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RFID Gives Dementia Patients Their Freedom

Topics/Verticals: Asset Tracking, Health Care

Thanks to passive tags sewed into clothing, residents at risk for wandering away from the Shady Palms assisted-living facility no longer need to be confined to a secured area.

By Mary Catherine O'Connor

Feb. 10, 2009—Roughly 70 percent of the 100 residents at Shady Palms, an assisted-living facility located in Tampa, Fla., suffer from some type of dementia. Because of this, many of them sometimes become disoriented and attempt to leave the facility.

"They'll say, 'I'm leaving; I need to go home now,'" says Robert Bennett, the facility's administrator. This tendency to flee, referred to in the industry as "elopement," poses a significant threat to the health and safety of the ailing residents, he explains, and also presents a serious liability threat to the facility. But Shady Palms has installed an RFID-based tracking system—which Bennett refers to as "the best thing since sliced bread"—that alerts staff members if a resident suffering from dementia attempts to leave the facility.

Robert Bennet

Bennett is enthusiastic about the RFID system because it enables him to offer residents and their families a new housing option. Previously, he says, when residents showed signs of dementia and attempted to leave the grounds, he had no recourse but to confine them to a section of Shady Palms in which all exits are locked. There, residents are closely monitored and unable to partake in all of the activities available to those living in the facility's main section. "When [an individual] becomes at risk for elopement, I can't take that risk," Bennett says.

Now, residents who exhibit a tendency for elopement but are otherwise well enough to remain in the main residence section have an alternative. These individuals are outfitted with RFID tags that trigger alarms if their wearers approach boundaries or exits.

Ted Kostis, president of RFID systems developer and integrator Silent Partner Technology, designed the RFID implementation for Shady Palms by selecting off-the-shelf tags and interrogators, and devising a means of integrating them unobtrusively into the facility, while also creating software that triggers alerts to employees based on specific read events. He recently founded Guardian Angel Carewear, a Florida-based company that develops and sells solutions to meet the needs of elder- and health-care providers.

While RFID has become a popular tool for monitoring the whereabouts of residents at nursing homes and assisted-living facilities, Kostis says he has taken a unique approach to the Shady Palms solution, based on Bennett's specific requests. In the process, Kostis says, he tested a wide range of tag types—including low-frequency (LF) passive tags, ultrahigh-frequency (UHF) passive and active tags, ultra-wideband (UWB) tags and acoustic tags—from a long list of manufacturers.

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The problem Bennett hoped to avoid, he says, was pushback from residents due to the presence of the RFID tag. "People with dementia don't [always] remember what happened 15 or 20 minutes ago," he explains. "And because of this short-term memory loss, a resident might not recall why they're wearing a tag on their wrist or around their neck, or pinned to their clothing. If they don't know what it is, they're likely to remove the tag." So instead of asking residents to wear a wristband tag, Shady Palms is sewing passive UHF EPC Gen 2 RFID tags into the clothing of residents to be monitored.

The tags, covered by a rugged, waterproof casing, are sewn into articles of clothing owned by the residents to be monitored. EPC Gen 2 readers are mounted near doorways. Initially, Shady Palms had added a small, passive 125 kHz LF tag to the soles of the shoes of monitored residents. These LF tags can be read by antennas buried underground, outside building exits and along the outer edges of outside areas surrounding the facility, if a resident crosses these boundaries. However, Kostis says, Shady Palms opted to stop using the LF tags and rely solely on the UHF tags, in order to detect when monitored residents are near a UHF reader mounted near the facility's main entrance and exit.

This system, Bennett says, allows residents to be part of the general population instead of having to be moved to the facility's secured area. When a tag assigned to a monitored resident is read by an interrogator installed near the door, the software controlling that reader (which Kostis and his team developed) e-mails an alert to the appropriate staff members. The workers then receive the alert on their desk computers or—if they carry one—a PDA linked to the facility's wireless LAN.

Cost is another key benefit of the RFID system, according to Bennett. Because of the elevated care for residents assigned to the secured section of the facility, families of those living in this section pay nearly twice as much per month as residents housed in the main facility. However, Bennett notes, residents monitored with the RFID system are charged "just a few hundred dollars more" each month. "Economically," he states, "this RFID system makes sense because the costs of the system are easily covered."

Five residents are currently being monitored with the RFID system, though Bennett expects that number to grow markedly in the years to come, based on the increasing number of patients suffering from dementia in the facility. What's more, he says, Shady Palms plans to expand its use of RFID beyond elopement control.

According to Bennett, staff members can also employ a handheld RFID reader to locate articles of tagged clothing. Early tests have shown that this can be a useful application, he explains, since residents sometimes misplace their clothing. He says he's also considering a move to tag all clothing for every resident, so that the garments can be better tracked as they are put through the laundering process. Other elder-care facilities are also carrying out similar practices (see For Improving Elderly Care, RFID Is on the Button)

Additionally, Kostis has also introduced a number of other RFID systems to Shady Palms. The facility

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utilizes active 915 MHZ RFID tags for tracking such high-value, reusable assets as wheelchairs or medical equipment. Active tags operating at 433 MHz, and featuring a panic button, are also issued to residents who may require immediate assistance. If they fall or become ill, these individuals are asked to press the button to summon help from the staff, who see the alert on their computers of PDAs.

In addition to business process benefits, Kostis says—such as better asset utilization and reduced labor—the other applications will enable Shady Palms to see a return on its investment in the technology more quickly than it would if it used RFID only for elopement control.

Kostis and Bennett are also testing RFID applications for theft deterrence, as well as for better employee performance, through a task management system. This would entail having employees carry handheld RFID readers, which they would use to record the steps they take in performing certain tasks.

"This will record services performed in real time," Bennett says, "and the data can be fed into our Medicaid billing system, and that will provide us enormous savings on man hours," because the services won't need to be manually recorded. Shady Palms also recently hosted a test of an RFID-based system for identifying residents more at risk for dementia (see RFID Helps Diagnose Early Dementia).

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