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Cardioversion

This information sheet is for individuals with atrial fibrillation (also referred to as AFib or AF) as well as carers. It describes different types of cardioversion, who they may be appropriate for, and what to expect from this treatment.

People with AFib or atrial flutter may have symptoms even when their heart rate is controlled with medication. Early onset AFib can be reversed with oral antiarrhythmic medications like amiodarone, sotalol, flecainide, dronedarone and propafenone. However, at normal doses, this may take several days or weeks to be effective. The drugs are not all suitable or safe for everyone and a cardiologist or arrhythmia specialist must assess the patient before prescribing such medication.

Using a higher-than-normal single dose (a 'pill-in-the-pocket' approach) can be used for some antiarrhythmic medications, and can be successful at converting AFib back to a normal heart rhythm, but first must be done in hospital to confirm patient suitability and outcome.

Alternatively, a doctor or 'heart rhythm specialist', as many arrhythmia clinics and services are nurse-led, may suggest cardioversion (CV) to get the heart back to the normal ('sinus') rhythm. There are three main methods: medical, electrical, and internal.

Who is it appropriate for?

If the patient has AFib or atrial flutter with symptoms that rate control alone has been insufficient in controlling and / or, they remain symptomatic and there is importance placed on trying to get to sinus rhythm.

Medical cardioversion

Medical cardioversion involves using injections of antiarrhythmic drugs like flecainide, sotalol, ibutilide, amiodarone and vernakalant. No anesthesia or sedation is needed. Depending on the drug, the injection may be given over a period of 10 minutes (say with flecainide) or up to 24 hours, for example with amiodarone.

During this time the electrocardiogram (EKG) is monitored continuously. The EKG may still be monitored for up to a few hours afterwards to be sure that any abnormal rhythm is quickly detected and treated. When the heart rhythm is stable, the patient is discharged and monitored regularly in an outpatient clinic or by a primary care physician.

Patients with implanted devices or allergies need to report this to their doctor before undergoing any kind of cardioversion.

Who is it appropriate for?

Patients for whom medical cardioversion is not appropriate for or for those whom electrical cardioversion is likely to be more successful. Overall, electrical cardioversion is more effective in achieving sinus rhythm than medical CV.

Electrical cardioversion

This technique is also known as 'external' cardioversion or DCCV, and involves using an electric shock to reset the heart's rhythm. It can be highly effective in carefully chosen patients.

For at least four weeks beforehand, a patient with AFib or atrial flutter will need to take an anticoagulant to reduce the risk of a stroke. Often, prescribing an antiarrhythmic drug such as amiodarone for one or more months beforehand means that the success rate of the electrical cardioversion can increase from 30% to 80% or more at one year.

It is wise to discuss taking antiarrhythmic drug treatment before and after the procedure with your heart rhythm specialist

Patients are required to fast before the procedure. Electrode patches or plates are positioned on the back and front of the chest, or on the upper right and lower left of the chest. The patient is linked to an EKG monitor connected to the cardioverter/ defibrillator. An injection of short acting anesthetic or powerful sedation is given so that the patient is asleep during the procedure.

endorsed by:

Affiliated to Arrhythmia Alliance

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The cardioverter (defibrillator) delivers a shock simultaneously with a heartbeat. Often a single shock is successful, but sometimes several are needed at increasing energy levels or with different electrode positions.

The patient wakes up within minutes and quickly regains full control. The EKG is monitored until full recovery. Patients are usually allowed to go home after a few hours. A friend or partner should come to hospital with the patient as they are advised not to drive for 24 hours after the procedure. Because of having sedation / anesthetic, it is best for someone to stay with them on the night after the procedure to ensure they are recovering.

Anticoagulation is needed in most people for at least four weeks following the procedure. Antiarrhythmic drugs may also be continued for at least several months after DCCV, if already prescribed beforehand. A routine follow-up assessment may include an EKG and it may be necessary to continue with anticoagulant and antiarrhythmic therapy for the longer term.

If you have any concerns or if there have been changes in your situation, difficulty with anticoagulant control or if palpitations recur, it is important that you seek medical advice as early as possible.

Risks of electrical cardioversion may include the following:

- Onset of bradycardia (slow heart rhythm). This usually passes quickly, or at most, needs an injection with a medicine called atropine.
- Ventricular tachycardia (fast heart rhythm), treatable with a follow-up shock before the patient regains consciousness.
- Stroke is very unusual if the patient has been fully anticoagulated before the procedure.
- Minor skin burns or irritation from the electrodes — less common these days with the phasing out of metal paddle electrodes.
- Reaction to anesthetic.
- Up to 20% of people return to AFib in a few days.

Who is it appropriate for?
People for whom other kinds of CV have failed, those with higher risk or obese patients.

Internal cardioversion

Patients are typically admitted to hospital as a day case. Several routine laboratory tests including blood work and an EKG may be performed before the procedure. On the day, the patient may be asked not to eat or drink anything before the test except for taking sips of water with medication. As in many hospital procedures, you will be asked to sign a consent form to permit the doctor to perform the procedure.

Afterwards, anticoagulation is continued for at least one month, but depending on other factors it may be recommended that anticoagulation continues for longer. This will be decided by your doctor.

It is important to mention that the CV techniques are not always successful, and further cardioversions may be necessary if AFib or atrial flutter return. If there is still no success, other treatments are available to regulate the heart's activity. CV is not a cure for AFib or atrial flutter. Rather a test, or temporary correction of the heart rhythm as we know that AFib will often recur. It is done to see if it can convert to sinus rhythm, and if so, does this make the patient feel better. If so, further attempts are considered to maintain sinus rhythm. Similarly, if the patient has heart failure, with or without symptoms, CV is considered in order to improve the heart function overall.

Acknowledgments: This information sheet is an amalgamation of three previous AF Association sheets on electrical, external and internal cardioversion. A more detailed booklet is still available. AF Association would like to thank all those who have helped develop this publication. Particular thanks are given to Dr Adam Fitzpatrick, Professor John Camm, Dr Patrick Heck, Prof Dhiraj Gupta, Dr Angela Hall, Dr Charlotte D'Souza, Dr Benjamin Steinberg and Francesca Calahan.

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