

Atrial fibrillation (AFib)

Section 1 of 6: The basics

Understand the rhythm, protect against stroke, and explore your treatment choices.

What should I do now?

Call 911

Call 911 for chest pressure, severe trouble breathing, fainting during a racing heartbeat, or stroke signs such as face drooping, arm weakness, or trouble speaking. Do not drive yourself.

Contact your care team

Contact your care team for new or longer episodes, worsening fatigue, reduced activity, medication side effects, or bleeding concerns.

Keep your care plan

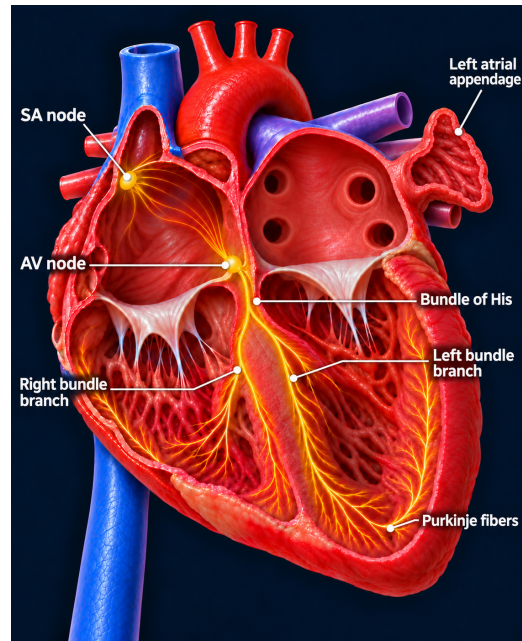
Keep your treatment and follow-up plan. Bring questions, readings, and your medication list.

01 / START WITH THE BASICS

1. Understanding AFib: What is happening in your heart?

First, how does a normal heartbeat work?

Your heart has an electrical system that coordinates each heartbeat. A normal rhythm begins in the SA node, the heart's natural pacemaker in the right upper chamber.



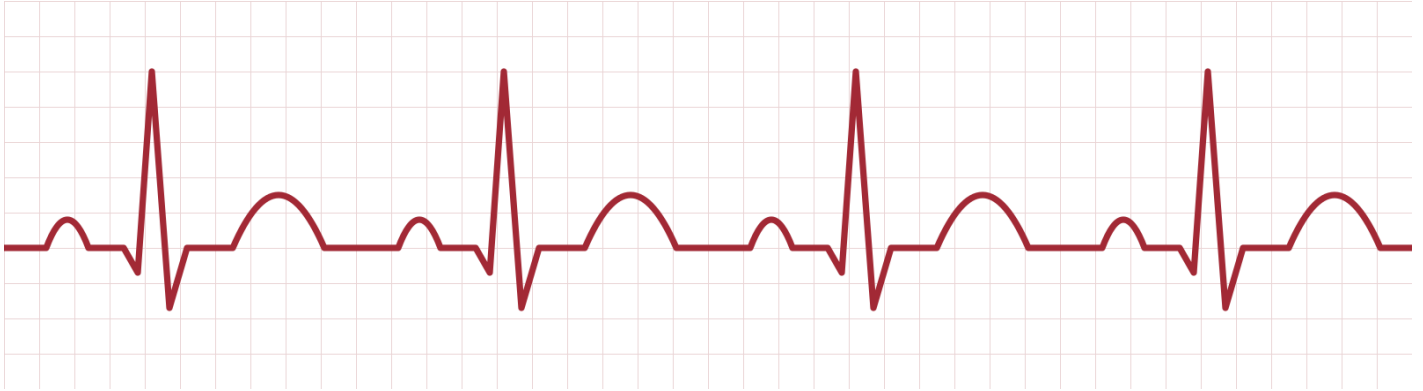
Follow one normal heartbeat

SA node → Atria → AV node → Ventricles

- The SA node starts the signal. The heart's natural pacemaker in the right upper chamber begins each normal sinus beat.
- The signal spreads through both atria. The upper chambers contract, moving blood into the ventricles.
- The AV node briefly delays the signal. This pause gives the ventricles time to finish filling.
- The signal activates the ventricles. It travels through the bundle of His, right and left bundle branches, and Purkinje fibers. The lower chambers contract, pumping blood to the lungs and body.

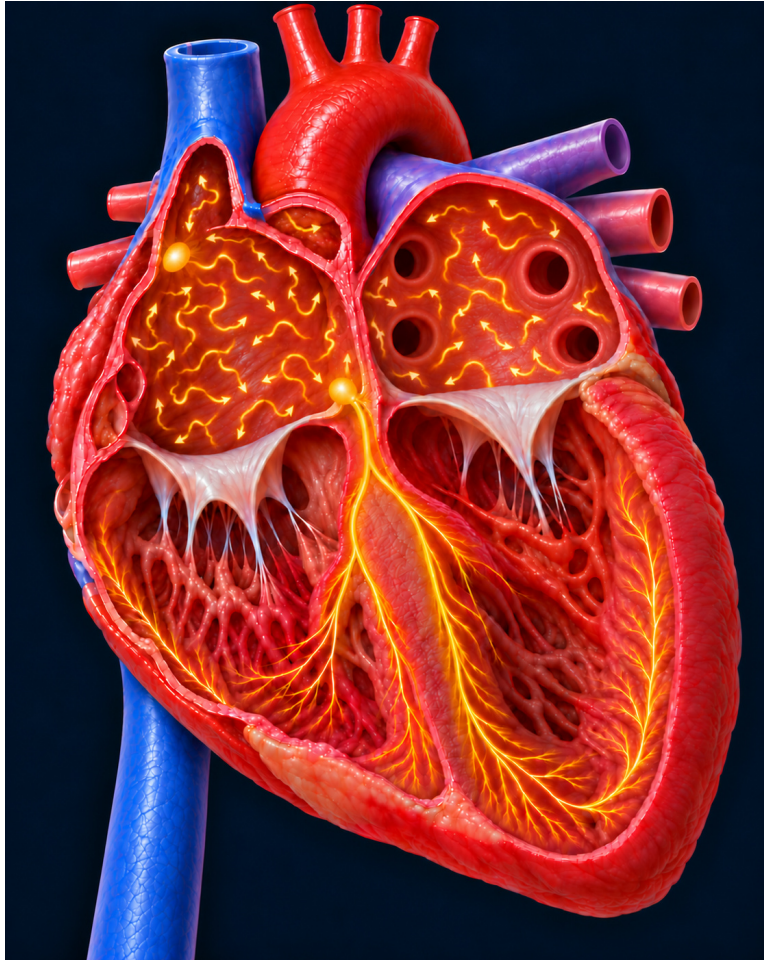
The atria contract first; the ventricles follow. This organized sequence produces a coordinated heartbeat.

Sinus rhythm

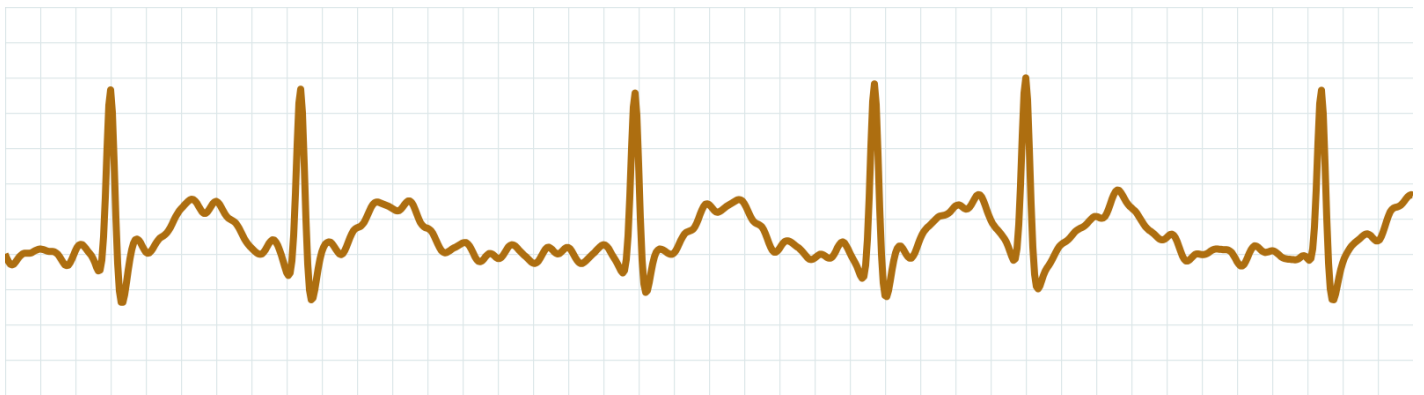


Regular, evenly spaced beats

In atrial fibrillation (AFib), these electrical signals become disorganized. Instead of squeezing normally, the atria quiver. This causes an irregular heartbeat that may be fast, even when you do not feel symptoms.



Atrial fibrillation

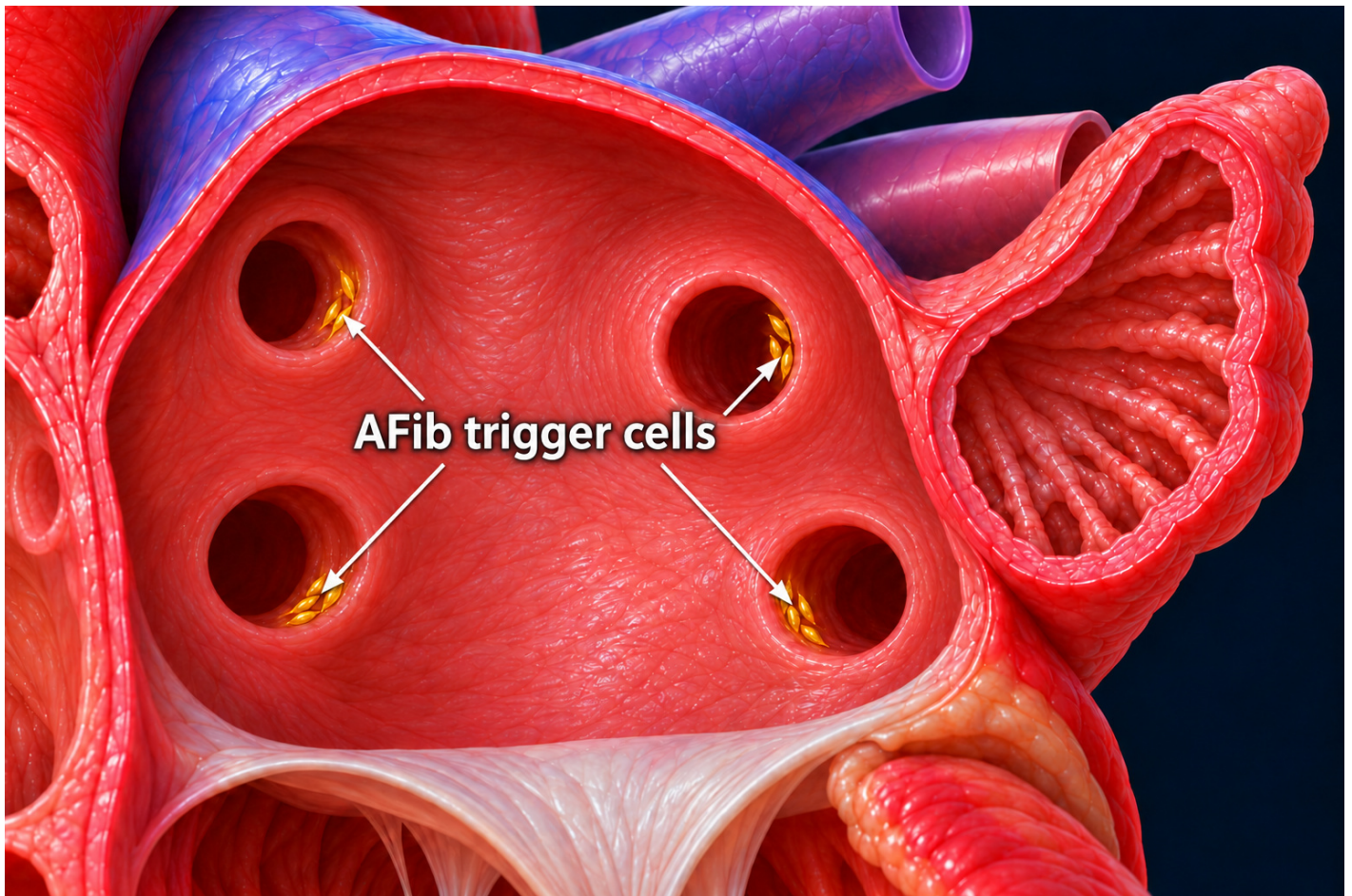


Irregular, unevenly spaced beats

How does AFib start?

AFib often starts when tiny groups of heart muscle cells near the openings of the pulmonary veins send out extra electrical signals. These veins carry blood from the lungs back into the heart's upper left chamber, called the left atrium.

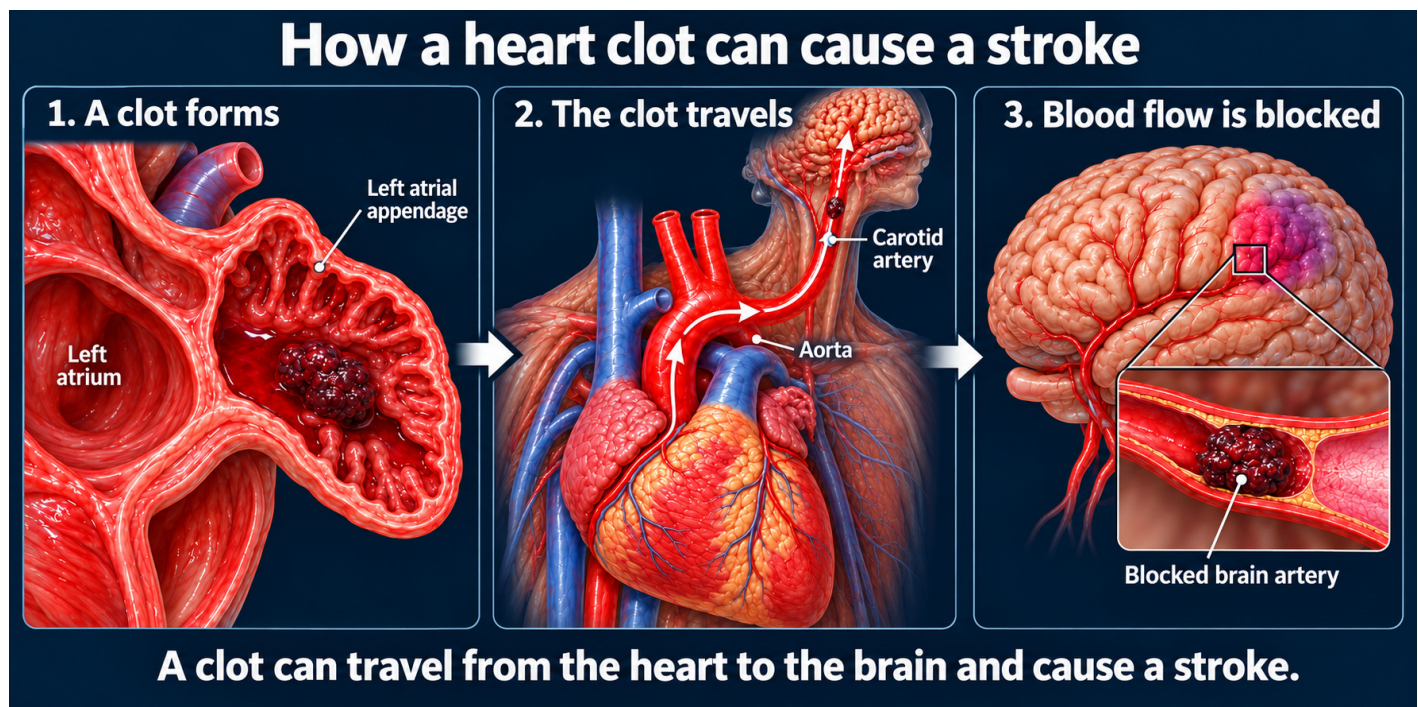
We call these cells “trigger cells” because their signals can interrupt the normal heartbeat and trigger an episode of AFib. They are found in small sleeves of heart muscle that extend into the veins near their openings. The extra signals can spread through the atria and start the disorganized electrical activity shown above.



The labeled gold clusters represent potential AFib trigger cells in muscle sleeves near the pulmonary vein openings. Extra electrical signals from these sites can start an AFib episode. Cell size and location are simplified for teaching.

How AFib can lead to a stroke

Because the atria are not squeezing effectively, blood can pool in a small pouch attached to the upper left chamber called the left atrial appendage. When blood sits in this pouch, clots can form. A clot can then break loose, be pumped out of the heart, and travel to the brain. If it blocks an artery supplying the brain, it can cause a stroke.



A clot can form in the left atrial appendage, break loose, and travel through the bloodstream to the brain. If it blocks an artery, it can cause a stroke.

Untreated AFib is associated with about a fivefold increase in stroke risk compared with people without AFib. Your individual risk depends on factors such as your age and other medical conditions. This is why preventing blood clots and stroke is a central part of AFib treatment - even if you feel well.

AFib can progress over time

AFib is a long-term condition with no guaranteed permanent cure. Treatment can provide excellent control - and sometimes years without episodes - but AFib can return.

AFib is also a progressive disease: episodes may become more frequent, last longer, and eventually become continuous. This does not happen to everyone, but longer-lasting AFib can become harder to control.

Why early treatment matters

The goal of rhythm treatment is to suppress AFib, meaning reduce how often it happens and how long it lasts, or maintain a normal rhythm. Your overall treatment plan also addresses symptoms, heart rate, stroke prevention, and conditions that contribute to AFib.

Addressing AFib early gives us an opportunity to improve symptoms and limit progression. In appropriate patients, early treatment to restore or maintain a normal rhythm can also reduce serious cardiovascular complications.

Why AFib should not be ignored

Poorly controlled AFib can lead to repeated emergency visits or hospital stays and can cause or worsen heart failure. AFib also increases stroke risk and is associated with a higher risk of dementia, although researchers are still studying that relationship.

Some patients with a persistently fast heartbeat that cannot be controlled with other treatments may eventually need a pacemaker together with a procedure called AV node ablation. A pacemaker is not a routine treatment for AFib, and most patients do not need one.

AFib is manageable. Early evaluation and a personalized treatment plan can help protect your heart and keep you feeling well.

Heart illustrations use conceptual electrical overlays. EKG strips are illustrative, not patient recordings; timing and voltage are not calibrated.

Atrial fibrillation (AFib)

Section 2 of 6: Symptoms

Understand the rhythm, protect against stroke, and explore your treatment choices.

02 / RECOGNIZE THE SYMPTOMS

2. What symptoms can AFib cause?

AFib feels different for everyone. Some people notice a racing or fluttering heartbeat. Others mainly feel tired, short of breath, or less able to do their usual activities.

Symptoms may include:

- Palpitations: A racing, pounding, fluttering, or irregular heartbeat.
- Fatigue: Feeling unusually tired or having less energy.
- Shortness of breath: Becoming winded during activities that were previously easy.
- Reduced stamina: Difficulty keeping up with walking, exercise, or everyday tasks.
- Dizziness or lightheadedness: Feeling faint or unsteady.
- Weakness: Feeling drained or less strong than usual.
- Chest discomfort or pressure.
- Anxiety or uneasiness: Sometimes occurring with the sensation of a racing heartbeat.

Symptoms may come and go or persist while you are in AFib. You do not have to feel a fast heartbeat to have AFib.

Can I have AFib without symptoms?

Yes. Some people have no noticeable symptoms. AFib may be discovered during an EKG or heart-monitor recording.

Feeling well does not mean AFib is harmless. Even without symptoms, stroke risk still needs to be assessed and treated when appropriate.

When should I seek emergency help?

Call 911 for new or severe chest pain or pressure, severe shortness of breath, fainting, or signs of stroke, such as facial drooping, arm weakness, or difficulty speaking. Do not assume these symptoms are simply from AFib.

Atrial fibrillation (AFib)

Section 3 of 6: Diagnosis

Understand the rhythm, protect against stroke, and explore your treatment choices.

03 / CONFIRM THE DIAGNOSIS

3. How is AFib diagnosed?

AFib is diagnosed by recording the heart's electrical activity with an electrocardiogram (EKG or ECG) or an electrical rhythm strip. Your healthcare professional reviews the recording to confirm that the rhythm is AFib.



During an EKG, adhesive electrodes connected to wires record the heart's electrical activity. The test is painless and does not send electricity into your body. This is an illustrative image.

Because AFib can come and go, a brief office EKG may not capture an episode. Your doctor may recommend a wearable heart monitor that records your rhythm over several days or weeks.

Can a smartwatch diagnose AFib?

Some smartwatches can detect an irregular pulse, and certain models can also record a single-lead EKG rhythm strip. A clear EKG recording from a compatible watch can help confirm AFib when reviewed by your healthcare professional.

An “irregular rhythm” notification by itself does not confirm AFib. If your watch provides an alert or captures a recording, save it and share it with your care team.

What about a blood pressure cuff or finger oxygen monitor?

A home blood pressure cuff or finger pulse oximeter may alert you to an irregular pulse, but these devices cannot confirm AFib because they do not record the heart's electrical activity. Extra beats and other rhythms can also cause an irregular pulse.

An irregular-pulse alert is a reason to investigate. An electrical rhythm recording is needed to confirm the diagnosis.

Atrial fibrillation (AFib)

Section 4 of 6: Treatment options

Understand the rhythm, protect against stroke, and explore your treatment choices.

04 / TREATMENT

4. How is AFib treated?

AFib treatment addresses several different goals: protecting you from stroke, preventing an excessively fast heartbeat, and reducing AFib episodes. Your treatment plan is tailored to your symptoms, medical conditions, and personal goals.

The three pillars of AFib treatment

1. Stroke preventionProtect the brain by reducing blood clot risk.
2. Rate controlSlow an excessively fast heartbeat during AFib.
3. Rhythm managementRestore normal rhythm and suppress AFib episodes.

Each pillar has a different job. A medication that slows your heart rate does not replace stroke prevention, and successful rhythm treatment does not automatically mean you can stop a blood thinner.

The foundation: treating contributing risk factors

Alongside these three pillars, we address conditions and habits that contribute to AFib, such as:

- High blood pressure.
- Excess weight.
- Sleep apnea.
- Alcohol use.

- Smoking.
- Physical inactivity.
- Diabetes and other heart conditions.

Treating these risk factors does not cure AFib, but it can reduce symptoms and decrease the frequency and duration of episodes. It can also help other AFib treatments work better.

Your plan may combine several treatments, with adjustments over time as your needs change.

Pillar 1: Preventing blood clots and stroke

Not everyone with AFib has the same stroke risk. We use a guideline-recommended stroke risk score, commonly called CHA₂DS₂-VASc, to estimate your likelihood of having a stroke. It considers your age and conditions such as high blood pressure, diabetes, heart failure, vascular disease, and a previous stroke.

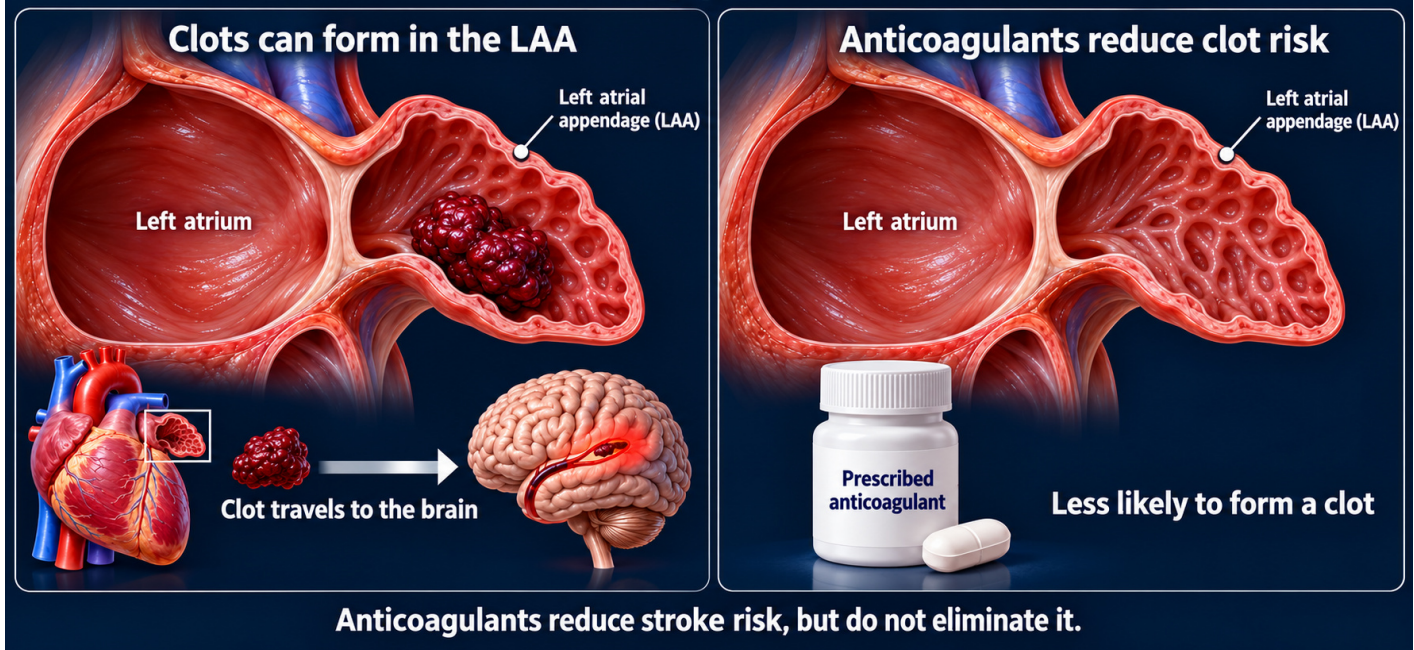
Your score helps guide treatment, along with your other medical conditions and bleeding risk. We reassess it over time because your risk can change.

When do I need a blood thinner?

If your stroke risk is high enough, we usually recommend an anticoagulant, often called a blood thinner.

These medications do not actually make blood thinner. They reduce the blood's ability to form clots, making it less likely that a clot will form in the left atrial appendage and travel to the brain. This lowers the risk of an ischemic stroke - a stroke caused by a blocked artery.

How blood thinners help prevent heart-related strokes



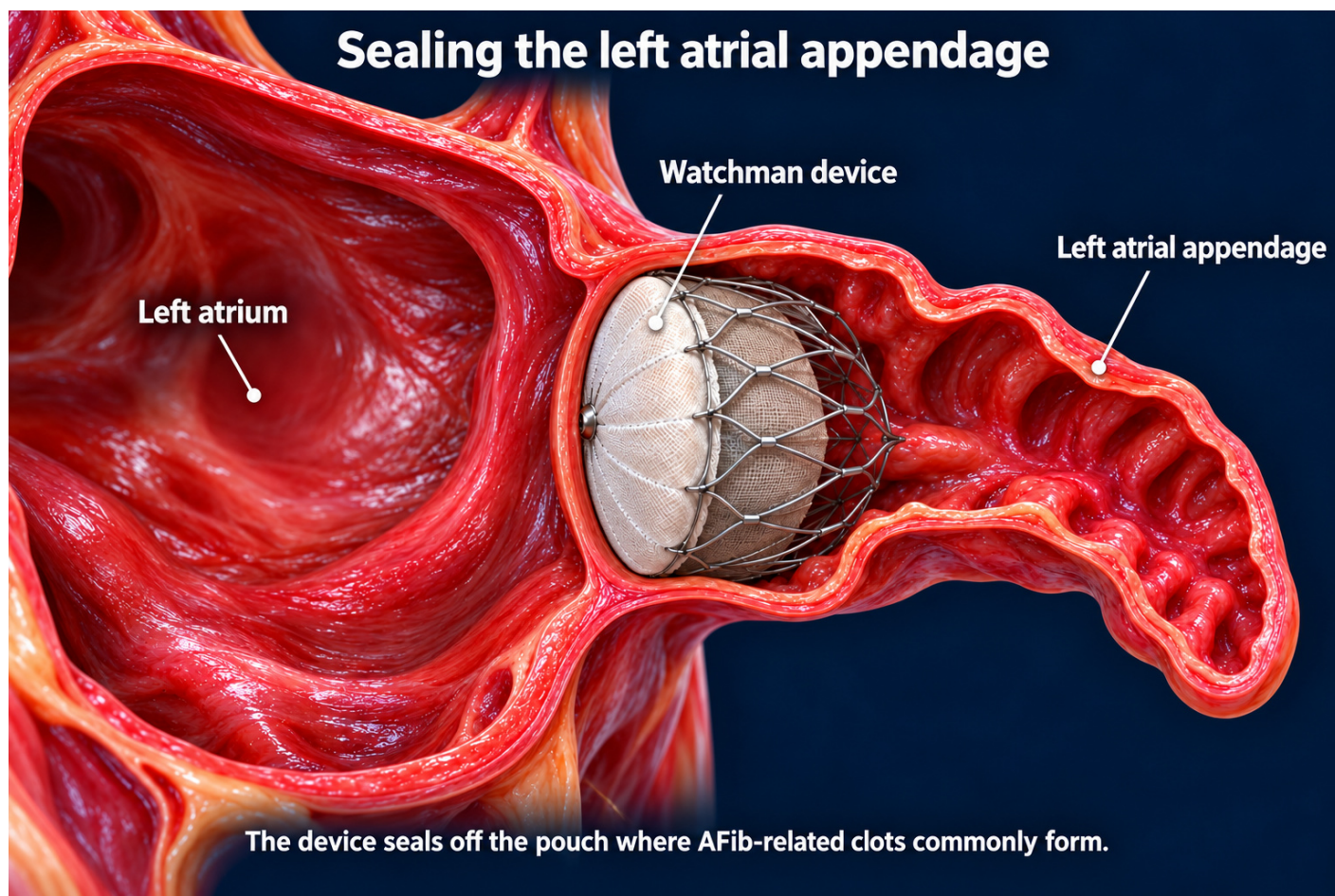
Anticoagulants make clots less likely to form in the left atrial appendage, reducing the risk of a clot traveling to the brain. They reduce stroke risk but do not eliminate it.

Blood thinners help prevent strokes, but they do not stop AFib or control your heart rate. They also increase bleeding risk, which we consider when choosing your treatment.

What if I cannot tolerate a blood thinner?

Some patients need stroke protection but cannot safely take a blood thinner long term - for example, because of serious bleeding.

For selected patients, we may recommend left atrial appendage closure. During this procedure, a device such as Watchman or Amulet is placed inside the appendage to seal off the pouch where AFib-related clots commonly form.



A Watchman device sits inside the left atrial appendage and seals its opening to help prevent clots from leaving the pouch. Conceptual illustration.

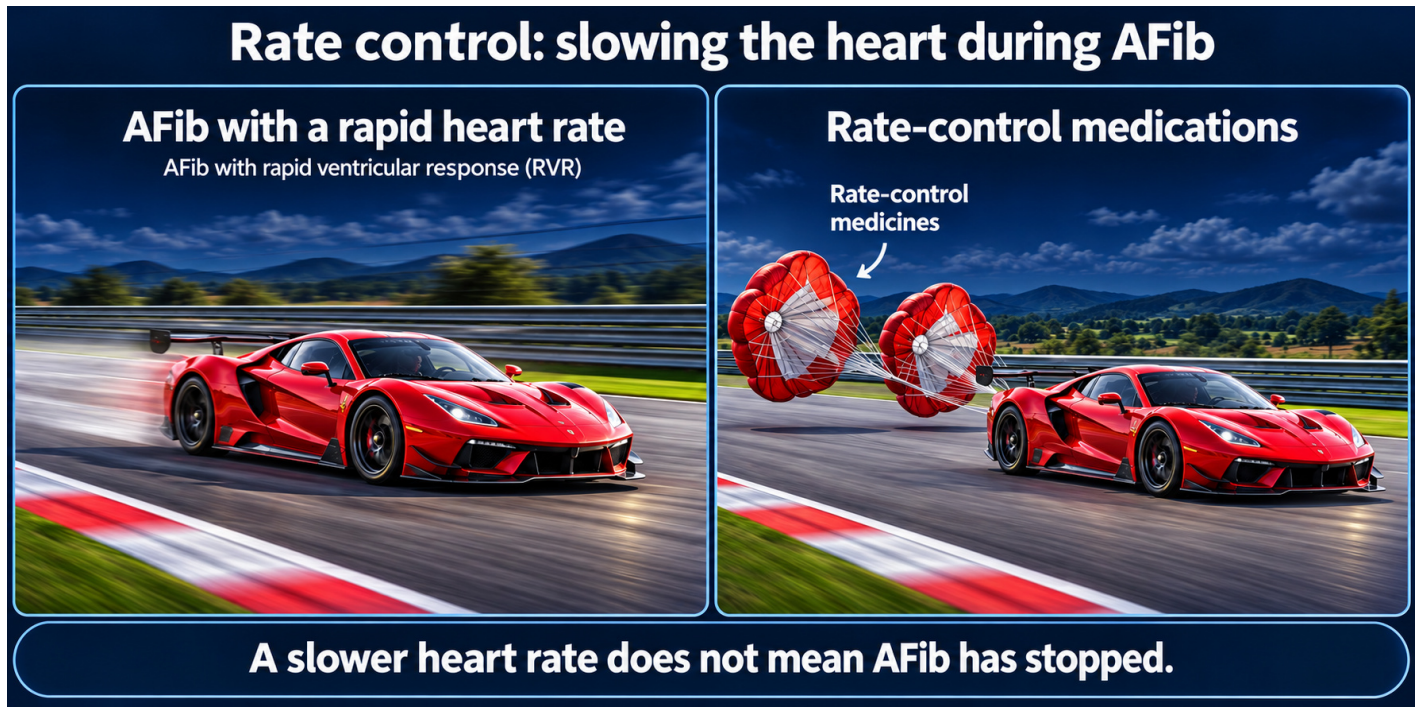
This can provide an alternative to long-term blood thinners for appropriate patients. It does not treat AFib itself, and blood-thinning or antiplatelet medication is usually needed for a period after implantation while the device heals.

The goal is to choose a stroke-prevention plan that balances protection from clots with your individual bleeding risk.

Pillar 2: Controlling the heart rate

During AFib, the disorganized signals in the upper chambers can cause the lower chambers to beat too quickly. Rate-control medications slow this response, helping prevent an excessively fast pulse.

These medications do not stop the disorganized electrical activity in the atria or reliably restore a normal rhythm. You can have a slower pulse and still be in AFib.



Like parachutes slowing a racecar, rate-control medications slow the pulse while the underlying AFib rhythm can remain present.

Why is slowing the heart rate important?

Rate control has two main goals:

- Improve symptoms: Slowing a rapid heartbeat can reduce racing or pounding sensations, shortness of breath, and other symptoms.
- Protect the heart muscle: A persistently rapid heartbeat can weaken the heart's pumping ability and cause or worsen heart failure. Controlling the rate helps reduce this risk.

Common medications include beta blockers, such as metoprolol; certain calcium channel blockers, such as diltiazem; and sometimes digoxin. Your doctor chooses the medication and heart-rate goal based on your symptoms, blood pressure, and heart function.

Rate control manages how fast the heart beats during AFib. Rhythm management - the next pillar - aims to suppress AFib itself. Stroke prevention still needs to be addressed separately.

When medications cannot control the rate: AV node ablation and a pacemaker

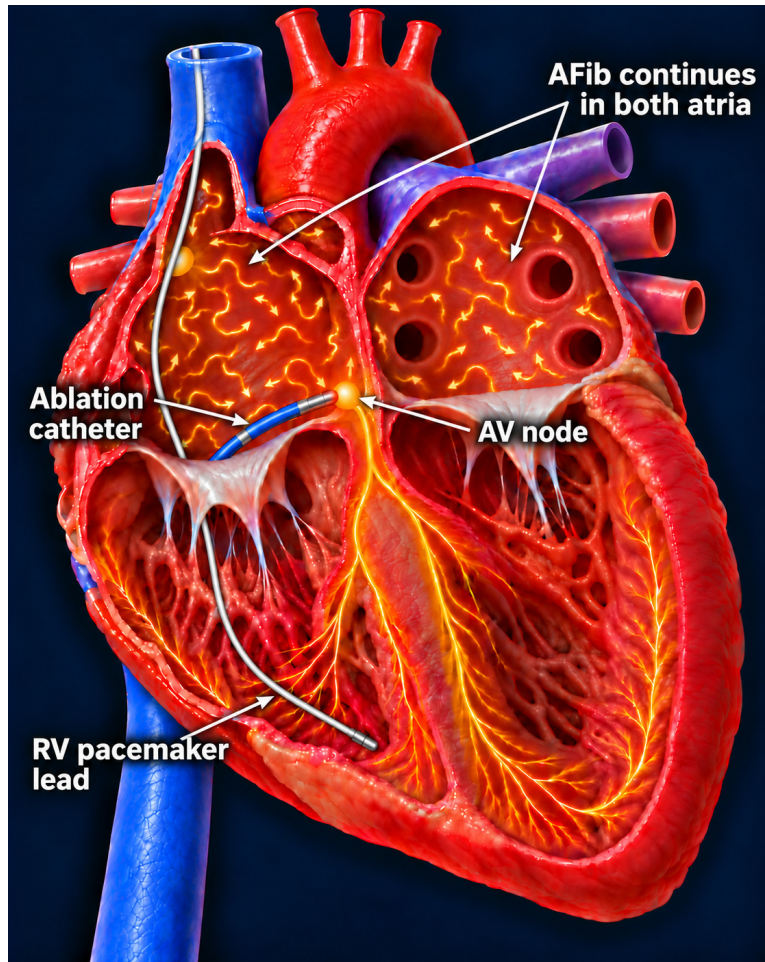
For selected patients with permanent AFib, medications may not adequately control a rapid heart rate. If treatments to restore normal rhythm have been unsuccessful or are unlikely to help, an EP may recommend AV node ablation with a pacemaker, sometimes called “pace and ablate.”

How does it work?

The AV node normally carries electrical signals from the upper chambers - the atria - to the lower chambers - the ventricles.

A catheter delivers energy to create a complete electrical block at the AV node. AFib signals can no longer pass through this pathway and make the ventricles beat rapidly.

A pacemaker is implanted under the skin of the upper chest, with a lead placed inside the heart. It supplies the electrical impulses that keep the ventricles beating at a controlled rate. After AV node ablation, you depend on the pacemaker to maintain your heart rate.



The catheter tip is shown treating the AV node while AFib continues in both atria. AV node ablation aims to block the rapid atrial signals from reaching the ventricles. The white RV pacemaker lead passes through the right atrium and tricuspid valve into the right ventricle. A pacemaker is required afterward to maintain the ventricular heart rate; its generator is outside this view. This treatment controls the ventricular rate but does not eliminate AFib or its stroke risk.

This controls the rate - it does not cure AFib

AFib remains in the upper chambers, and stroke risk remains. Continue blood thinners prescribed for stroke prevention unless your care team changes that plan.

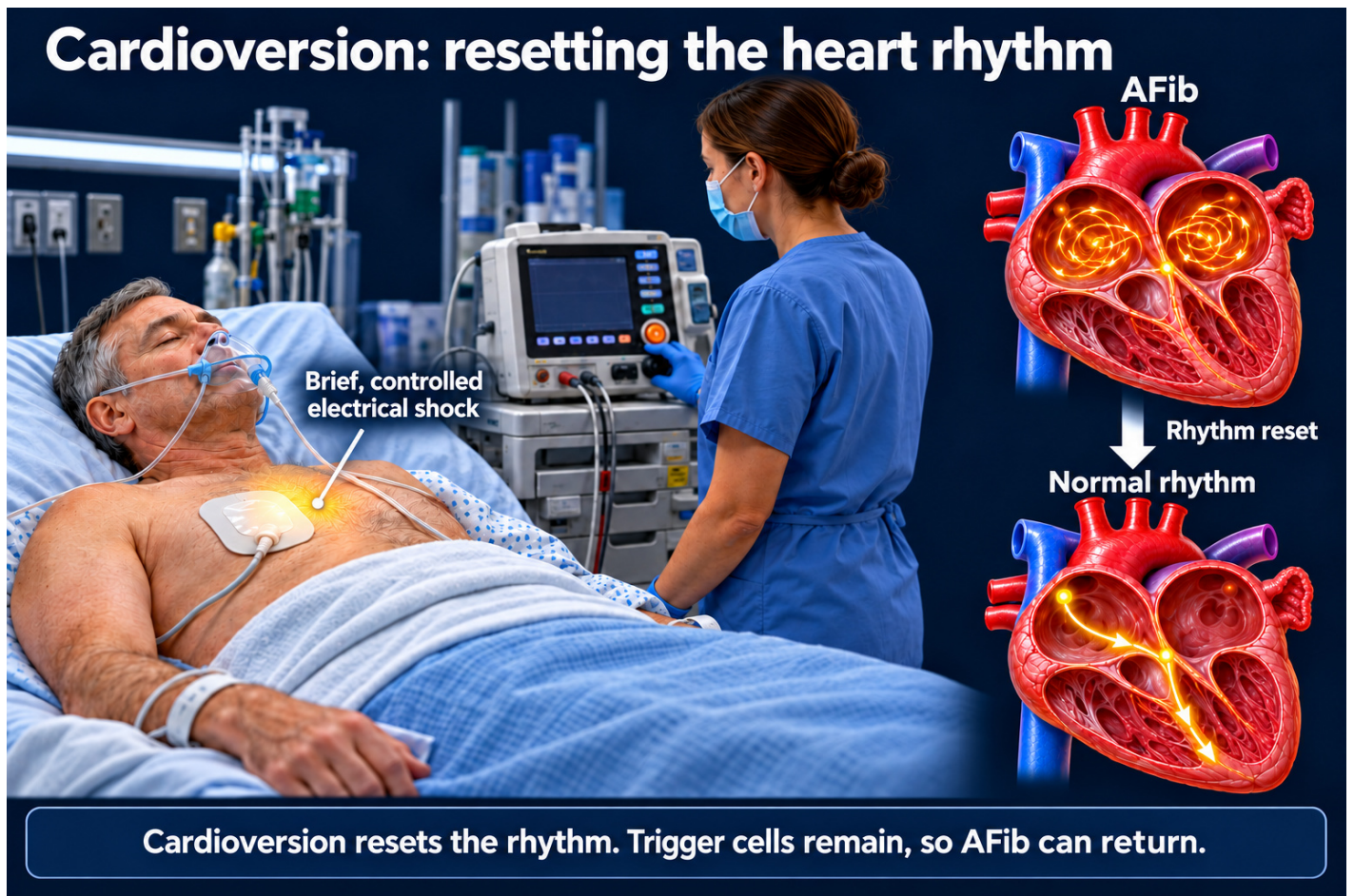
Pillar 3: Managing the heart rhythm

Rhythm management aims to restore a normal heartbeat and reduce AFib episodes. Options include cardioversion, rhythm-control medications, and catheter ablation.

Option 1: Electrical cardioversion - resetting the rhythm

Cardioversion uses a brief, controlled electrical shock delivered through pads on your chest and back. You receive sedation so you are asleep and comfortable during the procedure.

The shock interrupts the disorganized electrical activity and can allow your heart's normal electrical system to take over again.



Cardioversion resets the rhythm. The trigger cells remain, so AFib can return.

Cardioversion resets the rhythm, but it does not remove or electrically isolate the trigger cells that can start AFib. Those cells remain, so AFib can return - even after a successful cardioversion. Medications or catheter ablation may be recommended to help maintain normal rhythm.

Your care team also plans stroke protection before and after cardioversion. Returning to normal rhythm does not automatically mean you can stop your blood thinner.

Option 2: Rhythm-control medications - helping maintain a normal rhythm

Rhythm-control medications, also called antiarrhythmic medications, help your heart stay in a normal rhythm. They work by changing electrical activity in the heart to reduce how often AFib occurs.

These medications do not cure AFib. Their goal is to suppress it. AFib can still return, even when you take your medication correctly.

Taking your medication as prescribed

These medicines work best when you follow the prescribed schedule. For medications taken regularly, missed doses can reduce their ability to prevent AFib episodes. Do not stop, change the dose, or take extra doses without instructions from your care team.

Side effects and monitoring

Each medication has its own possible side effects. Your cardiologist chooses a medication based on your heart health, kidney function, other medications, and individual needs.

Some medications require regular blood draws to check kidney function, electrolyte levels, or thyroid and liver function. You may also need EKGs to check how the medication affects your heart's electrical system. Certain medications must be started in the hospital so your rhythm can be monitored closely.

Tell your care team about side effects so they can adjust your treatment safely.

Keeping your heart in normal rhythm does not automatically mean you can stop your blood thinner. Stroke prevention remains a separate part of your AFib treatment.

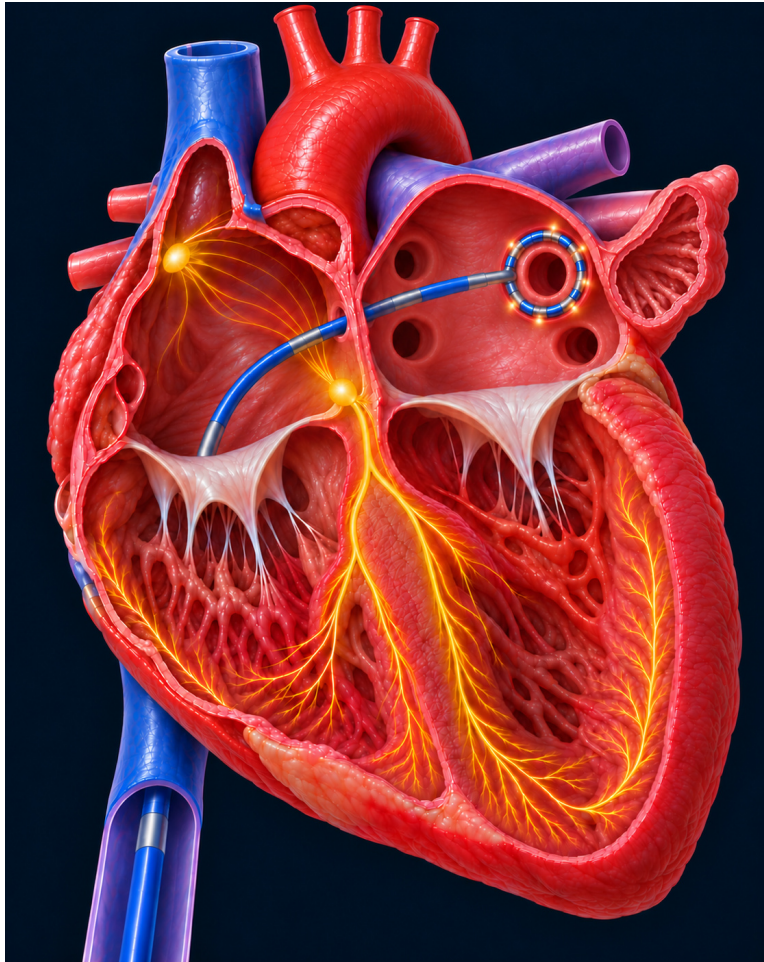
Option 3: Catheter ablation - targeting AFib at its source

AFib often starts when tiny groups of trigger cells near the openings of the pulmonary veins send abnormal electrical signals into the left atrium. These veins bring blood from the lungs back to the heart.

During ablation, your electrophysiologist guides a thin, flexible catheter through a blood vessel into your heart. The catheter delivers energy to disable targeted heart muscle cells and create an electrical barrier around the pulmonary veins. This is called pulmonary vein isolation, or PVI.

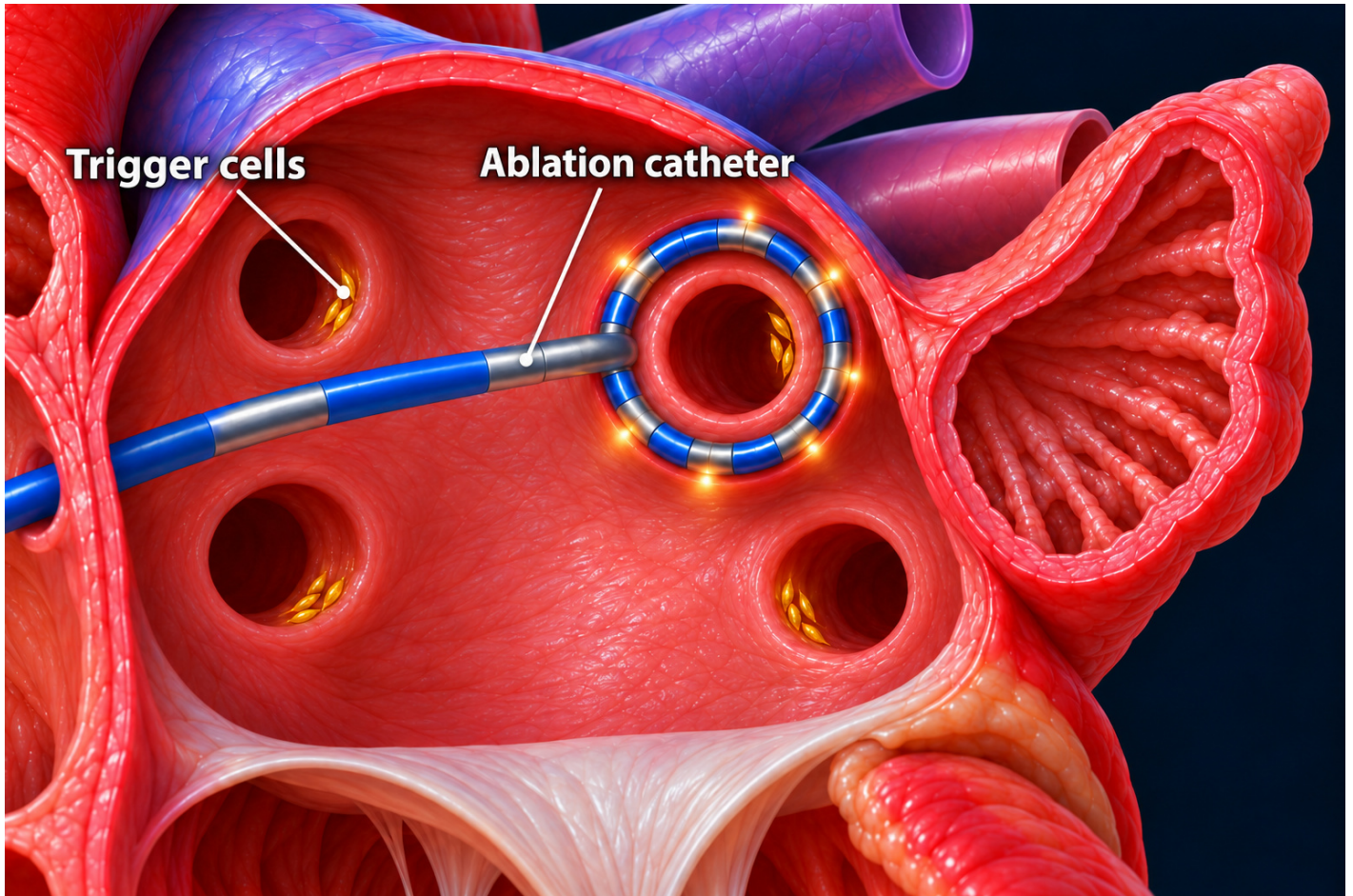
The barrier prevents abnormal signals inside the veins from reaching the rest of the atrium and starting AFib. The veins remain open, so blood can still flow normally. Ablation can use heat, freezing, or short electrical pulses called pulsed field ablation.

1. How the catheter reaches the left atrium



The catheter travels from a vein in the groin through the inferior vena cava (IVC) to the right atrium, then crosses the wall between the upper chambers to reach the left atrium. Its circular tip is shown around one pulmonary vein opening. Pulmonary vein isolation (PVI) creates an electrical barrier that keeps signals from the pulmonary veins from entering the atrium. All pulmonary veins are treated during PVI. This is a simplified illustration of the route and catheter position.

2. How ablation isolates the trigger cells



The circular ablation catheter is shown around a pulmonary vein opening. The gold clusters represent AFib trigger cells. Ablation creates an electrical barrier that keeps signals from the pulmonary veins from entering the left atrium.

Why choose ablation?

Catheter ablation is generally the most effective of these options for long-term AFib suppression. Cardioversion resets the rhythm, and medications suppress abnormal electrical activity. Ablation directly targets the pathways that allow trigger signals to start AFib.

Compared with rhythm-control medications, ablation generally provides better control of AFib episodes and symptoms. Outcomes are often better when treatment occurs earlier.

Can AFib return?

Ablation is not a guaranteed cure. Electrical connections can recover, or AFib can develop from other areas. Some patients need another procedure or continued medication.

Your stroke-prevention plan remains separate: successful ablation does not automatically mean you can stop your blood thinner.

Preparing for your ablation?

Learn about procedure day, recovery, and caring for your groin puncture sites at home.

[What to expect on my procedure date](#)

Atrial fibrillation (AFib)

Section 5 of 6: Long-term care

Understand the rhythm, protect against stroke, and explore your treatment choices.

05 / PUT THE PLAN INTO PRACTICE

Living with AFib: a lifelong care plan

AFib is a lifelong condition that can progress over time. Episodes may become more frequent or last longer, although progression varies from person to person. Even when treatment keeps your heart in normal rhythm, ongoing follow-up remains important.

Stay connected with your cardiologist

Your cardiologist helps manage your AFib, reassess stroke risk, monitor heart function, and treat conditions such as high blood pressure, sleep apnea, and heart failure. Your treatment plan may need to change as your health and rhythm change.

Discuss your options with an electrophysiologist (EP)

An EP is a cardiologist who specializes in the heart's electrical system and rhythm disorders. We recommend that every patient with AFib have an EP consultation to discuss whether rhythm control would be helpful and which approach best fits their needs. This may include cardioversion, rhythm-control medications, or catheter ablation.

An EP consultation does not mean you must have a procedure. It gives you an opportunity to understand the benefits and risks of your options and make a plan based on your symptoms, AFib pattern, heart health, and preferences. Discussing these choices early can help you plan

treatment before AFib becomes harder to control.

Take medicines as prescribed and tell your team about recurrent symptoms. Do not stop a blood thinner because you feel better or have had ablation; review the decision with your clinician.

Atrial fibrillation (AFib)

Section 6 of 6: Your next visit

Understand the rhythm, protect against stroke, and explore your treatment choices.

06 / YOUR NEXT VISIT

Questions to ask your care team

- What is my stroke risk?
- Would an early rhythm-control or ablation discussion help me?
- How will we measure whether treatment is working?

[Make an appointment](#)

Preparing for your ablation?

Learn about procedure day, recovery, and caring for your groin puncture sites at home.

[What to expect on my procedure date](#)

Sources & further reading

[NHLBI: How the heart beats](#)

[MedlinePlus: Cardiac conduction system](#)

[AHA: Understanding AFib](#)

[AHA: AFib treatment options](#)

[2023 AF guideline: key points](#)

Updated October 2026. Educational information; your own care plan may differ.

[Heart Rhythm Society: AFib ablation and pulmonary vein isolation](#)