

Heart Rhythm Problem (Arrhythmia)

Cardiac Dysrhythmia

Pacemaker



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HEART RHYTHM PROBLEM (ARRHYTHMIA)

Key Points

- Arrhythmia is an abnormal rhythm of your heartbeat, such as beating faster or more slowly than normal, or skipping beats.
- Depending on what is causing the heart rhythm problem, you may be treated with medicine or surgery.
- The best way to prevent arrhythmia is to have a heart-healthy lifestyle, and to follow your provider's instructions for treatment of high blood pressure or heart disease.

What is arrhythmia?

Arrhythmia is an abnormal rhythm of your heartbeat. Your heart may beat faster or more slowly than normal, or it may skip beats. This can make it harder for the heart to pump enough blood to your body.

Another term for arrhythmia is dysrhythmia.

What is the cause?

An electrical signal in your heart starts each heartbeat, causing the heart muscle to squeeze (contract). Normally, this signal starts in the upper right chamber of the heart (the right atrium) at a place called the sinus node. The signal then follows normal pathways to the upper left atrium and to the lower chambers of the heart (the ventricles). You may have an abnormal heart rhythm if the electrical signals don't follow the normal pathways or the nerve cells that make the electrical signals don't work right.

Common causes of heart rhythm problems are conditions that damage the heart, like coronary artery disease, heart attack, or heart failure.

Problems with the heart valves are another common cause. The heart has 4 valves that open and close with each heartbeat to help blood flow in the right direction through the heart.

Some other causes of heart rhythm problems include:

- Health problems, such as a stroke, lung disease, diabetes, overactive thyroid gland, or high blood pressure
- Abuse of alcohol or drugs, such as cocaine
- Some medicines, such as cold medicines
- Some natural remedies, such as ephedra, guarana, and licorice

Exercise or emotional stress can make your heart beat faster or skip beats, but this is usually not a cause for concern.

Sometimes no cause for arrhythmia can be found.

What are the different types of arrhythmia?

There are many different types of arrhythmia. The heart may beat very slowly (bradycardia) or very fast (tachycardia). The abnormal rhythm may start in either the upper or the lower heart chambers. The 2 main types of arrhythmia are:

- **Atrial arrhythmia:** The electrical signals don't start in the normal place in the right atrium and don't travel normally. This can cause part or all of the heart to beat very fast and not in a normal pattern. This affects the ability of the heart to pump blood to the rest of the body.
- **Ventricular arrhythmia:** The abnormal rhythm starts in the lower chambers of the heart. The heart beats in a rhythm that may be irregular or very fast. If severe and untreated, it can be life-threatening.

What are the symptoms?

Some arrhythmias do not cause any symptoms, or the symptoms may come and go. Your body may simply adjust to the change in rhythm over time.

When you do have symptoms, they may include:

- Feeling like your heart is beating too fast or too hard or skipping beats or fluttering
- Feeling dizzy or lightheaded
- Fainting
- Feeling tired or weak
- Chest pain
- Shortness of breath

How is it diagnosed?

Your healthcare provider will ask about your symptoms and medical history and examine your heart and lungs. Tests may include:

- An ECG (also called an EKG), which measures and records your heartbeat. You may have an ECG while you are resting or while you exercise on a treadmill. You may also be asked to wear a small portable ECG monitor for a few days or sometimes a couple weeks.
- Blood tests
- Chest X-ray
- An echocardiogram, which uses sound waves (ultrasound) to show the structures of the heart and how well the heart muscle is pumping
- An angiogram, which uses dye injected into an artery and X-rays to look for narrowing or blockages of blood vessels
- An electrophysiology study (EPS), which uses tiny wires put into your heart through your veins to look at the electrical pathways in your heart

How is it treated?

The goal of treatment is to help the heart keep a normal rhythm. The right treatment for you depends on the cause of the arrhythmia, how often you have symptoms, and the severity of your symptoms. If you have no symptoms, or your symptoms are fairly mild, you may not need treatment.

If a health problem like a leaky heart valve or heart failure is causing the arrhythmia, treating the health problem may also treat the arrhythmia. Other possible treatments are:

- Medicine to control the heart rate
- Surgery to:
 - Make small cuts or scars in the heart that will block abnormal electrical pathways (cardiac ablation)
 - Put an electronic device, such as a pacemaker, under the skin in your chest to help control the heartbeat
 - Improve blood flow to the heart if you have coronary artery disease (bypass surgery)

How can I take care of myself?

Follow your healthcare provider's instructions. Ask your provider:

- How and when you will get your test results
- How long it will take to recover
- If there are activities you should avoid and when you can return to your normal activities
- How to take care of yourself at home
- What symptoms or problems you should watch for and what to do if you have them

Make sure you know when you should come back for a checkup. Keep all appointments for provider visits or tests.

How can I help prevent arrhythmia?

The best prevention is to have a heart-healthy lifestyle:

- Keep a healthy weight.
- Eat a healthy diet.
- Stay fit with the right kind of exercise for you.
- Decrease stress.
- Don't smoke.
- Limit your use of alcohol.

Let your healthcare provider know if you have a family history of arrhythmia.

If you have heart disease or high blood pressure, follow your healthcare provider's instructions for treatment.

This content is reviewed periodically and is subject to change as new health information becomes available. The information is intended to inform and educate and is not a replacement for medical evaluation, advice, diagnosis or treatment by a healthcare professional.

CARDIAC DYSRHYTHMIA

What is a cardiac dysrhythmia?

A normal, healthy heart has a regular rhythm and beats between 50 and 100 times per minute.

A cardiac dysrhythmia (also called an arrhythmia) is an abnormal rhythm of your heartbeat. It can be slower or faster than a normal heart rate. It can also be irregular. It can be life-threatening if the heart cannot pump enough oxygen-rich blood to your heart or the rest of your body.

A cardiac dysrhythmia can be caused by many things, including problems with the heart valves, coronary artery disease, heart failure, drug use, and some medicines.

Common types of dysrhythmia include:

- **Atrial fibrillation:** In atrial fibrillation the upper chambers of the heart do not squeeze (contract) in an organized way and are not working with the lower chambers. This affects the ability of the heart to pump blood.
- **Atrial flutter:** In atrial flutter, the upper chambers of the heart beat faster than the lower chambers of the heart, which causes less blood to be pumped to the body.
- **Multifocal atrial tachycardia:** In multifocal atrial tachycardia, too many signals are sent from the upper chambers of the heart to the lower chambers, causing a very fast heart rate.
- **Bradycardia:** In bradycardia, your heart beats very slowly.
- **Paroxysmal supraventricular tachycardia (PSVT):** This is a rapid heart rate that happens off and on and starts in the upper chambers of the heart.
- **Ventricular tachycardia:** The heart's lower chambers beat in a regular rhythm but very fast. This abnormality is usually caused by heart disease. It can sometimes be caused by medicine you are taking. Continuous ventricular tachycardia can be a life threatening condition if not treated right away.
- **Ventricular fibrillation:** The heart muscle quivers and is uncoordinated. This prevents the heart from pumping. This is usually a lethal condition if not treated right away.
- **Various degrees of heart block:**
 - **First-degree heart block:** The electrical signals are only slightly slowed. You may not have symptoms. First-degree heart block is common.
 - **Second-degree heart block:** Some of the electrical signals do not reach your heart's lower chambers. Your heart rate gets slow or irregular. Continuous second degree heart block can be life threatening and needs to be treated right away.
 - **Third-degree block (complete heart block):** The electrical signal from the upper chambers does not reach the lower chambers. The upper and lower chambers do not work together. Your heart may not be able to pump enough blood and oxygen to your brain and the rest of your body. This is usually a lethal condition and needs to be treated away.

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Testing

Testing may include:

- Blood tests to check for the amount of certain proteins in the blood to find out if your heart muscle has been damaged
- Blood tests to check your sodium, potassium, and other electrolyte levels. Electrolytes help control the amount of fluid in your body and the way your muscles, nerves, and other cells work.
- Blood tests to check for medical conditions that may cause a dysrhythmia, such as thyroid disease
- An ECG (also called an EKG or electrocardiogram), which measures and records your heartbeat
- A chest X-ray to check if your heart is bigger than normal and if there is extra fluid or other problems in your lungs
- Ultrasound (echocardiogram) uses sound waves and their echoes passed through your body from a small device that is held against your skin to create pictures of the inside of your heart to look at your heart valves, blood flow, and how well your heart muscle is pumping.
- Heart catheterization (coronary angiogram) is a series of X-rays taken after your healthcare provider injects contrast dye into your blood vessels to look for areas where the contrast dye may be leaking out of a blood vessel or blocked blood vessels.
- Stress test is an ECG while you exercise on a treadmill. If you are unable to exercise, you will be given a medicine that increases the work of your heart in order to measure your heart's response. This test will help your provider decide what treatments and physical activities are best for you or may be needed in the future.
- Electrophysiology studies uses small tubes called catheters inserted into a blood vessel and up into your heart to check the electrical signals and pathways in your heart.
- MRI, which uses a strong magnetic field and radio waves to show detailed pictures of the heart

Treatment

Medication

- Help control your heart rate, reduce blood pressure, and reduce the workload of the heart
- Help the heart to beat normally
- Prevent blood clots

Procedures

- Ablation surgery: A procedure in which your healthcare provider places a long, thin, flexible tube (catheter) into a blood vessel in your groin and up to your heart and uses electrical pulses to scar small areas of heart tissue. This causes the electrical activity of the heart to take a different path around the scars and to change the heartbeat to a normal rhythm.
- Artificial pacemaker implantation: Surgery to place a device under your skin with small wires to your heart to help the heart maintain a regular beat. It is commonly used when your heart beats too slow.

PACEMAKER

What is a pacemaker?

Every normal heartbeat starts in a group of special pacemaker cells in the upper right chamber of the heart. These cells send a regular electrical signal that causes the heart to contract (squeeze) and push blood into other parts of the heart and out to the body. When the heart cannot beat regularly because of a problem with the electrical signal or damage to the heart, a pacemaker may be needed.

A pacemaker is a small battery-powered device that helps your heart beat in a normal rhythm. The pacemaker device is placed under the skin in your chest or belly. You will be able to feel the device under your skin. It's about the size of a large watch. The pacemaker is attached to wires that deliver electrical signals to your heart. Your healthcare provider sets it to check your heart rhythm and send electrical signals to your heart, if needed. The electric signals cause your heart to beat in a regular pattern. You will not feel the electrical rhythm that is generated by the pacemaker.

The pacemaker runs on battery, and the battery will need to be replaced regularly as determined by your healthcare provider.

How is a pacemaker insertion done?

Before the procedure:

- Your healthcare provider will ask you to sign a consent form for the procedure. The consent form will state the reason you are having the procedure, what happens during the procedure, and what you may expect afterward.
- There is risk with every treatment or procedure. Talk to your healthcare provider for complete information about whether any of these risks apply to you:
 - Anesthesia problems
 - Bleeding
 - Blood clots
 - Infection
- Tell your healthcare provider if you have any food, medicine, or other allergies such as latex.
- Tell your healthcare provider if you are taking any medicines, including nonprescription drugs, herbal remedies, or recreational or illegal drugs.
- You will have a small tube (IV catheter) inserted into a vein in your hand or arm. This will allow medicine to be given directly into your blood and to give you fluids, if needed.

During the procedure:

- You may be given a sedative through your IV to help you to relax.
- You will be given medicines to prevent pain during your surgery. These may include:
 - Local anesthesia, which numbs the area where the pacemaker will be inserted

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- General anesthesia, which relaxes your muscles and puts you into a deep sleep. It also keeps you from remembering the operation. While you are asleep, you will have a tube in your throat to help you breathe and to make sure you are getting enough oxygen. The tube may be removed before you wake up after the surgery.
- The doctor will use a needle to insert the pacemaker leads into a large blood vessel in your upper chest and then thread them into the heart. The provider will use a type of X-ray to guide the leads to the right place in your heart.
- The doctor will connect the leads to the pacemaker and test that the leads are in the right place.
- The doctor will make a cut in the upper chest or abdomen to insert the pacemaker just under the skin.
- The cut will be stitched closed.

After the procedure:

- You may stay in the hospital for a few hours or several days to recover, depending on your condition.
- While you are in the hospital, you will be checked often by nursing staff.
- There will be a dressing on the pacemaker insertion site. The dressing will be checked and changed by your provider or the nursing staff as needed.
- Your provider may prescribe medicine to:
 - Treat pain
 - Treat or prevent an infection
 - Help prevent blood clots
 - Control cholesterol levels
 - Reduce fluid build-up and swelling in the body
- Your provider may recommend other types of therapy to help relieve pain, other symptoms, or side effects of treatment.
- Your blood oxygen level may be monitored by a sensor that is attached to your finger or earlobe.
- A cardiac (heart) monitor will be used to keep track of your heart rate and rhythm.

What can I do to help?

- You will need to tell your healthcare team if you have new or worsening:
 - Chest pain or pressure, squeezing, or fullness in the center of your chest that lasts more than few minutes, or goes away and comes back (may feel like indigestion or heartburn)
 - Pain or discomfort in one or both arms or shoulders, or in your back, neck, jaw, or stomach
 - Trouble breathing
 - Breaking out in a cold sweat for no known reason

- If your provider has prescribed nitroglycerin for angina, pain that does not go away after taking your nitroglycerin as directed
 - Along with the previous symptoms, feeling very tired, faint, or sick to your stomach.
 - Dizziness or lightheadedness
 - Feeling like your heart is beating too fast, too slow, or skipping beats
 - Redness, swelling, pain, warmth, or drainage from your surgical wound
 - Fever, chills, or muscle aches
 - Swelling of your legs, ankles, or feet
 - Trouble breathing
- Ask questions about any medicine, treatment, or information that you do not understand.

How long will I be in the hospital?

How long you stay in the hospital depends on many factors. The average amount of time to stay in the hospital for a pacemaker procedure is 4 to 5 days.

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