

ATRIAL FIBRILLATION

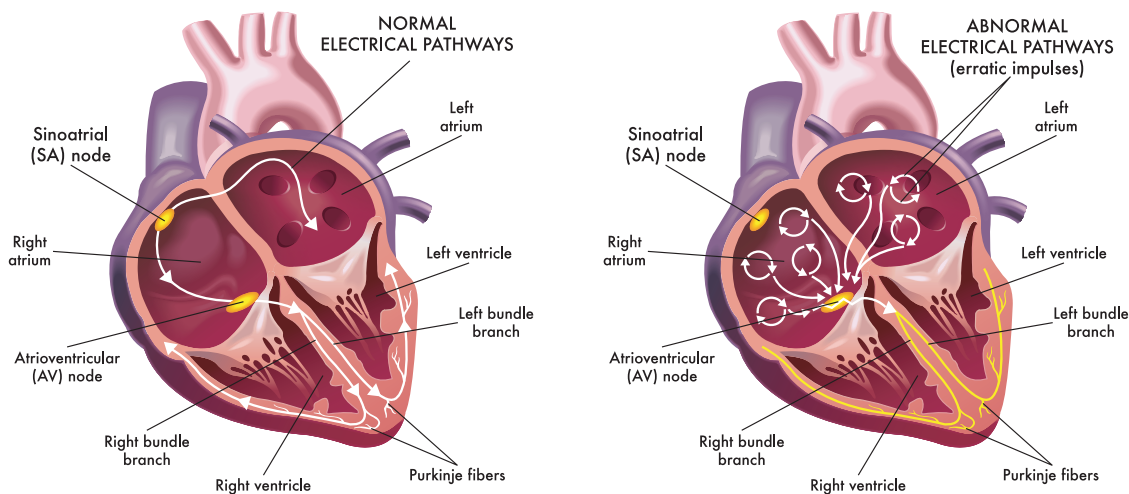
(AF) or (Afib)

Normal Heartbeat

- The heart has 4 chambers: the right and left atria (upper chambers) and the right and left ventricles (lower chambers).
- A normal heartbeat begins in the right atrium.
- The sinoatrial (SA) node is a collection of specialized cells that initiate an electrical signal that travels through the heart muscle.
- This signal causes the atria to contract, which pumps blood from the atria into the ventricles.
- The signal travels through the atrioventricular (AV) node and into the muscle around the ventricles.
- When the ventricles contract, blood is pumped to the lungs and the rest of the body.

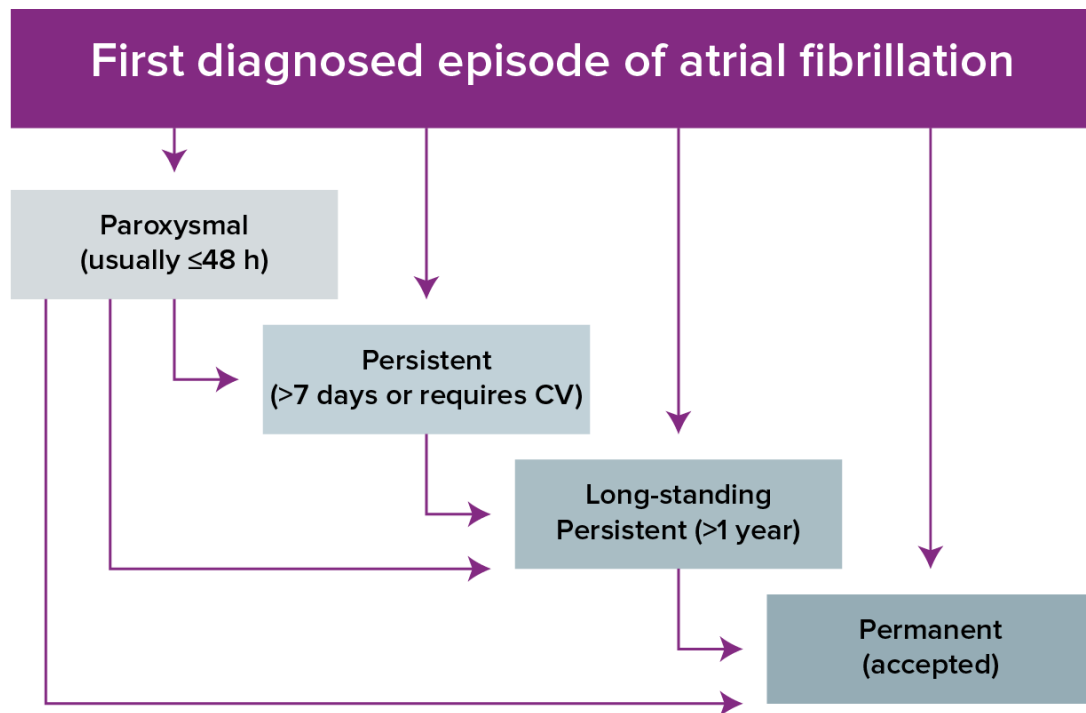
AF is a common arrhythmia (abnormal heart rhythm).

- Heart rhythm is the regularity of your heartbeat.
- In a normal rhythm, heartbeats are evenly spaced.
- Heart rate is the number of times your heart beats in 1 minute.
- In AF, the electrical signal that travels through the heart is uncoordinated.
- This disorganized electrical signal starts at a site other than the SA node and leads to the upper chambers (atria) beat abnormally.
- Instead of beating in a normal pattern, the atria beat irregularly and too fast, quivering like a bowl of jello.
- During episodes of AF, blood is not pumped through the heart efficiently.
- Episodes may be brief or prolonged.



Classification of AF

- The clinical picture of atrial fibrillation varies.
- AF may be asymptomatic and the 'first detected episode' should not be regarded as necessarily the true onset.
- Some people only experience a few short periods of AF throughout their lifetime.
- In others, AF is present constantly.



Paroxysmal AF is defined as atrial fibrillation that terminates spontaneously or because of specific treatment within seven days of onset. It is sometimes called occasional, self-terminating or intermittent atrial fibrillation.

Persistent AF is defined as atrial fibrillation that persists for more than seven days.

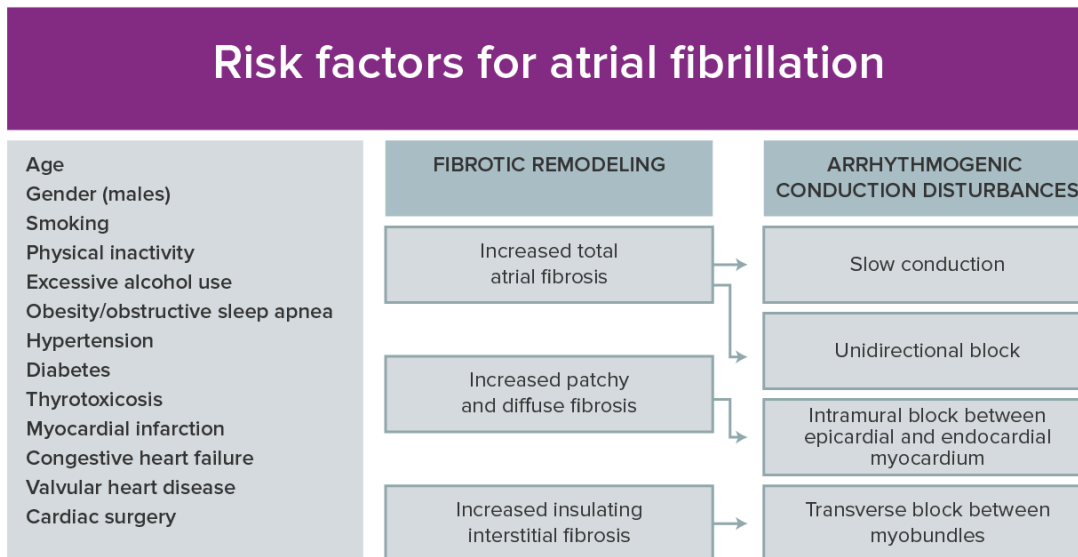
Permanent AF is defined as persistent atrial fibrillation where a clinical decision has been made to not aim at restoring normal sinus rhythm.

Paroxysmal AF typically will worsen over time as the underlying disease process that predisposes to AF progresses.

The time frame varies from person to person.

- Electrophysiological changes occur in the atria within a few hours of the onset of AF that tend to maintain fibrillation: electrical remodeling.
- When AF persists for a period of months, structural remodeling occurs, with atrial fibrosis and dilatation that further predispose to AF.
- There is good news though. Modifying risk factors such as obesity, hypertension, excess alcohol and sleep apnea, can lessen the burden of AF.
- Thus, early treatment of AF will prevent re-initiation of the arrhythmia.

What is the underlying reason for me developing Afib?



What caused the afib at this time? i.e. what triggers my episodes?

There is no straightforward and simple answer

- All of the risk factors listed above increase scarring or damage (fibrosis) in the left atrium or pulmonary veins that drain into the left atrium, setting up abnormal electrical signals that can provoke AF.
- Treating reversible causes, such as hyperthyroidism or a cardiac valve problem, is important and may help the AF go away, however, often times we won't find a specific reason why you developed AF.
- Finally, and possibly most importantly, let's take a close look at your lifestyle. Sometimes AF is preceded by excessive physical exercise, emotional stress or alcohol.

Are you overweight?

- There is a correlation between abdominal fat and fat around the heart which has been shown to infiltrate the muscle tissue also setting up abnormal electrical signals.
- If so, losing 10% of your body weight will substantially lower your risk of recurrent AF

Your personal BMI is:

CATEGORY	BMI RANGE - kg/m ²
Severe Thinness	< 16
Moderate Thinness	16 - 17
Mild Thinness	17 - 18.5
Normal	18.5 - 25
Overweight	25 - 30
Obese Class I	30 - 35
Obese Class II	35 - 40
Obese Class III	> 40

Habitual drinking at moderate levels, as well as binge drinking, predisposes to AF.

We are unsure how exactly alcohol interacts with heart function, however, there are some theories how exactly alcohol interacts with heart function

- One has to do with the vagal nerve. This nerve that runs through the neck seems to respond to alcohol, and the more you drink, the more vagal nerve activity, which can predispose to AF.
- AF symptoms can also come on when your fluid levels aren't optimal. Since alcohol is a diuretic, it helps your body eliminate more water, and that can leave you dehydrated. You're also losing more than water: minerals like sodium and potassium, will drain out, too. Without these electrolytes, heart function can be affected. You'll want to make sure you are well hydrated with water and nutritious food
- I recommend no more than one drink per day for women and two drinks per day for men.

Overall, the underlying cause is atrial scar tissue, or fibrosis, regardless of which condition you may have.

- Fibrosis can be reversed to varying degrees through lifestyle modification
- Let's get you exercising regularly and eating a healthy diet, make sure your sleep is optimized, and your stress minimized!

AF Symptoms

Many people with AF feel no symptoms at all.

- They do not know they have AF or that there is a problem. Others can tell as soon as it happens.

The symptoms can vary from none to any of the following:

- Feeling overtired or a lack of energy (most common)
- Pulse that is faster than normal or changing between fast and slow and feels irregular
- Shortness of breath
- Heart palpitations (feeling like your heart is racing, pounding, or fluttering)
- Trouble with everyday exercises or activities
- Pain, pressure, tightness, or discomfort in your chest
- Dizziness, lightheadedness, or Fainting (syncope)
- Increased urination (using the bathroom more often)

what are the

SYMPTOMS



Shortness
of breath



Dizziness or
lightheadedness



Fatigue



Chest pain



Palpitations



No noticeable
symptoms



The symptoms of AF may be exaggerated by other conditions such as infection, sepsis, hypoxia due to respiratory illness, hemorrhage and any stress, either physical or emotional.

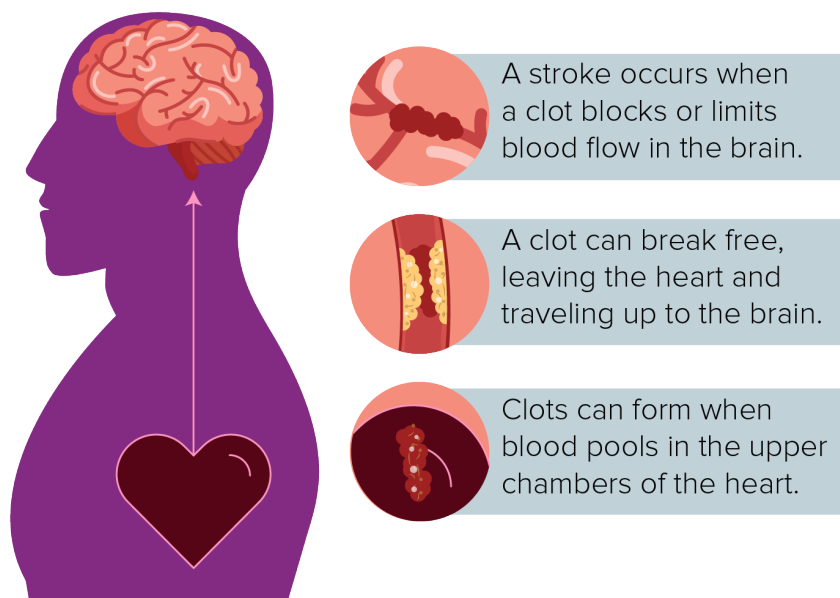
Some people live with AF, but it can lead to other medical problems including:

- **Stroke:** AF makes it harder for the heart to pump blood effectively. With the blood moving more slowly, it is more likely to form clots. If the clot is pumped out of the heart, it could travel to the brain and lead to a stroke.
- **Heart failure:** Without treatment, AF can cause a fast pulse rate for long periods of time. This means that the ventricles are beating too fast. When the ventricles beat too fast for long periods of time, the heart muscle can become weak. This condition is called cardiomyopathy. This can lead to heart failure and long-term disability.

Surveillance through regular office visits is recommended.

AF and Stroke

- If you have AF, the top 2 chambers of your heart, called the atria, quiver (fibrillate) instead of contracting with a full squeeze
- Because of this, the atria do not push all the blood out to where it should go, the ventricles
- The blood left in the atria can pool and clump together, increasing the risk for clots to form
- These clots may then be carried to the brain, causing a stroke.



With proper preventive treatment, stroke may be avoided.

Every patient with AF will be evaluated for the need for anticoagulant therapy.

On average, the risk of stroke is about five times higher in people with AF.

The CHADS risk score can quantify your specific risk of stroke.

- These scores (CHADS2 or CHA2DS2-VASc) address risk factors such as age, gender, history of hypertension or vascular disease, heart failure, and diabetes.
- The annual stroke rate can range from <1% for the lowest risk patients to nearly 16% for the highest risk patients.
- Patients with a CHADS2 or CHA2DS2-VASc score of zero usually don't need anticoagulant therapy.
- Men with a score of 1 or women with a score of 2 should be considered for treatment. This is a gray area so the decision is more of a personal one.

- Men with a score of 2 or more and women with a score of 3 or more should be treated with anticoagulant drugs, unless there are contraindications such as high bleeding risk.
- Medications that prevent blood clots are recommended when the benefit is greater than the risk.

Together, we will weigh the pros and cons of taking an anticoagulant and decide which one to take. We will make the decision together.

Your personal CHADSVASC Score Summary:

Know your stroke risk			
CHAD2DS2-VASc Risk	Score	CHAD2DS2-VASc Score	ADJUSTED STROKE Rate (% / year)
		0	0
CHF or LVEF <40%	1	1	1.3
Hypertension	1	2	2.2
Age >75	2	3	3.2
Diabetes	1	4	4
Stroke/TIA/Thromboembolism	2	5	6.7
Vascular Disease	1	6	9.8
Age 65-74	1	7	9.6
Female	1	8	6.7
		9	15.2
CHF = congestive heart failure; TIA - transient ischemic attack			
LVEF = left ventricular ejection fraction			

Anticoagulants

Blood-thinning medications—known as anticoagulants—can greatly reduce stroke risk if taken properly.

- They work by preventing blood clots from forming and can reduce the risk of first stroke in Afib patients by 60 to 80 percent
- Aspirin is not recommended for anticoagulation to prevent stroke in patients with AF. Studies have shown that aspirin does very little to lower stroke risk in AF patients, while at the same time being associated with a bleeding risk as high as some of the newer anticoagulant agents.
- There are several clot-preventing medications available, including, warfarin (Coumadin) and new drugs called direct thrombin inhibitors or anti-Xa inhibitors called direct oral anticoagulants (DOACs) or “novel” “non-vitamin K” (NOACs)— Pradaxa, Xarelto and Eliquis.
- All of the newer agents have ½ the risk of brain hemorrhage compared to Coumadin (approximately 1%).
- They are either as effective or slightly better than Coumadin but can be more expensive depending on your insurance.
- People who take warfarin must be regularly monitored with a blood test called the International Normalized Ratio (INR) and stick to a restricted diet, which can be difficult. This is because warfarin interacts with vitamin K — found in leafy greens and other foods.
- All NOACs undergo some degree of kidney clearance and are excreted in urine.
- If your kidney function is impaired this decreases drug clearance, prolongs half-life, and increases total exposure so we will make dose adjustments accordingly.
- We will be monitoring your kidney function with laboratory workup (creatinine and GFR) to

check how well the kidneys are working.

- The NOACs do not interact with foods, you won't have to restrict your diet.

If you need help with co-pays/ prescription coverage/ have questions about treatment with ELIQUIS? Call 1-855-ELIQUIS (354-7847) or go online <https://www.eliquis.bmscustomerconnect.com/afib/savings-and-support>

If you need help with co-pays/ prescription coverage/ have questions about treatment with Xarelto Call live Care Coordinators at 1-888-XARELTO (1-888-927-3586) or online <https://www.xarelto-us.com/xarelto-patient-assistance/xarelto-cost-insurance>

If you have any unusual bleeding or bruising or other problems, tell us right away.

Rhythm Control in AF

Rhythm control describes a treatment strategy that aims at restoring and maintaining sinus rhythm.

Cardioversion

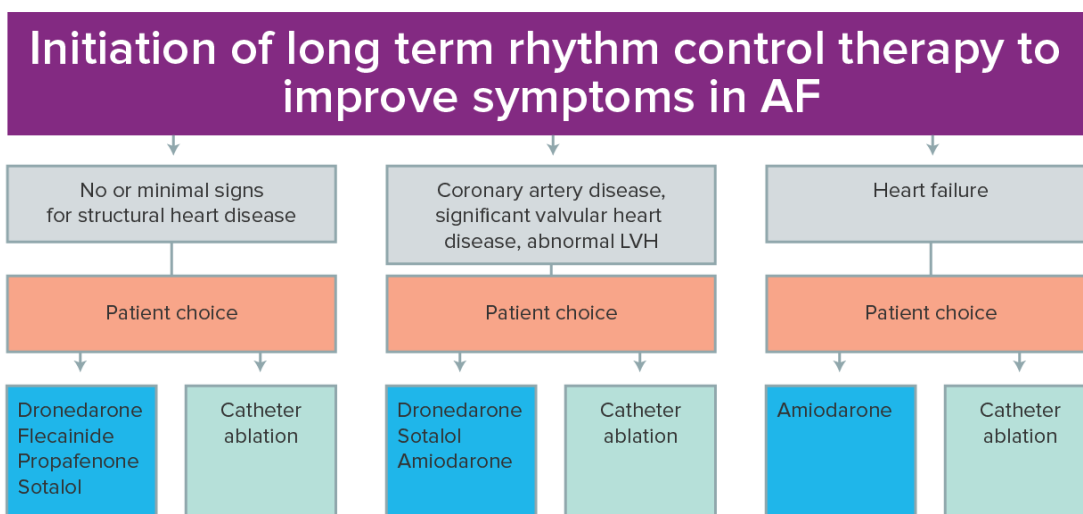
- The word “cardioversion” describes the process of converting AF to normal (sinus) rhythm. Cardioversion may be achieved by electrical conversion or Pharmacological (drug) treatment or often a combination of both therapies
- Before cardioversion, anticoagulant treatment (with either Coumadin, Eliquis, Xarelto, or Pradaxa) is recommended for several weeks (no less than three) to reduce the risk of blood clots. This therapy is usually continued for at least four weeks after cardioversion unless the episode of AF has lasted less than 48 hours.

Electrical conversion

- The most commonly used method to restore sinus rhythm in patients with AF.
- It is a brief procedure, performed under sedation (you are asleep, breathing on your own) where an electrical shock is delivered to the heart through patches or paddles placed on the chest.

Pharmacological Treatment

- Sometimes, cardioversion may be achieved by drug treatment.
- Once sinus rhythm is restored antiarrhythmic drug therapy may be needed to maintain sinus rhythm.
- Examples of drugs used for this purpose are flecainide (Tambocor), propafenone (Rythmol), amiodarone (Cordarone, Pacerone) and dofetilide (Tikosyn).



Rate Control in AF

Although there are exceptions, most people with AF have fast heartbeats that may eventually exhaust the heart muscle and lead to heart failure.

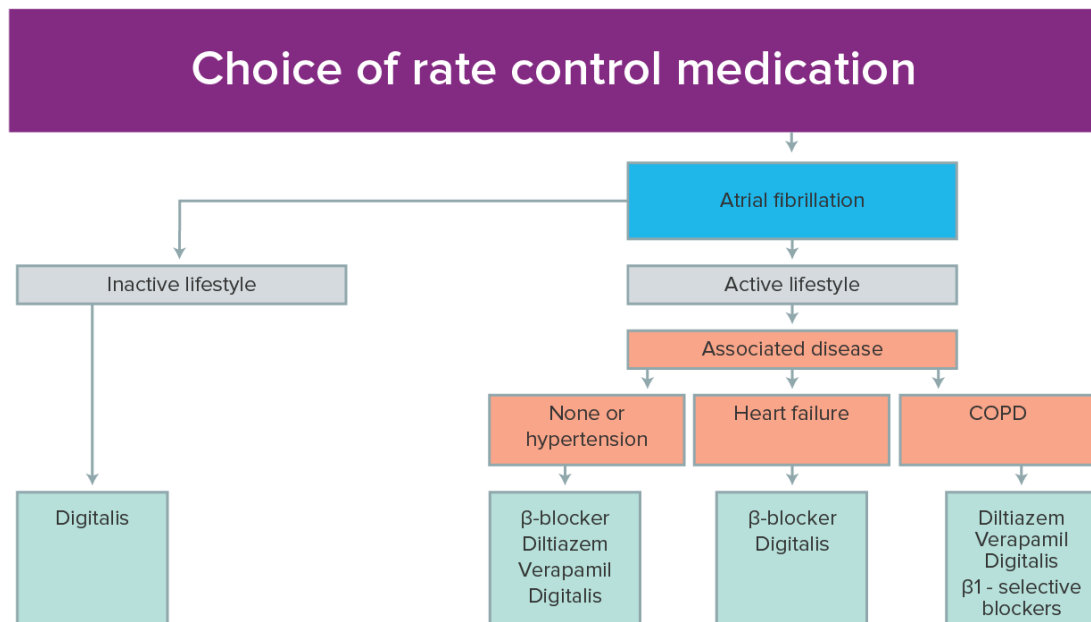
Studies have suggested that rhythm control and rate control strategies are associated with similar risks of mortality and complications such as stroke.

The rhythm control strategy is more often used for younger patients and if symptoms are significant.

The optimal heart rate goal has not been fully defined and may be patient specific.

Therefore, control of heart rate is of key importance when treating this arrhythmia.

Heart rate slowing drugs are used to control heart rate. Examples of such drugs are beta blockers, calcium channel blockers, and digoxin.



If these medications are ineffective or if excessive bradycardia occurs, other measures may need to be considered.

- One option suitable for some patients is catheter ablation of the AV node and pacemaker implantation (ablate and pace)
- However, this approach usually results in pacemaker dependence and carries the associated risks and complications of indwelling pacemaker leads.

In many patients, maintaining sinus rhythm may be a difficult task.

- In these cases, accepting that AF has become permanent may be a better option than continuing to strive for maintenance of sinus rhythm.
- Accepting a rate control strategy may also be problematic if you are very symptomatic. In this cases, catheter ablation may be an option.