Draft-7

Atrial Fibrillation

Patient Resource Booklet

&

Progress Record

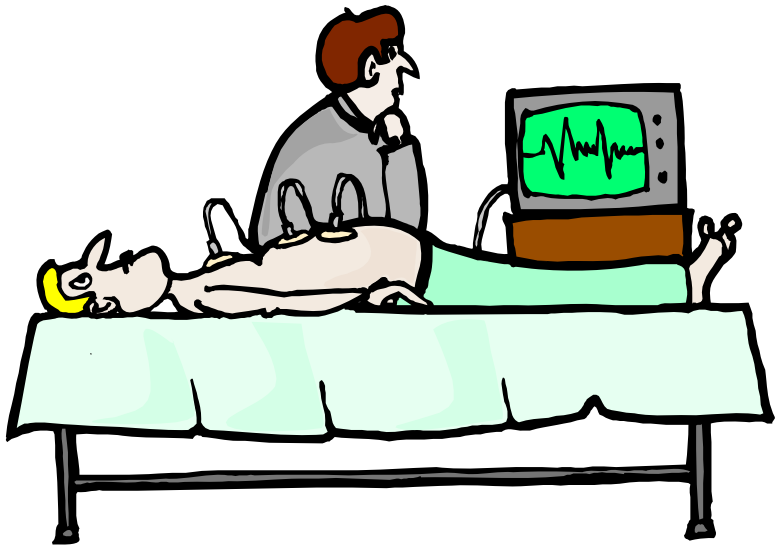

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Table Of Contents

Personal Information

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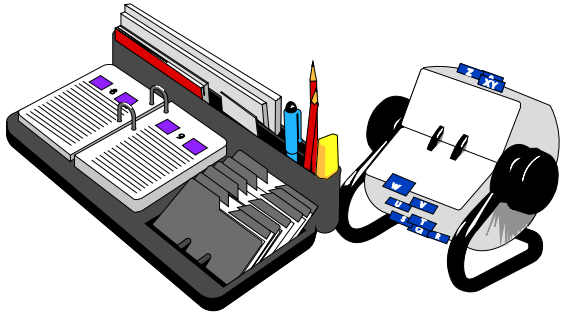

Important Names & Telephone Numbers

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Cardiologist's Name: _____

Pharmacy Name: _____

Pharmacy Phone: _____

Why Read This Booklet?

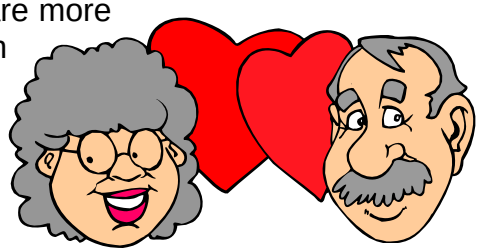
This booklet has been prepared for people like you who have had one or more episodes of irregular heartbeat (arrhythmia) called atrial fibrillation. Atrial fibrillation or AF is the most common irregular heartbeat lasting for more than a few minutes.

AF often occurs suddenly and may cause uncertainty and anxiety for you and your family. You will likely wonder why AF occurred to you and how it may affect your life in the future. These questions and feelings are normal.

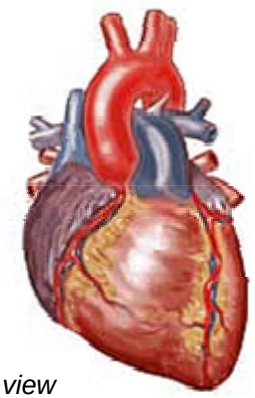
We have designed this Patient Resource Book to answer some of the most common questions that people with AF ask, and keep track of your progress. The booklet provides you with a description of all options offered for Atrial Fibrillation management, a place to record your medications, and blood tests.

Who Gets Atrial Fibrillation?

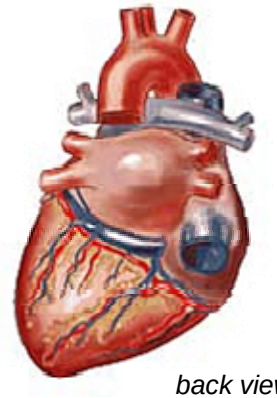
AF occurs more frequently in people with conditions such as high blood pressure, previous heart attack, lung disease, thyroid problems and many others. It can also occur in people who are otherwise healthy. It is rare in children and young people, but very common in those over 65 years old. It is slightly more common in men than women of the same age, but because there are more elderly women than elderly men, there are about equal numbers of men and women with AF.



The Normal Heart and Circulation



front view



back view

To understand what AF is, it is helpful first to know how your heart works normally. Your heart is a hollow muscular organ, normally about the size of your fist. It lies slightly to the left of the center of the chest and is protected by the sternum (breastbone) and rib cage.

The heart has four chambers: the two upper chambers are the left and right atria, and the two lower chambers are the left and right ventricles. The two upper chambers receive blood from your veins, the left from your lungs and the right from the rest of your body. The two lower chambers pump blood out of your heart to all parts of your body, the right to your lungs and the left to the rest of your body. Valves separate the chambers (like doors between rooms).

To work best, the heart's four chambers normally beat in an organized manner, making the heart beat effective (a coordinated contraction of the upper and lower chambers makes the pumping action of the heart more effective)..

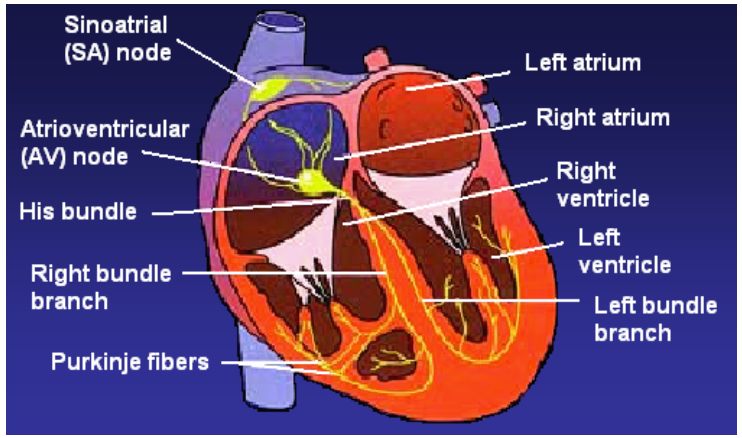
The normal heartbeat is controlled by a natural, primary pacemaker located in the muscle near the top of the right atrium, the sinoatrial (SA) node. The SA node sends out

regular electrical impulses that move through the heart, from top to bottom, first to both atria and then into the ventricles.

The electricity in the heart flows through the atria, like a ripple of water after a rock has been tossed into it. When the electrical impulse reaches the heart muscle, it contracts or “beats”. This beating pumps blood. Because the SA node is located in the upper part of the right atrium, the atria normally beat before the ventricles, providing a coordinated contraction of the upper and lower chambers.

To help the blood to flow in an organized way (that is, from the atria to the ventricles), a short delay between beating of the upper chambers (atria) and lower chambers (ventricles) is needed. This delay occurs in the heart via a specialized electrical pathway that connects the atrial muscle to the ventricular muscle.

This contraction of the upper and lower chambers makes the pumping action of the heart more efficient. The AV node, a secondary pacemaker, allows that coordinated contraction.



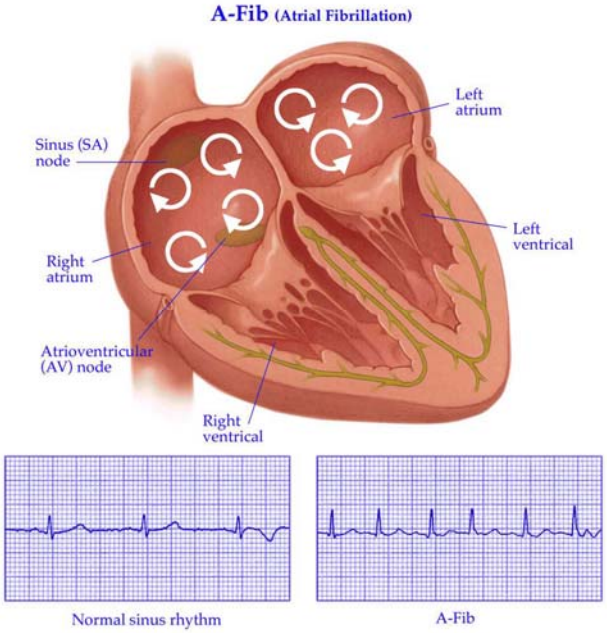
The rate at which your heart pumps is controlled by your heart’s electrical system. Your heart normally beats at a rate

between 50 to 70 beats per minute while you are resting, and speeds up when needed, for example when you exercise.

What Is Atrial Fibrillation?

For a variety of reasons, the atria do not always beat normally. One of these abnormal beating patterns is called AF. Continuous, chaotic electrical activity occurs in the atria.

This abnormal electrical activity in the atria has three consequences.



First, the regular electrical impulses from the SA node cannot get through the atria.

Second, the atria are no longer contracting regularly or as strongly, but instead the muscle is quivering. However,

since the ventricles are the main-pumping chambers of the heart, only some of the pumping efficiency of the heart is lost.

Third and more importantly, the continuous, chaotic electrical activity in the atria bombards the AV node continuously.

Fortunately, the special function of the AV node allows only some of these electrical impulses to reach the ventricles. Sometimes, if enough of these impulses get through, the ventricles will beat rapidly and irregularly, even while you are resting. Rapid and irregular beating of the ventricles reduces the pumping efficiency of the heart even more. The rapid and irregular beating of the ventricles are responsible for many of the symptoms of AF discussed later in this booklet.

What Are the Symptoms of Atrial Fibrillation?

AF may occur without you being aware of it (asymptomatic AF). Your doctor or a nurse may be the first to notice the irregularity when taking your pulse or an ECG of your heart.

More commonly, there are a variety of symptoms. The most common is palpitations or an awareness of the heartbeat. This symptom is due to the rapid irregular heartbeat. Other common symptoms you may experience include fatigue, reduced ability to exercise, shortness of breath, light-headedness, chest heaviness, chest discomfort, dizziness, sweatiness, feeling generally unwell or anxiety. Less commonly you may experience nausea, increased urine output or momentary loss of consciousness. These symptoms are related to the rapid irregular heart beat and the reduced pumping of the heart during AF.

What triggers AF and how long will it last?

Most episodes of AF will occur without any obvious reason. However, some patients have noticed that excess coffee, nicotine, or alcohol use, indigestion, lack of sleep, or other factors can trigger an episode.

AF may occur intermittently, starting and stopping by itself within 7 days (commonly less than 24 hours) ('**paroxysmal AF**'). When an episode of AF lasts more than that, it is often called '**persistent AF**'. After several attempts to restore and maintain normal rhythm have failed, AF may be accepted as continuous and is termed '**permanent AF**'

The number of episodes of AF per person varies widely. After the first episode (**'new onset AF'**), it may be months or years before another occurs. Some research suggests that more episodes, longer episodes make it more likely the AF will become 'permanent'.

AF can often disappear for a while, but it will usually occur again later unless it has a specific cause that can be isolated and removed. A cause cannot always be found and even when found it cannot always be removed, so AF usually requires life-long treatment. Your specific treatment for AF is determined by many factors that you and your doctor will have to consider and discuss. Most of these factors are discussed in this booklet.

Is Atrial Fibrillation Dangerous?

AF is rarely dangerous even though you may feel unwell, have less energy, and be more short of breath.

The most serious complication of AF is the formation of blood clots in the left atrium. When blood is not pumped normally out of the atria into the ventricles, the blood flow in

the atria can become slow and stagnant. A clot may form in arteries or in the heart itself. If the clot grows, it can branch into other vessels and block them. It can also break into fragments – called emboli – that can be swept along by the blood. Other Emboli from the heart or arteries can cause a stroke if they lodge in brain vessels, or cause damage if they block vessels in other organs or your arms or legs. Damage from clots ejected from the heart can be temporary or permanent. The formation of clots in the heart during AF usually takes more than 48 hours of continuous AF.

People over 65 years of age and people of all ages with conditions such as previous mini-strokes, strokes, diabetes, high blood pressure, or poor heart pumping function have a higher risk of forming clots.

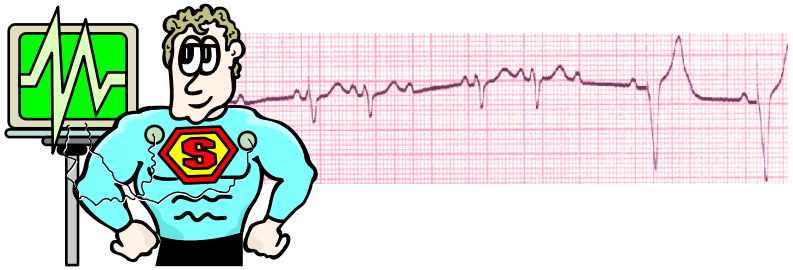
In a few people, AF that is continuously present for months or years without proper treatment may lead to an enlarged heart and reduction of its function. Effective treatment may partially or completely reverse this process.

What Tests are Performed?

Before deciding how to treat your AF, your doctor may wish to perform a number of tests. These tests can help to find out how serious your condition is, other problems with your heart, and to determine the treatment needed.

The three most common tests are described here. If you require any of these tests, your doctor can explain them to you in greater detail.

Electrocardiogram (ECG)



An ECG is done by placing electrical wires on the outside of your chest while you are resting. These wires record your heart's electrical activity. The ECG produces a tracing of that electrical activity. Analyzing this tracing can help your doctor diagnose abnormalities of the heart.

An ECG is often done while you are in AF. It will indicate if you have an irregular heart beat.

Sometimes an ECG may be recorded on a device which records continuously for 24 hours (Holter monitor). Sometimes an ECG is done while you exercise on a treadmill (Stress ECG).

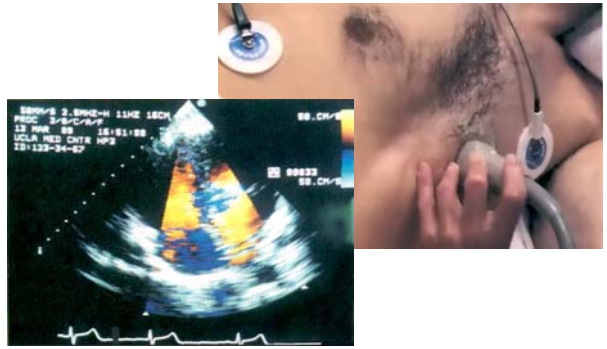
Holter Monitor

Stress ECG

Blood Tests

Blood tests can determine your thyroid function, potassium levels, clotting tendency, and other chemical variations. These tests may be done to determine whether any chemical imbalances in your body are contributing to the tendency for AF and your risk of clots forming.

Echocardiogram (ECHO)



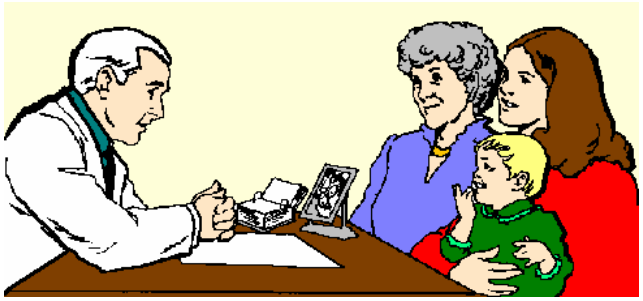
An Echocardiogram (ECHO) is done by sending sound waves through the body and bouncing them off the heart. The returning sound waves ('echoes') are analyzed and used to construct an image of the pumping action of your heart and the valves. In the most common type of ECHO, the wand is placed on the outside of the chest.

An ECHO is useful in determining the size and function of your heart muscle and the functioning of your heart valves. This test may also help to identify whether there are any blood clots in the top portion of the heart (atrium).

A transesophageal echocardiogram (TEE) is an ECHO test that doctors use to obtain even clearer images of parts of your heart from a wand on a tube that is passed into the esophagus. The food pipe (esophagus) lies behind the heart. TEE allows very clear images of the heart and blood flow because the wand is much closer to the heart and the sound waves have to travel through less body mass.

In addition to these tests, other tests may be performed based upon your medical condition. These tests will be discussed with you if they apply.

How is AF Treated?



Options

There are many ways in which AF is treated. These options are outlined in the chart at the center of this booklet (pages 14 & 15).

Deciding how to treat AF requires a thorough review of your medical condition. Doctors have many options to consider. The purposes of treating AF are:

- to prevent blood clot formation and reduce the risk of stroke
- to reduce symptoms
- to prevent enlargement and weakening of the heart.

Doctors usually try to treat AF with medications first. Your medicines are usually taken 1-3 times daily. It is important for you to take your medications as prescribed. Notify your doctor if you are unable to do so, or if side effects appear. Some of the drugs used for rhythm control have possible side effects and your doctor will test for side effects with additional blood tests.

If drugs do not work, non-drug treatments, with or without continued drug treatment, may sometimes be necessary. Your doctor will discuss the advantages and disadvantages of the various kinds of recommended treatments with you. It is common to try different treatments over months or years, depending on changes in your condition and whether or not the treatments are working.

Medication to Reduce the Risk of Clots

Most patients with AF take a blood-thinning medication (anticoagulant). Anticoagulants are medicines that are prescribed specifically to prevent and/or treat the formation of a clot inside your blood vessels (thrombosis). Your doctor may prescribe acetylsalicylic acid (ASA), heparin or warfarin (coumadin).

These medicines are sometimes called “blood thinners”, but this is misleading. The blood of people who take anticoagulants is not “thinner” than the blood of people who do not. It is just less likely to clot.

Heparin is prescribed at the beginning of treatment in hospital or when warfarin needs to be temporarily

discontinued. Heparin is given by injection under the skin or intravenously.

ASA (**Aspirin**) is sometimes prescribed instead of warfarin for people who are at lower risk for stroke.

Warfarin (**Coumadin**) is the most commonly prescribed anticoagulant. Warfarin is taken in pill form. If you take warfarin, you will need regular blood tests to assess the amount of blood thinning (anticoagulation). The increased tendency to bleed with these medications may require limiting of certain activities such as contact sports.

Remember that oral blood thinner medications are not interchangeable: you cannot substitute one for another on your own.

Warfarin and the other medicines prescribed may interact with many other medicines. Please check with your pharmacist regarding any drug interactions when you are filling your prescription or purchasing any over-the-counter medications.

Diet plays a large role in the success of your warfarin therapy. Most critical is your awareness of the vitamin K content of the foods you eat. Warfarin works to prevent clotting by blocking the action of vitamin K. Therefore eating excessive amounts of foods rich in vitamin K could interfere with the warfarin. On the other hand, reducing vitamin K in your current diet could cause warfarin to become too effective, leading to bleeding problems.

Please, don't eliminate vitamin K from your diet! You should continue to enjoy the foods that have always been a part of your diet – *without changing* the quantity you normally eat. It is not the **content** of the diet, but rather the **changes** in the diet that cause fluctuations in your blood tests when you are taking warfarin.

Here are a few rules of thumb you can follow to help remember which foods tend to be high in vitamin K:

- Generally, leafy green vegetables and certain legumes are high in vitamin K, with the outer leaves higher than the inner.

- Vegetable oils are also high, but lose much of the K content when exposed to light.

- Peels of fruits and vegetables contain higher amounts of vitamin K.
- Don't eat an excess of foods such as liver (beef, chicken, pork), green peas, cabbage, broccoli, and spinach or turnip greens.
- And although it may be tempting, don't splurge on salads in the summer**.**

The key to optimizing your warfarin therapy is to be consistent. Do not eat a small amount of vitamin K foods one day and a huge amount the next. Maintain a healthy balance and your blood tests should balance, too.

Atrial Fibrillation Management

PURPOSE

- prevent stroke
- feel better
- prevent heart enlargement

TREATMENT

- Complex
- Many options
- Doctors and patient need to choose

STROKE PREVENTION

For Cardioversion

Long-term

Stroke Prevention Medications
Heparin
Warfarin
ASA
New Experimental

CONTROL HEARTBEAT

Short-term

CONTROL RATE Drugs:

Digoxin
Diltiazem
Verapamil
Beta-blocker

CARDIOVERSION

Electrical shock
Transthoracic
Intracardiac

AND/OR

Drugs:

Propafenone
Quinidine
Procainamide
Dofetilide
Sotalol
Ibutilide
Amiodarone
New Experimental

Long-term

CONTROL RATE Drugs:

Digoxin
Diltiazem
Beta-blocker
Verapamil
Combinations

Non-Drug Treatment:

AVN Ablation & Pacer

MAINTAIN RHYTHM

Drugs:

Propafenone
Quinidine
Procainamide
Dofetilide
Flecainide
Sotalol
Disopyramide
Amiodarone
New Experimental

Non Drug Treatment:

Surgery
Special Pacer
Special RFA
Atrioverter

Treatment to Control AF

In addition to treatment to reduce the risk of clots, you may need treatment to control the heartbeat. Treatments to control heartbeat may involve one of two strategies:

1. **To control the speed –** heart rate control treatment
2. **To restore and maintain a regular rhythm –** heart rhythm control treatment

Heart Rate Control Treatment

Medications

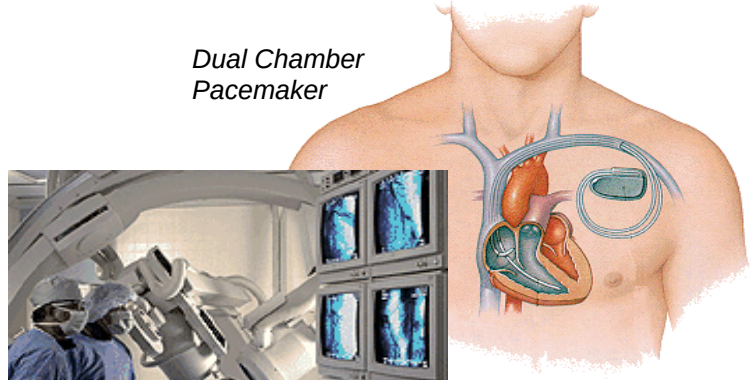
The medications listed in the chart on page 14 & 15 work by impeding the flow of electrical impulses through the AV node. These medications are usually effective and well tolerated.

Other treatments

If your symptoms of AF are affecting your quality of life or you do not tolerate medications, other treatments can be used to control the heartbeat. These non-medicine treatments include having a permanent pacemaker inserted and continuing your drugs or having a procedure called radiofrequency ablation (RFA) of the AV node and inserting a permanent pacemaker.

The most common option is called total AV node ablation. A permanent pacemaker is first implanted to produce an adequate heart rate for daily activity after RFA. In RFA (illustrated below), a small wire is introduced into a vein and guided to the heart using a x-ray camera. The normal electrical conduction system is interrupted or blocked by heating the tissue at the AV node and damaging the node.

This treatment prevents all electrical impulses in the atria from reaching the ventricles and effectively slows the heart. The atrial fibrillation is not cured but can no longer make the heart race. All medications for atrial fibrillation may be stopped except for blood thinners, which may still be necessary. This procedure generally involves a 24 to 48 hour hospital stay (depending on being put back on blood thinners) with a relatively quick return to full activity (1 or 2 weeks).



Dual Chamber Pacemaker

EP Lab

RFA and a permanent pacemaker treatment means that your heart rate is now dependent on the permanent pacemaker. If these procedures are considered appropriate, your doctor will discuss these with you in further detail.

Heart Rhythm Treatment

Electrical Shock

AF may be converted to normal rhythm either by an electrical shock (cardioversion) to the heart, or sometimes by medications. The electrical shock is most commonly done by placing paddles on the outside of your chest and delivering a shock to the heart after you have been given

medication to put you to sleep. If these treatments fail, an electric shock may be delivered through temporary wires passed through your veins into the heart to access its electrical system.

Medicine

Medicine is often needed before, during and/or after the electrical shock treatment to keep a person in a regular rhythm. Medications aim to restore and maintain a normal heart rhythm (sinus rhythm). Your doctor will discuss with you the most appropriate medication for you.

If you have previously taken any drug that did not work or that caused side effects, it will probably not be prescribed for you again. Drugs considered to be unsuitable for you for other medical reasons also will not be given. Combinations of some medications may be necessary to control your heart rhythm. The amount of drug that you take will be determined by the effectiveness of the drug and whether you experience any side effects. If a normal heart rhythm can be restored and maintained for several months it may be possible to reduce or discontinue your anticoagulants. However, discontinuation of anticoagulants in this situation is controversial because many people continue to have episodes while taking medicines that are asymptomatic. You should not discontinue your anticoagulant without discussing it with your doctor.

Non-Drug Treatments

There are also non-drug treatments that may keep your heart in a regular rhythm. These are listed in the chart on page 14 & 15. Many of these non-drug treatments are still being tested and their true effectiveness is unknown. Some of these treatments may not be suitable for you. With most of the non-drug treatments it will be necessary to continue

your heart beat medications and probably your anticoagulants.

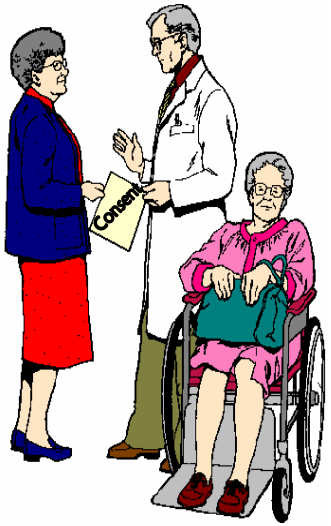
Other treatments are rarely used but are being actively investigated. Surgical procedures (corridor procedure or maze procedure) are also available that can re-channel electrical impulses through the atrium to prevent atrial fibrillation. These procedures can be successful in carefully selected patients, but unfortunately require open-heart surgery and are generally done only when heart surgery is being done for other reasons. This procedure is not widely available.

Other experimental procedures to eliminate AF include special radiofrequency ablation (RFA) in the atria or pulmonary veins. At the moment, this procedure only works in a few carefully selected patients. There is an RFA treatment for atrial flutter. (Atrial flutter is a heart rhythm that is closely related to AF).

An implantable atrial defibrillator may be useful in a few carefully selected patients and it may be combined with special types of pacemakers or an implantable ventricular defibrillator. Such devices are still experimental and the electrical shock therapy is painful so patients receiving such devices at this time should be aware of this and not have frequent, symptomatic episodes of AF. In addition, special kinds of pacemakers without defibrillator capability, pacing two sites in the atria and/or using special software are being developed and tested. Usually it is necessary to continue drug treatment with these therapies.

Innovative treatments

If you are a candidate for a new treatment or a newer medication, it will be discussed with you, and you will need to sign a special consent form.



Other Common Questions

Is AF a “serious problem”?

With proper attention, it is generally not a life-threatening condition. Atrial fibrillation can be very frustrating and may require many adjustments in medicines or other treatments before the condition is under control. Most people with AF live a normal life without restricting their activity unless there are other serious medical conditions present.

Does AF damage the heart?

Usually not. Some people who go untreated for long periods may have an enlargement and weakened heart. If this is the case, further testing may be needed and treatment will be based on your heart health.

What medicine am I taking to manage AF?

There are many kinds of medicines that your doctor may use to treat your atrial fibrillation. Your doctor will provide you with a prescription and discuss possible side effects of the medications.

Please also ask your pharmacist to provide you with information about your drugs, and have the pharmacist review the possible side effects with you when you fill your prescription.

Some of the side effects may be serious, so it is important that you report side effects to your doctor and follow up with your doctor as recommended.

What if medications do not work?

You may take a variety of medications before finding a combination of medications that works for you. Some people will try many medications only to find that none work satisfactorily and the symptoms from the atrial fibrillation remain intolerable. Other options are then available. Your doctor will discuss these treatments in further detail with you if they are to be considered for you.

How often do I need my blood tests?

Because the amount of anticoagulant medication needed differs among people your doctor will regulate your medication based on a blood test called an **INR** (International Normalized Ratio).

Initially you will need frequent blood tests to manage your **warfarin** therapy.

Arrangements will have to be made for your doctor to direct adjustment of the dosage for the warfarin. Once the blood tests are within a target - therapeutic range (INR=2.0 to 3.0), your doctor will direct you to have less frequent blood tests. You should ask your doctor about the frequency of future visits and blood tests.

It is a good idea for you to keep track of you lab tests (INR). Please refer to the back section of this booklet for an INR Record to record your results.

If you are taking ASA or another less powerful anticoagulant, blood tests are usually not necessary.

When do I go to the hospital?

As previously mentioned, atrial fibrillation will likely return. It is not necessary to go to the hospital every time an episode of atrial fibrillation occurs. If you have symptoms such as chest pain, loss of consciousness, significant shortness of breath and a reduction in energy, or a racing heart beat, you should call your doctor or go to the emergency room. However, you should ask your doctor about your symptoms, and get some direction about when you should go to the hospital and when you should call your doctor.

What if my symptoms of AF increase?

If you notice an increase in your symptoms and/or feel that you are in AF and are not taking the blood thinner, warfarin, you should speak with your doctor regarding anticoagulation and other possible changes in your treatment.

Questions/Notes:

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Questions/Notes:

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Q	
A	

INR Results

Date	INR Result	Warfarin Dose

INR Results

Date	INR Result	Warfarin Dose

INR Results

Date	INR Result	Warfarin Dose

INR Results

Date	INR Result	Warfarin Dose

MEDICATION RECORD (Record all medication taken. Ask your doctor to help you complete this section)

1. Name of Medication _____

   Strength _____ pills/day _____

   Date medication started _____

   Prescribing Doctor _____

   Reason for starting the medication

   _____

   Date medication discontinued _____

   Prescribing Doctor _____

   Reason for medication being discontinued

   _____

   Side effects noted _____

   _____

2. Name of Medication _____

   Strength _____ pills/day _____

   Date medication started _____

   Prescribing Doctor _____

   Reason for starting the medication

   _____

   Date medication discontinued _____

   Prescribing Doctor _____

   Reason for medication being discontinued

   _____

   Side effects noted _____

   _____

MEDICATION RECORD (Record all medication taken. Ask your doctor to help you complete this section)

3. Name of Medication _____

   Strength _____ pills/day _____

   Date medication started _____

   Prescribing Doctor _____

   Reason for starting the medication

   _____

   Date medication discontinued _____

   Prescribing Doctor _____

   Reason for medication being discontinued

   _____

   Side effects noted _____

   _____

4. Name of Medication _____

   Strength _____ pills/day _____

   Date medication started _____

   Prescribing Doctor _____

   Reason for starting the medication

   _____

   Date medication discontinued _____

   Prescribing Doctor _____

   Reason for medication being discontinued

   _____

   Side effects noted _____

   _____

MEDICATION RECORD (Record all medication taken. Ask your doctor to help you complete this section)

5. Name of Medication _____

Strength _____ pills/day _____

Date medication started _____

Prescribing Doctor _____

Reason for starting the medication

_____

Date medication discontinued _____

Prescribing Doctor _____

Reason for medication being discontinued

_____

Side effects noted _____

_____

6. Name of Medication _____

Strength _____ pills/day _____

Date medication started _____

Prescribing Doctor _____

Reason for starting the medication

_____

Date medication discontinued _____

Prescribing Doctor _____

Reason for medication being discontinued

_____

Side effects noted _____

_____

MEDICATION RECORD (Record all medication taken. Ask your doctor to help you complete this section)

7. Name of Medication _____

   Strength _____ pills/day _____

   Date medication started _____

   Prescribing Doctor _____

   Reason for starting the medication

   _____

   Date medication discontinued _____

   Prescribing Doctor _____

   Reason for medication being discontinued

   _____

   Side effects noted _____

   _____

8. Name of Medication _____

   Strength _____ pills/day _____

   Date medication started _____

   Prescribing Doctor _____

   Reason for starting the medication

   _____

   Date medication discontinued _____

   Prescribing Doctor _____

   Reason for medication being discontinued

   _____

   Side effects noted _____

   _____