Living With Your CRT-P

A patient’s guide to understanding Cardiac Resynchronization Therapy Pacemakers (CRT-Ps)

Compliments of your doctor and

ST. JUDE MEDICAL
Your Contact and Device Information

Have your doctor or nurse complete the information on these pages before you go home from the hospital.

Physician Name ________________________________
Phone Number ________________________________
Address ______________________________________

Hospital Name ________________________________
Phone Number ________________________________
Address ______________________________________

Device Model Number __________________________
Serial Number _________________________________
Date Implanted ________________________________
Description ____________________________________

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Physician Instructions
Understanding Your Device

You have just received—or you’re about to receive—a remarkable little device that can improve the quality of your life. It’s called a cardiac resynchronization therapy pacemaker, but it’s also known as a “CRT-P”. It helps to keep your heart pumping regularly and on time.

Invented in the 1950s, these amazing devices—about the size of a silver dollar—send small pulses of electricity to the heart to help it beat normally. The devices are run by tiny computer chips and sophisticated software. They are powered by batteries that last for years.

This booklet will answer many of your questions about your CRT-P. It will also tell you how the surgery is done and how to prepare for it. You’ll also find out what happens after the operation, and how to avoid problems when you’re living with your device.

A CRT-P is different from a standard pacemaker because two of its leads are implanted into the right and left ventricles. This means that the device can be used to stimulate both lower heart chambers to support the pumping of blood from the heart.

After reading this booklet, if you still have questions, discuss them with your doctor.

If you come across a word you do not understand, you can find its definition in the Glossary on page 38.
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The Healthy Heart

Why is the heart sometimes called a pump?
Your heart’s job is to deliver oxygen and nutrients to all the organs and tissues of your body. Your heart does this by pumping blood from the lungs (where it picks up oxygen) to all the areas in your body (where it drops the oxygen off). The heart then pumps blood back to your lungs, completing the loop that keeps you alive day and night year after year.

Figure 1. Blood flow through the heart.
What does the heart look like?

Your heart is divided into four connected chambers, each with a part to play in pumping blood. Oxygen-poor blood from the body enters the heart at the right atrium.

When the atrium is full, it pumps the blood into the chamber below it, the right ventricle. This larger chamber squeezes the blood out of the heart and into a blood vessel called the pulmonary artery that takes the blood to the lungs.

After picking up oxygen, the blood returns to the heart through the pulmonary veins into the left atrium. When the left atrium is full, it pumps the blood into the large chamber below it. The left ventricle then uses its strong muscles to pump blood into the body.

![Figure 2. A typical heart.](image)
How does the heart beat?

The millions of cells in your heart react to small pulses of electricity. Your heart makes its own electrical pulses in a special area at the upper part of the heart called the Sinoatrial Node or SA Node (see below).

How often does the heart beat?

A normal heart beats 60 to 100 times each minute, regularly and in rhythm, so the time between each heartbeat is roughly the same. Depending on the body's need for oxygen, the heart can beat faster or slower. Your body tells your heart how much oxygen it needs.

What is the Sinoatrial (SA) Node?

The SA Node is a cluster of specialized cells in the atrium that produces tiny electrical signals and sends them to the rest of the heart.

The SA Node senses when the atrium fills with blood and sends out an electrical pulse that causes the muscles in the atrium to contract. This contraction pushes the blood in the atrium down into the ventricle.
What is the AV Node?

The *AV Node* or *Atrioventricular Node* is another specialized cell cluster, located between the atrium and the ventricle. It holds the pulse for just a few hundredths of a second before releasing it into the ventricle. The result is that the atrium beats first, pushing blood into the ventricle, and then the ventricle beats after it has been filled with the blood from the atrium.

**Figure 3.** *The Sinoatrial (SA) Node and Atrioventricular (AV) Node.*
Arrhythmias

What is an arrhythmia?

An arrhythmia (pronounced “a-RITH-me-a”) is any abnormal heart rhythm. It could be irregular, too fast, or too slow.

What causes an arrhythmia?

Many conditions and substances affect the heart’s rhythm. Diseases like diabetes, hypertension, heart disease, chronic obstructive pulmonary disease, and hyperthyroidism can cause arrhythmias. Alcohol and certain drugs can cause arrhythmias, and so can drug withdrawal. Some people are born with hearts prone to arrhythmias. Some people have their heart’s electrical system damaged by a heart attack or poisons. Even emotional swings, caffeine, and pregnancy affect the heart. Finding the cause of an arrhythmia is important because the treatment depends on the cause. Your doctor may order tests and procedures to diagnose the cause of your arrhythmia.

What are the different kinds of arrhythmia?

Too Slow—Bradycardia

Bradycardia means “slow heart.” A heart that beats too slowly all the time can make a person tired, dizzy, or light-headed because a slow heart is not pumping enough blood to provide the body with as much oxygen as it needs. A
cardiac resynchronization therapy pacemaker (CRT-P) can be used to make a person's heart beat normally.

Too Fast—Tachycardia

Tachycardia means “fast heart.” If the heart beats too fast all the time, its chambers may not fill completely with blood. The heart will not be able to pump enough oxygen to the body and the result will be dizziness, fainting, and even cardiac arrest. Some tachycardias occur in the top chambers of the heart and some occur in the lower portion.

Ventricular Fibrillation

This is the most serious kind of arrhythmia, where the heart's electrical signals aren't timed correctly and start in the ventricle instead of the SA Node. The result is that the heart “fibrillates” or quivers instead of beating regularly. A fibrillating heart pumps very little blood to the body, and a person in ventricular fibrillation quickly loses consciousness. Untreated ventricular fibrillation can be fatal.

To treat ventricular fibrillation, doctors use de-fibrillation, which is a large electrical shock to the heart that returns the heart to its normal rhythm. The shock can come from a machine with large paddles, or it can come from an ICD (Implantable Cardioverter-Defibrillator) implanted within the body.
Atrial Fibrillation

This is the most common arrhythmia in older people. In atrial fibrillation, the upper chambers of the heart are quivering (or “fibrillating”) and the signals sent to the lower chambers are irregular and erratic. Some people may not feel any effects of atrial fibrillation. But in many people, this arrhythmia causes a feeling of pounding or fluttering in the chest. It may make people feel tired, sluggish, dizzy, or short of breath.

More serious is the fact that atrial fibrillation can cause a blood clot inside the heart that can flow to any part of the body, where it can cause a stroke or embolism.

Doctors can treat atrial fibrillation with a combination of surgery, medications, AV nodal ablation, and defibrillation. CRT-Ps can also be used to treat some patients with atrial fibrillation, depending on the cause and type of arrhythmia.

Asynchrony

Besides beating too fast or too slow, the heart can also beat irregularly. For example, one side of the heart may contract sooner than the other side. When this happens, blood and oxygen are not delivered fast enough to the body and the pumping mechanism begins to fail. If blood is not pumped out of the lungs and the body, it backs up, causing congestion like a traffic jam.

This can lead to a serious condition called congestive heart failure or heart failure.
What is heart failure?

Besides beating too fast or too slow, the heart can also beat irregularly. In some patients, one side of the heart may contract sooner than the other side. When this happens, the pumping mechanism begins to fail. Blood and oxygen are not delivered fast enough to the body. This condition is called heart failure.

This condition is usually treated with drugs, but in some cases, a CRT-P can be used to help in the treatment. CRT-Ps can help the left and right ventricles beat at the same time (resynchronize the heart beat).
Some Basic Facts About CRT-Ps

What is a CRT-P?

CRT-P stands for cardiac resynchronization therapy pacemaker. It is a special type of implantable pulse generator to help resynchronize (coordinate) the lower heart chambers, enabling your heart to beat efficiently. A CRT-P can be used with your prescribed heart medications as part of your treatment plan.

To treat heart failure, the CRT-P monitors your heart signals and sends electrical pulses to the lower chambers of your heart and enables them to contract more efficiently.

These St. Jude Medical® CRT-Ps have three leads: one in the right atrium, one in the right ventricle and one in the left ventricle. These can help the left and right ventricle beat at the same time.

The CRT-Ps described above can also be rate-modulated. That means the CRT-P can speed up when the patient becomes more active and slow down when the patient is resting. Also known as “rate-responsive” or “rate-adaptive,” this type of CRT-P has a sensor so it knows when the patient is moving. For example, a rate-modulated CRT-P will speed up when a person jogs. When the person stops to rest, the CRT-P slows the heart rate.
Figure 4. A CRT-P system.

**Why do I need a CRT-P?**

Your doctor has determined that despite taking medication for heart failure, you still have heart failure symptoms. In many cases, a CRT-P can help your heart beat properly. To treat heart failure, the CRT-P monitors your heart signals and sends electrical pulses to the lower chambers of your heart and enables them to contract more efficiently.

Implantation of a St. Jude Medical CRT-P is indicated for:

- Maintaining synchrony of the left and right ventricles in patients who have undergone an AV nodal ablation for chronic atrial fibrillation and have NYHA Class II or III heart failure.
The reduction of the symptoms of moderate to severe heart failure (NYHA Class III or IV) in those patients who remain symptomatic despite stable, optimal medical therapy (as defined in the clinical trials section), and have a left ventricular ejection fraction ≤ 35% and a prolonged QRS duration.

Patients who have undergone an AV nodal ablation for chronic atrial fibrillation or have heart failure.

Who does not need a CRT-P?

If your conditions are reversible, temporary, or can be controlled solely by drugs or other methods, you do not need a CRT-P. If you are not taking medication for heart failure you should not receive a CRT-P. There is more about medication in a later section of this booklet.

What does a CRT-P do?

The CRT-P can sense the heart's rhythm. CRT-Ps can be “programmed” to either send out a pulse or to wait for the heart to beat on its own. Some CRT-Ps also sense the patient’s activity — for example, climbing stairs or exercising — so that it can speed up or slow down the heart rate.

After a CRT-P is inside the body, its settings can still be changed. Doctors and clinicians “talk” to it with a programmer. This is a computer with a wand that sends signals through the body to the CRT-P. The procedure is
painless. The programmer also displays information the CRT-P has collected about the heart.

What does a pulse feel like?
Most people can’t feel it at all. The electrical pulse of a CRT-P is very small. If you do feel a pulse, your doctor or clinician may change the settings to make you more comfortable.

What happens when the battery runs down?
A CRT-P lasts, on average, five to ten years. How long it lasts depends on the type of battery, how often it sends a pulse, the patient’s medical condition, and other factors. The battery does not suddenly stop working. It gradually runs down over a period of months, usually with more than enough time to schedule a replacement. Doctors and clinicians check the battery at each follow-up visit. When the battery energy gets low, the CRT-P has to be replaced with a new one, and you must have another operation.
What happens if your lead needs to be replaced?

If your lead needs to be replaced, surgery is required to replace it.
Risks and Benefits

CRT-Ps are not a cure for heart disease. They don’t treat the causes of slow or irregular heartbeats. But because they can keep the heart pumping for years, CRT-Ps can greatly improve the quality of life for people with arrhythmias.

What are the benefits of having a CRT-P?

A CRT-P improves the ability of the heart to pump regularly and on time. Some people must rely completely on the CRT-P to make the heart beat.

Many patients get relief from symptoms such as light-headedness, dizziness, and fainting. Some people feel they have more energy.

A CRT-P also gives many patients “peace of mind.” They feel safer because the CRT-P can keep their hearts beating.

A CRT-P may also help alleviate your heart failure symptoms, such as fatigue or shortness of breath. You may experience other benefits from a CRT-P. Your doctor is the best person to help you understand them.

What are the risks of having a CRT-P?

A small number of patients develop complications from the operation to implant the CRT-P and the leads in the body. These can include infection, a reaction to a drug used during surgery, blood loss, or damage to a blood
vessel, the heart wall, or other organ. These complications can usually be corrected or cured.

The CRT-P may not always eliminate all symptoms of the arrhythmia. You still may feel lightheaded or dizzy, or you may faint.

After the surgery, you may feel some discomfort or feel tired, but these feelings only last a short time. Some patients, however, may continue to feel a bit uncomfortable in the area where the CRT-P was implanted.

Modern CRT-Ps have many safety features. Sometimes, a CRT-P may not act properly because it is being affected by outside sources of electromagnetic energy. (This is discussed on page 24.)

It is also possible for the tip of the lead to shift in the heart so that the pulse is no longer effective. Very rarely, the device may slip out of the “pocket” in the chest. (See the section on surgery below.)

Finally, remember these are man-made devices. It is important to monitor the device regularly with follow-up visits as often as your doctor recommends.

Contact your doctor if:

- You notice you are tired, short of breath or your heart rate is changing.
- Symptoms you had before the CRT-P was implanted seem to return.
Surgery for the CRT-P System

What will the operation be like?
Surgery to implant a CRT-P is routine. In many cases, the operation takes one to two hours, and patients may go home the same day.

However, each patient is unique, and the surgery will differ from person to person. The following sections discuss what generally happens to patients during a CRT-P operation. Your doctor will give you details about what will happen during your own surgery.

What happens before the operation?
Before the surgery, your doctor will tell you how to prepare for the operation. You may have to stop taking one or more of your medications beforehand. Usually, patients are asked not to drink or eat for several hours before the operation. A technician may take a blood sample. Some doctors will also ask patients to complete insurance and other forms.
What happens on the day of the operation?

You will be taken to an operating room where a nurse or clinician will shave and wash your upper chest or abdomen. You may have an IV (intravenous) line placed in your arm and a blood pressure cuff around your arm. ECG (electrocardiogram) electrodes will be placed on various parts of your body.

Most patients stay awake for the procedure, and receive a shot of a local anesthetic to numb the area where the CRT-P will be placed. If you are going to be given general anesthetic, an anesthesiologist will give you medications to put you to sleep.

What happens during the surgery?

After the skin of the shoulder or chest is cleaned and numbed with an anesthetic, the doctor makes a cut through the skin about one to two inches long. The doctor then finds a vein and threads the leads directly into the heart, using a fluoroscope to see where it will go. You should not feel the leads in your heart.

The doctor then makes a small “pocket” under the skin. The doctor fits the CRT-P into the pocket and connects it to the leads. The CRT-P is then tested to make sure it is working properly.
You may feel some pressure while the CRT-P and leads are being inserted. If you begin to feel increased discomfort, let the doctor know immediately.

What happens after surgery?

You will be taken to a recovery room where nurses will look after you to make sure you are doing well. You may feel some soreness where the CRT-P was implanted. You will be given pain medication if you need it.

Later on, the doctor or clinician will test your CRT-P to make sure it is working properly.

Many patients go home the same day. Other patients may need longer to recover and will stay overnight before going home.
Coming Home After Surgery

What will happen when I get home from the hospital?

For the first few days or weeks after your operation, you will need to recover. The wound should gradually heal. You should feel better. At first, you may be aware of the CRT-P, but after a while you will become accustomed to it.

Right after the operation, you should:

- Keep the wound clean and dry. If you notice that the wound is red, hot, swollen, more painful or starts to drain fluid, call your doctor immediately.
- Follow the instructions about bathing, changing the wound dressing and resuming activities.
- Use only gentle movements with the arm closest to the CRT-P. Avoid stretching, lifting, and sudden, jerky movements. As you heal, gradually increase the use of your arm.
- Do not play with or move the CRT-P under your skin. Try not to hit it or bump into it.
- Keep your doctor appointments.
Keep your Patient Identification Card with you at all times.

If your symptoms do not improve, call your doctor. Do not wait for a follow-up visit.

What happens at follow-up visit?

A follow-up visit normally takes place in a doctor’s office or in a clinic. The visit is painless. After a brief physical examination, the clinician or doctor usually attaches ECG electrodes to your chest. They will then place the wand over your chest and use the programmer (the computer that talks to the CRT-P) to display and print out information about your heart and the CRT-P. With this information, the doctor can check the settings on the CRT-P. If any changes are needed, they can be done right away. They will also check your CRT-P’s battery.

Be sure to tell your doctor or clinician about any problems you may be having with the CRT-P, your heart or your health in general. It’s also a good time to ask questions about your CRT-P.
What is remote monitoring?

Remote monitoring is the use of a telephone or computer to send information to the doctor about your CRT-P. Some doctors ask patients to “phone in” information instead of coming in for a follow-up visit. Many doctors use remote monitoring along with visits to the clinic.

There are a number of different systems for remote monitoring. They are all fairly easy to use. Some are held over the CRT-P and then held over the phone. Some use computers and modems to send in the information. Your doctor will give you instructions on how to use phone monitoring.

When can I get back to my old life?

Each person’s recovery period is different, but eventually, you may be able to return to your normal life with very few changes.

Your wound should be completely healed before you return to your usual daily activities. Talk to your doctor about how soon you can return to work, drive your car, begin exercising, or go away on a trip.
Living with Your CRT-P System

What is a Patient Identification Card?
This card lets everyone know that you have a CRT-P. It contains information on the type of CRT-P you have and other important information. If you’re ever in a medical emergency, this card will give emergency personnel critical data that could save your life. Keep it with you at all times.

Figure 5. Example of a typical St. Jude Medical Pulse Generator Patient Identification Card.
Will a CRT-P limit the things I do?

One of the reasons for getting a CRT-P is to help you lead a fuller life. At home, most people will have no restrictions on their activity. If you work with heavy electrical equipment that causes EMI, tell your doctor.

What is the “Patient Notifier”?

“Patient Notifier” is a safety feature in some devices that lets you know that you or your device needs attention. Some devices “notify” you by vibrating inside your body, while others may sound a tone. The “notifier” or alert may go off for a number of different reasons, like a low battery or a fast heart rate.

Your doctor will tell you if your device has this feature and what you should do if you sense it. After your surgery, your doctor or clinician will test the notifier so you can see how it feels or sounds when it goes off.

The notifier is there to help you. It does not hurt or cause any harm to you or your heart. When it goes off, you should follow your doctor's instructions. If you don't remember the instructions, call your doctor's office as soon as possible to let them know you just received the alert.
Precautions and Warnings

What is EMI?
EMI means *electromagnetic interference*. Certain types of electrical or magnetic energy can interfere with your CRT-P’s operation. You should do your best to avoid some major causes of EMI, explained below.

What causes EMI?
EMI or electromagnetic interference can be caused by:

- Electrical appliances in poor condition or not grounded correctly
- Electrical equipment that produces a great deal of energy, like industrial generators
- High-voltage transmission lines and equipment, arc or resistance welders, induction furnaces.
- Communication equipment, such as microwave transmitters, linear power amplifiers, or high-power amateur transmitters.
- Metal detectors and security systems used in stores and airports.
Magnetic resonance imaging (MRI) scans, which can severely damage your device when you are in or near an MRI room.

Transcutaneous Electrical Nerve Stimulation (TENS) units, which are electrical nerve and muscle stimulators.

Therapeutic radiation, such as cancer radiation therapy.

Electrosurgical cautery, which can inhibit the operation of your device.

What should I do if I am near a source of EMI?

In most cases, you can just walk away from the EMI source or turn it off. At airports, show the security personnel your Patient Identification Card so that you do not have to walk through the metal detector.

If you feel symptoms after being near an EMI source, contact your doctor.

What electrical equipment is safe to use?

Most home appliances in good working order and properly grounded are safe to use. This includes microwave ovens, blenders, toasters, electric knives, televisions, VCRs, electric blankets, stoves and garage door openers.
Office equipment and most medical equipment is also safe to use. The CRT-P will work properly during chest and dental x-rays, diagnostic ultrasound, CT scan, mammography, and fluoroscopy.

What if I am going into a hospital or clinic?
Tell the hospital personnel that you have a CRT-P before you undergo any medical or dental procedure or test.

Do not enter areas that have a “no pacer” symbol posted.

Talk to your doctor if you have to undergo the following medical procedures:

- Electrosurgery
- Electrocautery
- Lithotripsy
- Radiation therapy.

Do not undergo any diathermy procedure, even if your CRT-P has been turned off. It could cause damage to the tissue around the implanted electrodes, or permanent damage to the CRT-P.

External defibrillator paddles should not be placed directly on your device or leads. Carry your Patient Identi-
fication Card at all times so emergency personnel are aware of your device if necessary.

**Will a cellular phone interfere with my CRT-P?**

You can use a cellular phone without any problems with St. Jude Medical cardiac resynchronization therapy systems. Contact St. Jude Medical for more information about using a cellular phone.

**What about security systems?**

Security systems, like the ones used at entrances, exits, or checkout counters are also sources of EMI. When you enter or leave a place with security system, walk through the entrance or exit at a normal pace. Do not linger in these areas.

**Are there any precautions I need to take at home?**

It is safest to live in a home that has a properly grounded electrical system, so three-prong plugs fit right into the wall. Poor grounding can cause EMI. An evaluation of
wiring by an electrician, particularly in older homes, would identify any improper grounding.

Keep your tools and appliances in good running order. Don't use products with breaks in the power cords. If you're fixing your car, remember that your car's electrical system (alternators, high-tension ignition wires, spark plugs, and coil wires) can be a source of EMI.

Some stereo speakers contain large magnets which can interfere with CRT-P.

Electric razors, vibrators, or handtools held directly over the CRT-P may affect its operation. Some CRT-Ps respond to pressure, so your doctor may tell you to avoid sleeping on the CRT-P.

Do not manipulate your implanted CRT-P since it may result in lead damage or lead displacement.

**What precautions should I take at work?**

If you work near large sources of EMI (see list above), you should discuss this with your doctor and employer. You may be able to limit your exposure to these sources.

Magnets, large heaters, and radio transmitters can also cause EMI.

Work that involves severe shaking or physical contact should also be avoided.
Learning to Live with Heart Disease

My illness has changed my life. How do I cope with it?

Serious heart disease is a blow that can affect your emotions as well as your body. At times you may feel anxious, afraid, depressed, even angry. There are many ways to cope:

- Talk to other people. It will help you work through your feelings. Talk to your doctor, a nurse, a counselor, a friend or family member, or a member of the clergy.
- Talk to your doctor about joining a support group. Sharing experiences with other CRT-P patients lets you know that you are not alone.
- Exercise regularly. It’s a great way to reduce stress, build strength and gain confidence. Remember to ask your doctor before starting an exercise program. There is more about exercise later in this guide.
- Learn more about relaxation. Too much stress can wear you down and increase your chance of getting other illnesses. It also disturbs your sleep and makes you cranky.

One good way to relax is to sit quietly with your eyes closed for 20 to 30 minutes twice a day. A short nap
each day or a slow walk every morning can also be calming.

- Take care of yourself. Avoid alcohol and caffeine. And quit smoking. These habits can make anxiety and depression worse.

**My spouse/family member is the patient. How can I help?**

If a family member or friend is the patient, it is natural for you to have the same fears and worries. There are several things that can help both of you cope with their condition. For example, listen when they want to talk. Your loved one needs reassurance that they have your support. However, you should not deny that their illness is serious.
Drugs

Why do I need medication if I have a CRT-P?
Anti-arrhythmia drugs and the CRT-P can work together to improve the efficiency of your heart.
In addition to your CRT-P, you will also need to take medication as part of your heart failure treatment plan.

Warning: Do not stop taking your drug(s) without the advice of your doctor!

I’m told that my drugs may need periodic adjustments. How will that be done?
Your doctor may find it necessary to increase or decrease your drug dosage. They may also add a new drug. Your heart must be watched closely while your doctor makes these changes. This means that you may need to stay in the hospital. The length of the hospital stay varies from patient to patient.

Is it OK to take my anti-arrhythmia and heart failure drugs with other drugs?
Make sure your doctor knows about all of the drugs you are currently taking. Tell your doctor whenever another doctor prescribes a new drug.
Food and Nutrition

I already have heart disease. Will changing my diet benefit me?

It is never too late to improve your diet. The American Heart Association recommends a diet high in fiber and low in fat, cholesterol and sodium (salt). High-fat, high-cholesterol foods (such as whole milk dairy products, red meats and junk foods) contribute to hardening of the arteries—a major cause of heart attacks and strokes. High-fiber foods are rich in vitamins and minerals and make you feel full and satisfied for fewer calories.

What are good sources of fiber?

Oatmeal, fresh vegetables, and fruit are good sources of fiber. Fiber helps lower blood cholesterol and prevents constipation.

How much fat can I have?

Generally, you should keep saturated fat to less than one third of your daily fat intake—10% of daily calories. A fat-rich diet raises blood cholesterol and can lead to weight gain, both of which contribute to heart disease. Most packaged foods list fat, cholesterol and fiber content on
their labels. Talk with your doctor about your specific dietary requirements and changes you may need to make in your eating habits. A registered dietitian is a wonderful resource to help you learn more about eating to be “heart healthy.”

**What is the best way to control my fat intake?**

Let balance, variety and moderation guide you. There is no need to give up meats and dairy products. Eat lean cuts of meat and low-fat dairy items. Save high-fat foods such as potato chips and cheesecake for special occasions.

Avoid saturated fats. These are found mostly in red meats, whole milk products, and foods made with palm and coconut oil. In general, saturated fats come from animals.

Sometimes it is not obvious that a food is high in fat. For example, one ounce of trail mix with peanuts and raisins has as much fat as one chocolate chip cookie.

**What foods are high in sodium?**

Salty foods and those foods with preservatives generally have a high sodium content. For example, broth, soy sauce, cold cuts, hot dogs, chips, nuts and pretzels are high in sodium. Sodium may encourage high blood pressure and water retention. Reducing the sodium in your diet is simple if you take note of the food products labeled as “low sodium.” Ask your doctor how much sodium is OK for you.
Besides diet, what affects heart health?

Many factors contribute to heart disease. Some things you can’t change, like your sex, race, age, high blood pressure and family. You can change other things that affect your heart, like smoking, a poor diet and lack of exercise. If you have high blood pressure, have it checked regularly and follow your doctor’s instructions to keep it under control.

Why is being overweight dangerous for a person with heart disease?

When you’re overweight, the extra pounds make your heart work harder. They can also lead to high blood pressure and diabetes, which are bad for the heart. Losing excess weight eases the strain on your heart.

If you diet, you should lose weight slowly, ideally one-half to one pound a week. You will be more likely to keep the weight off. Your doctor can help you set up a weight-loss program.
Exercise

What kind of exercise can I do after surgery?

After surgery you should resume your normal activity as soon as you feel up to it. You may feel a little tired or sore at first, so build slowly up to your normal routine. Before long, you'll feel more like yourself. Your doctor may give you special exercise instructions or suggest that you start a cardiac rehabilitation program.

In most cases, your CRT-P will not limit your fun. There are only a few exercise restrictions to keep in mind. Avoid rough contact sports that might damage your CRT-P—like wrestling, football, soccer or rugby—since they may damage the CRT-P or the leads. Consult your doctor before doing strenuous or repetitive upper-body exercise like weight lifting or softball.

It's also best to avoid activities that involve severe shaking, like horseback riding or bumper cars. Depending on the programming of your device, this type of activity may inappropriately cause a temporary increase in the rate of pacing. Strenuous or repetitive upper-body exercise, like weight lifting or softball, can in some cases affect your CRT-P or leads.
Before you begin any vigorous exercise or activity, talk to your doctor.

**Warning:** Avoid contact sports after you get your CRT-P. Also, get your doctor’s approval before starting an exercise program, especially if it involves upper-body activity.

No matter what kind of exercise you do, be sure to wear loose clothing and comfortable walking shoes. Feeling comfortable will help you get the most benefit and enjoyment from exercising.

**What is cardiac rehabilitation?**

It is an exercise and education program to help you regain your strength and improve your heart. A typical program consists of regular exercise monitored by medical professionals. Walking and bicycling are the most common exercises. You will also attend classes to learn more about your heart, the reasons for your heart disease, and how to live a healthier life.

Ask your doctor if this kind of program would be good for you. They will develop one specifically for you.
Other Questions?

If you have any other questions or would like more information about your CRT-P, call Technical Services at the phone numbers below.

In North America:
1-818-362-6822
1-800-722-3774
(toll-free in North America)
1-818-362-7182 (FAX)
Glossary

Anesthetic
A substance that produces numbness or sleep.

Arrhythmia
An abnormal rhythm of the heart.

Atrioventricular (AV) Node
The small mass of special tissue that delays the energy pulse traveling from the SA Node to the lower chambers (ventricles) of the heart.

Atrial
Relating to the atrium.

Atrium
One of the two upper chambers of the heart, the right atrium and the left atrium. These chambers receive blood from the body and pump it to the ventricles, the lower chambers of the heart. (Plural = Atria)

Bradycardia
An abnormally slow heart rate.
Cardiac Resynchronization Therapy Pacemaker (CRT-P)

A system comprising a device and three leads: one in the right atrium, one in the right ventricle and one in the left ventricle. These can help the left and right ventricle beat at the same time.

Chamber

One of the four areas in the heart that fill with blood before contracting during the heartbeat. The four chambers are: right atrium, left atrium, right ventricle, and left ventricle.

Congestive Heart Failure

The failure of the heart to pump enough blood to the rest of body, resulting in congestion of blood in the lungs and tissues.

Contraction

Heartbeat. A squeezing of the heart muscle that forces blood out of the heart.

Defibrillation

The use of electric shock to correct rapid heartbeats, usually tachycardia or fibrillation. Defibrillators can be paddles on the outside of the chest or small internal electrodes placed directly on the heart.
**Electrocardiogram**

Often called an EKG or ECG, it is a recording of the electrical activity of the heart.

**Electromagnetic Interference**

Also known as EMI, this is magnetic or electrical interference from machines or devices which can interrupt the normal operation of a CRT-P.

**Electrophysiologist**

A doctor who specializes in diseases of the electrical system of the heart.

**EMI**

See “Electromagnetic Interference.”

**Fibrillation**

An arrhythmia in which the heart quivers rapidly. Atrial fibrillation occurs in the atrium and is usually not life-threatening. Ventricular fibrillation occurs in the ventricles and can be fatal.

**General Anesthetic**

A medication or group of medications that will make the patient unconscious during surgery.
**Heart Failure**

Heart failure (HF) is a complex clinical syndrome that results when the heart muscle is weakened and can no longer pump blood as efficiently as a healthy heart.

**ICD**

Implantable Cardioverter-Defibrillator; an implanted pulse generator used to treat ventricular fibrillation and tachycardia by delivering electrical shocks directly to the heart.

**Intravenous (IV)**

Inside a vein.

**Lead**

A special wire connected to the CRT-P and placed inside the heart.

**Local Anesthetic**

A medication used in surgery that numbs only one area of the body while the patient stays awake.

**Node**

A cluster or a place where things join, for example, the Sinoatrial Node is where many nerves join.
Pacemaker

Another term for pulse generator.

Programmer

A special computer designed to communicate with or “program” an implanted CRT-P.

Pulmonary Artery

A blood vessel that carries blood from the right ventricle to the lungs.

Pulmonary Vein

A blood vessel that carries blood from the lungs to the left atrium.

Pulse

A short burst of electricity.

Pulse Generator

A sealed device containing electronic circuitry and a battery, that is designed to send out electrical pulses and correct problems with the heart’s rhythm.

Rate-Modulated

A CRT-P that can sense a person’s activity and change the heart rate accordingly.
Remote Monitoring
Using a device or machine to transmit information about your CRT-P over a phone line.

Rhythm
The regular beating of your heart.

Sinoatrial (SA) Node
The small mass of special tissue that generates a heartbeat. It is located in the upper right chamber of the heart.

Tachycardia
An abnormally fast heart rate.

Ventricle
The two lower chambers of the heart. These chambers pump the blood out of the heart into the body.

Ventricular
Relating to the ventricle.
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