes the area<sup>2,6</sup>
- The area which needs treating is usually fairly small
- Success rates are usually around 90% with complications being extremely rare<sup>2</sup>
- Most patients are treated as day-cases and can return to normal life within a few days<sup>2</sup>

#### ***Atrial Fibrillation (AF)***

- Ablation for atrial fibrillation is a newer procedure that is rapidly growing with improving success rates
- The procedure for AF is complex and usually involves electrical isolation of the four veins leading into the left atrium (one of the top chambers of the heart)<sup>7</sup>

- The procedure involves passing a pair of wires through a small hole in between the atria into the left atrium and burning or cauterising the area that appears to be the cause of the problem<sup>2</sup>
- It is a very successful procedure and can often provide a permanent cure for many patients<sup>2</sup>
- The procedure does carry the potential for risk, which may be serious in approximately 2% of patients<sup>2</sup>
- Risks include blood leaks around the heart, stroke, nerve damage and pulmonary vein damage<sup>2</sup>.

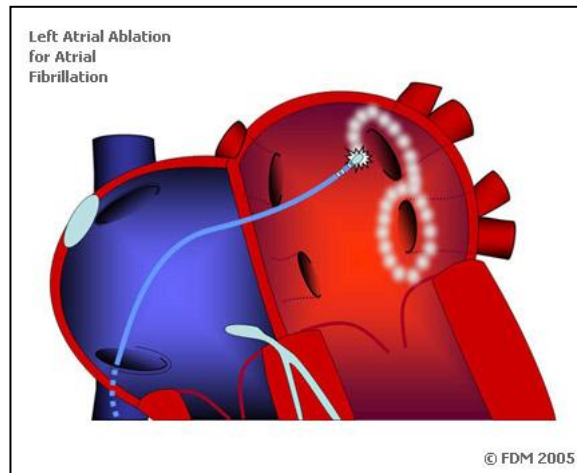


Figure 2: Diagram of a left atrial ablation atrial fibrillation<sup>8</sup>

### Pacemakers

- A pacemaker monitors the heart's own impulses, and if there is a lack of any impulse, the pacemaker will pace the heart as required and according to the way that the physician has programmed it
- Pacemakers are commonly implanted to prevent the heart beating too slowly and are often implanted to treat patients with dizziness or blackouts<sup>2</sup>
- They can occasionally be used to treat fast heart rhythms<sup>2</sup>
- The pacemaker is placed in the chest near the collarbone and electrical leads are passed through veins in the chest to the heart<sup>2,9</sup>
- The leads then pass information from the heart to the pacemaker and if it is beating too slowly, the pacemaker will send out a tiny electrical impulse via the leads to speed up the heartbeat<sup>2</sup>
- Approximately 25,000 pacemakers are implanted in the UK every year<sup>2</sup>

### Implantable Cardioverter Defibrillator (ICD)

- An ICD works in a similar way to a pacemaker for slow rhythms, but can also treat dangerously fast and potentially life threatening arrhythmias by either pacing the heart or using small electrical shocks<sup>2,5</sup>
- Like the pacemaker, it is placed in the chest near the collarbone and the leads that feed back to the generator, monitor the heart's rhythm to detect and treat any dangerously fast heart rhythms (ventricular tachycardia or ventricular fibrillation)<sup>2</sup>

- If an abnormal fast heart rhythm is detected, it can be treated either with bursts of rapid pacing or sometimes a small shock is delivered to correct the abnormal heartbeat.
- On the basis of research studies, certain groups of patients have been shown to have prolonged survival with an ICD compared to drug treatment. This includes certain patients who have suffered a heart attack in the past leading to significant damage to the heart muscle function

### Cardiac Resynchronisation Therapy (CRT)

- CRT therapy treats heart failure that occurs when not all parts of the lower chambers of the heart (the ventricles) contract simultaneously, which leads to the heart not pumping efficiently<sup>2</sup>
- CRT involves implanting a special CRT pacemaker or defibrillator that has an extra lead overlaying the left ventricle to stimulate both ventricles and coordinate simultaneous contractions<sup>2</sup>

### Cardioversion

- Cardioversion is a technique used to restore the normal heart rhythm. It can be used for any abnormal heart rhythm but it is particularly useful in treating the most common form of arrhythmia, atrial fibrillation<sup>8</sup>
- There are different types of cardioversion but the most common used is electrical cardioversion which is often referred to as 'DC' or direct-current cardioversion<sup>8</sup>
- Cardioversion can also be delivered via a wire passed through a vein to the heart whilst the patient is anaesthetised, although this is rarely needed<sup>8</sup>
- Sometimes, an alternative called 'chemical cardioversion' can be administered as medication via injection or by tablets<sup>8</sup>

### Drug Therapy

- Drug treatment plays an important role in the treatment of arrhythmias and sometimes no other treatment is required<sup>8</sup>
- For patients with tachycardia (fast heart rate) drugs such as beta blockers, flecainide or calcium antagonists can be used to slow down the heart rate<sup>1</sup>
- Stronger drugs such as amiodarone can be used to prevent recurrences of arrhythmia but may cause side effects<sup>8</sup>

### References

<sup>1</sup> Department of Health. National Services Framework for Coronary Heart Disease. Chapter Eight: Arrhythmias and Sudden Cardiac Death. March 2005

<sup>2</sup> Arrhythmia Alliance Website. Available at [www.heartrhythmcharity.org.uk](http://www.heartrhythmcharity.org.uk)

<sup>3</sup> Scheinman M, Morady F, Hess DS, Gonzalez R. Catheter-induced ablation of the atrioventricular junction to control refractory supraventricular arrhythmias. (1982). JAMA,; 248:851-855.

<sup>4</sup> NICE Guidelines. Percutaneous radiofrequency ablation for atrial fibrillation. April 2006

<sup>5</sup> The Wellington Hospital Website. Available at [www.thewellingtonhospital.com](http://www.thewellingtonhospital.com)

<sup>6</sup> British Heart Foundation. Atrial Fibrillation Booklet

<sup>7</sup> Demosthenes G. Katritsis; Kenneth A. Ellenbogen. Is Isolation of All Four Pulmonary Veins Necessary in Patients With Paroxysmal Atrial Fibrillation? Pacing Clin Electrophysiol. 2004;27(7):938-940

<sup>8</sup> The London Bridge Hospital Website. Available at [www.londonbridgehospital.com](http://www.londonbridgehospital.com)

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<sup>9</sup> The Harley Street Clinic Hospital Website. Available at [www.theharleystreetclinic.com](http://www.theharleystreetclinic.com)