

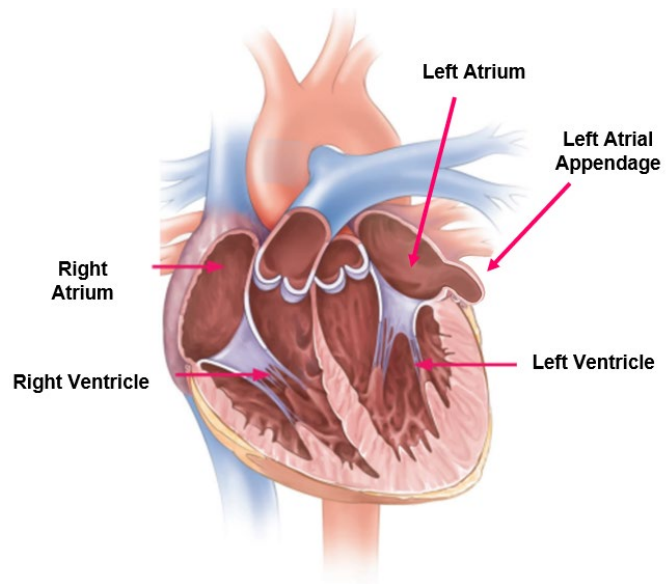
What is Atrial Fibrillation?

What is atrial fibrillation?

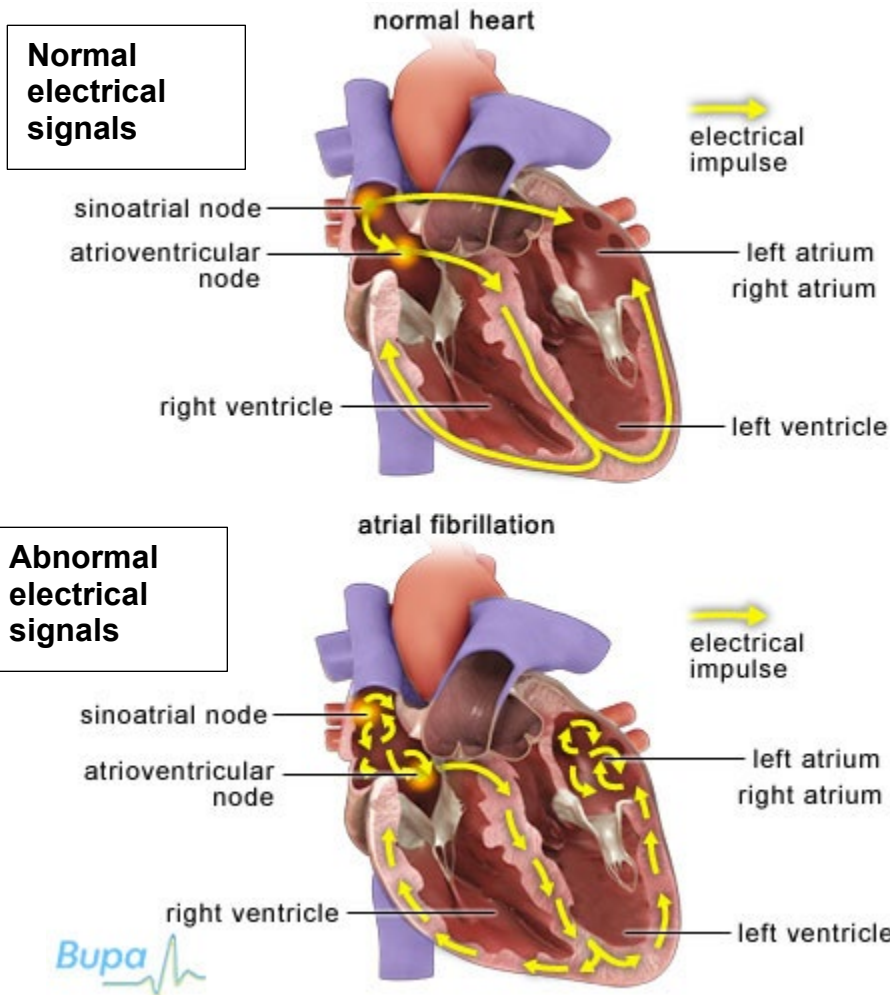
Atrial fibrillation, also called **AFib**, is a common type of abnormal heart rhythm. AFib causes your heart to beat irregularly and sometimes much faster than normal.

What happens during atrial fibrillation?

The heart has an electrical system that sends signals to the different parts, called **chambers**, of your heart. These signals tell the chambers when to squeeze or relax. When someone has AFib, the upper chambers of the heart (the left and right atrium, or the atria) start sending abnormal electrical signals. Instead of fully squeezing and relaxing, these chambers quiver (**fibrillate**). This causes an irregular and often fast, pounding heartbeat.



The abnormal electrical signals can also disrupt the smooth flow of blood from the atria to the ventricles, causing blood to build up (or pool) in the left atrium and left atrial appendage. When blood pools in these areas, it raises the risk for blood clots to form. These blood clots may travel from the heart to the bloodstream and into the brain, causing a stroke. Poor blood flow can also cause symptoms such as dizziness, fatigue (extreme tiredness), and shortness of breath.



You can watch a video from the Heart Rhythm Society on this webpage to learn more about atrial fibrillation: UpBeat.org/heart-rhythm-disorders/atrial-fibrillation-afib

What are the symptoms of atrial fibrillation?

Some people with AFib may not experience any symptoms. Others may have symptoms, including:

- Fast or irregular heartbeat
- Shortness of breath
- Lack of energy and fatigue
- Dizziness or lightheadedness

- Anxiety, or feeling nervous without a clear cause
- Chest pain or discomfort
- Problems with thinking or memory

What are the types of atrial fibrillation?

There are 4 types of atrial fibrillation, which are defined by how long the AFib episode lasts.

AFib type	Episode length
Paroxysmal	A few seconds to less than 7 days
Persistent	7 days or longer <ul style="list-style-type: none"> • It may require an intervention to restore a normal rhythm
Long-standing persistent	Longer than 1 year
Permanent	Continuous (the episode doesn't end)

What is atrial flutter?

Atrial flutter is caused by an electrical signal that travels in a loop in the upper chambers of the heart (the atria), like a short circuit. This causes the atria to beat quickly (**flutter**) instead of fully squeezing. Interestingly, the “looping” circuit can sometimes cause a more organized and regular heart rhythm. With atrial flutter, your heartbeat can be irregular or regular.

Atrial flutter increases the risk of developing atrial fibrillation later on. Some people can have both atrial flutter and atrial fibrillation. The treatment of atrial flutter is similar to the treatment of atrial fibrillation.

You can watch a video from the Heart Rhythm Society on this webpage to learn more about atrial flutter: UpBeat.org/heart-rhythm-disorders/atrial-flutter

What are the risk factors for atrial fibrillation?

The risk of AFib increases as you get older, especially when you are over age 60.

Common conditions that increase your risk include:

- Having had a heart surgery
- High blood pressure
- Heart disease
- Heart failure
- Heart valve disease
- Lung disease
- High body weight (body mass index, or BMI, over 25)
- Diabetes
- Overactive thyroid (hyperthyroidism)
- Sleep apnea

Some lifestyle choices that can increase your AFib risk include:

- Alcohol use
- A high salt diet
- Tobacco use (smoking, chewing, or vaping)
- Recreational drug use

What are the common tests used to diagnose atrial fibrillation?

To diagnose AFib, your provider will likely do one or more of the following tests:

- **Electrocardiogram (ECG or EKG):** This test records your heart's electrical activity from electrodes that are put on your chest, arms, and legs.
- **At-home use heart monitor:** This is a portable ECG monitor you attach to your chest and wear continuously for several days or a few weeks. It can diagnose and record abnormal heartbeats such as AFib. The monitor comes with a diary, so you can write down any symptoms you experience while wearing the monitor.

- **Surface echocardiogram (echo):** This is a test that uses sound waves (ultrasound) to create images of your heart. Medical staff will move an ultrasound probe across your chest. The probe produces sound waves that bounce off your heart and “echo” back to the probe. These waves are changed into images of your heart. This test looks at the structure and function of your heart.
- **Transesophageal echocardiogram (TEE):** This is a type of heart ultrasound done from inside your esophagus (the tube that moves food and drink into your stomach). Medical staff will guide a thin, flexible tube (probe) into your mouth, down your throat, and into your esophagus. Because the esophagus is so close to the upper chambers of your heart, the probe can take clear pictures of your heart, especially the left atrial appendage (LAA). We use this test to check for blood clots in the LAA.
- **Computed tomography scan (CT):** This test uses radiation, similar to an x-ray, to check the structure of your heart. In patients with atrial fibrillation, it specifically looks for any sign of blood clots in the heart.
- **Magnetic resonance imaging scan (MRI):** This test uses a strong magnet and radio waves to create detailed pictures of your heart. An MRI does not use any radiation.

How is atrial fibrillation treated?

The main goals of AFib treatment include:

- Reducing your risk of having a stroke
- Controlling your heart rate
- Returning your heartbeat to a normal rhythm
- Maintaining your heart function (keeping its normal function or preventing it from getting worse)
- Reducing the risk factors that could make your AFib worse

There are many options available to treat AFib, including medications, procedures or surgery, devices, and lifestyle changes. We may refer you to a general cardiologist or a heart rhythm specialist (an **electrophysiologist**) for treatment. These AFib treatment options are described below, and there is an image showing an overview of these options included at the end of this handout.

Medications

The medications used to treat atrial fibrillation are:

- Heart rate control medications
 - These medications keep the heart from beating too fast. Examples of these include beta blockers, calcium channel blockers, and digoxin.
- Heart rhythm control medications (antiarrhythmic drugs)
 - These drugs help keep your heartbeat at a normal rhythm.
- Anticoagulant medications (blood thinners)
 - If you are at a moderate or higher risk for stroke, your provider may prescribe a blood thinner medication.
 - Your medical provider will use the **CHADS2-VASc** scoring system to evaluate your risk of stroke. Points are assigned for each risk factor, shown below. A higher total of points means a higher risk of stroke:

Score	CHADS2-VASc risk criteria
1 point	Congestive heart failure
1 point	Hypertension (high blood pressure)
2 points	Age 75 years or older
1 point	Diabetes mellitus

Score	CHADS2-VASc risk criteria
2 points	Stroke, transient ischemic attack (TIA), or thromboembolic event
1 point	Vascular disease (heart attack, peripheral artery disease (PAD), or aortic plaque)
1 point	Age 65-74 years
1 point	Sex category (female)

Procedures or surgery

Read through the different procedures used to treat AFib below:

- **Cardioversion:** Cardioversion is a procedure used to bring an abnormal heart rhythm back to a normal rhythm by delivering electrical energy through patches put onto your chest. We use this procedure when your heart is beating extremely fast or irregularly. We will give you medication to put you to sleep before we send the electrical energy through the patches.
- **Heart ablation** (also called cardiac ablation): During this procedure, one or more flexible, thin tubes (catheters) are guided through blood vessels into your heart’s upper chambers. Sensors on the tips of the catheters deliver hot or cold energy to destroy (**ablate**) areas of tissue that cause AFib. When the tissue is destroyed, your heart can return to a normal rhythm.
- **Maze or mini-maze procedure:** This is a surgical ablation procedure. The surgeon uses a catheter to ablate areas in the heart to create a “maze” of scar tissue to prevent electrical signals from passing through that cause AFib or atrial flutter. During this procedure, the left atrial appendage (LAA) can also be closed to prevent blood clots from forming there.

- **Pacemaker:** When you have AFib and your heart beats too slowly (bradycardia), your provider may recommend a pacemaker. A pacemaker helps your heart beat at the right pace and allows you to safely take medications used to treat AFib. You may also need a pacemaker if you have a heart AV node ablation (see below), which can cause a slow heart rate. A pacemaker is a small device implanted just under the skin below your collarbone on the left or right side of your chest. A traditional pacemaker has 2 parts:
 - **Pulse generator:** a small battery-powered unit that sends electrical signals to your heart.
 - **Pacing leads:** the pulse generator is connected to your heart by one or more small wires called pacing leads. We place these wires in one or more chambers of your heart.
- **AV node ablation and pacemaker:** If atrial fibrillation or atrial flutter continues to be very fast and does not respond to any of the treatments, we can use ablation on the **AV (atrioventricular) node**. This node is the main electrical connection between the upper and lower chambers of the heart. Once ablated, the upper and lower chambers (atria and ventricles) will be disconnected electrically, causing your heart to beat very slowly. Then we will implant a pacemaker to help your heart beat at the right pace.

Other device therapy to prevent blood clots or stroke

There are people who are not able to take blood thinners because they are at higher risk for bleeding. For these patients, we can implant a **left atrial appendage occlusion device (LAAOD)** into the left atrial appendage to prevent blood clots from forming. This umbrella-like structure closes the left atrial appendage so that blood clots will not be able to travel to the left atrium from the appendage. We implant the LAAOD using wires passed through the veins and up into the heart.

Lifestyle changes

Lifestyle changes are important to help prevent AFib or to reduce your risk of complications from AFib. Your health provider may recommend you take some steps to help keep your heart healthy, including these listed below:

- Take your medication as prescribed.
- Stay at a healthy weight.
- Get tested for, or manage, your sleep apnea (treatment for sleep apnea makes treatment for AFib more effective).
- Avoid or limit drinking alcohol.
- Control your blood pressure, cholesterol levels, and blood sugar levels.
- Eat a heart-healthy diet (low in salt, saturated fats, trans fats, and cholesterol).
- Get regular physical activity for at least 30 minutes a day, 4 days a week.
- Reduce and manage your stress.
- Quit tobacco.
- Get regular health checkups.

For more information about following a healthy lifestyle, read the “Lifestyle Changes to Manage Atrial Fibrillation (AFib)” handout:

med.umich.edu/1libr/CVC/LifestyleChangesToManageAFib.pdf

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Treatment Options for Atrial Fibrillation (AFib)

Maintain Heart Function and Improve Symptoms

Heart Rate Control
(stay in AFib but prevent rapid heart rate)

- Options:**
- Medication to control your heart rate
 - AV node ablation with pacemaker placement

Heart Rhythm Control
(maintain a regular rhythm)

- Options:**
- Medication to control your heart rhythm
 - Catheter ablation
 - Surgical ablation
 - Cardioversion

Live a Healthy Lifestyle

- Get regular physical activity
- Maintain a healthy weight
- Avoid or limit alcohol
- Manage blood pressure
- Control diabetes
- Get tested for sleep apnea
- Manage stress

Prevent Blood Clots and Reduce the Risk of Stroke

Can you take a blood thinner (anticoagulant)?

Yes

No

Based on your risk factors and overall risk score, we may recommend taking a blood thinner medication. Talk with your provider about your specific risk score and possible need for a blood thinner.

If you cannot take a blood thinner medication, we may recommend a left atrial appendage (LAA) occlusion device.

