CONDITION

Atrial fibrillation

Learn how atrial fibrillation affects the heart, how it is diagnosed, and how treatment can control symptoms and reduce the risk of stroke.

WHAT IT IS
Abnormal heart rhythm beginning in the upper chambers

BODY SYSTEM
Heart and circulation

MAIN SYMPTOMS
Irregular heartbeat, shortness of breath, tiredness, dizziness

WHAT CAUSES IT
Electrical instability, often multifactorial or unknown

HOW IT IS DIAGNOSED
ECG or longer heart rhythm monitoring

MAIN TREATMENT
Stroke prevention and heart rate or rhythm control

CAN IT BE CURED?
No, treatment controls symptoms and risks

IS IT AN EMERGENCY?
Sometimes, with sudden facial drooping

LONG-TERM OUTLOOK
Ongoing condition with stroke and heart failure risks

Overview

Atrial fibrillation, often called AFib or AF, is an abnormal heart rhythm. It begins in the atria, the two upper chambers of the heart. Instead of contracting in a steady pattern, the atria beat rapidly and irregularly.

The heart's electrical signals normally begin in a natural pacemaker called the sinus node. In atrial fibrillation, many disorganized signals compete with one another. Some signals reach the lower chambers, called the ventricles, causing an irregular pulse that may also be too fast.

Atrial fibrillation may come and go, last for long periods, or become continuous. Clinicians may describe it as:

These terms describe the rhythm's pattern, not how serious a person's condition is.

Atrial fibrillation matters because blood may not move normally through the atria. A clot can form, especially in a small pouch called the left atrial appendage. If a clot travels to the brain, it can cause a stroke. A persistently fast heart rate can also weaken the heart and contribute to heart failure.

Treatment can reduce these risks and improve symptoms. The right plan depends on symptoms, other medical conditions, stroke and bleeding risks, and personal preferences.

- Paroxysmal: Episodes stop on their own, usually within seven days.
- Persistent: An episode continues and may require treatment to restore a regular rhythm.
- Long-standing persistent: Atrial fibrillation has continued for more than 12 months.
- Permanent: The patient and clinical team have decided not to keep trying to restore a regular rhythm.

Symptoms

Some people have no noticeable symptoms. Atrial fibrillation may be found during a routine examination, an electrocardiogram, or monitoring performed for another reason.

When symptoms occur, they may include:

Symptoms do not reliably show how fast the heart is beating or how much stroke risk is present. Someone with few symptoms can still need treatment to reduce the chance of complications.

Call emergency services for signs of a possible stroke, including sudden facial drooping, weakness or numbness on one side, trouble speaking, loss of coordination, or a sudden severe change in vision. Sudden chest pressure, severe shortness of breath, fainting, or symptoms of shock also require emergency care.

A new episode of rapid or irregular heartbeat without those emergency features still deserves prompt medical advice, especially if it continues, causes significant symptoms, or occurs in someone with heart disease.

- A racing, fluttering, pounding, or irregular heartbeat
- Shortness of breath
- Tiredness or reduced stamina
- Dizziness or lightheadedness
- Chest discomfort

- Weakness
- Difficulty exercising

Causes and risk factors

Atrial fibrillation occurs when the heart's electrical system becomes unstable. Changes in the structure, pressure, or electrical properties of the atria can make this more likely. Often, more than one factor is involved.

Risk rises with age. High blood pressure is another important contributor because it can enlarge or stiffen the heart's chambers over time. Other associated conditions include coronary artery disease, heart failure, heart valve disease, congenital heart disease, and previous heart surgery.

Additional risk factors and possible triggers include:

Intense endurance exercise over many years may be associated with atrial fibrillation in some people, although regular moderate physical activity generally supports cardiovascular health.

Caffeine in usual amounts does not trigger atrial fibrillation in everyone. Individual responses vary. It can be useful to discuss suspected triggers rather than eliminating foods or drinks without a clear reason.

Sometimes no single cause is identified. This does not mean that the rhythm is harmless or that the person did something wrong.

- Overactive thyroid, also called hyperthyroidism
- Obstructive sleep apnea, in which breathing repeatedly stops during sleep
- Obesity and low physical activity
- Diabetes
- Chronic kidney or lung disease
- Heavy alcohol use or drinking a large amount over a short period
- Smoking
- Serious infection or another acute illness
- Some stimulant drugs
- A family history or inherited tendency

Diagnosis

Atrial fibrillation is diagnosed by recording the heart's electrical activity. A standard 12-lead electrocardiogram, or ECG, may confirm the rhythm if it is happening during the test.

Because episodes can come and go, longer monitoring may be needed. A portable monitor can record the rhythm for one or more days. Other devices can monitor for weeks, while an implanted monitor can record for much longer when appropriate.

Smartwatches and home devices may identify an irregular rhythm, but an alert is not always atrial fibrillation. A clinician generally reviews an ECG-quality recording before confirming the diagnosis and making treatment decisions.

The evaluation usually includes questions about symptoms, episode length, medicines, alcohol use, sleep, and other health conditions. A clinician may check the pulse, blood pressure, heart, lungs, and signs of thyroid disease or heart failure.

Tests may include:

The clinical team also estimates stroke risk and bleeding risk. These assessments help guide decisions about anticoagulation, but bleeding risk is not considered in isolation. Treatable concerns, such as uncontrolled blood pressure or interacting medicines, may be addressed as part of the plan.

- Blood tests to evaluate thyroid function, blood count, electrolytes, and kidney or liver function
- An echocardiogram, which uses ultrasound to examine heart structure, pumping function, valves, and chamber size
- Additional heart monitoring to measure how often atrial fibrillation occurs and how fast the ventricles beat
- Testing for sleep apnea when symptoms or risk factors suggest it
- Exercise or coronary artery testing in selected people

Treatment and management

Treatment has several possible goals: preventing stroke, controlling the heart rate, restoring or maintaining a regular rhythm, relieving symptoms, and managing conditions that contribute to atrial fibrillation.

Reducing stroke risk

An anticoagulant like warfarin or apixaban may be recommended when a person's estimated

stroke risk is high enough. These medicines reduce the blood's ability to form harmful clots. They are sometimes called blood thinners, although they do not actually thin the blood.

Common options include direct-acting oral anticoagulants and warfarin. Direct-acting medicines are often preferred for eligible patients, but warfarin remains appropriate in certain situations, including some mechanical heart valves and rheumatic mitral stenosis. Kidney function, other medicines, cost, and individual medical history can affect the choice.

Anticoagulants lower stroke risk but can cause bleeding. They should be taken exactly as directed and should not be stopped without medical guidance. Aspirin is not an equivalent substitute when anticoagulation is indicated.

For selected people who cannot use long-term anticoagulation, a procedure that closes the left atrial appendage may be considered. It is not suitable for everyone and has its own risks and follow-up requirements.

Controlling heart rate

Rate-control treatment aims to keep the ventricles from beating too quickly. Medicines may include beta blockers like metoprolol or propranolol , certain calcium channel blockers like amlodipine or diltiazem , or digoxin. The choice depends on heart function, activity level, other illnesses, and side effects.

Rate control does not necessarily return the heart to a regular rhythm. Some people feel well with a controlled irregular rhythm, while others continue to have symptoms.

Restoring or maintaining rhythm

Rhythm-control treatment attempts to return the heart to a normal rhythm and reduce future episodes. It may be considered early in the course of atrial fibrillation, particularly when symptoms are troublesome or the rhythm is affecting heart function.

Cardioversion restores rhythm using an electrical shock delivered under sedation or, in some cases, medicine. If atrial fibrillation has lasted long enough for a clot to have formed-or if its duration is uncertain-anticoagulation or special imaging may be needed before cardioversion. Anticoagulation may also be needed afterward.

Antiarrhythmic medicines can help maintain a regular rhythm. Their safety depends on the person's heart structure, kidney and liver function, other medicines, and possible electrical effects on the heart. They require clinician supervision.

Catheter ablation is another option. Thin tubes are guided through blood vessels to the heart, where targeted energy creates small areas of scar intended to block abnormal electrical signals. Ablation can reduce episodes and symptoms, but atrial fibrillation may return, and more than one procedure may be needed. Stroke-prevention decisions after ablation are based on stroke risk rather than symptoms alone.

Addressing contributing factors

Managing related conditions can improve overall heart health and may reduce atrial fibrillation episodes. Care may include controlling blood pressure and diabetes, treating sleep apnea, reaching a sustainable weight, stopping smoking, and avoiding heavy alcohol use.

Regular physical activity is often encouraged, but the type and intensity should fit the person's health and symptoms. People who notice a consistent trigger can discuss it with their clinical team.

Medicines commonly used for this include apixaban , dofetilide , propafenone and propranolol . Which one suits you, if any, is a decision for you and your doctor.

Complications

Stroke is one of the most important complications. A stroke caused by atrial fibrillation occurs when a clot leaves the heart and blocks blood flow in the brain. Anticoagulation can substantially lower this risk when used appropriately, but it does not remove the risk completely.

A fast ventricular rate can make it difficult for the heart to fill and pump efficiently. If this continues, it may cause or worsen heart failure. In some cases, prolonged rapid beating weakens the heart muscle, a problem called tachycardia-induced cardiomyopathy. Heart function may improve when the rate or rhythm is controlled.

Atrial fibrillation may also reduce exercise ability and quality of life. Poor sleep, anxiety about episodes, and medicine side effects can add to the burden.

Bleeding is a potential complication of anticoagulant treatment. Emergency assessment is needed for vomiting or coughing blood, heavy uncontrolled bleeding, black or bloody stools, a serious head injury, or sudden neurological symptoms. Easy bruising or minor nosebleeds are usually not emergencies, but recurrent or concerning bleeding should be discussed with the prescribing clinician.

Follow up

Atrial fibrillation usually requires ongoing follow-up, even when symptoms improve. Routine visits may review heart rate, rhythm, blood pressure, symptoms, stroke risk, bleeding concerns, and treatment goals.

People taking warfarin need regular blood tests called INR tests to make sure its effect

remains in the intended range. Direct-acting anticoagulants do not require INR testing, but kidney function, blood count, and medication interactions still need periodic review.

Tell clinicians and dentists about anticoagulant use before procedures. Check before starting nonprescription pain relievers, supplements, or new medicines because some can increase bleeding or affect heart rhythm. Do not change or skip heart or anticoagulant medicines without guidance.

Contact the clinical team promptly if episodes become more frequent, last longer, or cause worsening shortness of breath, swelling, dizziness, or reduced activity. Seek emergency care for stroke symptoms, fainting, severe breathing difficulty, significant chest pain, or major bleeding.

Sources

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