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Sick sinus syndrome

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Overview

Sick sinus syndrome is the inability of the heart's natural pacemaker (sinus node) to create a heart rate that's appropriate for the body's needs. It causes irregular heart rhythms (arrhythmias). Sick sinus syndrome is also known as sinus node dysfunction or sinus node disease.

The sinus node is an area of specialized cells in the upper right chamber of the heart. This area controls your heartbeat. Normally, the sinus node creates a steady pace of electrical impulses. The pace changes depending on your activity, emotions, rest and other factors.

In sick sinus syndrome, the electrical signals are abnormally paced. Your heartbeat can be too fast, too slow, interrupted by long pauses — or an alternating combination of these rhythm problems. Sick sinus

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syndrome is relatively uncommon, but the risk of developing it increases with age.

Many people with sick sinus syndrome eventually need a pacemaker to keep the heart in a regular rhythm.

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Symptoms

Most people with sick sinus syndrome have few or no symptoms. Symptoms may be mild or come and go — making them difficult to recognize at first.

Signs and symptoms of sick sinus syndrome may include:

- Fatigue
- Dizziness or lightheadedness
- Fainting or near fainting
- Shortness of breath
- Chest pain or discomfort
- Confusion
- Slower than normal pulse (bradycardia)
- A sensation of rapid, fluttering heartbeats (palpitations)

When to see a doctor

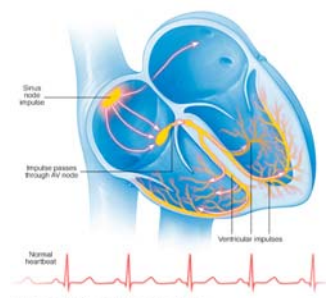
Talk to your doctor if you have any signs or symptoms of sick sinus syndrome. Many medical conditions can cause these problems, and it's important to get a timely and accurate diagnosis.

If you have new or unexplained chest pain or suspect you're having a heart attack, call for emergency medical help immediately.

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Causes

Your heart is made up of four chambers — two upper (atria) and two lower (ventricles). The rhythm of your heart is normally controlled by the sinus node, an area of specialized cells in the right upper heart chamber (atrium).



This natural pacemaker produces electrical signals that trigger each heartbeat. From the sinus node, electrical signals travel across the atria to the ventricles, causing them to contract and pump blood to your lungs and body.

Normal heartbeat

If you have sick sinus syndrome, your sinus node isn't working properly, causing your heart rate to be too slow (bradycardia), too fast (tachycardia) or irregular.

Problems of the sinus node include the following:

- **Sinus bradycardia.** The sinus node produces an electrical charge at a slower rate than normal.
- **Sinus arrest.** Signals from the sinus node pause, causing skipped beats.
- **Sinoatrial exit block.** Signals to the upper heart chambers are slowed or blocked, causing a pause or skipped beats.
- **Chronotropic incompetence.** The heart rate is normal at rest, but doesn't increase with physical activity.
- **Bradycardia-tachycardia syndrome.** The heart rate alternates between abnormally slow and fast rhythms, usually with a long pause (asystole) between heartbeats.

What makes the sinus node misfire?

Abnormalities of the sinus node may be caused by the following:

- Age-related wear and tear of heart tissues
- Heart disease
- Inflammatory diseases affecting the heart
- Damage to the sinus node or scarring from heart surgery
- Medications to treat high blood pressure, including calcium channel blockers and beta blockers
- Drugs to treat irregular heartbeats (arrhythmias)
- Some Alzheimer's disease medications
- Neuromuscular diseases, such as muscular dystrophy
- Obstructive sleep apnea
- Rare genetic mutations

Risk factors

Sick sinus syndrome can occur at any age, but it's most common in people in their 70s or older. Common heart disease risk factors may increase the risk of sick sinus syndrome:

- High blood pressure
- High cholesterol
- Excess body weight
- Lack of exercise

Complications

When your heart's natural pacemaker isn't working properly, your heart can't work as well as it should. This can lead to:

- Atrial fibrillation, a chaotic rhythm of the upper chambers of the heart
- Heart failure
- Stroke

- Cardiac arrest

By Mayo Clinic Staff

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