

EXCLUSIVE FEATURE: TOP DOCTORS 2009

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VOL. 4 | ISSUE 2
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What You Need to Know About Implanted Cardiac Devices

by Dr. Brian DeVille

Although the American Heart Association recently announced that overall deaths from cardiovascular disease are dropping, heart disease remains the number one killer of Americans. Despite the prevalence of the disease, many patients are living longer because of advancements in technology. Throughout the past 20 years, an increasing number of patients have received life-saving pacemaker and defibrillator devices.

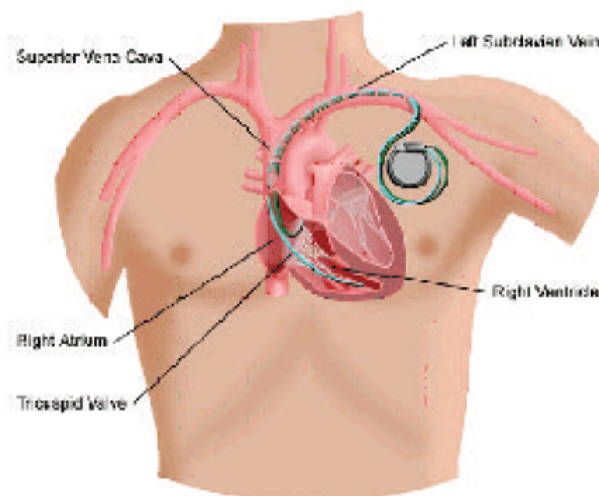
As the patient population continues to increase, many questions have surfaced from patients and loved ones about implanted cardiac devices. Dr. Brian DeVille, Medical Director of the Electrophysiology Laboratory and a member of the medical staff at THE HEART HOSPITAL Baylor Plano answers our questions.

How many patients are implanted with cardiac devices (ICD)?

Today, more than two million Americans rely on an implanted pacemaker or defibrillator to regulate their heart beat.

When would a patient receive a pacemaker/defibrillator?

Physicians implant a cardiac device to help ensure the heart is contracting and pumping blood adequately. This ensures the body receives enough blood, oxygen and food. According to the American



Heart Association, reasons for implanting a pacing device include:

- ♥ A heart that beats too slow or too fast
- ♥ A heart that does not beat regularly
- ♥ A blockage in the heart's electrical pathways

Patients may receive a defibrillator for several reasons:

- ♥ After resuscitation from a cardiac arrest
- ♥ Rhythm problems known to carry risk of cardiac arrest
- ♥ An inherited disorder that carries a risk of cardiac arrest
- ♥ A weakened heart that places the patient at risk for cardiac arrest

For most patients, pacemakers and defibrillators are lifelong treatment options. Other patients only need a pacemaker or defibrillator for a short time, like after a heart attack. Such needs may be addressed with a temporary pacemaker or an external, wearable defibrillator.

Patients who are experiencing heart problems should immediately consult their physician.

How do ICDs work?

A pacemaker senses when a heart beat is too slow and delivers a small electrical impulse to the heart, triggering it to beat. Defibrillators, which are larger in size, deliver an electrical shock to the heart when the heart rate becomes dangerously fast. In addition, defibrillators have pacemaker functions built into them.

Pacemakers and defibrillators are small units that each contains a pulse generator, which houses a battery and a computer chip. The generator is placed in a pocket, usually under the collar bone. The device is hooked up to the heart via thin flexible wires known as leads, which are advanced into the heart through veins.

Can a patient feel the device activate?

For a pacemaker this process should occur without any patient recognition.

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If the pacemaker action is felt by the patient, he or she should consult their physician; there may be a malfunction with the pacemaker or the wires that connect the device to the heart.

For defibrillators, the pacing functions also should occur without being felt by the patient. If the patient has a dangerously fast heart rhythm, the device will deliver a larger electrical shock to the heart to restore normal rhythm. If the patient is conscious when this occurs, he or she will feel the shock.

How does a pacemaker/defibrillator impact a patient's life?

Many patients with implanted devices are able to live normal lives. Depending on your condition, your doctor may ask you to monitor your heart beat while exercising or doing physical activities. Other patients may only be able to do limited physical activity.

It is important for patients who are implanted with cardiac devices to see their doctors regularly and report any changes in their condition. Most implanted devices should be checked by a physician every three to six months to ensure proper functioning. Additionally, device batteries will need to be replaced every five to eight years. A physician should also check the leads in the implanted device to make sure they are functioning properly.

What are cardiac leads?

Cardiac leads are thin, insulated wires that connect and provide power from the implanted device to the heart. Over time,

leads may occasionally malfunction or become infected—either of which can cause serious complications for patients. When malfunction or infection occurs, physicians and patients must consider a variety of treatment options and potential removal of the lead.

When should leads be removed?

As more patients are receiving pacemakers and defibrillators at a younger age, the need to remove infected or defective leads has increased. At its annual meeting in May, the Heart Rhythm Society (HRS) announced new guidelines encouraging lead removal in various cases including infection, malfunction and if abandoned leads cause occlusion of all usable veins to implant a new pacing system.

How are the leads removed?

Because scar tissue can bind the lead in place, lead extraction demands expertise, as well as a plethora of specialized tools. The main extraction tools include laser and radiofrequency ablation, mechanical rotational sheaths and manual traction.

THE HEART HOSPITAL Baylor Plano is using an Excimer Laser procedure, which produces pulsed burst of ultraviolet (UV) light energy to vaporize the buildup surrounding leads and frees the wires for easy removal. A recent, four-year retrospective LEXICON (Lead Extraction in Contemporary Settings) study demonstrated the use of excimer laser assisted lead removals to be more than 97 percent successful in the removal of pacemaker and defibrillator leads.

(To learn more about cardiac lead removal, see Dr. DeVille's article in the March issue of *Mature Texan*).

Where can patients learn more?

Patients interested in learning more about pacemakers and defibrillators can call THE HEART HOSPITAL Baylor Plano at 1-800-4BAYLOR.