



Industry Analysis

Creating Smart Homes for People With Disabilities: Examples of Technologies to Support Community Living

The U.S. population is rapidly growing older. One in every six Americans, or 45 million people, is 60 years of age or older. According to the Department of Health and Human Services' Administration on Aging, one in every four, over 89 million Americans, will reach that milestone in the next 30 years. Given this longevity evolution, baby boomers, who are now in their late 40s, and 50s, can expect to live well into their 80s and 90s. While most older adults are active members of their families and communities, others need some type of assistance, ranging from help with transportation, preparing meals, or medication monitoring, to total care.

Across the United States, there is a lack of consensus about the treatment of the elderly and disabled with regard to long-term care needs. Long-term care needs of the elderly and disabled can vary and involve physical or cognitive disabling conditions. Although it seems there is no longer any question about the shift from institutionalization to community-based services for the disabled, questions and debate remain lively when considering what services are needed to compensate for these disabilities and what balance should exist between publicly available and family-provided services.

designated family members or caregivers through phone and Internet alerts. CMI and its affiliates have been providing services for the disabled and elderly since 1990 and is headquartered in Asheville, North Carolina, and Green Bay, Wisconsin.



According to Allen Ray, president and chief executive officer of CMI, "Smart home technology can delay more expensive alternatives such as having a health care professional visit the home or a customer move to assisted living or nursing home and instead affords the individual the freedom and independence of remaining in their own home." In its September, 2008 *Market Survey of Adult Day Services & Home Care Costs*, MetLife reported the national average costs for in-home health aides was \$20 per hour and adult day services was \$64 per day. With the average annual costs for assisted living facilities at \$35,628 and skilled nursing facility care at \$68,985, CMI offers an alternative level of care that is a less expensive option for those individuals that do not need or want to receive services outside of the home. CMI

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Community-based services are being provided in both urban and rural areas via numerous grant programs. In New York, the state's 2005-2006 executive budget included the allotment of \$36 million for the expansion and improvement of home and community-based care services. Many of the initiatives were designed to allow older residents to remain in their homes and communities, as well as improve the quality and efficacy of services. Funding was doubled for the Expanded in Home Services for the Elderly Program (EISEP) from \$25 million to \$50 million over two years to allow elderly New Yorkers to maintain their independence in their own homes, while receiving critical assistance with tasks such as shopping, light work, repairs, case management services, caregiver respite services, personal care services, and special equipment.

As a result of the the Deficit Reduction Act of 2005 (DRA), on September 28, 2006, the Centers for Medicare & Medicaid Services (CMS) announced awards totaling \$7.5 million to organizations developing Programs of All-Inclusive Care for the Elderly (PACE) in rural service areas in Arkansas, Colorado, Hawaii, Iowa, Montana, New York, North Carolina, North Dakota, Pennsylvania, South Carolina, Vermont, Virginia, and West Virginia.

With the increase in care plans that rely largely on in-home services rather than other residential care settings, there is a place for technology to play a role in monitoring disabled individuals at home. Community Management Initiative, Inc. (CMI) operates a national system, called SimplyHome, that uses "smart home" technology to create a virtual living environment using alerts and a proprietary web portal to enable people with disabilities to stay in their homes and live with greater independence. CMI serves more than 600 public entities, corporate providers, and families in 16 states. The SimplyHome system uses sensors to track specific activities within the home and reports these activities to

offers month-to-month contracts for SimplyHome ranging from \$24.95 to \$69.95 plus initial equipment costs ranging from \$99.95 to \$799.95 depending on which product is chosen. CMI also offers a sliding scale buy-back of equipment. The SimplyHome system is typically reimbursable through private insurance and Medicaid. Recognizing the value of the SimplyHome system, many long term care insurers are picking up the option as well. According to Mr. Ray, "CMI's focus is to delay not replace more intensive treatment for those individuals where independent living is still an option."

SimplyHome creates a "Supportive Home" environment by providing easy-to-use assistive technology and services. The top three concerns of families and caregivers of elderly or disabled individuals include falls, cooking safety, and medication compliance. These are the types of concerns that Community Management Initiative attempts to address with its product line. SimplyHome currently has three products: Personal Emergency Response System (PERS Plus), SimplyHome Basic and SimplyHome Butler. While none of these systems can prevent a negative event from taking place, their use can provide an additional level of support for people with disabilities.

PERS Plus

PERS Plus is a paging pendant system and is sent to consumers already programmed. The system just has to be plugged into a base unit connected to a phone line and electrical outlet in the home. The pendant is wirelessly connected to the base and can be pressed at any time. The PERS Plus base station has three large buttons: red, green, and yellow. It can be used to access SimplyHome's call center which is staffed 24/7 by Certified Emergency Medical Technicians, by pressing either the red button on the base station or the pendant button. A certified EMT is available to speak to the customer via a highly sensitive base station intercom to



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assess a problem. Each customer is also assigned a designated caregiver who can be reached by pressing the yellow button on the pendant. The PERS Plus system also has a wireless and waterproof pull cord for the shower or bath as well as a unique fall sensor. So, should a customer fall while wearing the fall sensor device, and they are unable to activate the button, the system will automatically activate and notify the SimplyHome call center. Finally, if a customer accidentally presses a button or wants to cancel a call for help, the consumer would simply press the green button.

SimplyHome Basic System

The SimplyHome Basic system offers more features to families and caregivers but maintains the same ease of use of the PERS Plus System. This SimplyHome package is synchronized to communicate wirelessly with the existing sensors, and the rules established in the customer's personalized assessment are already in place on the customer's web site. Customer's must complete a brief in home set-up, allow the unit to charge for 24 hours, explore the web dashboard for rules and alerts and the system is then ready to go. Alerts can be sent to consumers via cell call, text, or email if there are any potential problems. Here are some examples of common rules that can be set up:

- "If the back door is open after 10 p.m., send an email to [Family Member A] and a text message to [Caregiver B]."
- "If the stovetop is left on for more than one hour, call [Family Member B]."
- "If the living room window is open after 7 p.m., send a text message to [Caregiver A]."

Each customer can access his or her system on-line, request rule changes, and update as his or her needs evolve. A log of recent activity is also available via the web site: "Grandma accessed her medicine at 9 a.m." For medication monitoring, SimplyHome uses radio frequency identification (RFID) videostamp on prescription bottles activated by pressure that sends a signal to a receiver that documents access to medication was attempted. This can assist in monitoring if a medication was accessed on time and as prescribed (i.e twice per day).

SimplyHome Butler System

The SimplyHome Butler system, is the most comprehensive package offering all the features of the Basic package plus extensive control over many potential concerns in the home. With the Butler platform, caregivers are able to perform many basic tasks on-line. For example, if the caregiver worries that a family member may forget to turn off the stove or the lights, the caregiver can monitor stove and light usage on-line. There is also an option to turn off the stove or lights via the web dashboard. Other options include temperature and lighting controls, a stove/microwave control, smoke and flood sensors. Additional technology options now also permit more intensive monitoring. These include video cameras, GPS, sensors that provide notifications of inactivity, a fall sensor and a bed sensor.

Additionally, the Butler System enables advanced rule setting with sequential decision-making capabilities. For instance, if a family member turns on the stove and then leaves the home, a rule can be created for the caregiver to be notified that the stove is on and the front door was opened. The on-line platform affords the user/caregiver almost limitless possibilities for creation of these types of sequential rules.

The on-site set-up for the Butler system requires in-home broadband internet and a telephone connection. Customers need to place the sensors in the specified areas of the home to be monitored, plug in the phone, internet, and power. Once on-line, current rules can be viewed, rule changes can be requested, and current system status and historical data

and events can be viewed. This system can be utilized for assessing trends in behavior as well. For example, a caregiver can find out if their mother is sleeping less or leaving the stove on repeatedly. In this regard, CMI offers a product whereby caregivers are provided additional information that assists in making more timely decisions about the treatment needs of elderly or disabled individuals.

Smart Home Monitoring System



Older Americans and people with disabilities are increasingly becoming consumers of community-based services. The use of technology in serving individuals who may not yet need or want long-term residential care, can offer cost-effective systems that provide peace-of-mind and independence to persons with disabilities. These technologies offer the ultimate in consumer choice by serving and supporting those who wish to live independently at home.

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