

Match Protection Technology to Facility and Resident Needs

Steven Elder

Use of protection technology in assisted living (AL) facilities allows administrators and caregivers to provide a safe environment for residents while addressing residents' desires for independence. A secure environment is a strong selling point that can attract and keep residents. But system choices can be overwhelming, especially when these systems must be capable of interacting with other technologies within a facility. A structured approach to analyzing a facility's situation can help in choosing the best solutions.

Understanding Needs

The first step in selecting the right technology is having a clear understanding of needs. The following questions may help.

What kind of resident protection is needed?

Resident protection is a broad category, encompassing everything from basic building security to individualized protection. For the purposes of this discussion, protection refers to security applications that are expressly designed to meet the unique needs of residents in AL. Systems that enable residents to call for help, sometimes called "E-call," are available with a variety of options. The degree of flexibility required governs the choice of options. Some systems provide a pull

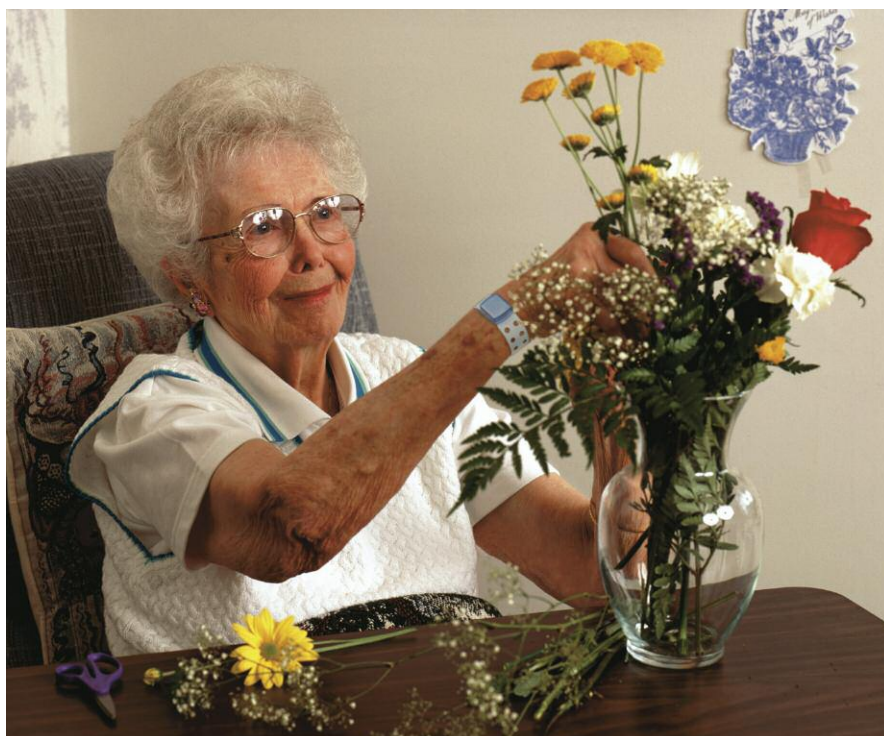


Figure 1. A resident wearing a wander prevention tag.

cord in the bathroom or at the bedside; others are wireless systems that enable residents to call for help from any location in the facility. Portable protection is needed if residents frequently move about the facility within common areas.

What are the facility's wander prevention needs?

The philosophy of "aging in place" has pushed facilities to extend the range of services offered to meet the evolving needs of residents, es-

pecially those with Alzheimer's disease or dementia. Being able to accommodate a resident with mild wandering symptoms not only makes good business sense, but also best serves residents who can remain in familiar surroundings among familiar faces. This is critically important for couples because separation resulting from different care needs can trigger precipitous declines in health and well-being for both.

Selection of wander prevention

systems (Figure 1) is based in part on the number of residents who need to be monitored. One or 2 residents may be protected by staff vigilance, but not 20. At some point—and it's best to err on the side of caution—specialized technology is required.

What are the facility's current systems?

Facilities already have at least one security system in place—whether it is a basic card-reader access control system, a nurse call system, or a closed-circuit television (CCTV). Replacing an outdated or unreliable system or choosing additional protection components that can integrate with existing systems is one of the hardest choices administrators must make. Ideally, all technologies in a facility should be integrated to operate as a single system so that staff are not burdened with learning several different systems and can instead concentrate on resident care.

What are other security needs?

While investigating resident protection technologies, keep in mind other potential security needs that a new system may be able to fill. These range from preventing the theft of high-value mobile assets like notebook computers to protecting a medicine cabinet. Many of the technologies applied in resident security also support other applications, either by themselves or through integration with other systems.

Emergency Response Systems

The traditional technology for personal emergencies is a nurse call system in each resident's room with a fixed pull cord or push button by the bed and perhaps in the bathroom. These systems are widely used in the LTC market and are, in fact, usually a regulatory requirement. However, nurse call systems are not ideally suited to the AL market because residents have no means to call for help outside of their rooms.



Figure 2. An emergency response necklace.



But system choices can be overwhelming, especially when these systems must be capable of working with other technologies within a facility.



A wireless system can answer this need. Residents carry a wireless tag at all times (Figure 2). When the resident needs help, he or she presses a button on the tag. The resulting radio signal is picked up by 1 or more receiver devices and relayed to a control station, usually a personal computer. The key difference among the many available wireless products is how this information is gathered and how precise the location information is.

Telephony-based products use telephones equipped with radio antennas to pick up signals from the resident tags and to communi-

cate with a resident in distress. These systems can use existing PBX telephone cable networks, saving on cabling costs, but new phones will be required in each patient room and common areas. Because radio signals travel through walls and floors, the only way these systems can determine that the resident is in his or her own room and not the room next door or even on another floor, is for the telephone in each resident's room to be programmed to receive signals from only 1 resident's tag. The downside to such programming is that a resident may need to call for help from another resident's room, in which case the signal may not be received. Only the phones installed in common areas are programmed to pass along signals from all residents' tags.

Many systems use special receiver devices rather than phones to pick up resident tag signals. These receivers can be either wireless or hardwired and are usually controlled and monitored by a computer. There are pros and cons to both methods. Wireless systems may be cheaper to install but require a power supply. However, hardwired systems are not prone to radio frequency interfer-

ence as are wireless systems.

Accuracy and precision of a resident's location is variable among systems because many systems use only a single wide-area receiver on each floor to pick up messages from resident tags. Although cost effective, the location information such a system provides is general. As previously explained, radio signals travel through walls and floors, so it is possible that such a system will place the resident on the wrong floor.

Precise location can only be achieved by a denser network of receivers. When a message is received by several receivers, the location is calculated based on the relative strength of the signal at each receiver. Floor discrimination is provided by special devices installed just outside elevators and exits on each floor that detect when a resident has changed floors. This way, even if a distress message is being picked up by receivers on more than 1 floor, the system will always provide the correct floor information.

Wander Prevention

As with emergency response systems, there are many options available for wander prevention. A secure lockdown unit is a common feature of many nursing homes, but doesn't suit the AL world in which openness and freedom are maintained as much as possible.

A better option is a dedicated wander prevention system, in which at-risk residents wear a small radio frequency tag, and exits are protected by special door monitors (see Figure 1). Many of the manufacturers of emergency response solutions also offer wander prevention systems with common system components.

A basic wander prevention system provides simple protection of perimeter exits, with generation of an audible alarm at the exit when a monitored resident approaches an open door. The functionality of

such systems can usually also be extended to provide central alarm reporting for all exits at a nurse station or to identify the ID number of the tag of the resident who wandered.

A higher-level system is controlled by a personal computer. Alarms can be monitored from multiple locations around the facility, and more information is provided including the time and the location of the alarm, the name of the resident, and even the resident's photo. This resident information and the identity of the staff member who responded are retained in a database for future reference.

One or two residents may be protected by staff vigilance, but 20 such residents cannot be safely monitored in such a way.

Computerized systems offer increased security through individual user passwords and pass codes, whereas simpler systems generally provide only 1 pass code used by all staff to clear an alarm or bypass an exit to escort a resident.

Of greatest relevance to AL facilities is the ability of these computer-driven systems to tailor protection to each resident. It is possible, for example, to enable a resident to pass through some but not all exits without triggering an alarm. Such individualization can be set to allow a resident to use an elevator to reach a common area but block that resident from leaving the facility through perimeter exits. This flexibility can be especially useful in enabling spouses to share the

same accommodation and enjoy the same activities within the facility.

These same systems often offer asset tracking too. Tags attached to medical equipment or other assets can send out regular signals that are picked up by the network of receiver devices and relayed to a computer to locate them at all times. Other possible applications include monitoring of windows, medicine cabinets, or even basement flooding. A simple switch, such as a door contact, is connected to an input/output (I/O) module. When the switch is tripped, the I/O device sends a signal to the system software. The possibilities for this kind of use are nearly endless.

Effective Integration and Use

Integration is the next obstacle to overcome after security options have been chosen. With proper integration, all systems become essentially 1 system, with a single user interface. Choosing a vendor that can provide this integration is important in terms of both cost and ease of use. Many manufacturers are striving to make integration easy, even with other companies' systems. Philips Lifeline, for example, is integrating the RoamAlert wander prevention system into its CarePoint emergency call system. The 2 products essentially work as 1, with all information on wandering residents displayed through the software user interface.

No matter what system a facility chooses, it is essential to embed it into facility procedures. Thorough staff training to ensure comfort with the system, knowledge of how it works, and what to do when an alarm occurs should be reinforced with a published procedure that outlines how the system is used and what should be done in the event of a distress call from a resident or a wander elopement. **ALC**

Steven Elder is Senior Communication Specialist for VeriChip Corp.