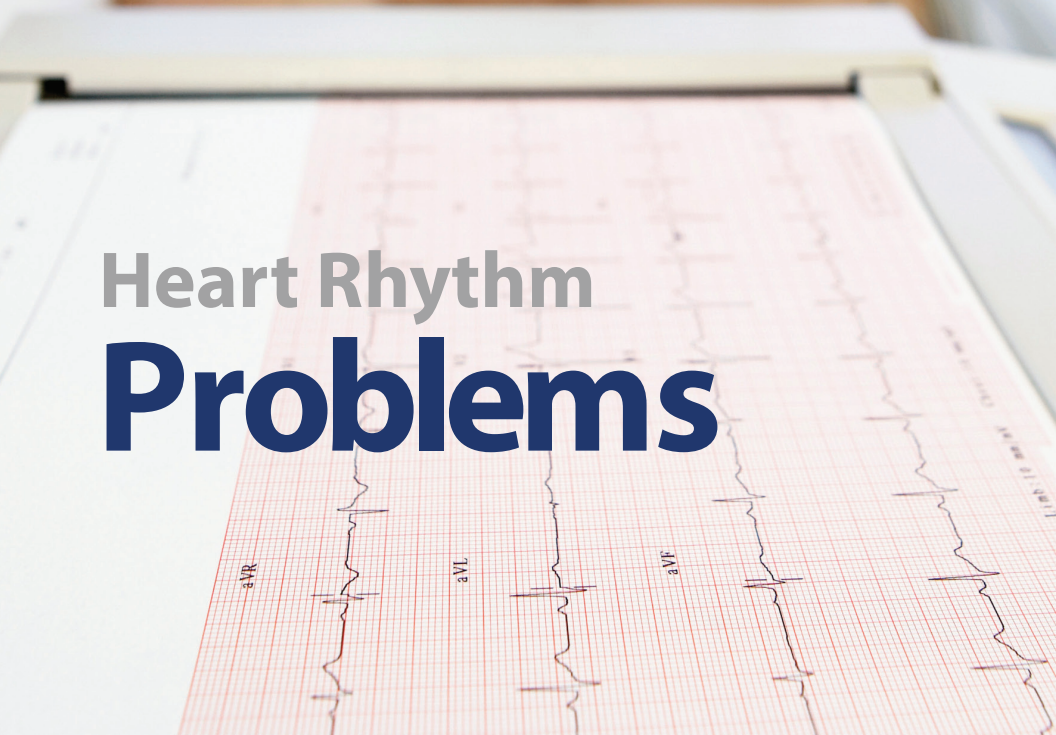




Heart Rhythm **Problems**



Taking Control of Heart Failure

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The Heart Failure Society of America (HFSA) is a non-profit organization of healthcare professionals and researchers who are dedicated to enhancing quality and duration of life for patients with heart failure and preventing the condition in those at risk. HFSA developed these education modules to help patients, their families, and individuals at risk for heart failure understand and cope with the disease. For more information about the HFSA, please visit our website at www.hfsa.org

This booklet was developed under the direction of the Heart Failure Society of America. The booklet is designed as an aid to patients/physicians and sets forth current information and opinions on the subject of heart failure. The information in this booklet does not dictate an exclusive regimen of treatments or procedures to be followed and should not be construed as excluding other acceptable methods of practice. Variations taking into account the needs of the individual patient, resources, and limitations unique to the institution or type of practice may be appropriate.

Know Who to Contact

Please write down important contact information in the space below. You may also want to share this information with family members and friends.

Healthcare Provider Treating Me for Heart Failure:

Name _____

Address _____

City _____ State _____ ZIP _____

Phone _____

Fax _____

E-mail _____

Other Important Phone Numbers:

Ambulance, fire department, or emergency services: 911

Pharmacy _____

Other healthcare providers:

Introduction to Heart Rhythms

How the Heart Beats

The heart has an electrical system that causes it to beat and pump blood. During a normal heartbeat, an electrical signal starts in a small group of cells called the sinus node in the upper chambers of your heart. This node tells your heart when to beat. The electrical signal then spreads throughout the upper chambers of your heart called the atria to another group of cells called the atrioventricular (AV) node. The AV node conducts the signal between the upper and lower chambers of your heart. Finally, the electrical signal travels to the ventricles or lower chambers of your heart. A pulse occurs each time your heart beats and pumps blood.

Normally, your heart beats in a regular and coordinated way, like a clock. However, many people with heart failure may have a heart that beats irregularly, too fast or too slow. These rhythm changes are often referred to as arrhythmias or dysrhythmias. Sometimes they are benign, which means these rhythm problems do not cause problems and are not related to a known heart abnormality.



However, arrhythmias may also be due to changes in the shape of your heart from heart failure. Or a previous condition such as heart attack or long-standing high blood pressure may also cause arrhythmia. Under these circumstances, arrhythmias may be dangerous and are important to understand and treat. With proper treatment and self-care, even with heart failure, you can lead a normal, active life even if you also have a heart rhythm problem.



Taking Control of Heart Failure

Why Heart Rhythm Problems Happen

You may develop a heart rhythm problem if any part of this electrical system is damaged. For example, a rhythm problem may occur if an irritable heart cell starts a beat early, or if the electrical signal takes a detour through a part of your heart where a signal doesn't normally travel. Similarly, a problem in the AV node can cause a rhythm problem by blocking the electrical signals instead of allowing them through to the lower chambers of your heart.

Diagnosis

Tests are available to see how your heart is working. An electrocardiogram (ECG) is one test that can show the electrical activity of your heart on a computer screen and can be printed on paper for your doctor to evaluate.

This module will provide basic information about:

- Types of heart rhythm problems
- Diagnosis, treatment, and prevention of heart rhythm problems
- What your family and friends should know about heart rhythm problems

This module will help you:

- Recognize the symptoms of heart rhythm problems
- Understand what happens to the heart during different rhythm problems
- Learn about the medicines and devices used to treat heart rhythm problems
- Learn what you can do to reduce your risk of heart rhythm problems



Symptoms of Heart Rhythm Problems

You may not know if you have a heart rhythm problem. Many heart rhythm problems are minor and harmless. Even people with healthy hearts have heart rhythm disturbances from time to time. However, if you have heart failure, heart rhythm problems can be serious and make heart failure worse if you are not treated. Be alert to symptoms that may be caused by heart rhythm problems including:

- Skipped heart beats
- A fluttering or pounding feeling in the chest
- Feeling dizzy or light-headed
- Sudden shortness of breath
- Periodic weakness
- Fainting or sudden loss of consciousness

These symptoms may happen because your heart is beating irregularly, too fast or too slow. Let your doctor or nurse know if you experience any of these symptoms.

Taking Control of Heart Failure

Types of Heart Rhythm Problems

There are many types of heart rhythm problems. In general, they can be described as:

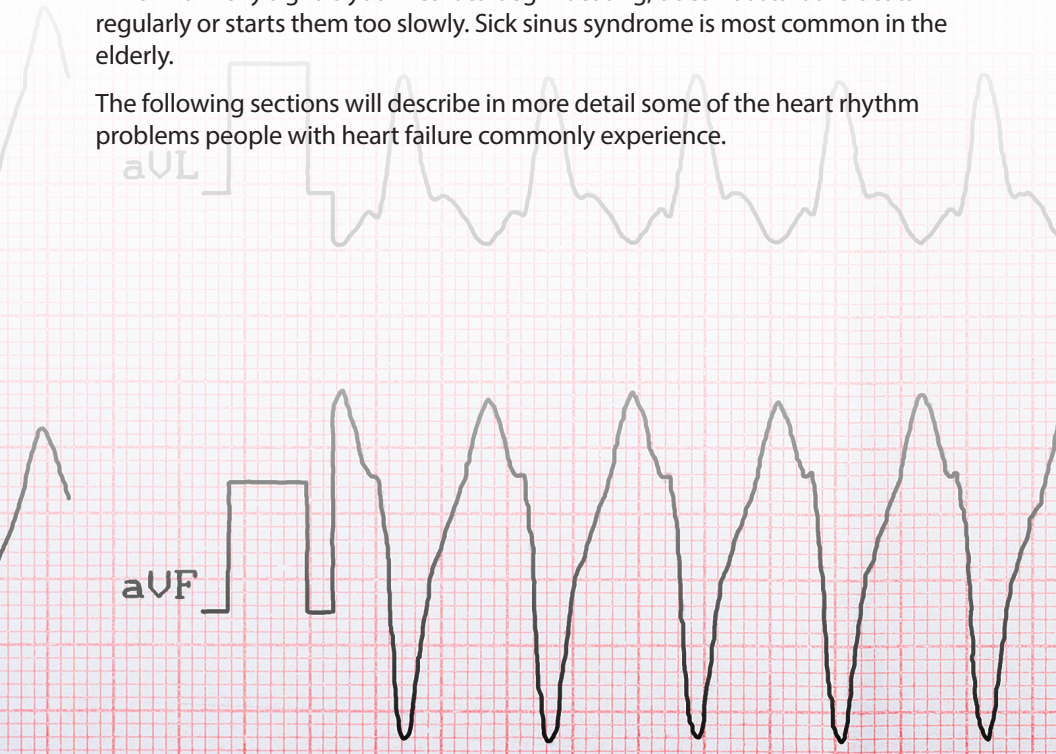
- Irregular
- Too fast (also known as tachyarrhythmia)
- Too slow (also known as bradyarrhythmia)

Two common reasons that an irregular heart rhythm may occur if you have heart failure:

1. Extra heartbeats cause the heart to beat earlier than normal. These extra heartbeats are referred to as premature atrial complexes (PACs) or premature ventricular complexes (PVCs) if they start in the upper (atria) chambers of your heart. If extra heartbeats start in the lower (ventricles) chambers of your heart, we call them premature ventricular complexes (PVCs).

2. An irregular heart rhythm can also be caused by conditions called sinus pause, sinus arrest, or sick sinus syndrome. In these conditions, the sinus node, which normally signals your heart to begin beating, does not start the beats regularly or starts them too slowly. Sick sinus syndrome is most common in the elderly.

The following sections will describe in more detail some of the heart rhythm problems people with heart failure commonly experience.



Atrial Fibrillation

Atrial fibrillation is an irregular and often a rapid heart rhythm in the upper chambers of the heart. It occurs when many electrical impulses are generated signaling your heart to beat instead of the single impulse in the sinus node that usually starts the beat.

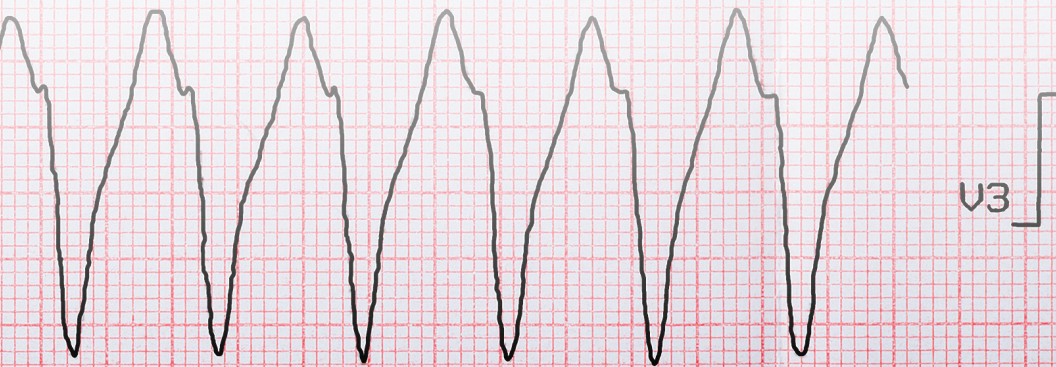
Atrial fibrillation is the most common heart rhythm abnormality in the general population and is also very common in people with heart failure. It can come and go, or you can have this rhythm all of the time. Blood is still being pumped from the upper to lower heart chambers when someone is having atrial fibrillation but not as efficiently as it normally does. Some blood can even stand still in the upper chambers of your heart, and this can lead to the formation of blood clots, which can cause a stroke. A stroke is the blockage of blood vessels in the brain, which can cause speech problems, weakness, and loss of memory. Anticoagulant medicines (commonly called blood thinners) are often prescribed for people with atrial fibrillation to help reduce the chance of a stroke. You can find more information on anticoagulant medications on page 17 and in [Module 3: Heart Failure Medications](#).

Atrial Flutter

Atrial flutter is a similar heart rhythm to atrial fibrillation, but may be somewhat less irregular and may respond better to certain types of therapy.

Supraventricular Tachycardia

Supraventricular tachycardia is a fast heart rhythm that starts in the upper chambers of your heart. Several early, regular, beats that start in the upper chambers of the heart can take over the heart rhythm and speed it up. This rhythm is sometimes called paroxysmal atrial tachycardia (PAT). Paroxysmal means “starting suddenly.”



Taking Control of Heart Failure

Ventricular Tachycardia

Ventricular tachycardia is a rapid heart rhythm that involves the lower chamber of your heart. This rhythm problem can become life threatening if it lasts a long period of time. Urgent treatment is necessary to get your heart back in rhythm to prevent complications. If you have had a heart attack or other changes in your heart muscle (such as heart failure), you are at risk of developing this type of rhythm problem.

Ventricular Fibrillation

Ventricular fibrillation is an irregular and rapid heart rhythm that results in a chaotic, uncoordinated quivering in the lower chambers of your heart. This is the most serious heart rhythm problem, because no blood is pumped out of the heart during this rhythm disturbance. Ventricular fibrillation causes loss of consciousness and leads to sudden death unless a normal rhythm is restored. Immediate cardiopulmonary resuscitation (CPR) and/or a defibrillation shock to your heart can restore a normal rhythm. This is why your friends and family members are encouraged to learn CPR and know emergency contact procedures if you have heart problems.

For information on where you or family members can learn CPR please refer to this website: cpr.heart.org

Slow Heart Rhythms

Heart Block

Heart block occurs when electrical signals from the upper chambers of your heart cannot travel to the lower chambers of your heart along the normal pathway because of damage to the AV node. Depending on the level of heart block, the electrical impulses that cause your heart to beat may be slowed or partially blocked. If you have a very slow heartbeat, you may experience fatigue and/or dizziness or you could lose consciousness, depending on the severity.



Taking Control of Heart Failure

Diagnosing Heart Rhythm Problems

Tests are available to help your doctor evaluate your heart rhythm problem and guide your care. Commonly used tests are described as follows:

Electrocardiogram (ECG)

An ECG is a simple way to record the electrical activity of your heart. To record an ECG, adhesive electrodes (or patches) are placed on your chest, arms, and legs. The patches are attached to wires and connected to a machine that records the electrical activity of your heart on graph paper.

You cannot feel anything during this test and it is safe and does not hurt.

Clinicians perform this test in one of three ways, depending on the type of information needed:

- A regular ECG is done while you are resting
- An exercise ECG is done while you are walking on a moving treadmill. This test allows a doctor to check the electrical activity and how much oxygen is getting to the heart while your heart rate is increased. You may get tired from exercising during the test.
- A signal-averaged ECG is a special way of recording an ECG that allows the doctor to enlarge certain parts of the electrical tracing to better evaluate your risk of developing a serious heart rhythm problem.



Holter Monitor

A Holter monitor is a small portable device used to make a recording of an ECG over a longer period of time. It helps pick up rhythm problems that can occur during normal daily activities and might not be detected on an ECG done for a short time in the doctor's office.

To make a Holter recording, electrodes (adhesive patches) are attached to your body and to a small portable monitor. You are asked to wear the monitor for 24 to 48 hours and to keep a diary of your symptoms. After the test is done, the tape is sent to a lab for analysis. Your symptoms are also compared to the recorded ECG. A Holter test is painless, but you may find the monitor bothersome to wear even though it is very lightweight.

Tilt Table

A tilt table test involves monitoring your ECG and blood pressure while you lie on a bed. The bed is tilted up and down during the test. Your head is up, and your feet rest on a footboard. The test allows a doctor to evaluate how your heart rhythm and blood pressure respond to position changes. Sometimes, medicines are given through a needle in the vein during the test. You are asked to report any symptoms you experience during the test, such as light-headedness.

Electrophysiology (EP) Study

An EP study is a test in which special catheters (thin insulated wires) are inserted into a blood vessel and guided into your heart to record its electrical activity. A doctor specializing in heart rhythm problems called an electrophysiologist performs the test. An EP study is done in the hospital electrophysiology laboratory. You may be an outpatient or an inpatient in the hospital for this test. During an EP study, the doctor will try to stimulate a heart rhythm problem in a controlled way to pinpoint its starting location in your heart and evaluate how you respond to the abnormal rhythm. It also allows the doctor to test the effect of certain medicines on the abnormal rhythm.

You are slightly sedated during an EP test. You receive medicine to numb the site where the catheter is inserted and receive sedatives to help you feel more comfortable during the test. After the test, the catheters are removed, and pressure is applied to the catheter insertion site to prevent bleeding. You are then monitored in the hospital and usually discharged the same day. You may experience some discomfort from the needle insertion, but the test is usually fairly short and painless.

Taking Control of Heart Failure

Treatment of Abnormal Heart Rhythms

After your heart rhythm problem has been diagnosed, your doctor will develop a treatment plan that is right for you. Your treatment plan depends on the type of heart rhythm problem and your symptoms. You may be treated using medicine, surgery, and/or an implantable device. Treatments for heart rhythm problems are described in more detail in the following section.

Procedures

Cardioversion

Cardioversion is a procedure in which an electrical shock is used to restore your normal heart rhythm. Cardioversion is done in the hospital. A defibrillation shock is carefully delivered through pads applied to your chest while your ECG is monitored. You receive medicine to make you feel drowsy before the cardioversion procedure, so you are less likely to feel the shock.

Catheter Ablation

Catheter ablation is a procedure used to correct some types of rhythm problems that cause the heart to beat too fast. It is performed in the electrophysiology laboratory using techniques similar to those used in an EP study. First a catheter is used to pinpoint the area of your heart where an abnormal pathway is causing a rhythm problem. An electrode is then used to destroy the small spot in your heart that is causing the rhythm problem.

Implantable Devices

In some patients with a heart rhythm problem, an implantable device can be used to automatically monitor and correct a rhythm that is irregular or too fast or too slow. Clinicians program the device to read your heart's rhythm all the time. It can correct rhythm problems using either small painless electrical impulses or a defibrillation shock as needed.

Implantable devices used in heart failure patients include pacemakers, implantable cardioverter defibrillators (ICDs), or combination devices. The devices look like a small metal disk and contain computer circuits and a battery. Lead wires connect devices to your heart. The devices are about the size of a small pocket watch, and may be even smaller in the future.

A device is usually implanted on an outpatient basis using local pain medications at the insertion site. If you have an implantable device, you must still take medicines as directed and follow self-care recommendations. You must also have your device checked regularly and follow recommendations regarding your daily activities and work. There may also be restrictions on driving.

Pacemakers

A pacemaker is used primarily to treat a very slow heart rate. This device monitors your heart rate and sends small and painless electrical impulses to start each heartbeat as needed. Pacemakers today are small and do not change your appearance.

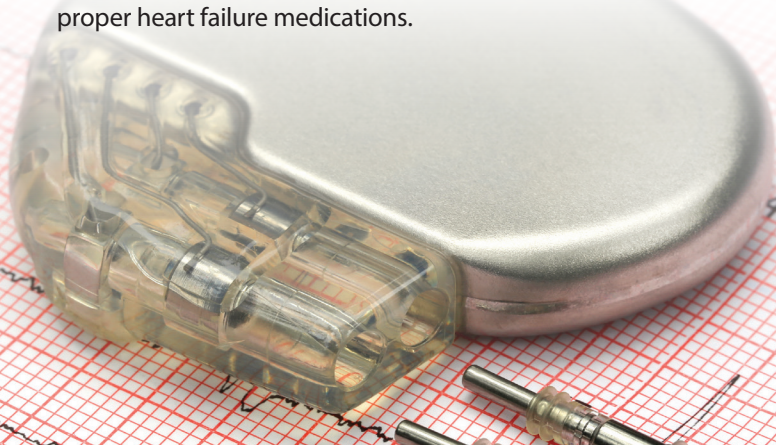
Implantable Cardioverter Defibrillator (ICD)

An ICD delivers painless pacing impulses or a more noticeable defibrillation shock if pacing impulses do not work. So, an ICD can stop heart rates that are too fast and restore your normal rhythm by delivering painless pacing impulses or a more noticeable defibrillation shock if pacing impulses do not work. ICDs are used if you are considered to be at higher risk for having serious rhythm problems in the lower chambers of your heart such as ventricular tachycardia and/or ventricular fibrillation.

Other Heart Failure Devices

In some people with heart failure, conduction through the heart is slowed, and the electrical impulse that signals one or both of your heart's lower chambers (ventricles) to beat may be delayed. As a result, your heart may beat in an uncoordinated way. A special type of pacemaker can help coordinate your heart's pumping action. This type of therapy may be called biventricular pacing or cardiac resynchronization therapy (CRT). These pacemakers send impulses to both the right and left sides of your heart in an attempt to coordinate the pumping action of the heart muscle. Some of these heart failure pacemakers also contain an ICD. These devices are currently reserved for patients who continue to have symptoms even though you are taking your medicines as prescribed.

Your doctor can determine if an implantable device is right for you by performing an ECG and an echocardiogram (echo) and determining if you are on the proper heart failure medications.



Taking Control of Heart Failure



Medications

Antiarrhythmia Medications

Many medications can be used to control heart rhythm problems. These medicines are called antiarrhythmics. If you are started on one of these medications, regular monitoring with an ECG is necessary to make sure your heart is staying in rhythm. Blood tests are also necessary to monitor for side effects. There are many antiarrhythmia medications and your doctor will determine which one is best for you.

Some antiarrhythmia medications can be dangerous for patients with heart failure and should be avoided. Your healthcare providers will help choose the most effective and safest medication for you. They will also recommend the appropriate follow up testing. It is important that you take antiarrhythmia medications as prescribed, and not stop them without contacting your physician.

Anticoagulants

People with atrial fibrillation need to take anticoagulant medicines (blood thinners) to help prevent blood clots and decrease the risk of stroke. If you have heart failure, you (and your family) should receive specific instructions about caring for yourself while on a blood thinner. You should also be monitored carefully by a doctor, nurse, or pharmacist. A number of new blood thinners have become available over the years. Although these new medications require less frequent monitoring, you should still be seen regularly by a healthcare provider to make sure you are not having adverse effects.

If you take a blood thinner, you should:

- Take the medicine exactly as prescribed
- Call your anticoagulation clinic for directions about what to do if you miss a dose
- Keep all appointments for checking your blood clotting ability
- Notify your doctor or nurse of any bruising or bleeding
- If you take warfarin, keep the amount of green vegetables in your diet consistent. If you dramatically change your intake of these foods, which are high in vitamin K, it can cause unwanted fluctuations in the effect of blood thinners
- Tell your dentist and other healthcare providers you are taking a blood thinner
- Tell your anticoagulation clinic provider if you are taking herbal supplements

Taking Control of Heart Failure



Activities That May Aggravate an Abnormal Heart Rhythm

A number of factors may aggravate heart rhythm problems including:

- Drug interactions, including over-the-counter medications such as cough or cold medicines
- Abnormal blood chemistry levels such as potassium
- Exercising too vigorously

You may be able to minimize heart rhythm problems by:

- Making sure to ask your doctor or nurse before taking over-the-counter remedies, including nutritional supplements
- Reporting symptoms of muscle cramps, nausea and/or vomiting, unusual fatigue, weakness, or dry mouth, as these may be signs of potassium imbalance
- Drinking less alcohol
- Quitting smoking
- Consulting with your doctor or nurse about an exercise regimen
- Taking all of your medicines as directed

Sometimes heart rhythm problems are caused by other illnesses. For example, if you get sick with a stomach problem and have vomiting or diarrhea, it is important to replace the normal electrolytes that are lost. Your heart's electrical system needs electrolytes such as potassium to work properly. So it is important to notify your doctor or nurse if you have these illnesses and experience the symptoms of a heart rhythm problem listed on page 7.

Taking Control of Heart Failure

Educating your Family and Friends

Family and friends can help by learning about your heart rhythm problem. They can also monitor for symptoms and assist in seeking help when needed.

For example, friends and family should know:

- Which symptoms are expected and which ones indicate a need for help
- How to access the emergency medical system (911)
- Your wishes for advanced life support in the event you have a cardiac arrest
- CPR, if possible (visit www.cpr.heart.org)

Refer to **Module 7: Tips for Family and Friends** and **Module 9: Advance Care Planning** for additional information on how family members can help a person with heart failure.





Questions for your Healthcare Professionals

Do I have a heart rhythm problem?

Reason for asking this question: Heart rhythm problems are common in people with heart failure. Knowing your risk can help you take better care of yourself, take steps to reduce heart rhythm problems, develop a plan for emergency care, and stick to your overall self-care plan. It can also help family and friends provide the best support.

Is my heart rhythm problem under control?

Reason for asking this question: Heart rhythm problems can worsen heart failure. Your doctor can determine your risk for these problems and the best approaches for prevention and treatment.

Should I take an anticoagulant?

Reason for asking this question: Certain heart rhythm problems (specifically atrial fibrillation) can increase your risk of stroke. Anticoagulant medications will help reduce this risk.

Taking Control of Heart Failure

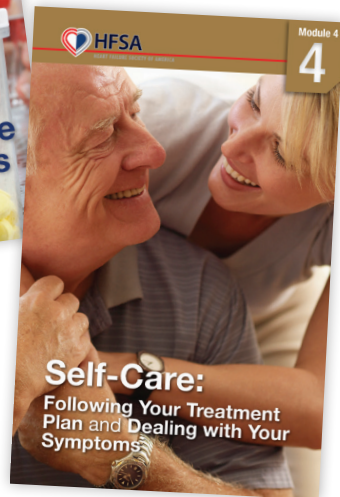
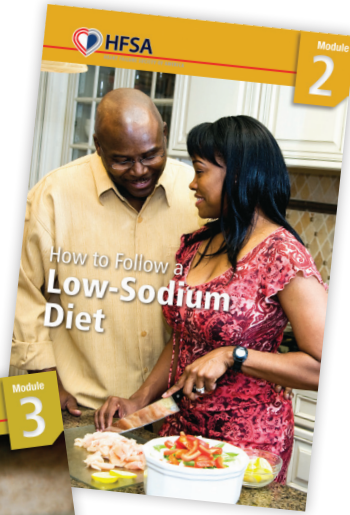
Learn more about Heart Failure, Treatment, and Self-Management

You can learn more about how to take control of your heart failure by reading the other modules in this series. You can get copies of these modules from your doctor or nurse. Or you can visit the Heart Failure Society of America website at www.hfsa.org

The topics covered in the other modules include:

- Introduction: Taking Control of Heart Failure
- How to Follow a Low-Sodium Diet
- Heart Failure Medications
- Self-Care: Following your Treatment Plan and Dealing with your Symptoms
- Exercise and Activity
- Managing Feelings about Heart Failure
- Tips for Family and Friends
- Lifestyle Changes: Managing other Chronic Conditions
- Advance Care Planning
- How to Evaluate Claims of New Heart Failure Treatments and Cures

These modules are not intended to replace regular medical care. You should see your doctor or nurse regularly. The information in these modules can help you work better with your healthcare provider.



About the Heart Failure Society of America, Inc.

In the spring of 1994, a small group of academic cardiologists gathered in New York to discuss the formation of a society that would focus on heart failure. This group had long recognized that the disease was on the rise; yet there was no venue for researchers, trainees, and clinicians to gather to discuss new treatments, research results, and the rise in healthcare costs associated with heart failure. A society dedicated to heart failure would bring together healthcare professionals, including researchers, physicians, nurses and other allied healthcare professionals, to learn more about the mechanisms of the disease, how best to treat patients, play a role in reducing healthcare costs, etc. The meeting led to the incorporation of the Heart Failure Society of America, Inc.

The Heart Failure Society of America, Inc. (HFSA) represents the first organized effort by heart failure experts from the Americas to provide a forum for all those interested in heart function, heart failure, and congestive heart failure (CHF) research and patient care.