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The information provided is not intended to be used for medical diagnosis or treatment or as a substitute for professional medical advice. Always seek the advice of your physician or other qualified health provider with any questions you may have regarding a medical condition.
You Asked. We Answered

Helpful information about EMI and your implanted cardiac device.

Myths and Facts about Cardiac Devices

How informed are you about cardiac devices? See if you can tell myth from fact. LifeBeat has complied statements to test your knowledge about cardiac devices.

1. Myth or Fact? My implanted device has to be opened up in order to change the battery.

Myth. Actually, when your device battery needs to be changed, the old device is detached from the lead wires and a new device is attached and implanted. Usually, the leads do not need to be replaced. The surgery takes about an hour. This is true for pacemakers, implanted defibrillators, and devices to treat heart failure.

2. Myth or Fact? I will be able to get through the security system at an airport.

Fact. You can safely walk through security arches at airports, stores, or other facilities. These security scanners should not affect your implanted cardiac device. However, your device may cause a sound when you walk through the security arch or pass a metal detector at the store. Stents should not trigger security alarms.

For airport travel, we recommend first showing your Boston Scientific medical identification card at the security checkpoint. Then, follow the security staff’s directions. Depending on the airport, the staff may do one of the following:

• **Ask you to continue through the security archway.** This will not harm your device or change the programmed settings; however, it may set off an alarm

• **Use a hand-held security wand.** If a wand must be used, remind the Security Officer that the search must be done quickly and to not hold the wand over your implanted pacemaker or defibrillator

• **Do a hand-pat search.** If you decide on a hand-pat search, you can request a private area, out of view of the general public
3. Myth or Fact? I can operate a lawn mower even though I have an implanted device.

**Fact.** Lawn mowers and other gas-powered tools such as chainsaws and snow blowers can be used. Remember to keep these tools 12 inches (30 cm) from your device during use. Coming into close contact with the running motor in these tools will not damage your device, but may temporarily affect how it works. These effects should end once the running motor is moved farther from the implanted device.

*Device patients who experience symptoms while standing close to a source of EMI, should move away from the source and contact their physician.*

4. Myth or Fact? I must be in my pajamas to transmit my Latitude data.

**Myth.** The communicator can find your device even through a snowsuit.

5. Myth or Fact? It is unsafe to go in a swimming pool if I have a defibrillator.

**Myth.** It is safe to go in a swimming pool with a defibrillator. However, you should never swim alone. It is important to have someone there in case you receive therapy from your device and need assistance. ICD shocks are delivered inside your body and any person touching you while you receive a shock would merely feel muscle contractions, even if they were in water.

Also, hot tubs and whirlpool baths can be used with permission from your doctor for your medical condition. While they cannot affect your device, the rise in body temperature may affect your underlying condition.
The Inside Story: How Long is My Device Going to Last?

Device Longevity: Batteries 101
This is one of the first questions patients ask about their implanted pacemaker or defibrillator. These battery-powered devices are designed to monitor each heart beat and treat a heart that beats too slow, too fast, or in a dangerous rhythm.

*How long will the device battery be able to do its job?*

In this article, *LifeBeat* will dig deeper into the batteries that drive therapy from our implantable cardioverter defibrillator (ICD) and cardiac resynchronization therapy-defibrillator (CRT-D) devices. A section below will also talk about pacemaker batteries.

The Clock is Ticking
Your ICD device monitors your heart rhythm day and night. The energy in your ICD device’s battery will slowly decrease over time while it performs this job. Battery longevity is affected by how much energy is in the ICD device battery and how often the ICD device uses the battery to pace or deliver shock therapy to your heart.

Since 2008, Boston Scientific ICD devices have new ways to sense heartbeats, deliver therapy, and record episodes – and do it more efficiently – than our previous generation of ICD devices. This helps the device battery last longer.

The Size of the Gas Tank – Battery Capacity
Observing the battery status of your ICD is an important part of any device check at the clinic. It is also a part of all remote device follow-up reports.

*How long will your ICD device last?* This depends on three things: the battery capacity, how efficiently it is used, and how the ICD device is programmed and operates.

Example of a Battery Status screen with the battery status gauge arrow pointing at Beginning of Life (BOL). A section of the Battery Details screen information about battery usage.
The Time Remaining gauge shows how much time is available before device replacement. The needle moves on the gauge based on how the device uses the battery. The “Approximate time to explant” display is based on how the ICD is programmed and how much therapy has been delivered to the heart. Changes to your device programmed settings may change the time to explant number.

The Battery Details screen has great information for whiz kids, but let’s point out a few things that may matter to a device patient:

<table>
<thead>
<tr>
<th>Charge Remaining: 1.84 Ampere-hours</th>
<th>Power Consumption: 65 microwatts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ampere-hours indicate the battery’s capacity – how long it will run before it is drained down. This is the “gas in the tank.”</td>
<td></td>
</tr>
<tr>
<td>• The more charge remaining, the longer a device may last.</td>
<td></td>
</tr>
<tr>
<td>The power consumption displays how the device is using the battery.</td>
<td></td>
</tr>
<tr>
<td>• The lower the power consumption (in micro-watts), the longer the device may last.</td>
<td></td>
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</tbody>
</table>

Boston Scientific ICD devices have nearly 70%* more battery capacity as compared to many other implantable cardioverter defibrillator devices available today.

*This estimate is based on the difference between a 1.1 AHr battery and a 1.9 AHr battery (1.9-1.1/1.1=72%).

The Energy Bill – Battery Efficiency

The battery provides the power for the ICD to sense and treat heart rhythms. Battery performance over time depends on how efficiently the ICD works with your heart.

**Employing two microcircuits instead of three reduces energy consumption.**

Current Boston Scientific ICD and CRT-D devices run on the same low power conditions as a pacemaker! This means that power usage in current Boston Scientific ICDs is 30% less than older generation ICD devices.

By using less energy, the ICD battery should last longer.
My LifeSaver – ICD Programmed Features

Your doctor decides how to program the ICD device based on your heart condition. Your ICD device gets to know your heart condition over time. This helps your heart doctor to fine tune your ICD device programmed settings.

Pacemaker Batteries

Like an ICD device, a pacemaker consists of a tiny but sophisticated computer, software instructions for that computer, various electronic components, and a battery—all enclosed within a small metal container.

Pacemakers may use up to half of their energy for pacing and the remaining energy to monitor heart rhythms and record information about your heart and activity.

The pacemaker monitors your heart rhythm and makes moment-to-moment decisions about whether or not to pace your heart. If your heart rate falls below a programmed number—normally 60 beats per minute—it “paces” by sending a tiny electrical impulse to your heart through the lead wire, and that stimulates your heart to beat.

Pacemaker batteries are typically lithium-iodine cells sealed inside the pacemaker. A pacemaker today typically lasts from 6 to 8 years*, depending on the settings your doctor programs and how much therapy you receive.

At each follow-up visit, your healthcare provider will check your pacemaker battery. A battery status gauge will show how much “gas is in the tank.” When the battery status reaches a certain point, your pacemaker will be replaced.

To replace the pacemaker battery means the entire pacemaker is replaced because both the battery and the circuitry are sealed within the same metal container.


Details About Your Device

The Details About My Device page on LifeBeat Online provides information about all Boston Scientific devices implanted today. Each device has a patient-friendly spec sheet about what it is, how big it is, and how long it lasts.

Tomorrow Starts Today

Unless you’re implanted during an emergency surgery, you do have a choice about which heart device you receive. Click here to learn more.
Q. What factors influence a physician’s recommendation on driving?

A. There are two primary issues about driving and the device patient. One is applying the law spelled out in a particular state. The other issue is the nature of the patient’s risk of rapid heart rhythms (ventricular arrhythmias). Whether a patient recovered from sudden cardiac arrest (SCA) or is at risk of having an episode, the conversation should focus on how the arrhythmia affects the patient – someone who may faint or lose consciousness while driving.

Q. How do state laws help guide the physician’s decision?

A. Each state has rules about driving a motor vehicle following a serious illness. While some states spell out restrictions for patients who experience arrhythmias, most states restrict driving for people who may lose control or consciousness for other reasons, such as epileptic seizures, diabetic coma, or specific medical conditions.

This means an ICD patient should be aware of other states’ laws when traveling. Even if an individual’s home state allows them to drive and the doctor gives permission as well, other states may restrict travel for people who may lose control or consciousness for other reasons, such as epileptic seizures, diabetic coma, or specific medical conditions.

Q. How does the nature of an individual’s arrhythmia affect a doctor’s decision?

A. Clinical research helps us understand who is at risk of a lethal arrhythmia and thus who can benefit from an ICD device. If someone survived an episode of sudden cardiac arrest, the ICD can protect them from a second episode of that lethal rhythm. If someone had a large heart attack that damaged the heart muscle, we know they are at risk of a lethal arrhythmia, but have not had it yet. They can also benefit from receiving an ICD. Let’s look at the American Heart Association’s guidelines.

- Anyone who receives an ICD device due to heart muscle damage from a heart attack (primary prevention), should avoid driving for one week after ICD placement. Talk to your doctor for specific recommendations for you.
- If you received an ICD device due to a previous cardiac arrest or ventricular arrhythmia, the guidelines discourage driving during the first six months after your procedure. If you experience no shocks during this period, you and your doctor can discuss if you can begin driving again.

An important issue is whether or not the person tends to lose consciousness with that arrhythmia. In those states where driving is allowed, if an individual tolerates the arrhythmia well and doesn’t pass out, it is more likely that a doctor will allow that person to drive. The ICD device is not a factor that should lead to driving restrictions. Instead the symptoms patients have with their arrhythmias should be the deciding factor.
Q. Do most doctors take into consideration factors besides the patient’s medical status?

A. Yes, and this is another difficult area for the doctor. If an individual is retired or can walk to the corner store, use public transportation, or get rides from friends and family, the reasons to allow such a person to drive are less compelling. On the other hand, if a person’s livelihood requires an ability to drive, this should be taken into account.

Q. Is the decision a difficult one for the doctor to make?

A. Definitely. In our culture, driving is an integral part of most people’s lives. This need or desire to drive, however, must be balanced against the risk that driving may entail to the patient, other drivers, and pedestrians.

Q. Once a person’s driving has been restricted, is it usually a permanent restriction?

A. It depends on the doctor’s recommendation, but most doctors reassess their decision at various points – in many cases after a period of six months to a year after an episode. If the patient has no history of life-threatening arrhythmias that required shock therapy, and if state law allows, a physician may change the recommendation and allow such a person to drive again. But remember that every situation is unique. Talk to your doctor about your situation.

Q. What suggestions do you have for those who are restricted from driving?

A. First, remember that a restriction may be temporary. Beyond that, the suggestions seem fairly obvious – ask friends and family for rides, find out about public transportation, or walk if possible. And as always, each patient should discuss any question with his or her doctor.

It is essential that you ask your heart doctor for driving guidelines. Be sure to direct any questions to your doctor as well.
Search Tips and Tricks

Your access to LifeBeat Online may have started with a search engine such as Google™, Yahoo!®, or Bing®. They have features to help you to find exactly what you are looking for. What do you search for?

1. Weather:
To see weather for many U.S. and worldwide cities, type “weather” followed by the city and state, U.S. zip code, or city and country. weather Paris, France

2. Calculator:
To use the internet as a built-in calculator, simply enter the calculation you’d like done into the search box. This works in most browsers. 5*9+(sqrt10)^3=

3. Local Search:
To find a store, restaurant, or other business, you can enter the category or business and the location and the internet will return results on the page along with maps and reviews. Italian food 55106

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The more you know about your heart and physical health, the better you can care for it.

Are You Heart Smart?

Fill in the blank with the most appropriate comparison:

Which of the following ages you the least?

A. Smoking one pack of cigarettes a day
B. Having an HDL cholesterol level (it’s the good kind) of 29 mg/dl
C. Constantly avoiding “cleaning grout” on your to do list
D. Eating steak twice a week

Show Answer
Heart Patient News

Diabetes control better, but still far to go

More patients with diabetes are meeting targets than was the case a decade ago, but there is still room for improvement, especially within certain subgroups, researchers found. (Diabetes is an independent risk factor for heart disease.1)

• In the period of 2007-2010*, more than half of people with diabetes achieved A1C, Blood Pressure, and Cholesterol LDL (ABC) goals, a significant improvement from levels achieved in previous years
• However, less than one in five patients achieved all three goals and results were not as good in Mexican Americans and non-Hispanic blacks compared with non-Hispanic whites

Find more information at MedPage Today

*National Health and Nutrition Examination Survey (NHANES) study period.

Most ICD patients know when they’d choose device deactivation, survey says

Colleagues at Yale University set out to understand patient preferences for deactivation of ICDs; a survey of 95 patients.

• Many patients with ICDs are unaware that it is possible to deactivate an ICD
• The survey posed five clinical scenarios (e.g., from advanced incurable disease to being permanently bedridden)
• Of the 95 respondents, 67 (70.5%) reported wanting ICD deactivation in at least one scenario describing health outcomes that are common in patients approaching the end of life

Find more information at www.theheart.org

Married people have lower heart risk, mortality

Single living and/or being unmarried increases the risk of having a heart attack and worsens its prognosis both in men and women regardless of age.

The population-based FINAMI myocardial infarction register recorded 15,330 cases of acute coronary disease among persons aged 35–99 years in Finland in 1993–2002.

• Acute coronary syndrome (ACS) is any set of symptoms linked to coronary artery disease, such as chest pain
• ACS carried a significantly higher mortality risk for men and women who lived alone or were unmarried than for married people
• The disparity between married and unmarried individuals increased over the 15-year study period, and variations in treatment could not explain the difference in mortality risk

Find more information at MedPage Today

D. Eating steak twice a week makes you physically less than one year older. By comparison, smoking a pack a cigarettes makes your Real Age eight years older; a low HDL cholesterol (29) makes it about four years older; and even the stress of avoiding nagging tasks on your to-do list can make it eight years older.

Source: RealAge® “What’s your actual age?”, www.realage.com
Important Information to Discuss with Your Doctor

Be sure to talk with your healthcare provider so that you thoroughly understand all of the risks and benefits associated with the medications, procedures and tests involved in the implantation of a stent. Results may vary from patient to patient. This information is not meant to replace advice from your doctor. Be sure to talk to your doctor about these risks and possible side effects.

Angioplasty and Stenting

Cardiovascular disease may be treated through lifestyle modifications and medications, conventional coronary bypass surgery or less-invasively through the use of balloon catheters and stents. Less-invasive treatment options for cardiovascular disease include the use of balloon angioplasty catheters and stent systems and may also include other ancillary devices. These ancillary devices are used in a range of interventional procedures including coronary angioplasty and stenting.

There are risks associated with any angioplasty or stent implant procedure. It is important that you review these risks with your cardiologist as they may include infection, allergic reactions, coronary vessel damage, blood clots and death.

Cardiac Resynchronization Therapy Devices

Cardiac resynchronization therapy pacemakers (CRT-P) and defibrillators (CRT-D) are designed to treat heart failure patients who may or may not have symptoms or who may have symptoms despite the best available drug therapy. They are also designed to help your heart pump more effectively and meet your body's need for blood flow. These devices are sensitive to strong electromagnetic interference (EMI) and can be affected by certain sources of electric or magnet fields. With all medical procedures there are risks associated. In regard to an implanted ICD, the risks include but are not limited to inappropriate shock, lead moves out of place, loss of stimulation capability, allergic reaction, fluid underneath the skin, and infection. In rare cases device failure or death can occur. Be sure to talk with your doctor so that you thoroughly understand all of the risks and benefits associated with the implantation of this system. To obtain a copy of the device Patient Handbook for more detailed device safety information, go to www.bostonscientific.com, or you can request a copy by calling 1/866-484-3268 or writing to Boston Scientific, 4100 Hamline Ave N., St. Paul, MN, 55112.

Pacemakers

A pacemaker system is designed to monitor and treat your heart rhythm problems, greatly reducing the risks associated with them. These devices are sensitive to strong electromagnetic interference (EMI) and can be affected by certain sources of electric or magnet fields. With all medical procedures there are risks associated. In regard to an implanted pacemaker, the risks include but are not limited to inappropriate heart rate response to exercise, lead moves out of place, loss of stimulation capability, allergic reaction, fluid underneath the skin, and infection. In rare cases device failure or death can occur. Be sure to talk with your doctor so that you thoroughly understand all of the risks and benefits associated with the implantation of this system. To obtain a copy of the device Patient Handbook for more detailed device safety information, go to www.bostonscientific.com, or you can request a copy by calling 1/866-484-3268 or writing to Boston Scientific, 4100 Hamline Ave N., St. Paul, MN, 55112.

Device Quality and Reliability

It is Boston Scientific's intent to provide implantable devices of high quality and reliability. However, these devices may exhibit malfunctions that may result in lost or compromised ability to deliver therapy. Refer to Boston Scientific's CRM product performance report on www.bostonscientific.com for more information about device performance, including the types and rates of malfunctions that these devices have experienced historically. While historical data may not be predictive of future device performance, such data can provide important context for understanding the overall reliability of these types of products. Also, it is important that you talk with your doctor about the risks and benefits associated with the implantation of a device.

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