Many Americans live in fear that an elderly parent will fall at home and get hurt without anyone there to help. Thanks to a fast-growing field known as telemedicine, that worry may become a thing of the past.

Lutheran SeniorLife, a faith-based nonprofit in Pennsylvania that runs senior living communities, has found that by having frail, elderly residents wear a sports watch–like health monitoring device that is part of a system called the MobileCare Monitor, nurses’ aides can respond quickly if there’s a fall. The secure, FDA-cleared system, sensing the fall, instantly sends a text message to the aide’s smartphone and an alert to a Web-based interface called a CareStation.

The MobileCare Monitor is made by AFrame Digital, a Reston, Va.–based firm that is among many players now entering the booming field of telemedicine. Medical providers in this niche use data sent from one site to another via wireless tools, two-way video, smartphones and other electronic forms of transmission to take care of patients and keep tabs on their condition.

Globally, the telemedicine patient-monitoring market grew from $4.2
billion in 2007 to more than $10 billion in 2012, according to a report from Kalorama Information, a publisher of medical market research with offices in Rockville, Md., and New York City. The U.S. alone claims nearly half that number—$4.1 billion in 2012—and its share is expected to soar to $8.7 billion by 2017.

"If you can do remote monitoring of patients...certainly that is better for everyone."

-Tatiana Melnik, attorney

Lutheran SeniorLife began using the MobileCare Monitor two years ago in its LIFE programs, which provide comprehensive medical care, adult day care and home care to older adults with medical challenges.

It quickly became apparent just how handy the system would be, the day the nonprofit relocated 24 former nursing-home patients to a low-income senior housing complex as part of a pilot program. One of the frail residents toppled out of bed the day of the move. "The nurse found her on the floor; her bed was up too high," recalled George Brett, M.D., medical director for LIFE programs at Lutheran SeniorLife, who previously spent 30 years in private practice, mainly in geriatrics.

Since that point two years ago, the percentage of patients that the organization has had to move into nursing homes has dipped from 20 percent to 12 percent, according to Dr. Brett. About 40 of the nearly 500 people enrolled in the program in three counties in the Pittsburgh area now use the MobileCare Monitor system so they can stay out of a nursing home. "We believe they are far better off in the community," Dr. Brett said.

(Read more: CES:The big tech trends to watch)

The cost equation

There's a big cost savings, too. Although Lutheran SeniorLife's LIFE programs spent a few thousand dollars to install AFrame Digital's Web-based system in each of three low-income senior complexes and pay $400 for each patient's wrist monitor and subscription charges, Dr. Brett insisted it adds up to "peanuts" compared to the cost of moving someone into nursing-home care.

Medicaid pays the LIFE programs a flat fee of $3,400 a month to cover each resident's care, regardless of their needs. If a resident is no longer safe alone at home and has to move to a nursing home, the LIFE programs must pick up the entire $7,500 tab—without any additional reimbursement from Medicaid, Dr. Brett said. "Under that scenario, our LIFE program loses about $4,000 per person per month, every month for the rest of the participant's life," he explained.
A boom in telemedicine

It isn’t only senior-care facilities that are tapping telemedicine. Interest among many types of medical organizations is growing, thanks to the Affordable Care Act, experts say. The health reform encourages “accountable care,” an approach in which medical providers are judged on their effectiveness in treating patients and preventing relapses of medical conditions.

“There’s a cost savings associated with not having patients come back again,” said Tatiana Melnik, an attorney in Tampa, Fla., who specializes in data privacy and security, health care, information technology and intellectual property. “If you can do remote monitoring of patients to make sure they’re taking their medications, to check their blood counts and things like that without their having to come into the hospital or physician's office, certainly that’s better for everyone.”

Melnik also noted that fueling the increased acceptance of telemedicine are measures such as a provision of the Affordable Care Act, which has directed the Center for Medicare & Medicaid Innovation to explore new models for coordinating care for the chronically ill who are at high risk of hospitalization, including options like home telehealth technology. The National Defense Authorization Act for Fiscal Year 2014, which President Obama recently signed into law, also includes a provision to provide expanded telemedicine coverage to members of the military who are making the transition to civilian life. Many states have also been active in promoting the use of telemedicine.

Lutheran SeniorLife’s use of telemedicine is only one example of how it is changing medical care these days. AFrame Digital’s system, which can be integrated with other devices, like glucose monitors and blood pressure cuffs, also has the capacity to do telemonitoring of patients’ vital signs and to quickly notify a caregiver if a patient’s medical readings go outside of his normal baseline or even if his activity level dips, which may indicate illness. It can also be programmed to alert a caregiver if patients with a condition such as dementia are at risk of wandering outside the facility.

Hurdles that lie ahead

AFrame Digital’s chief medical officer, Christine Tsien Silvers, who has an M.D. from Harvard Medical School and a Ph.D. from Massachusetts Institute of Technology’s Department of Electrical Engineering and Computer Science, left behind a career as an emergency-room physician to join the company several years ago. "I loved the idea of what we were trying to do,” she said.

Other telemedicine companies offer tools to help medical providers and mental health professionals serve patients from a distance, outsource radiology and stroke assessments, and do cardiac, pulmonary or fetal monitoring of patients who are at home, according
to the American Telemedicine Association.

But telemedicine still faces obstacles. Not all health insurance providers have embraced it. "Currently, there is little reimbursement for telemedicine services," Melnik said, although she claimed that some have been proactive because of the cost savings it brings.

Complying with the Health Insurance Portability and Accountability Act (HIPAA), which safeguards consumers' privacy, and adhering to the state laws that govern the use of technology in medicine can also be a hurdle for telemedicine companies. "A big issue is privacy and security," said Melnik.

Obstacles or not, Dr. Brett is an enthusiastic proponent, claiming that the MobileCare Monitor makes the nonprofit's work easier. "It keeps us true to our mission, which is to allow residents to 'age in place,'" he said.

— By Elaine Pofeldt, Special to CNBC.com

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