

What is atrial fibrillation, and why does it happen?

The human heart typically beats in a regular pattern with a rate between 60-100 beats per minute. This regular, organized pattern is known as “Sinus Rhythm.” Atrial fibrillation, frequently called “a-fib”, is a condition where the heart beats with an abnormal rhythm. It is considered an “arrhythmia.” This arrhythmia occurs when the electrical signals in the top of the heart get disrupted. (Think: a “short-circuit” in the electrical system of the heart.) When a-fib occurs, the top two chambers of the heart (the atria) have disorganized beats, and stop pumping blood in a rhythmic and organized fashion. Atrial fibrillation itself is not considered a lethal rhythm, however it can cause two significant issues that need to be considered. 1) Atrial fibrillation can cause blood to stagnate in the left atria, and form a “thrombus” or blood clot. This is the most significant complication caused by a-fib. This clot can become dislodged and travel through the vascular system and end up in the brain resulting in a stroke. 2) Typically, atrial fibrillation causes the heart to beat very fast, similar to rates seen when running on a treadmill. Remember, the heart is a muscle, and like all muscles, when continually exercised, the muscle gets bigger. When the heart gets bigger, it stops pumping as it should and becomes dysfunctional. This can result in a condition known as heart failure. Heart failure means your heart can no longer effectively pump blood through the body.

In atrial fibrillation, The bottom two chambers of the heart (the ventricles) still can beat/contract normally. Sometimes they beat at an uncomfortably fast pace, but they are usually still able to get blood to your lungs, brain, and body. Here is a video link that summarizes a-fib: <https://www.youtube.com/watch?v=eZTEc6GwLNs>

A-fib is the most common abnormal heart rhythm, and there are several things that increase a person’s risk for it. Over 95% of those with a-fib are older than 60 years. Other common risk factors include high blood pressure, obstructive sleep apnea, diabetes, smoking, obesity, heart disorders, lung disorders, high thyroid levels, stress, stimulants, electrolyte imbalances, certain medications, and drinking too much alcohol. Unfortunately, 15% of cases of a-fib occur without any of the above risk factors. All of the above risk factors cause stretching to the left atria. After a lifetime of stretching, the electrical pathways become damaged and the potential for afib develops. Interesting to note, some theories suggest childhood viral infections can predispose people to a-fib later in life.

What does it feel like?

90% of patients have no signs of this disorder and may only have an irregular pulse that they are unaware of. It may be years before someone ever knows they have it. If this abnormal heart rhythm starts preventing too much blood from getting where it needs to go, you may experience symptoms of feeling lightheaded/faint, a racing/pounding heart/palpitations, chest tightness/pain, shortness of breath (especially when exercising), or just plain feeling tired. A-fib can be completely different between any two people – it may or may not prevent blood from flowing where it needs to, it may increase or decrease a person’s heart rate, and may occur occasionally or continuously. Early in the course of the disease, a-fib may initiate and terminate without signs or symptoms. Each time this occurs, the episodes last longer. Some people may have no symptoms at all. Unfortunately, in many cases, the first symptom of atrial fibrillation is a stroke.

How does my doctor know I have a-fib?

While a-fib may have physical signs as mentioned above, your doctor can identify it on an electrocardiogram (an “ECG” or “EKG”), which is a recording of your heart’s electrical activity. Sometimes, a heart can go in and

out of rhythm, and a-fib might not be seen at your doctor's visit. In this case, a portable EKG such as a Holter monitor can record your heart's electrical activity for a couple days while you're not at the doctor's office, and catch/confirm the rhythm being occasionally abnormal. This heart rate is typically faster than 150 beats per minute. This rate can be captured with digital sports watches and affordable over-the-counter monitors that sync with modern smartphones. Holton Direct Care has one such monitor available for rent very affordably to our members. Doctors often order an echocardiogram (an ultrasound of the heart) to see how it moves in case of structural heart issues and to look for blood clots.

Should I be concerned?

In most people, a-fib never goes away. It may come and go, even with treatment. It is considered a "progressive illness," meaning it tends to get worse the longer it goes on. For some, A-fib may never cause problems, but people who have it do have an increased risk for the concerns mentioned above.

How is a-fib treated?

While a-fib may go away on its own, it always requires surveillance, and often requires treatment. The interventions involved in treatment may only be used temporarily until a-fib resolves, or they may be used long-term, depending on your risk factors. There are three main goals in treating a-fib:

1. Symptom management with either rhythm control or rate control.

Rhythm control seeks to cardiovert or switch the heart back into the regular sinus rhythm. This is achieved by spontaneous conversion, chemical cardioversion (medications) or electrical cardioversion (electrical shock delivered through the chest wall).

Rate control seeks to decrease the heart rate, to a level that results in effective blood pumping, without cardiac remodeling (heart failure). These treatments work by slowing down the speed of your heartbeat to help make sure the two bottom heart chambers have time to pump blood to the entire body and prevent the symptoms of a-fib. Depending on your symptoms, various treatments can be used for rate/rhythm control:

- There are several medications that are used for rate or rhythm control. These are the first-line treatments. Sometimes, simply slowing the heart down is enough to promote the return of sinus rhythm.
- Electrical Cardioversion involves applying a mild electrical current to the heart to reset the timing of the heartbeat and shock it back into rhythm. This is done during a brief hospitalization.
- Ablation is a procedure that uses heat ("radiofrequency ablation") or cold ("cryoablation") to destroy the small part of the heart cells that are sending abnormal electrical signals (eliminate the short-circuits), also a procedure that requires hospitalization.
- In certain circumstances, a cardiologist or electrophysiologist (a cardiologist who sub-specializes in electrical problems in the heart) might recommend that a pacemaker may be implanted in your body. Pacemakers send electrical signals to the heart to control the heartbeat, but *usually* aren't indicated in a-fib.
- It is not known if rhythm control or rate control offer a difference in mortality benefit (making you live longer). Both are considered equal in this regard.

2. Anticoagulation

Due to a-fib's known risk of blood clots and stroke, medicines known as anticoagulants (blood thinners) are used. Some examples of anticoagulants include heparin, warfarin, or direct thrombin and newer, highly-expensive factor Xa inhibitors with name brands such as eliquis,

pradaxa, and xarelto. The most common side effect from these medications is bleeding, including internal bleeding. Such bleeding can be minor or very serious.

3. Treating reversible causes or underlying conditions

Additional tests your doctor may also want to get are ones to help identify what might have caused this abnormal rhythm in the first place. These tests may include a cardiac stress test, echocardiogram (ultrasound of the heart), thyroid levels, blood counts, kidney function tests, liver function tests, and diabetes testing.

What else can I do about a-fib?

High blood pressure and heart disease are the most common health issues associated with a-fib. Some changes that decrease A-fib risk and severity include:

- Control blood pressure
- Screen for and successfully treat Obstructive Sleep Apnea
- Lose weight and reverse insulin resistance and diabetes
- Avoid too much alcohol (limit to 1 to 2 drinks per day)
- Cut down on caffeine
- Get regular exercise
- Reduce stress

What do I need to know about warfarin?

Warfarin is an anticoagulant (“blood thinner”) that has been used for a long time. (It’s also known as “Coumadin,” the old name brand, and warfarin is well-known as the active ingredient in rat poison!) It is very low-cost, usually around \$3 a month. However, it requires individual dosing and frequent monitoring and can be dangerous if not managed by your doctor, because it can make your blood too thick or too thin. Here are some things to keep in mind if your doctor puts you on warfarin:

1. **You need regular blood tests to monitor warfarin levels.** The test “PT/INR” or just “INR” checks how your blood is clotting. Usually done weekly at first, and eventually the goal is to do this test monthly.
2. **Take your medicine exactly as your doctor tells you to** – same time every day; no skipping doses.
3. **Ask your doctor before taking any new medicines.** A lot of medicines can change the way warfarin works, so tell your doctor about all the medicines you take. That includes prescription or over-the-counter medicines, herbs, and vitamins (especially aspirin and “NSAIDs” (ibuprofen, naproxen, etc.).
4. **Eat about the same amount of vitamin K each day.** Vitamin K can be found in many leafy greens and other vegetables. Changes in vitamin K levels can make warfarin not work well, requiring higher doses. If your vitamin K level stays about the same, then the warfarin can work as it should. But if you eat vitamin K regularly, have adjusted your dose accordingly, then stop the vitamin-K-rich foods, your blood can quickly get dangerously thin.
5. **Limit alcohol.** If you drink alcohol, limit yourself to 1 to 2 servings per day. Drinking a lot of alcohol at once or drinking often while on warfarin increases your risk of bleeding.
6. **If you get sick, tell your doctor.** If you get diarrhea, a fever, or an infection, or if you cannot eat, tell your doctor. These illnesses can change the way warfarin works and you might need a blood test and a change in warfarin dose.
7. **If you might be able to get pregnant, talk to your doctor.** Warfarin can harm an unborn baby. Use birth control if you might be able to get pregnant, and tell your doctor right away if you get pregnant while taking warfarin.
8. **Know your target INR.** Depending on your diagnosis that requires blood thinning, you might have higher or lower INR targets, and knowing your target helps you understand potential monthly dose adjustments.

What about the “newer” blood thinners?

There are several newer blood thinners on the market that are generally thought to be superior alternatives to warfarin. They are safer and don't require all the frequent blood work. They are collectively known as factor Xa inhibitors, or “novel anticoagulants.” Here's what you need to know about them:

- **They do NOT require regular blood tests**, unlike warfarin (which requires regular testing to check how your blood is clotting). Because they don't over or under-thin the blood, they are safer.
- **They do NOT change doses frequently**, unlike warfarin (which tends to have more frequent dose changes).
- **You DO need to take these exactly as your doctor tells you.** Each of these medicines only work for a short period of time, so missing a dose means it is no longer working in your body.
- **Unlike warfarin, they do NOT have many interactions with other medicines or foods**, but you should still talk with your doctor about all the medicines you take. That includes prescription or over-the-counter medicines, herbs, and vitamins (especially aspirin and “NSAIDs” (ibuprofen, naproxen, etc.).
- **These drugs are expensive.** As of the writing of this document, they were running around \$500 a month. If you are on Medicare or have insurance, some coverage might be available. Consider the cost and talk with your doctor about which anticoagulant might work best for you. Some patients have (somehow?) managed to get these medications from other countries at a significant savings.
- **Do NOT take these if you are pregnant or have mechanical heart valves** (devices that are used to replace damaged heart valves). Also, if you have kidney or liver problems, you should talk to your doctor how this might affect these medications.
- **BE CAREFUL:** Anticoagulants have bleeding implications. If you get in an accident, you may need to have these medications reversed. The newer medications have antidotes, however they are not readily available in most hospitals across the US yet.