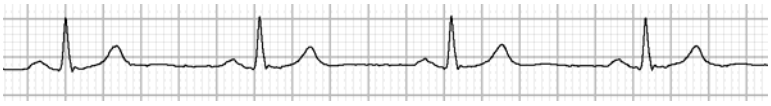
Atrial Fibrillation – A Guide for Patients

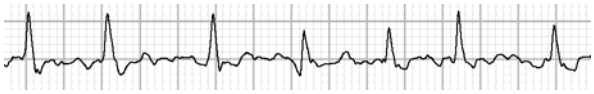
What is Atrial Fibrillation?

Atrial Fibrillation (AF) is a very common abnormality of heart rhythm, affecting more than two million people in the United States. To understand atrial fibrillation, it's important to understand the normal heartbeat. Normally, the upper chambers (atria) beat first, about once every second, pushing blood into and "priming" the lower chambers (ventricles). The ventricles, which are thick and muscular and provide essentially all of the pumping action of the heart, then beat to push the blood to the body.



Normal Rhythm

During AF, the atria don't actually pump blood at all, and so don't "prime" the ventricles. Instead, the atria "quiver" extremely rapidly and irregularly, causing the ventricles to beat rapidly and irregularly too, often about twice normal. The lack of "priming" and the rapid and irregular beating makes the heart pump less effectively. This rapid, irregular, less effective beating causes the symptoms associated with AF.



Atrial Fibrillation

Are there different kinds of atrial fibrillation?

Yes, there are several kinds. We often think of AF as a problem common to older patients with longstanding heart problems such as previous heart attack, leaky valves, and so forth. Sometimes, however, AF is seen in patients with an otherwise normal heart, and this is likely to be a very different kind of AF. In addition, AF is often divided into:

- Paroxysmal AF (comes and goes)
- Persistent AF (stays until treated with a shock or a medicine)
- Permanent or chronic (no therapy seems to stop it)

These distinctions are made because the implications of these different kinds of AF, as well as the best way to manage AF, depend on type.

What causes atrial fibrillation?

In many cases of AF, no cause can be found. More commonly, it is due to high blood pressure, lung disease, thyroid disease, nerve conditions, alcohol ingestion, excessive stimulants such as caffeine, or heart disease such as leaky valves, congestive heart failure, coronary artery disease, previous heart attack, or inflammation near the heart.

Is atrial fibrillation dangerous? What problems does it cause?

There are several problems, but the main concern is the risk of stroke:

- Stroke – caused by a blood clot traveling from the heart to the brain
- Symptoms – especially palpitations, fatigue, and lack of stamina
- Cardiomyopathy – weakening of the heart muscle

Although AF most often occurs without any symptoms at all, it can cause palpitations (a sensation of rapid, irregular, or otherwise abnormal heartbeats), shortness of breath, and lack of stamina or energy. Less commonly, lightheadedness, chest pain, and other symptoms can occur. Interestingly, even patients who believe that they can always tell when they are in AF actually cannot; AF occurs much more often than they are aware of.

Continuously elevated heart rates (above 125 beats per minute for weeks or months) can weaken the heart as well and cause cardiomyopathy; fortunately this is usually reversible and goes away with appropriate treatment of the elevated heart rate.

These three problems – stroke, symptoms, and weakening of the heart if rapid rates are persistent, are the main problems associated with AF.

How is atrial fibrillation treated?

Therapy of AF is directed at reducing or eliminating the three problems noted above - risk of stroke, symptoms, and cardiomyopathy from persistent rapid heart rate. Treating the underlying cause (such as thyroid disorders or high blood pressure), if one is found, is also very important.

Blood thinners*:*

Blood thinners are the mainstay of therapy of AF. Because the main problem with AF is stroke, and because a stroke can be so devastating, great efforts are made to try to prevent it. Stroke is the main cause of disability in the US, and the third most common cause of death. Older patients, those with heart disease, diabetes, high blood pressure, or those with a previous stroke are at high risk and usually are best treated with the blood thinner warfarin (Coumadin). Warfarin reduces the risk of stroke by about 75%.

Rarely someone has none of these risk factors (“lone AF”) and is at low risk of stroke, and may be safely treated with aspirin. Aspirin is a very mild blood thinner which reduces the risk of stroke by about 25%. A promising and effective new blood thinner (Ximelagatran) caused some problems such as liver trouble and has not been approved by the FDA. No other medications, dietary maneuvers, or herbal products have been shown to prevent strokes due to AF.

Medications to keep heart rates down in the normal range*:*

These are important because symptoms of AF are related to the rapid and irregular beating of the ventricles. Persistently elevated heart rate can weaken the heart as well (cardiomyopathy). Medications such as beta blockers (metoprolol, atenolol, others), calcium channel blockers (verapamil, diltiazem, others) or digoxin are used in an effort to keep heart rates normal, and can allow the heart to become strong again.

The combined approach of "**Heart Rate Control plus Blood Thinners**" has been shown to be the best approach to treating AF for most patients, but other approaches are appropriate in some circumstances; these are described below.

Medications to prevent AF:

Medications are available (flecainide or Tambocor, sotalol or Betapace, dofetilide or Tikosyn, amiodarone or Pacerone) that can prevent AF in some patients. Although many patients do well with this approach, these medications are only moderately effective and are associated with side effects in some patients.

"Pill in the Pocket":

This is an excellent strategy for patients who have AF infrequently, for instance once every few weeks or less. Patients take a single dose of pills (flecainide or propafenone) for AF, just when an episode occurs. It is best for patients with "persistent" AF – that is, AF that continues until treated, and normal rhythm continues for weeks or months after treatment. This avoids Emergency Room visits and daily medications for AF (although blood thinners may be required).

Cardioversion:

An electrical charge (as seen on TV, though in real life it's not so dramatic) synchronizes the heart so that it beats regularly again. It's best for those with prolonged continuous ("persistent", "permanent" or "chronic") atrial fibrillation. It is performed when a patient is asleep, and most patients do not feel or remember it. It almost always works, but normal rhythm may be maintained only for minutes or hours. In other patients, it may last months or even years. Although one would think that returning to normal rhythm would eliminate the risk of stroke, it has been shown that AF can return without any symptoms, and for that reason blood thinners usually continue to be required. Still, most physicians believe that cardioversion should be considered at least once in patients with persistent AF, and many patients will safely undergo cardioversion many times. It is generally safe and does not seem to hurt the heart. Cardioversion should generally be considered within the first 48 hours of the onset of AF if you are not taking blood thinners (warfarin, Coumadin), as there may be a risk of stroke if you wait longer.

Pacemakers:

Pacemakers are excellent therapy for slow heart rates, but they don't do anything for the rapid heart rates usually seen with AF. If heart rate cannot be controlled with medications, it is sometimes best to implant a pacemaker, then eliminate the electrical connection between the upper and lower chambers ("*Ablation of AV Node plus Pacemaker*") so that the AF does not cause the lower chambers to beat abnormally. Although the atrial fibrillation (which is in the upper chambers) will still be present, the heart rate (lower chambers) is then controlled by the pacemaker and consequently will be entirely regular and at normal rates. People usually feel better following this, and can often eliminate some of the medications that were used to try to slow down the heart rate. However, because the AF is still present, risk of stroke continues, and blood thinners are needed.

Implantable Cardioverter-Defibrillators (ICDs):

ICDs have been implanted to allow patients to deliver a shock to terminate atrial fibrillation, but it is uncommon. Usually, these patients also need an ICD for another reason, such as potentially life-threatening arrhythmias from the lower chambers (ventricular tachycardia and ventricular fibrillation).

Advanced therapy of AF:

Procedures are available that have been designed to permanently cure atrial fibrillation; these include the many varieties of the surgical and catheter "Maze" procedures. These include procedures involving advancing a catheter into the heart from a vein in the leg in order to cauterize and eliminate the spots from which the AF arises ("Catheter Ablation of AF"), and cardiac surgical procedures in which these areas are cauterized through incisions between the ribs ("Minimally Invasive Surgery of AF"). These procedures are appropriate only for a small fraction of all patients with AF, and are beyond the scope of this guide. To learn more, ask for the guide entitled "Advanced Therapy for Cure of Atrial Fibrillation", or visit **www.minimaze.org**, from which the guide can be downloaded.

Estimating your risk of stroke in AF:

You can find out your approximate annual risk of stroke (when not treated with warfarin) by adding up your risk factors in the table below (CHADS2 Index). You can reduce this risk by about 75% by taking warfarin.

Risk Factor	*Score*	*If your total is*	*Your yearly risk is*
Prior stroke, TIA, or similar	2	0	1.9%
Age > 75	1	1	2.8%
High blood pressure, even treated	1	2	4.0%
Diabetes	1	3	5.9%
Heart Failure	1	4	8.5%
		5	12.5%
Total		6	18.2%

AF: What should you do about it?

Atrial fibrillation needs to be addressed carefully, with special attention to the risk of stroke, which is by far the worst problem. Your primary physician has a great deal of experience with it, and should be consulted first. Your physician will:

- Address potential causes of AF such as high blood pressure
- Recommend lifestyle changes such as limiting alcohol and caffeine
- Estimate your risk of stroke, and start blood thinners if the risk is high
- Control your heart rate with medications
- Consider cardioversion or other options
- Refer you to a cardiologist or an electrophysiologist (heart rhythm specialist) if you have a particularly difficult or unusual case, or to consider advanced therapy.

Be sure to consult your physician if you have further questions about AF.