

# Technology Drives Success of ‘Connected Health’

BY SHERRY BOSCHERT  
San Francisco Bureau

When Dr. Joseph C. Kvedar founded a program in telemedicine at Massachusetts General Hospital in 1995, his first digital camera cost around \$1,200 and had about as much sophistication as today's average cell phone camera.

That early technology led to an epiphany, however, about the potential roles for consumer-ready technologies in health care—using tools such as cellular phones, the Internet, and digital cameras.

An early study compared two groups of dermatologists who were asked to diagnose skin lesions, with one group seeing the patients and the other seeing photographs of the lesions, to assess the accuracy of diagnoses using digital photos. The photography group breezed through evaluations of 37 cases in a 3-hour period.

“That’s when I realized it was an efficiency tool” as well as a diagnostic tool, said Dr. Kvedar, a dermatologist and director of the Center for Connected Health, Boston. The center, which was called Partners Telemedicine until this year, is a division of Partners HealthCare, the integrated health system comprising Massachusetts General Hospital, Brigham and Women’s Hospital, and many providers throughout eastern Massachusetts.

The center grew from a facility requiring Dr. Kvedar’s half-time attention to one with eight staff members who have coordinated studies and implemented programs to improve management of acne, wound care, hypertension, heart failure, psoriasis, and more. Compelling trends in the delivery of medical services fuel the center’s expansion.

“We’re facing an enormous challenge in terms of capacity” to provide health care in the United States, he said. “It’s so much more acute now.” A massive growth in the prevalence of chronic illness combined with cost constraints and a shortage of dermatologists, other specialists, and nurses make greater efficiency imperative, he said.

“In the last month, I’ve seen four articles in the lay press about the primary care workforce shortage,” he noted. “It’s disturbing.” A suburb of Boston recently had to choose between paying for health insurance for the town’s employees or funding high school sports. The students lost their sports programs.

“This is going to hit all of us. Our towns are going to

have to make choices like this” that will drive demand for greater efficiencies to help decrease the costs of health care, he said.

Efficiency is only part of the equation. Connected care can improve efficacy as well. Detaching some patient-provider interactions from the old paradigm of scheduled in-person visits can help give patients care when and where they need it. Using technology to give patients the feedback of physiologic data gets them more engaged in their health care.

“There’s all kinds of magic that happens when you’re able to take the care to the patient,” he said.

The center’s first big success was a study of 85 housebound patients with heart failure who were followed for 2 months after hospital discharge. The patients were given equipment to measure their weight, blood pressure, and oxygen saturation plus a tabletop device to answer disease management questions and to transmit daily measurements to telemonitoring nurses, who triaged follow-up care. These patients required 40% fewer home visits by a nurse and were hospitalized 25% less often, compared with a group receiving usual care.

Patients also reported improved quality of life and appreciated taking a more active role in their health. “We inadvertently learned that patients get very involved in their care,” Dr. Kvedar said.

The Partners hospitals discharge 2,300 heart-failure patients per year. The Connected Cardiac Care program is expanding to enroll as many of these patients as possible, housebound or not. Next, a similar study of diabetic patients is being planned.

Mistakes along the way inform the next steps in an iterative process. The heart failure study initially tried to get patients to send daily information through cell phones instead of a tabletop device. That “was a miserable failure because the over-65 set couldn’t tolerate the small screen and buttons” or other cell-phone features. After enrolling just 30 patients, the study was redesigned.

The center’s programs include:

► **Wound Care.** Home-care nurses uploaded digital photos of wounds on 34 homebound patients to wound care specialists, which reduced the average time for assessment by 2.5 hours per patient, a study found. The trial also showed that specialists provided different diagnoses and treatment plans than did the home-care nurses in many cases.

The Wound Telehealth Consultation System is being expanded to cover all wounds that require daily care, including stasis dermatitis, diabetic ulcers, and pressure sores. A new study will look at the feasibility of using cell phone camera photos for wound care assessment.

► **Acne.** Electronic follow-up visits for mild to moderate acne were a hit with patients and dermatologists in preliminary results from the first 60 patients of an ongoing study. Patients received digital cameras and uploaded facial photos for evaluation, trimming the average time spent by patients to about 20 minutes instead of over 2 hours for travel and clinic time. Blue Cross/Blue Shield reimbursed dermatologists for e-visits at the same rate as a follow-up visit in the clinic. “We see it extending to psoriasis and other skin conditions that don’t vary too much between visits,” Dr. Kvedar said.

► **Hypertension.** To increase adherence to hypertension therapy, 70 patients are being given “smart” pill bottles that transmit a signal when a scheduled medication dose has been taken or missed. They’ll also get a palm-size globe that glows red when a dose is overdue and green when the medication is taken.

A separate study brings the center together for the first time with employees of a large company, EMC Corp. of Hopkinton, Mass. The company recruited 400 employees with high blood pressure to be randomized to usual care or to a group that is asked to measure their blood pressures at least twice weekly with special home blood pressure cuffs that transmit readings to a central computer. Patients will get individualized feedback and advice weekly on a Web site; those whose blood pressure readings climb particularly high will be contacted via e-mail or phone by a clinician.

If these technological self-management strategies succeed in keeping blood pressures down, it’s a win for patients, the company, and clinicians. Trends toward basing clinician reimbursements on quality care through “pay for performance” and similar strategies will help push demand for better, more efficient care, Dr. Kvedar said.

When physicians in a system don’t get a bonus unless they keep the average hemoglobin A<sub>1c</sub> levels of diabetic patients under a certain level, a Center for Connected Health program to help them attain one is “music to people’s ears,” he said. “Things are starting to line up in a very exciting way on the reimbursement side. You’ll see that in the next few years.” ■

## PRODUCTS

### Aesthetic Products for U.S. Market

The signature facial and body treatment products of the French company Institut Esthederm are now for sale in the United States. The products include gels and creams for moisturizing and foams and gels for cleansing. For more information, call 800-710-1018 or visit [www.esthederm.com](http://www.esthederm.com).

### Software Makes Reminder Phone Calls

The ReminderPro software uses a PC running Windows XP or 2000 and a standard telephone and interfaces with existing practice management systems, electronic medical record systems, hospital records management, and electronic schedulers to deliver specific reminders to particular patients. For more information on the software, contact JulySoft at 800-350-7693.

### Medical Image-Sharing System

VivaNet, a dermatology-specific telemedicine server, allows dermatologists who use VivaScope confocal imagers to share the images with other dermatologists or

pathologists through the Internet. Once they are saved, pictures taken using VivaScope can be transferred and stored on a secure server for access by other authorized medical practitioners for review and consultation. For more information, contact Lucid Inc. by visiting [www.lucidtech.com](http://www.lucidtech.com).

### Cornstarch-Based Bug Spray

Off! FamilyCare Smooth & Dry is a cornstarch-based insect repellent designed to dry quickly and feel comfortable on the skin. The aerosol spray contains 15% DEET to help protect against mosquitoes as well as gnats, ticks, biting flies, chiggers, and fleas for up to 6 hours. For more information, contact the S.C. Johnson company by visiting [www.offprotects.com](http://www.offprotects.com).

### Seborrheic Dermatitis Regimen

Xolegel Duo is a new combination treatment regimen for seborrheic dermatitis of the scalp, face, and body. Xolegel Duo consists of a gel for the skin, Xolegel (ketconazole 2%, USP), and a shampoo for the scalp, called Xolex (zinc pyrithione

1%). The two products are made by Barrier Therapeutics. For more information, visit [www.barriertherapeutics.com](http://www.barriertherapeutics.com).

### Antioxidant Sunscreen

Environmental Defense Sunscreen is an SPF 30 lotion that provides UVA and UVB protection and is suitable for all skin types. The lotion’s active ingredients are a zinc oxide compound (Z-COTE MAX) and Parsol MCX. In addition, green tea extract, caffeine, hyaluronic acid, vitamin E, and Ceramide 3 (a plant-derived lipid) add antioxidants and moisture to the skin. For more information, contact Skin Medica by visiting [www.skinmedicaaesthetics.com](http://www.skinmedicaaesthetics.com).

### Antimicrobial Cream

Silcryst, a prescription antimicrobial cream containing NPI 32101, is a broad-spectrum antimicrobial wound-care cream containing nanocrystalline silver. Clinical trials involving more than 600 adults showed that the cream was an effective barrier against *Staphylococcus aureus* (including methicillin-resistant *S. aureus*) and *Pseudomonas aeruginosa*. For more information on the product, go to [www.nucryst.com](http://www.nucryst.com).

### Nutritional Care Supplements

Juvio’s Rejuvenate nutritional care products promote good health at a cellular level. The Green Perfection Powder and Green Perfection Capsules combine 78 ingredients including vitamins, minerals, plant extracts, and antioxidants. For more information on the nutritional care products, or to order the products, go to [www.nrodgerjuvio.com](http://www.nrodgerjuvio.com).

### Combination Diabetes Pill Approved

Combination tablets containing sitagliptin, a dipeptidyl peptidase-4 (DPP-4) inhibitor, and metformin have been approved by the Food and Drug Administration as an adjunct to diet and exercise for adults with type 2 diabetes. The tablets are marketed by Merck & Co. as Janumet. For more information, visit [www.janumet.com](http://www.janumet.com).

### Free Web-Supported EMR

GlanceEMR 2.0 is a free-of-charge electronic medical record system that is certified by the Certification Commission for Healthcare Information Technology. The system is manufactured by Glenwood Systems LLC, based in Connecticut. For more information, visit [www.glanceemr.com](http://www.glanceemr.com).