Atrial Fibrillation
Coping With a Chaotic Heartbeat

Patient Education Center
www.patientedu.org
What Is Atrial Fibrillation?

Atrial fibrillation is a fast and irregular heartbeat. It occurs in the heart’s two upper chambers, the right atrium and left atrium. Atrial fibrillation affects how the entire heart works.

The atria receive blood from the lungs and the rest of the body. They pump it into the ventricles, which are the lower two chambers of the heart. The ventricles then pump blood back to the lungs and the rest of the body. Normally, the atria contract and relax in a steady, synchronized rhythm. Each contraction pumps blood efficiently into the ventricles. When the heart is at rest, the atria beat between 60 and 100 times a minute.

In contrast, during atrial fibrillation, the atria fibrillate, meaning they contract fast and erratically. They may beat 150 times a minute or more. Instead of pumping, the atria just quiver; they don’t pump blood efficiently. This chaotic heart rhythm can cause symptoms that interfere with daily life. It also increases the chances of having a stroke.

There are different types of atrial fibrillation:

- **Paroxysmal atrial fibrillation.** This type of atrial fibrillation comes and goes. After the abnormal rhythm appears, it often disappears on its own.
- **Persistent atrial fibrillation.** This type of atrial fibrillation lasts longer than 7 days. Medication or other treatment is needed to restore a normal rhythm.
- **Permanent atrial fibrillation.** This type of atrial fibrillation endures despite attempts to end it.

What Causes Atrial Fibrillation?

A normal heartbeat begins in the right atrium. It starts in a group of cells called the pacemaker, more formally known as the **sinoatrial node**. These cells generate a tiny pulse of electricity that flashes across the atria. This pulse causes muscle cells in the atria to contract simultaneously. The contraction forces blood into the ventricles.

In people with atrial fibrillation, cells beside those in the pacemaker fire off “contract now” signals. This flurry of electrical activity makes the atria contract in a fast and uncoordinated way.

Quivering atria do a poor job of pumping blood from the atria down into the ventricles. As a result, blood moves sluggishly through the atria. This allows clots to form. Those clots can then travel in the bloodstream to an artery in the brain, blocking the blood flow through that artery and thereby causing a stroke. The American Heart Association estimates that atrial fibrillation accounts for almost 150,000 strokes a year.
Atrial fibrillation usually occurs because of damage to the heart’s structure. **This can be due to:**

- Heart attack.
- Years of high blood pressure.
- Abnormal heart valves.
- Heart surgery.
- A heart defect you’re born with (*congenital*).
- Overactive thyroid gland.
- Drinking too much alcohol.
- Use of stimulants, such as caffeine and tobacco.
- A problem with the heart’s natural pacemaker.
- Emphysema or other lung diseases.
- A viral infection.
- Stress due to pneumonia, surgery, or other illnesses.

**Sometimes there isn’t an obvious reason for the appearance of atrial fibrillation. This is called lone atrial fibrillation.**

**Symptoms**

Atrial fibrillation can cause a number of symptoms. These include:

- Weakness.
- Light-headedness.
- Shortness of breath.
- Low blood pressure.
- Palpitations (a feeling your heart is racing or missing beats).
- Chest pain.

In some people, atrial fibrillation is silent, meaning it doesn’t cause any symptoms. They learn about it during a physical exam or a test for some other condition.

**Diagnosis**

Diagnosing atrial fibrillation tends to be a several-step process. It usually begins with a conversation with your doctor. He or she will ask if you are having any heart symptoms and ask about your family history of cardiovascular disorders. Your doctor will check your heart rate and rhythm, take your pulse, and listen to your heart.

**An electrocardiogram (ECG)** records the heart’s electrical activity. This test reliably detects atrial fibrillation if it is performed while you are having it. An ECG takes only 2 to 3 minutes to complete. Since atrial fibrillation can come and go, it may not be happening while the ECG is being performed. In these cases, other tests may be needed to see if you are going in and out of atrial fibrillation.

**Holter monitor.** You may need to wear a portable ECG machine known as a Holter monitor for 24 hours. It continuously records the electrical activity in your heart. It will detect any episode of atrial fibrillation that occurs in that 24 hour period.

**Event recorder.** When atrial fibrillation comes on infrequently, your doctor may ask you to use an event recorder. You wear an event recorder for longer than 24 hours—for weeks in some cases. Like a Holter monitor, it continuously records your heart’s electrical activity. However, it only stores this information when you feel your heart doing something strange and press a button on the recorder. The recorder will store your heart rhythm around the time you press the button for your doctor to review.
Electrical cardioversion is a gentler, more sedate version of the procedure used to jump-start the heart that you may have seen on television or in the movies. Two paddles are placed on the chest, and a jolt of electricity travels between them.

Pharmacological cardioversion uses one or more anti-arrhythmia medications. For some people with paroxysmal atrial fibrillation, a technique called pill-in-the-pocket works. When they feel the telltale signs of atrial fibrillation, they immediately take a dose of anti-arrhythmia medicine that they carry in their pocket.

A small number of people with paroxysmal atrial fibrillation can stop it with physical maneuvers. These include holding your breath and bearing down as if you are having a bowel movement. Other physical maneuvers that can help include coughing, gagging yourself with your fingers, or drinking a glass of ice-cold water.

**Restoring a Normal Rhythm: Cardioversion**

When someone first develops atrial fibrillation, attempts are made to restore a normal rhythm. Those attempts are usually successful. That’s good, because most people feel better when their heart rhythm is normal.

Halting the abnormal rhythm and restoring a healthy one is called cardioversion. Cardioversion interrupts the flurry of signals raging through atria and allows the natural pacemaker to take charge again. It can be done using either electricity or medicines.
Two procedures, one of which is a medical procedure and the other involves surgery, can be used to halt atrial fibrillation:

**No-surgery catheter ablation:** A procedure called catheter ablation is sometimes used to stop atrial fibrillation. It uses heat or cold to make a ring of scar tissue around a particular area of the right atrium where the extra “beat now signals” often start. The scar tissue prevents these extra signals from traveling throughout the atria, causing them to beat in an uncoordinated way. The heating or freezing instrument is located at the tip of a thin wire, called a catheter. The catheter is inserted into a blood vessel in the groin. A doctor then slowly guides it into the right atrium.

Although safe, catheter ablation can have side effects and may not be permanent. Because atrial fibrillation often returns after the procedure, the Heart Rhythm Society and other organizations say that the term “cure” should not be used to describe catheter ablation.

**Surgery:** An operation called the Maze procedure completely stops atrial fibrillation 80% to 95% of the time. It also prevents strokes without the need for warfarin or other blood-thinning medication. A surgeon makes a series of cuts in the right and left atria and immediately sews them up. This creates a maze-like pattern of scar tissue that acts as a barrier against the errant “beat now” signals that make muscle cells contract. Because the Maze procedure requires open-heart surgery, it is usually done only when another major operation, such as coronary artery bypass or heart valve replacement, is needed.

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**Slowing the Heart Rate in Permanent Atrial Fibrillation**

Unfortunately, some people keep going back into atrial fibrillation. The treatments don’t prevent the abnormal rhythm from returning. Therefore, they remain in permanent atrial fibrillation. Millions of people live with this condition.

One way to ease the symptoms of atrial fibrillation is by controlling how fast the ventricles beat. Most people with atrial fibrillation feel better when their heart rate is under control. Current guidelines recommend aiming for a heart rate under 110 beats per minute.

**Three types of medication can do this:**

1) **Beta blockers.** These include atenolol, carvedilol, metoprolol, and propranolol.

2) **Calcium-channel blockers.** These include amlo-dipine, diltiazem, nifedipine, and verapamil.

3) **Digoxin.**

**Preventing Blood Clots & Strokes**

Fortunately, when atrial fibrillation lasts just a few days, the risk of blood clots and strokes is pretty small. For the millions of people who have permanent atrial fibrillation, however, the risk of clots and strokes is quite high.

The best way to prevent clots and strokes is to take a blood-thinning medicine and to keep your blood pressure under control.
Blood-thinning medicines include warfarin, dabigatran, apixaban, rivaroxaban, aspirin, and clopidogrel. Anyone who takes warfarin should have regular blood tests to check how well the medicine is working. It is also important to talk with your doctor or nurse about your diet. Some foods, such as leafy green vegetables, may interfere with the effectiveness of warfarin.

Blood-thinning medicines are a double-edged sword. They reduce the risk of clots, but they also increase the risk of bleeding and make it harder to stop bleeding once it starts. This can turn a simple injury into a bigger problem or lead to gastrointestinal bleeding.

Here are some things to watch for:

- You are bruising more easily, or have unexpected blood blisters.
- You notice that your stools are bloody, dark brown, or black.
- Your gums begin to bleed.
- You feel sick, weak, faint, or dizzy.
- You have an accident of any kind.

Living With Atrial Fibrillation

Millions of people who have atrial fibrillation live normal, active lives. Attention to medical care is important:

- See your doctor regularly. At each visit, bring a list of all the medicines and supplements you are taking.
- Make sure your blood pressure is under control. High blood pressure raises the risk of bleeding in the brain and puts a strain on the heart.
- Follow the instructions you’ve been given for taking your medicines.
- Be careful about taking over-the-counter medicines, like cold and allergy medicines, and nutritional supplements. Some of these products contain compounds that can launch rapid heart rhythms.
- If you take blood-thinning medicines that require monitoring, have your blood checked regularly to check how the medicine is working.

Lifestyle is important when living with atrial fibrillation and other conditions that people with atrial fibrillation often suffer from, such as high blood pressure or high cholesterol.

Your doctor may suggest that you:

- Choose a heart-healthy diet that includes plenty of vegetables, fruits, whole grains, and lean protein, such as fish, chicken, beans, and nuts.
- Have no more than 1 or 2 beverages with caffeine per day.
• Drink alcohol in moderation. That means no more than 1 drink a day for women or 2 a day for men.

• Try to reduce your intake of sodium (salt). Using less salt can help control blood pressure.
  • Increase your physical activity.
  • Don’t smoke and avoid second-hand smoke.
  • Aim for a healthy weight.
  • Reduce your stress.

For More Information

National Institute of Neurological Disorders and Stroke
www.ninds.nih.gov/disorders/stroke/stroke.htm

American Stroke Association
www.strokeassociation.org

National Stroke Association
www.stroke.org

Notes
STROKES ARE THE NUMBER-THREE KILLER IN THIS COUNTRY, YET MANY PEOPLE DON’T EVEN KNOW WHAT THEY ARE. THEY DON’T KNOW THAT MORE OF THE BRAIN CAN BE SAVED IF A STROKE IS DETECTED AND TREATMENT IS RECEIVED IMMEDIATELY. STROKES BEGIN WHEN A BLOOD VESSEL IN THE BRAIN BECOMES BLOCKED OR BURSTS. BLOOD FLOW IS CUT OFF. TISSUE IS STARVED FOR OXYGEN, AND PARTS OF THE BRAIN DIE. IF NOT TREATED QUICKLY, ABILITIES AND PRODUCTIVE LIFE CAN BE LOST. YOUR BRAIN IS YOUR MOST PRIZED POSSESSION. GUARD IT WITH YOUR LIFE.

WITH A STROKE, TIME LOST IS BRAIN LOST.

If you suddenly have or see any of these symptoms, call 9-1-1 immediately: Numbness or weakness of the face, arm or leg, especially on one side of the body • Confusion, trouble speaking or understanding • Difficulty seeing in one or both eyes • Trouble walking, dizziness, loss of balance or coordination • Severe headache with no known cause

Learn more at StrokeAssociation.org or 1-888-4-STROKE.
To learn more about atrial fibrillation, visit the Patient Education Center at www.patientedu.org/afib.

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