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Residential care for the elderly is moving into the digital age

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Sensors under the mattresses of elderly residents with dementia track how much they sleep at night. Others in the showers note how often they bathe, while sensors in the walls watch over their movements.

The data are sent to the nurses at the assisted living center where these residents live, a red dot appearing next to the names of residents whose normal routines have changed dramatically. This was how staff was alerted recently about a patient who is usually up and out of her apartment early, but instead had been lying in bed most of the day. It turns out she was developing pneumonia.

"We caught it early enough that we were able to treat her here instead of in the hospital," said Indra Sooklall, director of resident care at Spring Hills Somerset, a 120-unit assisted living residence in New Jersey that installed "smart sensors" two years ago in a wing for dementia patients.

Technology is changing life inside nursing homes and other residences for seniors. The most cutting-edge among the new systems offer lofty promises of helping providers cope with the coming tsunami of aging baby boomers even as they grapple with funding cutbacks and with the increasing demand to care for sicker and older residents in less-restrictive and less-expensive settings.

Many of the recent technology upgrades inside long-term-care centers mirror the digital advances of the times, with Wii, Skype and YouTube being used to spice up therapy routines and entertainment programs. Wii

games are helping get patients in rehabilitation moving again after an injury or surgery, while heath experts believe computer chess, trivia or other skill games can keep brains active and potentially ward off senility.

But the most closely watched technological revolution to hit the long-term-care industry is the growing use of motion sensors and so-called "patient-monitoring systems" to better track changes in a resident's health and mobility.

"There are a whole host of things that are arriving on the market and being looked at as ways to improve care," said Paul Langevin, president of the Health Care Association of New Jersey, a trade group that represents the long-term-care industry.

IT Initiatives, a Manalapan, N.J., firm that designs technology and communication systems, is finalizing contracts with seven long-term-care centers in New Jersey to install resident monitoring systems, said John Dalton, the company's president.

One of them is at Friendship Village, a retirement community in Basking Ridge that is in the middle of a multi-year project to install technology specific to the needs of the different facilities on its campus. The nursing home and assisted living residence at Friendship Village is being outfitted with electronic-medical-records kiosks in hallways where staff will type in data about everything from blood pressure readings to when the patient was last bathed. The community's independent living units will have telephones with LCD screens that allow residents to call for concierge-type assistance as well as high-tech personal emergency systems that send signals to the staff's two-way-monitors.

As technology advances, the big push is going to be installing sensor systems at assisted living residences and independent-style living communities, with data-recording devices in the walls, floors, carpets,

beds and bathrooms enabling staff to keep tabs on residents without having to physically send a staff member to every room for routine checks, Dalton said.

Nursing homes, where patients require closer monitoring, are likely to turn to more sophisticated systems - ones that incorporate two-way video communication between patients and their caregivers as well as wearable monitors that alert caregivers if a patient has fallen or wandered out of a unit. There is even a sensor on the market that monitors whether a nursing home patient's diaper needs to be changed.

"There are all sorts of technologies available now that can be incorporated into a whole system designed to meet a facility's needs," Dalton said.

These technologies may one day become more commonplace in private homes as a way to allow elderly residents to remain independent for longer periods, said Michele Kent, president of Leading Age New Jersey, an industry group that represents non-profit long-term-care centers.

The digital advances come at a time when technology is being touted as a way to improve health care overall, with doctors and hospitals switching to electronic medical records and increasingly using remote monitoring systems to check in on patients who have been sent home.

"The whole idea is to keep residents at their highest functioning level, and technology is seen as being able to play a role in that," Langevin said.

The trend is far from widespread, however. While technology in long-term-care settings is much buzzed about these days, many of the systems in place remain in the pilot stage.

"It's too early to say if there's going to be a broad deployment of some of these technologies," said Laurie Orlov, an industry analyst and author of a blog, Aging in Place Technology Watch. "Nobody has really figured out a good model for paying for them."

In New Jersey, recent cuts in Medicaid and Medicare reimbursements have made it harder for long-term-care companies to upgrade or install new technologies unless they secure grants to help pay for it, Langevin said. Even the recent push by the federal government to fund the transition to electronic medical record keeping has largely targeted hospitals and doctors' offices.

"Nursing homes and long-term-care centers in general have been left out of all preliminary discussions about going high-tech," Langevin said. "None of the federal money and little of the state money is going to them."

But the market for technology in nursing homes and assisted living centers has begun to pick up significantly in the last year, said Bryce Porter, a sales manager with Intel-GE Care Innovations. His company has installed its Quiet Care sensor systems in hundreds of communities nationwide, including Bella Terra, an assisted living residence in Ocean County.

Over the long run, Langevin predicts, long-term-care centers will find a way to pay for technology upgrades. "Boomers aren't going to want to stay in a 30-year-old building without modern technology," he said.

With an eye to the future wants and needs of the boomer generation, many centers have already invested in technology to improve not just clinical care but also the quality of life inside their buildings.

Christian Health Care Center in Wyckoff, N.J., secured a grant to create

an electronic medical records system five years ago. At the same time, the non-profit invested in a computer system called IN2L - It's Never 2 Late - which residents use to play games, surf the Web or work on projects.

Residents have become hooked on Chicktionary, a Scrabble-like computer game. "We'd be lost without this," said Betty Mowerson, a 94-year-old resident who had never before owned a computer. "It keeps your mind going."

These computer brain games could actually help ward off dementia symptoms by exercising memories, attention spans, orientation and word-finding skills, said Michelle Zaks, a speech pathologist at Christian Health Care Center's assisted living residence.

In the rehabilitation wing, a Wii computer game system has become a standard tool in treatments. "This makes therapy fun but also functional," said Ritchie Lim, director of rehabilitation at the center.

During one recent session, 92-year-old Leonore Albert found herself doing some virtual snowboarding just three weeks after breaking her pelvis. Albert, of Paterson, N.J., seemed unaware of the exertion of the exercises, laughing good-naturedly when the computer voice told her she was "unbalanced."

"Since when do they qualify as a psychiatrist?" Albert quipped.

Other centers have installed systems focused more on improving entertainment and giving residents more opportunities to connect with the world outside.

Emeritus - a national chain of assisted living residences with locations in Wayne, Emerson and Paramus - partnered recently with a technology

company called Connected Living, which has designed easier-to-use-and-read software, with touch-screen capabilities for residents too arthritic to use a mouse. One resident used it to watch her grandson's wedding at the Shore.

Recently, about a dozen residents used the system to prove that kids aren't the only ones who enjoy making mash-up videos. The two-minute montage of them vamping - in wheelchairs and walkers - to "The Lion Sleeps Tonight" is filmed over a strange clip of a computer-animated hippo and dog. It hasn't made it to YouTube yet, but that's only because its producer - Emeritus' "life enrichment" director Itzik Bader - is a little insecure about letting the world see his dance moves.

"We just decided to do it one day just for fun," Bader said.

Most of the residents weren't sure at first about why they were dancing. But like the millions of teenagers and college students putting themselves out there on YouTube, they found it entertaining to see themselves on video. "They get a kick out of watching it over and over again," he said.