CONDITION

Arrhythmias

Learn how abnormal heart rhythms can affect the heartbeat, what symptoms may occur, how arrhythmias are diagnosed, and which treatments may help.

WHAT IT IS
Abnormal heart rhythm

BODY SYSTEM
Heart and circulation

MAIN SYMPTOMS
Palpitations, dizziness, fainting, shortness of breath

WHAT CAUSES IT
Electrical changes, illness, medicines, triggers, or unknown

HOW IT IS DIAGNOSED
ECG and heart rhythm monitoring

MAIN TREATMENT
Medicines, procedures, or implanted devices

CAN IT BE CURED?
Sometimes - treatment can restore regular rhythm

IS IT AN EMERGENCY?
Sometimes - with fainting or severe breathing difficulty

LONG-TERM OUTLOOK
Often manageable, but some cause serious complications

Overview

An arrhythmia is a problem with the heart's rhythm. The heart may beat too quickly, too slowly, or in an irregular pattern. Some arrhythmias last only a few seconds and cause no harm. Others can affect how well the heart pumps blood and may require treatment.

The heartbeat is controlled by electrical signals. These signals normally begin in the heart's natural pacemaker, called the sinus node. They travel through the upper chambers, known as the atria, and then through the lower pumping chambers, called the ventricles. An arrhythmia can develop when an electrical signal starts in the wrong place, follows an unusual pathway, or moves too slowly through the heart.

Common categories include:

Heart rate varies with age, activity, sleep, medicines, and general health. A slow rate may be normal in a well-trained athlete, while a fast rate may be an expected response to exercise or fever. The rhythm, symptoms, cause, and effect on the heart all help determine whether a finding is important.

Arrhythmias matter because some can cause fainting, stroke, heart failure, or cardiac arrest. However, many can be monitored or treated successfully.

- Tachycardia: A heart rhythm that is faster than expected.
- Bradycardia: A heart rhythm that is slower than expected.
- Premature beats: Extra beats that may feel like a skipped or forceful heartbeat.
- Atrial fibrillation: A common irregular rhythm that starts in the upper chambers.
- Supraventricular tachycardia: A group of fast rhythms that begin above the ventricles.
- Ventricular arrhythmias: Abnormal rhythms that begin in the heart's lower chambers.

Symptoms

Arrhythmias do not always cause symptoms. Some are discovered during a routine examination, an electrocardiogram, or monitoring for another health concern.

When symptoms occur, they may include:

Symptoms alone cannot show which arrhythmia is present. Anxiety, anemia, thyroid disease, low blood sugar, dehydration, fever, and other conditions can cause similar sensations. Even noticeable palpitations may come from harmless premature beats, while a more serious rhythm problem may cause few warning signs.

Seek emergency care for palpitations or an abnormal heartbeat accompanied by fainting, severe breathing difficulty, persistent chest pain or pressure, or symptoms of a stroke. Stroke symptoms can include sudden facial drooping, weakness or numbness on one side, trouble speaking, loss of balance, or a sudden change in vision.

If someone collapses, is unresponsive, and is not breathing normally, call emergency services. Begin cardiopulmonary resuscitation, or CPR, and use an automated external defibrillator, or AED, if one is available.

Recurring palpitations, unexplained fatigue, brief lightheadedness, or reduced exercise tolerance usually call for a routine medical appointment rather than emergency care, unless they become severe or occur with the warning signs above.

- A racing, fluttering, pounding, or skipping feeling in the chest, known as palpitations

- A heartbeat that feels unusually fast, slow, or irregular
- Dizziness or lightheadedness
- Fainting or feeling close to fainting
- Shortness of breath
- Chest discomfort
- Weakness, unusual tiredness, or reduced ability to exercise
- Confusion, especially in an older adult

Causes and risk factors

An arrhythmia may result from changes in the heart's electrical system, another medical condition, a medicine, or a temporary trigger. In some people, no single cause is found.

Conditions that can affect the heart's rhythm include coronary artery disease, a previous heart attack, heart valve disease, heart muscle disease, congenital heart disease, heart failure, and inflammation or infection involving the heart. Scarring from heart surgery or a previous heart injury can also interfere with electrical signals.

Other possible contributors include:

Prescription medicines, nonprescription products, and supplements can sometimes trigger or worsen an arrhythmia. Examples may include certain decongestants, stimulants, and medicines that change electrical recovery between heartbeats. The risk depends on the specific product, dose, other medicines, and the person's health. Do not stop a prescribed medicine without speaking with the clinician who manages it.

Risk generally rises with age because the heart and its electrical pathways can change over time. Family history and inherited electrical disorders may also increase risk. Some inherited conditions affect the heart's electrical activity even when the heart muscle appears normal.

Temporary triggers do not explain every episode. Keeping a record of symptoms and what was happening at the time may help identify patterns, but it cannot replace medical evaluation.

- High blood pressure
- An overactive or underactive thyroid
- Obstructive sleep apnea, which causes repeated pauses in breathing during sleep
- Diabetes
- Significant changes in potassium, magnesium, or other body salts

- Anemia, fever, dehydration, or severe illness
- Heavy alcohol use or binge drinking
- Tobacco, cocaine, methamphetamine, and other stimulants like methylphenidate or lisdexamfetamine
- High amounts of caffeine or energy drinks in a person who is sensitive to them

Diagnosis

Diagnosis begins with a discussion of symptoms, medical history, family history, medicines, alcohol or stimulant use, and possible triggers. A clinician may check the pulse, listen to the heart, measure blood pressure, and look for signs of thyroid disease, heart failure, or another underlying condition.

An electrocardiogram , often shortened to ECG or EKG, records the heart's electrical activity through small patches placed on the skin. It can identify many arrhythmias, but it shows only the rhythm present during the short recording.

If symptoms come and go, longer monitoring may be needed. A Holter monitor usually records continuously for a limited period. An event monitor or adhesive patch may be worn longer. For infrequent but concerning symptoms, a small monitor may be placed under the skin to record the rhythm over months or years.

Other tests may include:

A smartwatch or personal ECG device may capture useful information during symptoms. These devices can miss arrhythmias or incorrectly label a rhythm, so results should be reviewed by a healthcare professional.

The diagnosis should identify the rhythm whenever possible. Treatment decisions also consider how often it occurs, how long it lasts, whether it causes symptoms, and whether the person has structural heart disease or a risk of stroke.

- Blood tests for thyroid function, anemia, body salts, or other possible causes
- An echocardiogram, which uses ultrasound to examine heart structure and pumping function
- An exercise stress test when symptoms occur with activity
- A sleep study when sleep apnea is suspected
- An electrophysiology study, which uses thin tubes called catheters to map electrical signals inside the heart

Treatment and management

Not every arrhythmia needs active treatment. An occasional premature beat without concerning symptoms or heart disease may only require observation. Treatment is more likely when an arrhythmia causes significant symptoms, affects heart function, raises stroke risk, or could lead to a dangerous rhythm.

Management may begin with treating a contributing condition. This can include care for thyroid disease, sleep apnea, high blood pressure, heart disease, dehydration, or abnormal body-salt levels. A clinician may also review medicines and supplements for possible rhythm effects.

Helpful daily measures depend on the individual trigger and diagnosis. They may include limiting alcohol, avoiding tobacco and recreational stimulants, getting adequate sleep, and discussing caffeine if it appears to bring on symptoms. Regular physical activity is beneficial for many people, but someone with fainting, exercise-related symptoms, or a newly diagnosed arrhythmia should ask about safe activity.

Medicines can be used to slow the heart rate, reduce episodes, or help maintain a more regular rhythm. These may include beta blockers like metoprolol or propranolol , certain calcium channel blockers like amlodipine or diltiazem , or antiarrhythmic medicines. Each has possible side effects and monitoring needs. The best choice depends on the exact rhythm and the person's other health conditions.

Atrial fibrillation can allow blood clots to form in the heart and travel to the brain. Some people with this condition are prescribed an anticoagulant, often called a blood thinner, to reduce stroke risk. Anticoagulants also increase bleeding risk. The decision is based on a structured assessment of stroke and bleeding factors rather than on symptoms alone.

Procedures and implanted devices may be appropriate in some cases:

Some rapid rhythms can respond to specific physical actions called vagal maneuvers. These should be taught by a healthcare professional for a diagnosed rhythm. Carotid massage should not be attempted without medical supervision.

Treatment plans may change over time. A procedure can greatly reduce an arrhythmia without removing every future risk. For example, a person treated for atrial fibrillation may still need stroke-prevention decisions based on their overall risk.

- Cardioversion uses medicine or a controlled electrical shock to restore a regular rhythm.
- Catheter ablation guides thin tubes into the heart and treats small areas responsible for abnormal electrical signals.

- A pacemaker monitors the heartbeat and sends electrical impulses when the rate is too slow.
- An implantable cardioverter-defibrillator , or ICD, can treat certain dangerous ventricular rhythms with pacing or a shock.

Complications

Possible complications depend on the type and duration of the arrhythmia and on the health of the heart.

Atrial fibrillation and atrial flutter can increase the risk of an ischemic stroke, which occurs when a clot blocks blood flow to the brain. A rhythm that remains very fast for a prolonged period may weaken the heart and contribute to heart failure.

Slow or fast rhythms can reduce blood flow to the brain, causing fainting and injuries from falls. Certain ventricular arrhythmias can stop the heart from pumping effectively and lead to sudden cardiac arrest. This is different from a heart attack, although a heart attack can trigger it.

Many people with arrhythmias do not develop these complications. Identifying the rhythm and addressing its specific risks helps guide prevention.

Follow up

Follow-up depends on the diagnosis and treatment. Routine visits may be used to review symptoms, check heart rate and blood pressure, assess medicine side effects, and repeat rhythm monitoring. People with a pacemaker or ICD need scheduled device checks.

Keep a current list of medicines and supplements. A symptom log can record the time of an episode, its duration, activity at the time, and associated dizziness, chest discomfort, or breathing difficulty. Bring recordings from a wearable device if available.

Contact the treating clinician promptly if episodes become more frequent or prolonged, symptoms change, or a medicine appears to cause side effects. People taking an anticoagulant should report unusual bleeding and follow instructions for procedures, injuries, and missed doses.

Emergency symptoms remain different from routine follow-up concerns. Seek immediate help for fainting, severe shortness of breath, persistent chest pain or pressure, stroke symptoms, or collapse with abnormal breathing.

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