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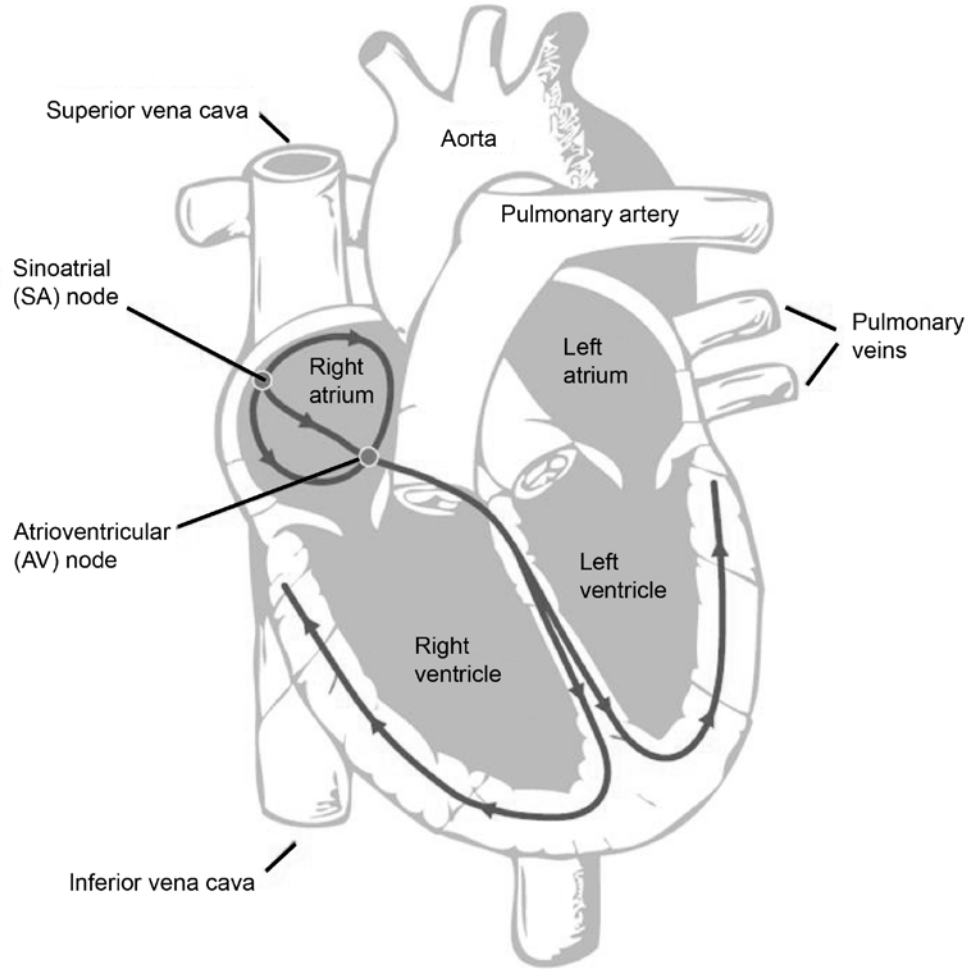
Atrial Fibrillation

Causes, symptoms, risks, and treatments

This handout describes atrial fibrillation. It includes symptoms, causes, risk factors, and treatments.

What is atrial fibrillation?

Atrial fibrillation (AF) is an abnormal heart rhythm (*arrhythmia*). It is also called "Afib." AF can make your heart beat in a very unsteady pattern. It may make your heart beat very rapidly or very slowly.



The anatomy and rhythm of a healthy heart: *The electrical signal starts in the sinoatrial (SA) node, follows the dark lines and arrows to activate the left and right atria, and then moves to the atrioventricular (AV) node. It then follows the dark lines to the ventricles.*

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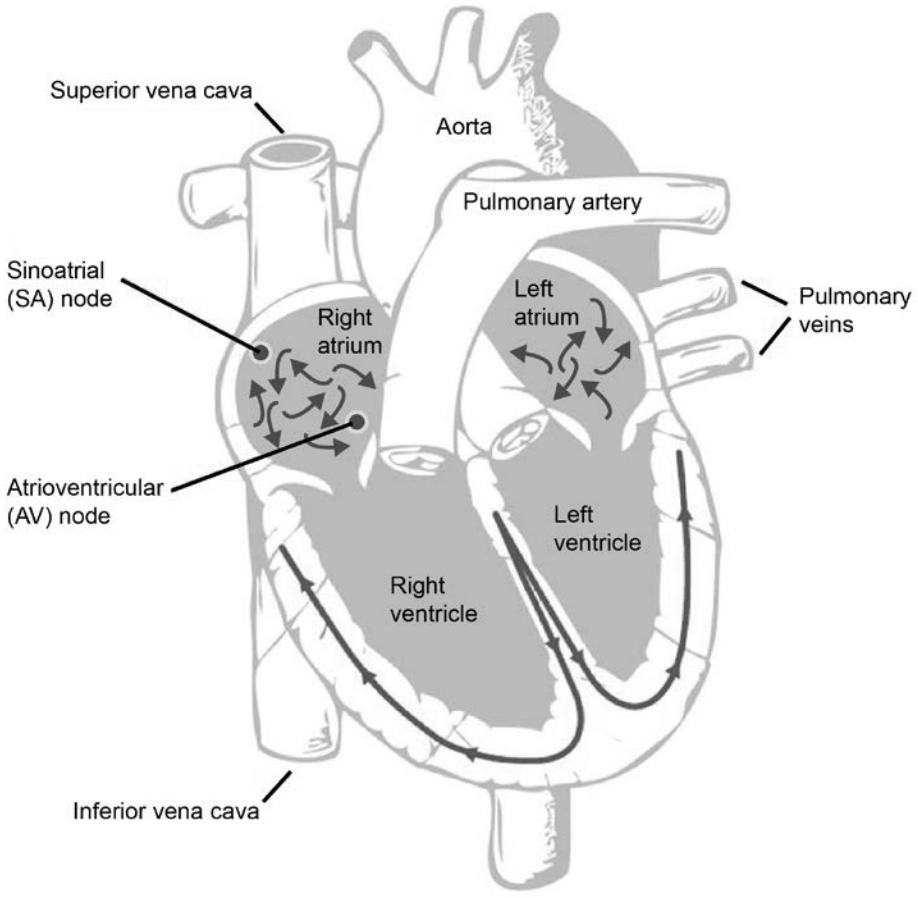
When you have AF, the 2 upper chambers of your heart (the *atria*) and the 2 lower chambers of your heart (the *ventricles*) do not work well together. This means blood does not pump smoothly out of your heart to the rest of your body.

A normal heart beats about 60 to 100 times each minute. After each time the atria beat, the ventricles beat in the same pattern and rhythm.

With AF, the atria beat much faster than normal (up to 500 beats each minute). The ventricles also beat faster (about 100 to 150 beats each minute), but in a different pattern and rhythm from the atria. The result is a fast and unsteady heartbeat.

AF can also cause blood to collect or swirl in the left atrium, and this can lead to a blood clot. This clot could enter your bloodstream and go to your brain. If this happens, it is called a *stroke*.



The anatomy and rhythm of a heart with atrial fibrillation: *The dark lines show the direction of the electrical signals. The sinoatrial (SA) node is no longer active while the heart is in atrial fibrillation. Instead, as seen by the arrows, the right and left atria have unsteady electrical signals, which causes fibrillation. The electrical signal still goes through the atrioventricular (AV) node and into the ventricles.*

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What are the symptoms of AF?

Symptoms of AF vary from person to person. Some symptoms are:

- Mild *palpitations* (rapid or irregular heartbeats)
- Fatigue, extreme tiredness, restlessness, reduced stamina
- Shortness of breath
- Chest pain or discomfort in your chest
- Feeling lightheaded or dizzy
- Fainting
- Fluid buildup or swelling in the legs

Some people with AF do not have any symptoms. This is called *asymptomatic*, or "silent," AF.

What are the different types of AF?

There are 4 types of AF:

- In ***paroxysmal* (intermittent) AF**, AF comes and goes. It lasts anywhere from minutes to about a week, and it goes away on its own.
- In ***persistent* AF**, AF lasts longer than 7 days or requires medical care to make it stop. This care could be medicine or a procedure called an *external cardioversion*.
- In ***longstanding persistent* AF**, AF is ongoing and lasts longer than 1 year.
- In ***permanent* AF**, AF does not go away. Sometimes treatments have been tried but have not worked. The goal of treatment is to lessen the symptoms.

Atrial fibrillation is *progressive*. This means episodes that go away on their own at first will last longer over time. They may need treatment to make them stop.

What heart conditions can cause AF?

Most times, AF is linked with having another heart condition, such as:

- High blood pressure
- Coronary artery disease
- Abnormal heart valves, or certain diseases of the heart valves
- *Cardiomyopathy* (an enlarged, weakened heart)
- Congestive heart failure

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- Heart attacks
- Heart surgery in the past
- *Congenital* heart defects (these are heart conditions you are born with)
- *Sick sinus syndrome* (the heart's natural pacemaker does not work properly)
- *Pericarditis*, an inflammation of the outer surface of the heart

Sometimes, people who have AF do not have other heart diseases. This is called "lone" AF. People with lone AF do not have any heart damage or heart defects. Atrial fibrillation is their main heart problem.

What else puts me at risk for AF?

Some other things that increase your risk of having AF are:

- Age (about 5 out of 100 people in the U.S. older than 65 have AF)
- Having a high level of thyroid hormone in your body
- Type 1 or type 2 diabetes
- Having a stroke, mini-stroke (*transient ischemic attack*, or TIA), or another blood clot that started in the heart (*embolus*) in the past
- Using tobacco, caffeine, alcohol, and other stimulants (these cause your heart to beat faster for a short time)
- Taking certain medicines
- Viral infections, or severe whole-body infections
- Lung diseases such as *emphysema*
- *Sleep apnea* (short stops in breathing when sleeping)
- Stress, either physical or emotional
- *Pulmonary embolism* (a blood clot that blocks blood flow to the lungs)
- Family history of AF

How is AF diagnosed?

To evaluate you for AF, your doctor will take your complete medical history and do a physical exam. The 2 main ways to diagnose AF are:

- ***Electrocardiogram* (ECG or EKG)** to monitor your heartbeat. In this test, electrodes are attached to your skin to record your heart's electrical activity. An EKG shows your heart's rhythm and the strength and timing of electrical currents through your heart muscle. It is done at your bedside and usually only takes a few minutes. You do not need to prepare in any special way for this test.

- **Home ECG monitor.** This monitor is a small device that records your heart rate for 1 to 28 days. The device is called a Holter monitor or an event monitor.

Other tests you might have are:

- **Blood tests**, including a thyroid function test.
- An ***echocardiogram***, which uses ultrasound to find out if there are any abnormalities in your heart. This test uses ultrasound waves to make images of your heart chambers and valves. It is done in the clinic and usually takes about 1 hour. You do not need to prepare in any special way for this test.
- A **chest X-ray**, which uses radiation to make images of the inside of your chest. A chest X-ray shows whether your "heart shadow" is normal (a heart shadow shows the shape and size of your heart). An X-ray will also show if you have fluid in your lungs. It is done in a radiology lab or at the bedside and usually takes only a few minutes. You do not need to prepare in any special way for this test.
- A **cardiac catheterization**, which uses X-ray to guide small flexible tubes (catheters) to your heart structures and coronary arteries. The test measures blood flow to your heart muscle and the rate of blood flow and pressures through your heart. It is done in a cardiac catheterization laboratory by a *cardiologist* (doctor who specializes in heart health).
  - This test usually takes 1 hour. It may be done during an outpatient visit, or you may need to stay overnight in the hospital.
  - You will receive sedatives (medicines to help you relax) during the test.
  - You will need to follow special instructions for eating, drinking, and taking medicines before your cardiac catheterization.
  - Your health care provider will give you more information if you are having this test.
- **Cardiac MRI or CT scan**, which creates detailed pictures of your heart.

What are the complications of AF?

Two complications of AF are stroke and heart failure. Another complication is a blood clot that travels to another part of the body. These complications can occur when AF starts or after someone has had AF for a long time.

How is AF treated?

There are 2 main ways to treat AF:

- Heart **rate** control
- Heart **rhythm** control

Heart Rate Control

In heart rate control, AF is allowed to occur, but its effects are lessened by controlling your heart rate while you are in AF. This prevents heart failure and lowers the stress AF puts on your heart.

Several medicines can be used for heart rate control. If this treatment is an option for you, your doctor will talk with you about these medicines. The goal is to keep your average heart rate below 110 beats per minute.

Heart Rhythm Control

In heart rhythm control, the goal is to keep AF from occurring and to restore a normal heart rhythm. To do this, your doctor may ask you to take medicine, or may advise you to have a cardioversion procedure. During a cardioversion, you are given medicine to make you sleep, and your heart is given an electrical shock to stop the AF and return your heart to normal rhythm.

Anticoagulation Therapy

The goal of both heart rate and heart rhythm control is to prevent blood clots from forming in the left atrium of your heart. Preventing blood clots will help prevent strokes from occurring. Treatment to keep blood clots from forming is called *anticoagulation therapy*.

These 4 anticoagulation medicines are used most often:

- Warfarin (Coumadin)
- Dabigatran (Pradaxa)
- Rivaroxaban (Xarelto)
- Apixaban (Eliquis)

Sometimes aspirin is used instead of these medicines to prevent strokes.

Catheter Ablation

If heart rate control and heart rhythm control do not work well enough for you, your doctor might recommend a 3rd way to treat AF, called *catheter ablation*.

Catheter ablation works best in people who have frequent, short episodes of AF. There are 2 types of catheter ablation:

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- *Radiofrequency* catheter ablation, which uses heat, or thermal energy
- *Cryo-balloon* catheter ablation, which uses cold, or freezing energy

The word "ablate" means to destroy. In catheter ablation, the triggers that cause your AF are destroyed. Usually, these triggers are near the *pulmonary* veins in the left atrium of your heart.

Pulmonary veins lead from your lungs to your heart. The ablation procedure stops the triggers from causing AF in the first place.

If your doctor recommends catheter ablation to treat your AF, please ask for the handout "Catheter Ablation for Atrial Fibrillation" to learn more.

Working Together

You, your heart doctor (*cardiologist or electrophysiologist*), and your primary care doctor will work together to decide what AF treatment is best for you. If your AF is not damaging your heart or putting you at risk of complications, you and your doctors may decide not to treat it at first. But over time, you might need medicines, cardioversion, or ablation to treat your AF to keep it from getting worse and causing other health problems.

Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns.

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