



OSU Ross Heart Hospital is a nationally recognized leader in heart care and heart surgery. Learn how these services and more can help you achieve heart health.

Call **(800) 293-5123** today for more information or visit [medicalcenter.osu.edu/go/heart](http://medicalcenter.osu.edu/go/heart)

## Cardiac Arrhythmia

An arrhythmia (also referred to as dysrhythmia) is an abnormal rhythm of the heart, which can cause the heart to pump less effectively. Arrhythmias can cause problems with contractions of the heart chambers by:

- Not allowing the chambers to fill with an adequate amount of blood because the electrical signal is causing the heart to pump too fast
- Not allowing a sufficient amount of blood to be pumped out to the body because the electrical signal is causing the heart to pump too slowly or too irregularly

In either of these situations, the body may not receive enough blood because the heart cannot pump out an adequate amount with each beat as a result of the arrhythmia's effects on the heart rate.

### Symptoms of Arrhythmia

The effects on the body are often the same whether the heartbeat is too fast, too slow, or too irregular. Some symptoms of arrhythmias include, but are not limited to:

- weakness
- fatigue
- palpitations

The symptoms of arrhythmias may resemble other conditions. Consult your physician for a diagnosis.

### Types of Arrhythmia

- An **atrial arrhythmia** is caused by a dysfunction of the sinus node, the heart's natural pacemaker or the development of another pacemaker within the upper chamber, called the atrium that takes over the function of the sinus node.
- A **ventricular arrhythmia** originates from the ventricle, or lower chamber, and takes over for the natural pacemaker. Ventricular arrhythmias can be life threatening, and immediate medical attention should be sought. Arrhythmias can also be classified as slow (bradyarrhythmia) or fast (tachyarrhythmia).
- **Atrial fibrillation** is a condition in which the electrical signals come from the atria at a very fast and erratic rate. The ventricles contract in a correspondingly erratic manner because of the erratic signals coming from the atria. Atrial fibrillation is the most common sustained heart rhythm disorder. About 2.2 million Americans are currently diagnosed; the number is expected to double in the next 30 years.

## Health Risks of Atrial Fibrillation

Atrial fibrillation is associated with a wide range of symptoms. Some patients experience only a slight decline in endurance, but otherwise have a fairly normal level of daily activity. Most individuals with permanent atrial fibrillation, however, endure more incapacitating symptoms, including palpitations, shortness of breath and significant intolerance of exercise. Over time, chronic atrial fibrillation leads to permanent changes in the heart. These changes not only diminish the effectiveness of medicines prescribed for atrial fibrillation, and uncontrolled atrial fibrillation may lead to heart failure. Atrial fibrillation also increases a patient's risk of stroke.

## Treatment Strategies

Restoration of the heart's rhythm is the ultimate goal of all atrial fibrillation treatment. Control of heart rate and prevention of strokes are important secondary goals. Ohio State University Medical Center offers medical, catheter and surgical based treatments for atrial fibrillation. Our physicians work closely with every patient to create individualized treatment plans.

## Medication

In its earliest stages, medications are the best treatments of atrial fibrillation. Antiarrhythmic drugs are used to convert arrhythmias to normal rhythms. Other medications include heart-rate control drugs and drugs to reduce the risk of blood clots and stroke. The long-term effectiveness of medical therapy alone is 30 percent after two years, but a significant number of patients suffer from side effects that may impact the long-term safety of antiarrhythmia medication.

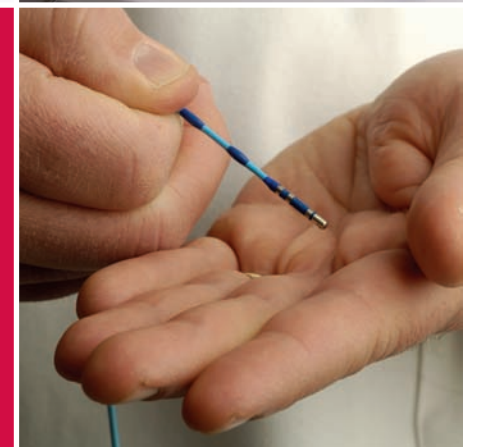
## Catheter Based Anti-Arrhythmia Procedures

Ohio State's Richard M. Ross Heart Hospital cardiologists can electrically isolate some of the areas in the atria that initiate atrial fibrillation, called left atrial ablation, with pulmonary vein isolation. Ablation is a technique to permanently eliminate electrical short-circuits using energy in the radiowave frequency. The current is delivered through the tip of the catheter to create a precise lesion or scar tissue. Ablation of the area around the pulmonary veins results in scarring that electrically isolates the pulmonary veins at the junction of the left atrium, a common origin of atrial fibrillation. The procedure is performed in the cath lab using an ablation catheter.

The next generation of catheter-based care, called the Stereotaxis Magnetic Navigation System, provides precise control for ablation procedures not found in other equipment. Ohio State's Ross Heart Hospital is the only central Ohio hospital to offer this treatment option (see box).

## Surgical Interventions

The OSU Richard M. Ross Heart Hospital is the only central Ohio hospital to use a minimallyinvasive thorascopic procedure combined with real-time, intraoperative mapping technology to identify abnormal electrical pathways in the heart and ensure that all sources of irregular heartbeat are treated. This procedure is performed with three tiny incisions on each side of the chest through the use of thoracoscopic techniques. The operation is highly effective for patients with either intermittent or chronic atrial fibrillation. The minimally invasive approach allows for rapid discharge from the hospital, typically on the second postoperative morning.



## The Next Generation of Catheter-based Treatments

*The Stereotaxis Magnetic Navigation System uses magnet-guided catheter therapy aimed at curing arrhythmias. Here's how it works:*

- Two powerful magnets, encased on pivoting arms on either side of the patient, offer electrophysiologists ultra-precise catheter control regardless of the distance or complexity of the path traveled through the blood vessels and heart.
- The flexible-tipped catheter instrumentation uses "gentle touch" technology (verses a stiff catheter) for soft and consistent tissue contact that is safer for the patient.
- Our physicians control the whole process with user-friendly joystick technology (verses manually) and high-resolution digital imagery.
- This magnet-guided ablation technique, which inactivates the source of the rhythm abnormality, gives our electrophysiologists and patients greater ability to choose personalized treatments.