

Rhythms of Life

PACEMAKERS, IMPLANTABLE DEFIBRILLATORS AND HEART FAILURE DEVICES



www.medtronic.com/rhythms

SPRING 2006

Thankful for Both Birthdays

Many of us wake up on our birthdays and have a sense of joy and anticipation, of wanting to celebrate the day with family and friends. But one of Albert Shuster's first thoughts on his birthday this past September was to call Medtronic and say, "Thank you. Thank you for my second birthday." Although Albert was born September 14, 1931, Albert and his wife, Ellen, believe that September 14, 2001 is Albert's second birthday—that's the day Albert received his implantable defibrillator.

Before the implantable defibrillator

In the 1990s, Albert had several heart attacks, along with other health problems. To help determine why Albert was not feeling well, his doctor ordered an electrocardiogram (also called an ECG or EKG). The results indicated Albert had ventricular tachycardia (VT), a dangerously fast heart rhythm in the lower chamber of his heart: the doctor recommended that Albert have an implantable defibrillator implanted. After reading the literature from his doctor, and listening to his physician son, who helped research the topic, Albert agreed. The surgery proceeded smoothly and the implantable defibrillator was placed in Albert's upper chest.

Although a blocked artery (heart attack) is a plumbing problem, a heart attack can also disrupt electrical pathways creating an electrical problem (arrhythmia).

A second life with his implantable defibrillator

Today, Albert lives his life just as he did before having an implantable defibrillator. He volunteers at the senior center, enjoys weekly outings to eat with his many cousins, and travels regularly to visit his family hundreds of miles away.

"Because my (implantable) defibrillator is on my left side, my grandchildren know they can jump only on my right side," laughed Albert. "I love playing with my grandchildren."



Albert telling stories to his attentive granddaughters, Flori and Ileyna, and their friend Nicole.

But before the first trip with his implantable defibrillator, Albert called Medtronic's Patient Services department to find names of doctors who are experienced with defibrillation therapy in the city where he would be staying, just in case he needed to contact them. So far, that hasn't been necessary.

(Guidelines in your patient manual recommend that you check with your doctor before traveling and before engaging in any sport or activity that might directly contact the implantable defibrillator.)

Why the implantable defibrillator shocks

Albert and Ellen recall one time when they believe that the implantable defibrillator saved Albert's life. It was in 2004, about one week before Albert's birthday. Albert was sitting in a chair when Ellen saw him jerk and heard him make a loud sound. Ellen watched Albert and waited. In a few moments, Albert began breathing again. Albert just remembered feeling dizzy and then a feeling of swirling downward. After resting, he said he felt fine. Following his doctor's instructions, Ellen called Albert's doctor. The next day, Albert visited his doctor and his device's therapy was adjusted to proceed directly to defibrillation.

The implantable defibrillator has three main levels of therapy. The first level sends several rapid, tiny electrical pulses. If a normal heart rhythm is not restored, the second level uses a low-power shock (cardioversion). The third level, defibrillation, is a high-power shock that is designed to reset the heart to a normal rhythm. The doctor programs the therapy according to each person's heart rhythm problem.

"It's a miracle and lifesaver for sure," explains Albert. "I'm so thankful to Medtronic and for my skilled physicians. Every day you have a choice. You can't control life, but you can control how you feel about it." A sense of humor, an optimistic attitude, and a thankful heart, that's what Albert Shuster wakes up feeling every day, not just on his birthday.

In Tony's Words

Excerpts of a letter to the editor:

...I hit the streets walking the day after my (pacemaker) implant and resumed running 30 days later.

It all started in January of 2003. I was an active 53-year-old who swam, ran, and rode mountain bikes. Then, I began to feel that sometimes I was missing a moment of time. These missed moments continued until June 2003 when I had a major (lapse in time) that took me to my knees. Luckily, I was at home. My wife convinced me to see a doctor. The doctor was unable to find anything wrong, but scheduled me for a physical 30 days later.

During the doctor appointment on July 2, 2003, the medical staff began the preparatory work: blood draw, electrocardiogram (EKG), and such. The doctor came into the room and began my physical by reviewing my EKG. He asked me if I felt OK and then hooked me up for another EKG. While it was running, he asked again, how I was feeling.

"Why?" I asked.

"(Your heart is beating at) 32 beats per minute," he said. (A normal heart rate is 60 to 80 beats per minute.)

Within the hour I was on my way to the hospital, and I had my Medtronic Kappa® 900 Pacemaker implanted the next day. On July 4 I walked three miles, and within the month I was back to my regular routines. I (now feel) great.

I have Sick Sinus Syndrome yet I lead a full, unencumbered life.

Thank you,

Tony

William Arnold



One month after his implant, Tony and his wife take a bike trip.

Sick Sinus Syndrome is when the heart's natural pacemaker, the sinus node, is not working properly and the heart beats too slowly. This results in not enough blood and oxygen flowing through your body and brain, which can cause lightheadedness or fainting. A pacemaker is implanted to help your heart beat at a normal rate.

"Grateful Beyond Words"

"Never, ever give up. And, while you should listen to your doctors, YOU must be your own advocate," advises 63-year-old Sandy Powell, who has an implantable defibrillator with a heart failure pacemaker.

The events that produced this advice began eight years ago when Sandy was an active and energetic owner of three retail stores. Thinking that her shortness of breath might be caused by pneumonia, Sandy went to her family clinic. "When the doctor told me I had blood clots and my heart was damaged because of a virus, I was in disbelief. Viral cardiomyopathy? Not me! I was too healthy, too active."

Viral cardiomyopathy occurs when a virus weakens and stretches the heart muscle. With weak pumping, not enough blood is sent throughout the body. And, extra blood sitting in the heart can form blood clots.

Sandy reduces stress

Listening to her doctor's advice, Sandy reduced the stress in her life by selling her stores. After that, Sandy was lucky enough to find a new job that she loved. And, even with an ejection fraction as low as 25%, she was able to go about her normal daily life for several years.

Ejection fraction is the amount of blood pumped out of the heart during each heartbeat. In a healthy heart, 50 to 75% of the blood is pumped out during each heartbeat. People who have a low ejection fraction (35% and below) are at risk for a dangerously fast heart rhythm.

Then, one evening at a special dinner for work, Sandy fainted and was taken to a hospital. Tests revealed ventricular tachycardia, or VT, a dangerously fast heart rhythm. Within the week, Sandy had surgery for an implantable defibrillator.

Sandy lived a normal life with her implantable defibrillator for about five years. During this time, Sandy even took care of her husband who had developed Alzheimer's disease. Then, one day, Sandy suddenly felt very sick—sick enough to go directly to her doctor. A test showed her ejection fraction was now 10%. (A healthy heart has an ejection fraction of 50 to 75%.) Sandy was referred to a heart transplant physician who recommended a heart transplant. At this point, Sandy's heart was so weak she needed a wheelchair to shop for groceries. Luckily, her adult son was able to move in to help her and her husband. Sandy also had to give up her favorite hobby — teaching painting — because she couldn't walk around the classroom. *(continued on back page)*

Heart Attack... Arrhythmias... Sudden Cardiac Arrest... Heart Failure... What IS the Difference?

If you're confused about the differences between these heart conditions, you're not alone. Sometimes, even news reports use these terms incorrectly. To help you understand the differences, each heart condition is described in relation to a healthy heart.

The Heart Needs Oxygen

Our heart is a powerful muscle that needs a good supply of oxygen. Oxygen is carried through blood vessels called arteries to all parts of our body. The blood vessels that bring oxygen-rich blood to the heart are called coronary arteries.

A **heart attack** is when one or more of the coronary arteries are blocked with a clot or fatty tissue called plaque. Oxygen is then not reaching part of the heart muscle (Figure 1). If blood flow is not restored within several hours, the affected heart muscle may be damaged permanently.

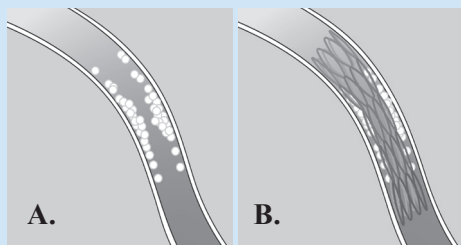


Figure 1. A. Plaque in the coronary arteries is called coronary artery disease. B. A coronary heart stent props open the pathway.

The Heart Needs Electricity to Pump

Every heartbeat begins with a tiny electrical pulse in the sinus node. Figure 2 shows how electricity flows through the heart, beginning in the upper

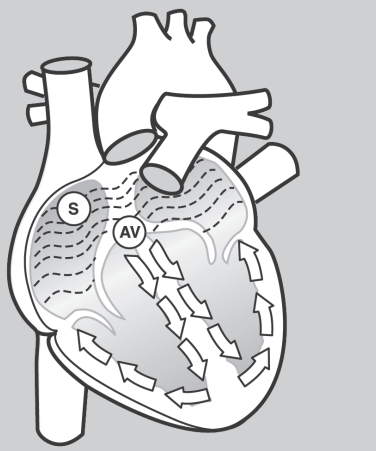


Figure 2. An electrical signal in the sinus node (S) starts other signals rippling through the upper chambers (dashed lines). The upper chambers pump. Electricity collects in the AV node (AV), flows through the conduction pathways (open arrows), and makes the ventricles pump.

chambers and causing the upper chambers to push blood into the lower chambers. The electrical signals then gather in the atrioventricular node (AV node) before flowing quickly throughout the two lower chambers called ventricles. The two ventricles pump strongly, and at the same time, to deliver blood throughout the body.

A heart rhythm disorder (**arrhythmia**) occurs when the heart's electrical system is not working properly.

When a heart beats too fast

Ventricular tachycardia is when the heart beats at a dangerously fast, yet regular rhythm. In contrast, **ventricular fibrillation** is when the heart's ventricles quiver, chaotically, and cannot pump blood. The heart does not beat. This is **Sudden Cardiac Arrest (SCA)** and the heart must be shocked into a normal rhythm—immediately.

After a person recovers from sudden cardiac arrest, (and often with ventricular tachycardia), an **implantable defibrillator** is prescribed. An implantable

defibrillator is a small heart device that senses when the heart is beating at a dangerously fast heart rhythm. It then delivers therapy as programmed by the heart doctor, to return the heart to a more normal heart rhythm.

When a heart beats too slowly

If the heart rate is too slow, a **pacemaker** provides the electrical signals needed to keep the heart beating at the rate the body needs, whether a person is walking to the mailbox or hiking.

When a heart cannot pump strongly

The last heart condition, **heart failure**, is when the heart muscle loses its ability to pump enough blood for the body's needs.

"Failure" doesn't mean the heart has stopped pumping, but that it is struggling to pump efficiently.

In the later stages of heart failure, the weakened heart muscle can cause the ventricles to pump at different times. When this happens, a **heart failure pacemaker** may help by sending tiny electrical pulses to make both ventricles pump at the same time. For some people, this coordinated pumping greatly improves blood flow.

Understanding the Heart and Heart Conditions

A healthy heart pumps blood throughout the body...all started by an electrical signal. A healthy heart has an intact electrical system and a strong mechanical (pumping) system. By knowing the differences between a plumbing problem (heart attack), an electrical problem (arrhythmias such as a heart rate that's too slow or too fast), and a pumping problem (heart failure) you may understand your own heart's condition more clearly. And remember, your doctor and heart nurse are your best resources for information.

(continued from page 2)

A new implantable defibrillator—with CRT

While going through the process of preparing for a heart transplant, Sandy learned that the battery in her implantable defibrillator needed to be replaced. (Although medical device batteries are long-lasting, they eventually need replacement. Getting a new battery means replacing the entire device.) Sandy's heart rhythm doctor (an electrophysiologist) recommended a new type of implantable defibrillator that also treats heart failure. The heart failure part of the device makes the two lower heart chambers pump at the same

Heart failure is when the pumping of the heart becomes weak and cannot pump enough blood for the body's needs. For some people, the pumping chambers of the heart no longer pump at the same time, reducing the amount of blood pumped to the body even more.

time, as they do in a healthy heart. After several consultations with the doctors—and with insistence from Sandy—both doctors agreed on an implantable defibrillator that also treats heart failure. (Cardiac resynchronization therapy or, CRT, biventricular pacemaker, and 3-lead device are other names for a heart failure pacemaker. A heart failure pacemaker often has a defibrillator to treat dangerously fast heart rhythms.)

A healthy ejection fraction of 51%

Several weeks after surgery to implant her Medtronic InSync II Marquis™ device, Sandy was feeling much better. The nurses, doctors, and Sandy were elated when tests showed an ejection fraction of 51%. Because of this excellent response, Sandy was removed from the heart transplant list. (Just as each person's medical condition is unique, a person's response to CRT is also unique. The type of response varies,

and, not all patients receive improvement.)

Today, Sandy says, "I have my life back. I've come back from the depths of death. I'm so grateful... grateful beyond words."

Last year Sandy moved herself and her husband from sunny Florida to snowy Michigan to be with their extended family. Sandy is now able to take care of her house, go on daily walks, and, even though she no longer teaches, she still does her favorite hobby—painting.



Sandy can paint once again.

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Rhythms of Life is a publication designed to educate and to share personal experiences of others who have a pacemaker, implantable defibrillator, or heart failure device. These testimonials are personal experiences of that individual and do not represent the company's or the medical profession's official recommendations. Therapy results vary by individual. As always, any questions regarding your specific medical device therapy should be directed to your doctor. You can also call Medtronic Patient Services toll-free at 1 (800) 551-5544, x41835 (7:00 a.m. to 6:00 p.m., Monday – Friday, Central Time) with non-medical questions.

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