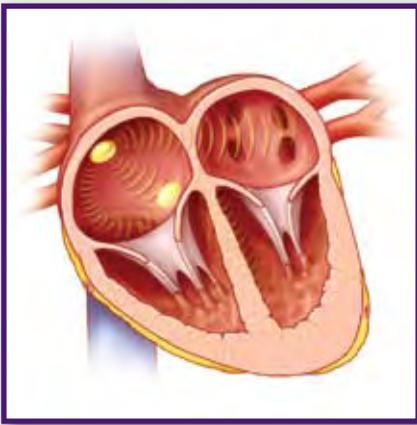


Cardioversion for Atrial Fibrillation



- **Your Heart's Electrical System**
- **Cardioversion**
- **Living with Atrial Fibrillation**



When You Have Atrial Fibrillation

You've been told you have a heart condition called **atrial fibrillation** (also called A-fib or AF). Hearing you have a heart problem can be scary. But here's the good news: A-fib is a common condition that can be managed. And it's rarely life-threatening. Read on to learn how you can control your A-fib and live a normal, active life.

What Is A-Fib?

A-fib is a problem with the speed and pattern of your heartbeat. It can occur in episodes. These are periods when your heart beats in a fast and irregular way. A-fib can occur with or without symptoms, which can include:

- A pounding, irregular heartbeat
- Shortness of breath
- Tiredness
- Dizziness or fainting
- Chest pain

Risk Factors for A-Fib

Risk factors are things that make a person more likely to have A-fib than other people. A-fib can occur without risk factors. For instance, A-fib without underlying heart disease is called **lone A-fib**. But more often, people with A-fib have risk factors. Your risk of having A-fib increases with any of the following:

- Age over 60 years old
- A heart condition, such as coronary artery disease, heart valve disease, or heart failure
- High blood pressure
- Lung disease
- Diabetes
- Recent heart surgery
- Thyroid disease (overactive thyroid)
- Certain sleep problems, such as sleep apnea
- Obesity
- Heavy alcohol drinking



A Procedure Can Help

A procedure called **electrical cardioversion (EC)** can help treat your A-fib. This procedure helps return your heart to a normal rhythm. This relieves your symptoms. Your healthcare provider will discuss your treatment options with you. You can then work together to manage your A-fib.



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Understanding Your Heartbeat

The heart is a muscle that pumps blood throughout the body. As the heart pumps, chambers in the heart relax and squeeze (contract). When the heart relaxes, it fills with blood. When it contracts, the heart empties this blood. These actions move blood through the heart and make up the **heartbeat**. The number of heartbeats per minute (bpm) is called the heart **rate**. The pattern of the heartbeats is called the heart **rhythm**. An **arrhythmia** is a problem with the heart's rate and/or rhythm. A-fib is one type of arrhythmia.

Electrical Signals Tell the Heart to Beat

Each heartbeat starts with an electrical signal. These signals are sent and received by special cells in the heart called **nodes**. As signals move through the heart, they tell the heart's chambers (the **atria** and **ventricles**) when to contract. When you're active, the signals speed up. This makes the heart beat faster so it can send more oxygen to the body. When you're resting, the signals slow down again. A normal resting heart rate is about 50 to 100 bpm.

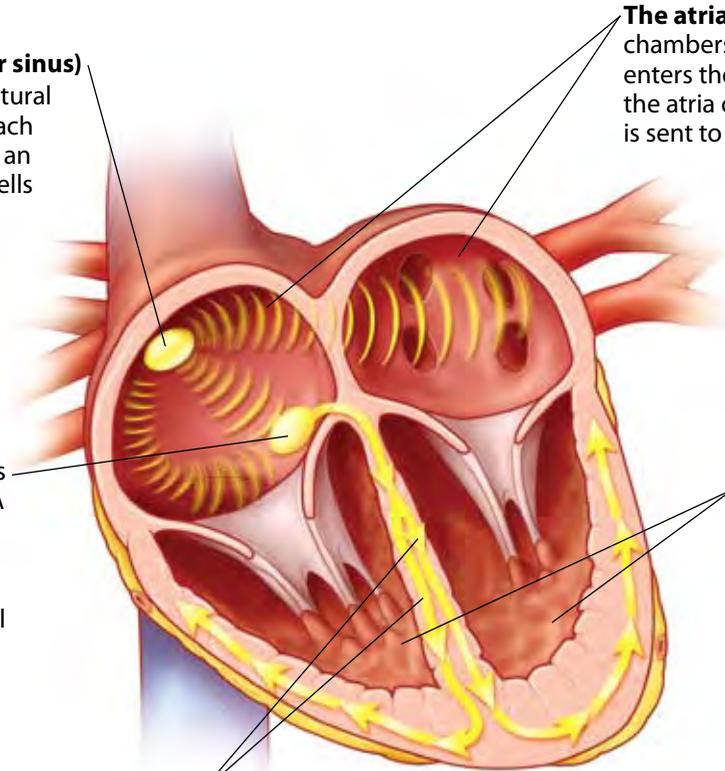
The SA (sinoatrial, or sinus) node is the heart's natural pacemaker. It starts each heartbeat by sending an electrical signal that tells the atria to contract.

The AV node receives the signal from the SA node after the signal passes through the atria. The AV node then guides the signal to the ventricles.

The bundle branches are pathways of cells that carry the signal through the ventricles. As the signal moves through the ventricles, they contract.

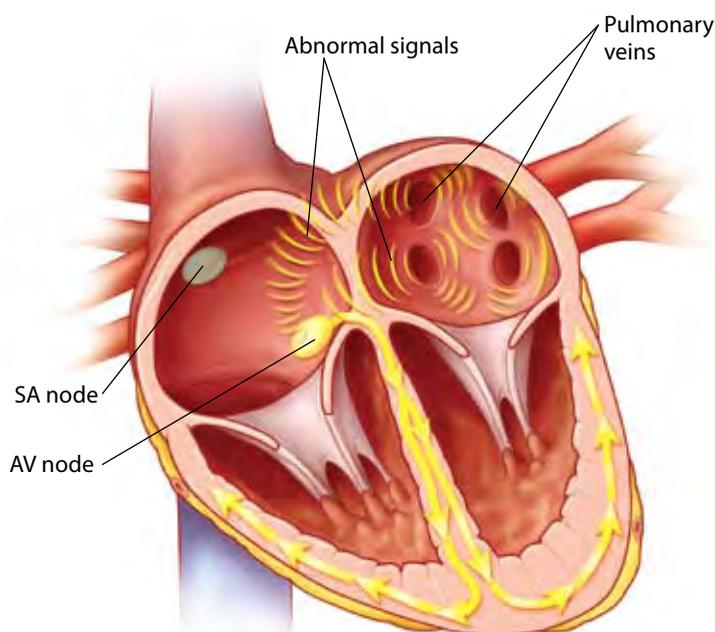
The atria are the upper chambers where blood enters the heart. When the atria contract, blood is sent to the ventricles.

The ventricles are the heart's lower chambers. When they contract, blood is pumped out of the heart to the rest of the body.



During an A-Fib Episode

During A-fib, the atria receive abnormal electrical signals. These signals are most often sent by cells in the **pulmonary veins** (blood vessels that carry blood from the lungs to the heart). The abnormal signals travel from the atria to the AV node and the ventricles. The signals cause both the atria and the ventricles to contract in a fast and irregular way. The atria may reach up to 350 to 600 bpm, while the ventricles may reach about 150 to 200 bpm. These different contraction rates cause an abnormal heart rhythm.



How A-Fib Can Cause Symptoms and Stroke

During an A-fib episode, the atria beat too fast to properly pump blood into the ventricles. So, less blood than normal may be pumped out of the atria and to the body. This can cause symptoms, such as feeling tired, dizzy, or out of breath. Meanwhile, the blood that is not pumped to the ventricles can pool in the atria. This pooled blood can clot. If clots move out of the heart to the brain, this can cause a stroke.

Types of A-Fib

There are three types of A-fib:

- **Paroxysmal A-fib** involves episodes that last less than 7 days. They start and stop on their own.
- **Persistent A-fib** involves episodes that last longer than 7 days. They typically require treatment to stop them.
- **Permanent A-fib** is when A-fib is ongoing and resists most treatment attempts.

Atrial Flutter

Some people who have A-fib also have **atrial flutter**, another type of arrhythmia. With both A-fib and atrial flutter, the heart beats in a fast and uneven way. In fact, an episode of atrial flutter may feel like A-fib. And stroke risk is the same for both conditions. Unlike A-fib, many cases of atrial flutter start in the right atrium rather than the left atrium. Treatment results also differ. Medications typically treat atrial flutter as well as they treat A-fib. But catheter ablation is more often successful for atrial flutter than for A-fib.

Medications for A-Fib Symptoms

You will probably take medications to help control your A-Fib. Medications can help reduce the number and length of A-fib episodes. They do this by controlling the rate or the rhythm of the heartbeat.

Controlling the Heart's Rate

Rate control is needed for most A-fib patients, whether or not rhythm control is needed. Rate control slows down the ventricles. This allows them to fill with more blood before they contract. As a result, the ventricles pump more blood to the rest of the body. This can help relieve A-fib symptoms. Most people with A-fib can live comfortably when their heart rate is under control. This is true even if their rhythm is still abnormal. Rate control medications include:

- Beta-blockers, such as metoprolol, atenolol, carvedilol, and bisoprolol
- Calcium channel blockers, such as diltiazem and verapamil
- Digoxin

How Rate Control Medication Is Given

Rate control medication is usually taken daily on an ongoing basis. Your healthcare provider will prescribe it for you if he or she thinks it can help you. You may take one medication or a combination of medications.

Your healthcare provider may have you try several medications before finding the right type for you.



Controlling the Heart's Rhythm

Your healthcare provider may suggest rhythm control medications (antiarrhythmics). These drugs can help restore a normal rhythm during an A-fib episode (this is called **chemical cardioversion**). They can also help maintain a regular heart rhythm. Like rate control, rhythm control helps the heart pump in a more efficient way. This can help reduce A-fib symptoms. Rhythm control medications include:

- Amiodarone
- Flecainide
- Propafenone
- Sotalol
- Dofetilide

How Rhythm Control Medication Is Given

Rhythm control medication is often given for the first time at a doctor's office, hospital, or clinic. Beforehand, you may need to take anti-clotting medication to help prevent a stroke. Rhythm control medication is given by injection or taken as a pill. Your body's response to the medication is monitored. This makes sure it works for you.



Common Side Effects of A-Fib Medication

Side effects depend on what type of medication you take. Side effects of medications used for rate control and rhythm control may include:

- Constipation
- Dizziness
- Fatigue
- Swelling of the legs
- Nausea and vomiting
- Erectile dysfunction

Having Electrical Cardioversion

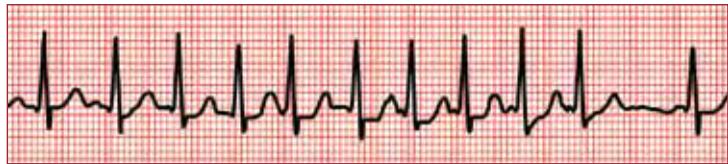
Electrical cardioversion can help relieve A-fib symptoms that are persistent or not controlled with medications. Your doctor will discuss EC's risks and benefits with you. You'll also be told how to prepare for EC, what to expect during the procedure, and how to care for yourself after.

How EC Helps the Heart

Electrical cardioversion uses electric current to “shock” your heart. After the shock, the heart usually settles back into normal rhythm. EC is often very effective. However, it is not a permanent cure. A-fib can come back at any time.



An ECG (echocardiogram) of a normal heartbeat. A new beat starts near each tall peak. Note that the heartbeats are evenly spaced. This shows that the heart rhythm is regular.



An ECG of a heartbeat during A-fib. The tall peaks are closer together than in the normal heartbeat. This shows that the heartbeat is faster than normal. The uneven spaces between the taller lines show that the heart rhythm is irregular. Electrical cardioversion “shocks” the heart out of this irregular rhythm back to a normal rhythm.

Preparing for EC

Follow all instructions you are given for how to prepare for your EC.

- Before the procedure, you may have preventive treatment to make sure there are no blood clots in your heart. This may include taking a blood thinner for about a month before your EC.
- Tell the doctor what medications you take. Ask if you should stop any before the procedure. Also ask whether you should take any medications the morning of the procedure.
- Do not eat or drink anything after midnight the night before the procedure.

Risks and Complications of EC

EC has risks and possible complications. These include:

- Anesthesia side effects
- Mild skin burn (rare)
- Stroke (rare)

During the Procedure

EC is done in the hospital. You're given medication to make you sleep. Special pads (electrodes) placed on your chest and paddles are used to send a brief electric shock to your heart. If EC doesn't work the first time, it may need to be repeated during the same session. You'll likely go home 2 to 3 hours after the procedure.

Recovering at Home

Have a family member or friend drive you home from the procedure. You will feel tired for a few days after your procedure. You should be able to go back to your normal activities the day after your procedure, but take it easy for a day or two. Continue taking all medications you have been prescribed. And be sure to schedule a follow-up appointment with your doctor.



Electrical cardioversion often takes just a few minutes.

When to Call the Doctor

After EC, be sure to call your healthcare provider if you have any of the following:

- A-fib symptoms
- Shortness of breath
- Dizziness
- Symptoms of stroke

Medications for Preventing Stroke

A critical part of your A-fib treatment plan is preventing stroke. Your healthcare provider will likely prescribe medication for this purpose. Your stroke risk is not related to the type of A-fib you have. Instead, other factors, such as having certain health problems, affect how likely you are to have a stroke.

Types of Medications

The type of medication you're given depends on your stroke risk. Two types of anti-clotting medications are used to help prevent stroke:

- **Warfarin** is a commonly used blood thinner (anticoagulant). When taking warfarin (brand name Coumadin), you'll need to have regular blood tests to make sure the dosage is correct. The blood test you'll have is called a prothrombin time (also called a protime or PT). It shows how quickly your blood clots. The result of the test is called your INR number. When taking warfarin, you should always know your current warfarin dosage, your INR number, the date of your last blood test, and when your next blood test is due.
- **Aspirin** may be prescribed instead of warfarin for patients whose risk of stroke is low. If taken daily, it can help prevent stroke.

Risks and Complications of Warfarin

Taking blood thinners has certain risks and possible complications. For warfarin, these include:

- Excessive bleeding
- Frequent bruising
- Birth defects (if taken by a pregnant woman)
- Interaction with other drugs

When taking warfarin, you need to get your blood tested regularly.



Living with Atrial Fibrillation

Treatment for A-fib can help improve your health. So be sure to follow your treatment plan. Also, avoid things that seem to trigger A-fib episodes. Take care of other health problems you may have. And make heart-healthy choices in your daily life.

Avoiding Triggers

Certain things can cause an A-fib episode in some people. These are called triggers. Common triggers include alcohol, caffeine, and stress. Talk to your healthcare provider for ways to manage your triggers.

Taking Care of Other Health Problems

Certain health problems can make A-fib worse, so it's important to take care of them. Health problems that should be carefully managed include:

- Heart disease, including heart failure
- High blood pressure
- Diabetes
- Overactive thyroid
- Lung disease
- Sleep problems
- Obesity

Living Healthy

A healthy lifestyle can help keep your heart and body strong. It can also lead to improved blood pressure, cholesterol, and weight, all of which benefit your heart. For a heart-healthy lifestyle, try the following:

- **Be physically active.** This can include working out at the gym, doing housework, or just walking. Try to get 30 minutes of exercise most days of the week. Be sure to talk to your healthcare provider before starting any exercise plan.
- **Eat healthy.** Start by choosing healthier fats. For instance, try to eat 2 servings per week of fatty fish, such as salmon. Also, eat lots of fruits, vegetables, and whole grains. And reduce the amount of sodium (salt) in your diet.

Taking Your Pulse

Taking your pulse (heart rate) can help you and your healthcare provider track how well your A-fib treatment is working. It can be done at the wrist or the neck. Take your pulse as often as your healthcare provider suggests. And be sure to take it during any suspected A-fib episodes. Recording your pulse in a log can be helpful. Include details about any A-fib episodes such as the date, duration, and maximum heart rate.



To take your pulse at the wrist, place two fingers as shown. Count the number of beats for 10 seconds. Multiply that number by 6 to get your pulse per minute.

Staying Healthy

Don't let atrial fibrillation hold you back. Follow your treatment plan. Stay in touch with your healthcare provider. And make heart-healthy choices. These steps can help you manage your condition so you can feel good and live a normal, healthier life.

Know the Symptoms of Stroke

Part of keeping healthy when you have A-fib is knowing how to recognize a stroke.

Call 911 or emergency services right away if you have any of the following:

- Weakness, numbness, tingling, or loss of feeling in your face, arm, or leg
- Trouble seeing; double vision
- Trouble speaking or understanding others
- Loss of balance, a feeling of spinning, or blackouts
- Sudden, severe headache



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