



## **W**hat are the most promising technologies for assisted living (AL) that are in use today or are in the horizon for the near future?



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The most promising technology for assisted living (AL) that is in effect now is E-prescribing. The advantage of E-prescribing is not just that it is HIPPA compliant, but also that it is a safety net for accuracy of transcribing prescriptions in all settings. E-prescribing is recommended to prevent transcribing errors that occur because of illegible handwriting, inappropriate abbreviations, and so forth.

Electronically transmitted medication orders (called E-MARs, or medication administration records) are emerging now in the assisted living (AL) setting. After the pharmacy has filled the order, it can be electronically transcribed back to the facility, where it is then electronically added to the facility MAR. Medication errors are greatly reduced and MARs are updated on an ongoing basis. There is no need for nurses to reconcile new MARs at the end of each month, thus saving valuable nursing time. This system is already in place in certain large healthcare communities that include skilled nursing, AL, and independent living on their campus.

E-MARs also include technology for barcoding drugs for administration. This technology ensures complete accuracy of each med pass (each administration of medication to patients). It reminds nursing staff if a resident has been skipped, or if certain medications require spacing between administrations (eg, inhalers). It also documents if patients refuse medications or medications are given PRN. All this is accomplished by the computer and shown on the screen. Completed and omitted tasks are reported, thus ensuring the accuracy and completeness of the med pass. As we all know, in AL delivery of health care lies primarily with the accuracy of medication administration. If a facility is not having discrepancies with medication administration, care is being accurately provided.

The one technology that is being targeted by the federal government is shared electronic health records (called RHIO or Regional Health Information Organizations), whereby physicians, hospitals, and clinics can share health records of each individual resident. This technology is in place in a very small segment of healthcare communities, but it has been difficult to organize the transfer of data among different healthcare providers because of high costs and software diversity. In other

words, the need is there, but the mechanism, funding, and cooperation are not yet.



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As the nation's 79 million boomers age, concerns are growing that a caregiver shortage will reach crisis stage within the next 20 years. Currently, nearly 3 million care providers work with older adults in residential care settings. By 2030, it is anticipated that the number of caregivers needed will potentially double. To that end, senior living organizations are looking towards technology as a means to enhance the quality of care and services provided to older adults. For AL, technology may open many opportunities to improve quality of life of residents when used in ways that enable residents to maintain choice, independence, and dignity.

Technologies for AL fall into one of two categories—those technologies that residents “passively” receive and those in which residents are “active” participants. Technologies in the first category are typically those that track safety or health status of residents in their environment. These technologies have been developed for home use, but several are being quickly adopted by senior living communities to reduce risks and facilitate independence. In the area of resident safety, electronic “tagging” (eg, residents wear electronic pendants or wrist bands to prevent wandering or serve as alarms in emergencies) has been the most common monitoring system used in residential settings. The downside of these systems is that residents need to remember to activate the alarms.

More recently, monitoring systems that use wireless motion and reminder sensors, cameras, or computers with Internet capability have been developed for home use but are now being adopted by senior living communities. Systems such as QuiteCare® provide 24/7 early detection and warnings through small wireless motion sensors placed in key locations of a resident's apartment or home that transmit data about daily living activities via a protected Web site, E-mail, text message, or call center to care providers in the senior living community or to family members. AL communities such as Oatfield Estates near Portland, Oregon, integrated wireless technology by Elite Care not only to track the location of participating residents, but also to monitor changes in health status or activities to trace potential problems. Residents have the choice of determining who may access the system to promote their sense of control.

The second category typifies technologies that residents actively use to promote quality of life related to physical or cognitive abilities. Particularly for AL, adapta-

tions to the environment are allowing residents to remain independent for longer periods. For example, bathing technology for AL residents now includes more “user-friendly” tubs and showers for the home. Some manufacturers are including hydrotherapy systems to add a spa-like feel for the coming generation of AL residents. In the area of cognitive enhancement, adaptive computer systems such as It’s Never 2 Late are linking residents with technology in a variety of ways from computer gaming to physical exercise to programs that help improve hand-eye coordination. Adaptive equipment and programming allow residents with dementia or physical disabilities to participate. Such technology also opens up contact with distance family members via E-mail and Web videos.

A key resource to monitor development and implementation of technologies is the Center for Aging Services Technologies (CAST), a program of the American Association of Homes and Services for the Aging (AAHSA). Their Web site at [www.agingtech.org](http://www.agingtech.org) provides a searchable dynamic clearinghouse of new breakthroughs in senior living technologies. We are truly only breaking the surface of what may be on the horizon for AL residents!



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While we have talked about the use of technology such as electronic health records (EHRs) for over a decade, it seems like we are no closer today to actual application. Barriers such as cost considerations and lack of connectivity continue, threatening to limit the acceptance of these technologies. “Cool” high-tech products such as smart apartments that can detect an individual’s movement within the apartment so that caregivers can be notified of a fall, noncompliance with medications, or a missed meal are still in our future. The technology that has the greatest ability to help individuals and facilities today is at our fingertips, yet we’re not fully taking advantage of it. (However, I can guarantee that our children are all using it right now.) Of course, I am referring to the Internet.

Despite the power of the Internet, there are still a number of AL facilities not utilizing this resource. A Web site to promote one’s facility to the community and to provide a source of information for residents can be powerful. Residents can be taught to use the Internet to stay connected to loved ones and to surf the Web for information about topics of specific interest. Computer labs can be built and wireless networks made available so that residents and staff can have ready access. Through new devices such as Apple’s iPhone, the Internet will be more accessible to a greater number of individuals than ever before.

I have seen the power of the Internet personally and professionally. Professionally I helped develop Web sites for my family’s skilled nursing facility ([www.fhhcc.com](http://www.fhhcc.com)) and for a home-care practice I have had the privilege to be associated with ([www.gericalls.com](http://www.gericalls.com)). Both relatively simple sites have reached many individuals. But perhaps nothing has been more wide reaching than the Web site I developed when my son was diagnosed with Ewing’s sarcoma. The site ([www.G4theG.com](http://www.G4theG.com)) started as a means to keep family updated about our Richard’s condition, but quickly grew to become a site for others dealing with life challenges. The site currently has over 100,000 hits per month. A sister site ([www.G4theG.org](http://www.G4theG.org)) used to promote our foundation for children affected by cancer has raised well over \$100,000 through individual donations. Clearly through the Internet we are able to connect on different levels with countless numbers of individuals. So when asked what technology can have the greatest impact on AL today, the answer is easy—the Internet.



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Unquestionably, the most promising technologies for AL have to do with improved mechanisms for information exchange. Establishing a secure EHR that allows authorized individuals to access relevant information more easily has the potential to reduce medical errors and costs, especially those associated with redundant testing. Additionally, it allows authorized family members to be informed of progress, eases scheduling, and allows greater flexibility in assisting vulnerable loved ones from afar.

EHRs also offer the potential for more efficient regulatory oversight and facilitate quality improvement efforts by making larger amounts of data more accessible and analyses more comprehensive. Finally, research in the AL environment may become more feasible because large numbers of records can be reviewed without the need for releasing the identities of subjects.

Another advantage of the EHR is improved security with role-specific authorization that prevents unauthorized individuals from gaining access to elements of the record that are not necessary for their job. Overall, information technology may allow greater monitoring of health-related care elements, ultimately ensuring better care with more time for residents. In the end, this can occur with far less cost. The challenge will be to provide information exchange among various healthcare systems in a seamless and streamlined fashion. Success at creating such interoperability not only will be helpful at the AL facility, but also will improve transition from one care setting to another. **ALC**