

According to Jolene Runkel, MSN, a nurse practitioner at Iowa Heart Center's Heart Failure Clinic, CardioSight Service provides more objective information for diagnosing intrathoracic fluid buildup. "It makes my job easier because we're catching problems earlier."

CardioSight Service provides either a Heart Failure Management or Cardiac Compass® Trends Report, both of which are useful for communicating with patients and with other providers involved in a patient's care, says Runkel. "If I see that a patient has had an irregular heartbeat, then I can go talk to the cardiologists or the EP doctors," she says. "We have more evidence as to what's going on."

### On the Foothill of Exciting Possibilities

With a wealth of patient cardiac device information flowing freely throughout Iowa Heart Center, Ytzen sees many opportunities for further development and a higher quality of patient care.

"We're on the foothill as far as what the possibilities are," she says. "Anytime you can streamline your process, it allows you to be more attentive to patient care issues, to deal directly with the patient versus manipulating the data. Especially when you look at the number of patients, we have a real opportunity to serve. That's pretty exciting."

*This case study recounts one clinic's experience using the Medtronic CareLink Network for remote device follow-up. Medtronic, Inc. cordially invited doctors and clinic staff to share their story. Please bear in mind that this experience is specific to this clinic. Results may vary. Not every clinic will have the same results.*

<sup>1</sup> Falk D, Straub K. Practice efficiency improvements resulting from the use of Medtronic CareLink Network Remote Monitoring Service. Fairfield, Iowa: Human Factors International, July 2004.

<sup>2</sup> For patients who have devices with OptiVol® Fluid Status Monitoring.

#### Brief Statement

##### Concerto™ Model C154DWK

**Indications:** Concerto is indicated for ventricular antitachycardia pacing and ventricular defibrillation for automated treatment of life-threatening ventricular arrhythmias. The system is also indicated for the reduction of the symptoms of moderate to severe heart failure (NYHA Functional Class III or IV) in those patients who remain symptomatic despite stable, optimal medical therapy, and have a left ventricular ejection fraction  $\leq$  35% and a prolonged QRS duration. **Contraindications:** Concerto is contraindicated in patients whose ventricular tachyarrhythmias may have transient or reversible causes; patients with incessant VT or VF; and patients who have a unipolar pacemaker. **Warnings and Precautions:** Changes in a patient's disease and/or medications may alter the efficacy of the device's programmed parameters. Patients should avoid sources of magnetic and electromagnetic radiation to avoid possible underdetection, inappropriate sensing and/or therapy delivery, tissue damage, induction of an arrhythmia, device electrical reset, or device damage. Do not place transthoracic defibrillation paddles directly over the device. Certain programming and device operations may not provide cardiac resynchronization. **Potential Complications:** Potential complications include, but are not limited to, rejection phenomena, erosion through the skin, muscle or nerve stimulation, oversensing, failure to detect and/or terminate tachyarrhythmia episodes, acceleration of ventricular tachycardia, and surgical complications such as hematoma, infection, inflammation, and thrombosis.

##### Model 2090 Medtronic CareLink® Programmer

The Medtronic CareLink Programmer is a portable, microprocessor-based instrument used to program Medtronic implantable devices.

##### Model 2490 Medtronic CareLink® Monitor

**Intended Use:** The Medtronic CareLink Monitor and the Medtronic CareLink Network are indicated for use in the transfer of patient data from some Medtronic implantable cardiac devices based on physician instructions and as described in the product manual. These products are not a substitute for appropriate medical attention in the event of an emergency and should only be used as directed by a physician. **Warnings and Precautions:** Do not use a cellular phone while the antenna is positioned over the implanted device. The Medtronic CareLink Network is currently available in the continental United States, Alaska, and Hawaii.

##### Model 2020A CardioSight® Reader

**Intended Use:** The Model 2020A CardioSight Reader is intended for use in a clinical setting. The CardioSight Reader is indicated for use to interrogate compatible Medtronic implantable devices to collect patient and device data and send the information to the clinician. The Model 2020A CardioSight Reader cannot be used to change therapy. **Contraindications:** There are no contraindications for the Model 2020A CardioSight Reader. **Warnings and Precautions:** The CardioSight Reader must only be used for interrogating compatible Medtronic implantable devices. Do not use a cellular phone while the antenna is positioned over the implanted device. The CardioSight Reader is designed for use in the continental United States, Alaska, and Hawaii.

##### Paceart®

For further information regarding Paceart, please call Medtronic at 1 (800) 722-3278 and/or consult Medtronic's website at [www.paceart.com](http://www.paceart.com).

*See device manuals for detailed information regarding the implant procedure, indications, contraindications, warnings, precautions, and potential complications/adverse events. For further information, please call Medtronic at 1 (800) 328-2518 and/or consult Medtronic's website at [www.medtronic.com](http://www.medtronic.com).*

#### World Headquarters

Medtronic, Inc.  
710 Medtronic Parkway  
Minneapolis, MN 55432-5604  
USA  
Tel: (763) 514-4000  
Fax: (763) 514-4879  
[www.medtronic.com](http://www.medtronic.com)

#### iSolutions

Medtronic CareLink Network,  
Medtronic CareLink Programmer,  
Paceart System, and CardioSight  
Service are part of Medtronic's  
family of information solutions.  
[www.medtronic.com/isolutions](http://www.medtronic.com/isolutions)

UC200603817 EN  
© Medtronic, Inc. 2006  
All Rights Reserved  
Printed in USA  
July 2006

## Clinic Case Study

Iowa Heart Center  
Des Moines, Iowa

## Patient Care and Clinic Management Using Medtronic's Information Solutions

### *iSolutions*

- Medtronic CareLink® Network
- Medtronic CareLink® Programmer
- Paceart® System
- CardioSight® Service

## Facilitating Information Flow Through Multiple Offices

Headquartered in the figurative heart of Iowa – Des Moines – the Iowa Heart Center branches out to several offices and locations throughout the central, northern, and southern parts of this primarily rural state. To manage the growing, multiple-site practice and increase operational efficiencies, Iowa Heart Center (IHC) relies on several Medtronic technologies that facilitate information access, flow, and organization: the Medtronic CareLink® Network, the Medtronic CareLink Programmer, Paceart® System, and CardioSight® Service. With this suite of information solutions, or “iSolutions,” clinicians in all IHC locations can access cardiac device information for any patient, helping provide consistency of care across the organization.

“Each individual office at Iowa Heart Center works like a small office, taking care of its patient population, but if a patient shows up at another office, we’re able to take care of them,” says Amy Leiserowitz, RN, technical director of Arrhythmia Services.

David Gordon, MD, the first board-certified cardiologist in central Iowa, founded Iowa Heart Center in 1970 with the modest vision of building a cardiology practice of three physicians. Today the center has grown to 60 cardiologists and surgeons, including seven electrophysiologists, as well as 20 EP nurses. These clinicians serve thousands of patients in Des Moines, West Des Moines, Ames, Carroll, Fort Dodge, Council Bluffs, and surrounding communities.

The center’s focus hasn’t changed since Dr. Gordon opened the first office: to provide quality, leading-edge, compassionate care to patients and their families. Implantable cardiac devices play an important role in the center’s mission of providing aggressive treatment that helps patients live longer, healthier lives. The clinic also strives to provide primary prevention for people at risk of sudden cardiac death, according to national screening guidelines.

The center implanted 1,169 ICDs and more than 800 pacemakers in 2005. “Iowa Heart Center has taken pride in providing the newest and greatest devices available,” Leiserowitz notes.

### *Better Efficiency and Care with the Medtronic CareLink Network*

The rapid growth in IHC’s device patient population made managing follow-up care a complex challenge. “With our increase in volume of ICDs, we didn’t have enough staff to check all the patients like we did in the past, so we had to change the process,” Leiserowitz says.

She conducted a two-day observation in 2003 comparing remote device checks via the Medtronic CareLink Network with in-office evaluations. It took her and the staff nearly three times as long to conduct in-office device checks<sup>1</sup> (25 minutes on average) compared with remote checks (8 minutes on average). Based on the study results, EP nurses calculated that remote follow-up saved Iowa Heart Center the equivalent of seven weeks of labor over the course of a year.

“We found that it took significantly less of the nurses’ time to get the same information, so it’s more cost-effective,” Leiserowitz notes. Today, three out of four annual device checks are performed remotely through the Medtronic CareLink Network for more than 1,400 enrolled patients. If patients experience symptoms or hear an alarm tone between checks, they transmit device data from home, and IHC staff review it on the secure Medtronic CareLink Clinician Website.

Mary Jo Ytzen, RN, director of EP Services at Iowa Heart Center, says that remote follow-up improves both patient care and satisfaction; patients appreciate not having to take time off work, drive to the clinic, or arrange transportation. “We also have a much better opportunity to address therapy shocks,” she explains. “There have been times when patients have received shocks for atrial fibrillation. That changes how we’re going to take care of the patient.”

Another benefit, according to Leiserowitz, is the increased flexibility for clinic schedules. “The greatest benefit to our staff is that the Medtronic CareLink Network allows us to triage situations and determine which patients need immediate care,” she says. “The Medtronic CareLink Network gives us the flexibility to work nonsequentially, based on what needs to be done most urgently.”

Iowa Heart’s EPs see great potential in Conexus™ Wireless Telemetry used with both the Medtronic CareLink Network and Programmer. Ben Johnson, MD, predicts that wireless-enabled cardiac devices will become the norm, and sees their real value in remote monitoring. According to Johnson, automatic, routine



Amy Leiserowitz, RN, technical director of Arrhythmia Services at Iowa Heart Center, has documented clinical efficiencies through use of the Medtronic CareLink Network and other Medtronic information solutions.

downloading of device data eliminates the need for “active participation either by the follow-up center or the patient.”

Ytzen says automatic monitoring will improve care. “Wireless will provide patient confidence and minimize the number of ‘no-shows.’”

Says Johnson, “The whole goal of wireless is quicker integration of the patient’s data with what we can do initially with medications and later with manipulation of programmable device parameters to try to improve care. We have simply got to create the means by which cardiac device information can be translated to better patient outcomes and less expensive solutions to their problems.”



Electrophysiologist Ben Johnson, MD, is excited about the potential for wireless-enabled cardiac devices to improve patient satisfaction, compliance, and outcomes.

### *Harnessing the potential of wireless communication: Medtronic CareLink Programmer*

Electrophysiologists at Iowa Heart Center use the Medtronic CareLink (2090) Programmer to set device parameters and therapies at implant and follow-up. IHC participated in clinical studies of the Medtronic Concerto™ CRT-D, one of the first cardiac devices with Conexus Wireless Telemetry. Iowa Heart’s implanting teams appreciated the efficiencies they gained through use of wireless communication.

“The wireless-enabled Medtronic Programmer is really nice at the time of implant,” notes Ytzen. “Programming can be done without having to have the telemetry wand over the patient’s device. It can be done very quickly while the pocket is being closed.”

In the clinic, nurses can do evaluations of wireless-enabled devices while talking to the patient or conducting a physical exam.

Overall, the nurses find it convenient to use the Medtronic CareLink Programmer with both wireless and non-wireless

devices. “I like the screen layout – it’s very easy to read,” says RJ Kuskulis, RN. “It’s simple to use the pen. I like the reports that are produced. There’s so much information. I give patients a printout so they understand what their therapies are. I show them how to read electrograms or marker channels.”

### *An information hub: Paceart System*

From the Medtronic CareLink Programmer and the Medtronic CareLink Network, data flow into the Paceart system, which provides a central hub for organizing and archiving patients’ arrhythmia and device information. Iowa Heart Center clinicians use Paceart to document and store all device evaluations and follow-ups, including remote, in-office, and transtelephonic monitoring follow-ups. Remote checks via the Medtronic CareLink Network download automatically into Paceart each night.

Leiserowitz notes that the automatic downloads help the clinic staff manage workflow. “We schedule patients to send their transmissions on a certain day, so we always know how many transmissions we’ll have to review the following day. We can plan our time and prioritize.”

Paceart manages information for all leading vendors’ devices and can serve as the gateway to electronic health record systems.

“All offices are up and running,” says Leiserowitz. “Paceart ties in nicely with what we’re trying to accomplish – no paper charts. Having everything in one place makes it easier to get the information we need, which saves time.”

### *CardioSight Service*

CardioSight Service is another of Medtronic’s information solutions that Iowa Heart Center has leveraged for better patient care. The service provides tailored heart failure information to help cardiologists treating heart failure identify problems such as fluid overload<sup>2</sup> before patients report symptoms. Although many of Iowa Heart’s cardiologists work in close proximity to the clinic’s electrophysiologists, they appreciate having a tool that provides quick, easy access to a patient’s device data, without having to rely on the EP for a programmer device interrogation.

“Heart failure physicians don’t want to know all the numbers – they just need to see those parts of the data collection that are relevant to heart failure. CardioSight Service gives them that subset,” says Ytzen. “From an efficiency standpoint in the office, they get the information very quickly because the patient doesn’t have to be scheduled for a device check, and the device nurses don’t have to be involved in the data review.”