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Useful Technology for Care Managers and Their Clients

NAPGCM® National Association of Professional Geriatric Care Managers

Guest Editors' Message

By Deborah Newquist, PhD, MSW, CMC and Julie Menack, MA, CLPF, RG

Recent technological advances have transformed our lives and are continuing to shape the landscape of our practices daily. How many of you recall the introduction of fax machines into office environments? Or telephone answering machines and voice mail? The Internet, wireless laptop computers, Web pages, email and Google? Cell phones, Blackberries, GPS devices, and more. Texting, tweeting, and Facebook. Not all of us avail ourselves of all technology devices. Neither do our clients and their families. Nevertheless, technology continues to advance and many of us become "adopters," whether early or late, of new products and services.

This issue of the *Journal of Geriatric Care Management* takes up the subject of technology and care management. Our focus is on how technology can be used to help our clients and their families and how it can help us run our practices. As editors we strove to cover a range of topics and approaches, from more academic overviews to nuts and bolts discussions. We have purposefully included the names of products, with their Web addresses in many cases, so that you can learn more about them. To be clear, however, NAPGCM and the Journal are not endorsing any particular products. Our reasoning was that to talk only in generalities does not fully help care managers on the ground find the tools and devices useful for particular clients. We have listed at the end of this section disclosures noting where authors or editors have ties to particular products so that readers are made aware of any potential conflicts of interest.

The goal of aging in place is widely shared. Technology products large and small, from smart homes to talking pill bottles, are now abundantly available. The three articles by Laurie Orlov; Jeff Brewer and Melissa Dark; and Beth Kallmyer and Nancy Cullen address in varying ways technologies to promote, monitor, and ensure health and/or safety of older persons in their homes.

Laurie Orlov's article, *"Health-Based Technology in the Home: Why It Matters, Why Now,"* provides a background on the importance of in-home health support technologies. She then gives an overview of the categories of technologies of interest to care managers, including health monitoring and tracking, home safety, and medication management. In addition, she offers guidance for successful use of technology.

Jeff Brewer and Melissa Dark's article, *"Telecare: An Objective Overview of Its Potential and*

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Concomitant Technical, Policy, Economic, and Organizational Issues," focuses on telecare and its ally telemedicine. They lay out the potential of telecare and cite numerous studies showing how telecare can be useful to provide supports while addressing cost and workforce constraints. But as they also discuss, telecare faces hurdles to full adoption due to deployment challenges in the realms of policy, technology, and organizational structures.

Beth Kallmyer and Nancy Cullen's article, *"Aging Safely at Home: The Use of Technology to Address Location Management and Wandering for Persons with Alzheimer's Disease,"* documents the prevalence of and problems associated with wandering and freedom of movement faced by persons with Alzheimer's disease and their caregivers. They review several products and approaches to addressing these issues helpful to care managers seeking to create personal care plans for their clients. New products which can allow freedom of movement with safety oversights and boundaries are discussed.

Julie Menack's article, *"Using Technology to Support Social and Intellectual Engagement,"* brings our attention to quality-of-life concerns, over and above health and safety. She reviews a range of products and tips for care managers seeking to help their clients sustain social, intellectual, emotional, and physical engagement. These approaches can help care managers promote their client's well-being in the fullest sense.

Dianne Smith's article, *"How to Utilize Technology with Care Management Clients,"* provides insights for care managers as they assess client needs and work to match technologies to particular clients. She shares useful tips for how to work with clients and their families to garner buy-in for adopting a new technology and integrating it into the client's routines.

Kim Olmedo's article, *"Telecare in Action: A Case Study,"* presents a case example which recounts her experiences working with a client and his support network to find solutions to fit his needs, and using technology as part of that effort. She walks the reader through the experience to reveal the choices and outcomes along the way.

Lastly, Lisa Moody's article, *"Managing Your Business with Technology,"* brings our attention from the clinical to the administrative. She overviews how various technology tools, products, and services can help care managers maximize their efficiency and effectiveness in running their practices. She offers many suggestions which should prove useful regardless of whether you are a technophobe or a techie.

Disclosures related to products or services mentioned in this issue:

Deborah Newquist's employer, ResCare, Inc., has a business partnership with Rest Assured®.

Beth Kallmyer and Nancy Cullen's employer, the Alzheimer's Association, is a co-developer of the Comfort Zone™ product. The Association is also the co-developer of the MedicAlert + Alzheimer's Association Safe Return Program.

Lisa Moody's company, JewelCode, is the developer of CareComplete Plus.

Newquist and Menack Bios

Deborah Newquist, PhD, MSW, CMC, is the director of geriatric services for ResCare, Inc, an international human services company offering geriatric care management, home care, and technology supports to persons with disabilities. Deborah is a Past President of NAPGCM and has been in the field of eldercare, and care management for over twenty-five years. She is based in Costa Mesa, California.

Julie Menack, MA, CLPF, RG, has worked in the field of care and fiduciary management since 2006. She is the author of *"Working with Long Distance Families – Tools the Care Manager Can Use"* in the 2008 book *"Care Managers and the Aging Family"* and is writing a chapter on Technology for Care Management in the upcoming 3rd edition of the *Handbook of Geriatric Care Management*. She is based in Oakland, California.

Health-Based Technology in the Home: Why it Matters, Why Now

By Laurie M. Orlov

In the past five years, technologies have been developed that can support families and seniors to age in place more independently. Many of these technologies can be recommended and supported by professional geriatric care managers (GCMs). This article provides a background of why this has happened and a brief overview of the categories of technologies that are of interest to GCMs.

Why Are In-Home Technologies So Important?

The Medicare and Medicaid funding crisis combined with the aging of the baby boomers results in a situation where technology, with its resulting lower costs, can help improve care and deliver it where it will be most useful – in the home. GCMs, like all health care professionals, will need to become informed and participate in the nationwide effort to lower costs and improve care for seniors. GCMs will use all means at their disposal, including technology, to help families in the midst of a changing landscape as:

- **Boomers and seniors will stay longer – and frailer -- in family homes.** Nursing home occupancy has been declining for the past 10 years, and assisted living growth has stalled following the collapse of real estate markets, shrinking retirement portfolios, and worsening job prospects for older Americans. Nationwide today there are only 3 million units of independent, assisted and skilled nursing care, despite 39 million seniors (age 65+).[1]

  The net result of this trend towards "aging in place" is that many more frail seniors with chronic conditions will stay in their current homes longer than was previously believed. And some seniors may move in with family members – who may be ill-prepared to care for them.

- **Cost crises and government investment are fueling expanded offerings.** Although the initial and apparent focus of health IT investments appears to be electronic medical records (EMR) and personal health records (PHR), government infusion of cash will be the catalyst for innovation in numerous adjacent health-related technologies – particularly those that seamlessly interface with EMR and PHR software. So with PHR, for example, vendors are appearing who sell related disease management software and services that consumers may want to use even after the technology is no longer covered by Medicare post-hospitalization benefits.

- **Home health technologies have evolved and cost reductions are proven**. With more than 17,000 patients participating in a study of care coordination/home telehealth, the Veterans Health Administration published results in 2008 that were conclusive about the benefits of delivering the 'right care in the right place at the right time.'[2] With coordinated care by case managers and a variety of technology enablers, participants' bed days of care dropped 25% and hospital admissions 19%. The cost of $1,600 per year per patient was substantially less than primary care costs of $13,121 per year or market nursing home care at the time of the study of $77,745 per patient per year (see Figure 1).

Home Health Tech Extends the GCM Toolkit and Reach

The world of GCMs extends well beyond their numbers. This is a direct result of their role as a coordinator of delivery of senior-related services to fill a wide variety of family needs. This includes referrals for assistance with legal, financial, care, health-related issues and help locating assistive devices, social and psychiatric services, and technology assistance. A GCM may initially be engaged under dire circumstances, not the least of which often is a family member's perception that an elderly parent is unsafe continuing to live in their own home. Technology categories that are relevant for geriatric care managers include in-home monitoring, medication monitoring and management, and Internet-based services. Examples of these and other important categories are described in the remainder of this article.

Health Monitoring, Tracking, and Information Storage

Because a large proportion of GCM time is spent with seniors with chronic conditions or who have recently been released from the hospital, technologies for monitoring and managing health information are required.

- **Telehealth monitoring devices.** GCMs may become involved with medically frail clients who require remote monitoring. Frequently, remote health monitoring by health care professionals is offered during the initial period of time after a client has been discharged from the hospital or rehabilitation facility, but it may also be offered

to those who live at home and are suffering from chronic diseases such as diabetes, hypertension, chronic heart failure, and chronic obstructive pulmonary disease (see Table 1). Telehealth units such as **Intel's Health Guide, Viterion,** or **Bosch's Health Buddy** are examples of products that are placed in the home. These offerings connect diagnostic devices that check blood pressure, glucose levels, or weight. The information collected by these devices is transmitted over telephone lines or the Internet to telehealth monitoring professionals (perhaps including the GCM). If a particular reading is outside of recommended parameters, the professional is notified and the patient is contacted for follow-up.

- **Tools for storing health information.** GCMs may use a computer to record notes and specific health information of a client. To make this more efficient, GCMs can save data on an inexpensive flash drive (sometimes called a memory stick or thumb drive) that plugs into the USB port on the side or back of their laptop. In addition, GCMs can utilize **Microsoft HealthVault** or **Google Health** to safely store an individual client's health information which can then be accessed by the GCM, other professionals, or the client family with appropriate permission granted.

Home Safety and Monitoring

A top priority for GCMs is to help a senior be as safe in and about their home as is possible. So GCMs should be familiar with:

- **Personal Emergency Response Systems (PERS).** The PERS pendant (or watch) is traditionally a first step in monitoring a person, typically an older woman living alone.[3] The pendant transmits to the base unit in the home from a distance of up to 300 feet, and it is necessary for the user to press the button in the event of an emergency. Devices like **Philips Lifeline** and **ADT Companion Services** (discounted through AARP) all notify wearers to do monthly battery checks, which have the added value of requiring a conversation with a call center rep. Today, some companies are advertising that call centers are staffed with EMTs (ResponseLink, for example, which uses the **Visonic** product). It should be noted that Medicaid waivers in some states cover PERS systems. Also it is important to determine if a call center is used at all, or if all calls are routed directly to 911 via a computer. Different clients may require different approaches.
- **Passive fall detection devices.** Recently a new wearable category of product has emerged that can detect that a fall has occurred without the requirement of pressing a button. **Halo Monitoring** is an early pioneer in this market and offers a wearable chest strap that can alert a call center about vital sign changes as well as falls; this can be worn against the skin or inside a sports bra. Recently they introduced a belt clip version of the fall detection device. One major advantage of a wearable technology like this is the ability to detect 'precursor' falls that may signal a serious life-threatening fall may happen in the future.
- **Passive sensor-based activity monitors.** Because they must be worn and activated, PERS devices are not the most reliable way to detect a problem of a frail, home-bound individual. Nor are they in any way useful for preventing falls or other problems. Beyond PERS, sensor-based home monitors (**GE QuietCare, Grandcare Systems, WellAWARE** and **Healthsense**), are more costly, but unlike PERS devices, they collect information and therefore can make a determination, based on how they are configured, as to whether to signal for help. This could include motion sensors that detect absence of movement through a doorway, bed sensors (similar), sensors placed near a refrigerator or outside doorways, all to help monitor and reassure seniors and caregivers. These technologies require custom installation and are primarily found in independent and assisted living facilities – GCMs should be familiar with their purpose, recommend them to facility management if appropriate, and consider them for residential use with support from the vendor.
- **Web cameras, telecare, and other security devices.** The ability to remain in one's home depends on whether the home is free from obstacles and dangers, and on whether risks are addressed. First, is the home environment safe? Security systems from **Alarm.com** or **ADT**, both of which have web camera options, should help ensure notification and reduce risk from a stove being left on, water left running, windows left open, or air conditioning failures. Web cameras are of special interest to family members who live some distance away and want to see, perhaps, that a frail relative has been in the kitchen today. Telecare, which integrates and monitors with two-way audio-visual systems in combination with sensors in the home, can help with preventing incidents. Examples are **Rest Assured®** and **Grand Care**.

Medication Monitoring and Management

It is well known that the number of medications prescribed proliferates in relationship to age and chronic disease. Studies indicate $290 billion per year is spent on health care due to medication non-adherence.[4] Furthermore, it is estimated that 1 in 10 visits to the hospital result from medication mismanagement. GCMs should consider use of:

- **Automated reminder systems.** Telephone-based reminder systems are easiest to set up for ensuring that medication regimens are met (or at least acknowledged). These include phone-based reminders through cell phones and PDAs

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like **OntimeRx** and **Zume Life**. **HealthAnywhere** adds mobile telehealth capability by enabling the user to attach a blood pressure cuff and transmit readings, while **MedeMonitor** offers a pill reminder and a portable pillbox.

- **Medication dispensing units.** Beyond simple reminders, some vendors offer wireless compliance transmission and various forms of dosage management. GCMs should consider **websites like ePill.com** to learn about current offerings, some of which can be purchased and others leased. These include removable canisters (MedSignals), dispensing devices (**Philips**) and even remote pharmacy re-reconfiguration of dosages (**InRange Systems' EMMA**). Like Philips, **MedMinder** offers a multi-dose, multi-day wireless container that supports 4 dosage periods and 28 compartments. Transmitted information (including non-compliance warnings) can then be viewed on the web by a GCM or nurse. The GCM might find that medication dispensing units are sometimes offered along with PERS systems as a package to support the elder aging in place (for example, **Philips**).

Internet-based and Other Services

A Deloitte 2008 study of consumers and healthcare found that 80% of consumers want more Internet-based information about their medical records, test results, and information about treatments, but most do not have this access.[5] This has created an opportunity for **Google Health**, and **Microsoft HealthVault** PHR software and their partnerships with health technology products. **Jitterbug phone** users can add a service (LiveNurse) in which family members can obtain answers to non-emergency questions 24 hours per day.[6]

Other services include:

- **The virtual doctor visit.** Depending on the circumstance, it may be of interest and benefit to augment a client's regular medical care provider with services that can respond and assist electronically 24x7 through e-mail and telephone like **AmericanWell** (which uses HealthVault), **ConsultADoctor**, or **TelaDoc**. These services provide an alert if a person has a condition warranting emergency treatment or prescription medication.
- **Internet sites with information or community.** Clients with computers but little mobility can benefit from sharing experiences through condition-specific sites like **Diabetesmine.com** or experience-sharing on a site like **PatientsLikeMe.com**. These Internet-aware clients can also access for-profit sites (like **WebMD**), and non-profit or chronic disease management sites like Alz.org **for those with Alzh**eimer's disease. For those with Internet access, the significance of this cannot be underestimated: according to Alexa.com, as of 2009, there are more than 62,000 health sites which received 55.3 million visits per month, 31% of the U.S. online views of 178 million.

Prequisites for Successful Use of Technology

The technology market is changing rapidly and new devices and entrants continually emerge. Geriatric care managers in group practices should have access to a technology expert who stays current on the products and services that are of benefit to frail elderly clients. Those who are self-employed should add technology consults to top of the list of their referral networks. In either case, GCMs should add:

- **Assessments – that survey tech access and capability.** When visiting a client for the first time, look around the home and make a baseline determination about technology access. Is there a computer, cell phone, Internet connection available? Used by the client? If so, can they be enhanced with capabilities described in this document? If not, can they be added by the technology expert in the GCM's network?
- **Systems – structured responder network required.** Monitoring systems are useless without a tailored network of responders that may include a family member or members, the GCM, a facility nurse, or 911. Review the list and make sure that it is regularly reviewed by a family member or a facility.
- **Vendors – make them work for you – bring you training and trial use.** Just as GCMs, however, may be unfamiliar with technologies in the market, so too, technology vendors are unfamiliar with GCMs. GCMs should seek out vendors for guidance, suggestions, and sample products that could enhance their practices and improve the lives of their clients. Technology vendors want to work with GCMs for the future referrals and business they bring. When you identify a technology software, hardware, or service provider, make them work hard for that referral by providing test equipment, setup, and regular technology checkups.
- **Get buy-in from the seniors involved.** The GCM can work with the senior and the family to get the senior's buy-in before introducing technology. This is particularly crucial when considering any form of monitoring tools. To raise the topic of technology with the senior, the following strategies are recommended: 1) **Explain** how the technology will help; 2) **Involve them** in decision-making; 3) **Give them** a chance to get used to the idea; and 4) **Present it** as an aid to remaining independent.[7]

Laurie Orlov *is Principal Analyst, Aging in Place Technology Watch.*

Notes

[1] Population: http://www.census.gov/population, Nursing home beds: http://www.cdc.gov/nchs/fastats/nursingh.htm; Assisted living units, Kaiser Health News

[2] Case Report, Care Coordination/Home Telehealth: The Systematic Implementation of Health Informatics, Home Telehealth, and Disease Management to Support the Care of Veteran Patients with Chronic Conditions, Darkins, Ryan, Kobb, Foster et al, Revised February, 2008 The study included use of videophones,, messaging devices, biometric devices, digital cameras, and telemonitoring devices.

[3] http://www.silverplanet.com/blog/aip-tech-watch/visit-philips-lifeline/55332

[4] New England Healthcare Institute, http://bit.ly/b6jGJ

[5] 2008 Survey of Health Care Consumers, Deloitte Consulting

[6] http://www.jitterbug.com/ServicesStore/LiveNurse.aspx

[7] http://www.orcatech.org/information/news/remote-control-frail-seniors-embrace-home-monitoring

VA Telehealth Study Proved Reduction in Hospitalization

LOCATION	# PATIENTS	% Decrease in Utilization
Urban	9,880	29.2
Rural	6,782	17
Highly Rural	294	50.1

CONDITION	# PATIENTS	% Decrease in Utilization
Diabetes	8,954	20.4
Hypertension	7,447	30.3
Chronic heart failure	4,099	25.9
COPD	1,963	20.7
Single condition	10,885	24.8
Multiple conditions	6,140	26.0

Notes:
•Mean age at study enrollment in 2006 was 65 years, 96% male
•Not all conditions shown

Source: Veterans Administration VHA Care Coordination/Home Telehealth

Figure 1 Case Report, Care Coordination/Home Telehealth: The Systematic Implementation of Health Informatics, Home Telehealth, and Disease Management to Support the Care of Veteran Patients with Chronic Conditions, Darkins, Ryan, Kobb, Foster et al, Revised February, 2008

Categories To Support Calibrated Care

Home Telehealth	Medication Management	Internet-based Services
Personal emergency response devices	Telephone-based reminders	Community websites
Passive remote monitoring with device integration	Electronic pill boxes	E-mail/chat/telephony
Dedicated telehealth remote monitoring, case management	Medication dispensing with remote monitoring	Disease management smart phone applications
Video conference call	Remote medication dosage management	Virtual doctor visit software
Mobile carts	Smart pills	Health platforms
Kiosks	Smart clothing	Social networking sites

Figure 2

Orlov Bio

Laurie Orlov is the Founder of Aging in Place Technology Watch, a market research firm that provides thought leadership, analysis, and guidance about technologies and related services that enable boomers and seniors to remain longer in their home of choice. With over 30 years in the technology industry, Laurie is featured on Caring.com, SilverPlanet, Mobile Health News, and her blog entries are referenced on sites like SmartSilvers, 50+Digital, RetirementHomes, and MaryFurlong.com, among other sites. She was one of the judges in the 2009 Silicon Valley Boomer Business Plan Competition and speaks regularly at conferences on the business of technology for boomers and seniors. In 2009, she received graduate certification in Geriatric Care Management from the University of Florida. She has a BA from the University of Rochester.

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CATEGORY	SUB-CATEGORY	PURPOSE	PLATFORM	CONTACT
Home Telehealth				
Health Anywhere	Mobile telehealth	Monitor chronic conditions	Smart phone, PC, portal	Healthanywhere.com
Rest Assured®	Web-based telecare	Monitor functional status, off-site tele-caregiving	Wireless, interactive	RestAssuredsystem.com
Cardiocom	Vital sign monitoring	Monitor CHF, COPD, Asthma, Diabetes, etc.	Proprietary device, telephone transfer	Cardiocom.com
InTouch	Remote presence robots	Doctor-controlled remote examination	Wireless, remotely controlled robots	Intouchhealth.com
Healthsense™ eNeighbor™	Passive remote monitoring including vital signs	Resident Monitoring CCRC	Wifi sensor network	healthsense.com
GrandCare Systems	Passive remote monitoring including vital signs	Resident Monitoring CCRC	Wifi sensors connected to a set top box	Grandcare.com
Halo Monitoring	Chest strap for fall detection	Resident Monitoring CCRC	Zigbee body sensor	Halomonitoring.com
Medication Management				
Senticare.com	Pillbox with camera image of pills to verify accuracy	Home use	Appliance plus monitoring service and call center	Senticare.com
TabSafe	Multi-dose, multi day medication management	Assisted living facilities	Pharmacy-filled cartridges	Tabsafe.com
EMMA	Multi-dose, multi-day remote medication management	Home care agency for patient home use	Appliance programmed by pharmacist, wireless	Inrangesystems. Com
Philips Lifeline with Philips Medication Dispensing Service	Multi-dose, multi-day canister with dosage cups	Home care agency for patient home use	Appliance with telephone transmission	Lifelinesys.com
MedSignals	Medication dispenser and manager	Consumer, four drugs, voice instructions	Appliance with telephone transmission	Medsignals.com
Med eMonitor	Pill Reminder	Consumer: Portable pillbox	Web	Informedix.com
MedMinder Adherence System	Multi-dose, multi-day container with dosage cups	Consumer, four dosages, 28 compartments	Wireless pill container and notification	Medminder.com
OnTimeRx	Automated reminder software/service	Web, Palm, BlackBerry	Web	Ontimerx.com
Internet Based Diagnostic and Care				
Microsoft Health Vault	Platform for secure patient health information	Foundation for partner application and device connection	Uses Microsoft data storage, security	Healthvault.com
Mayo Clinic.com	Self-help care website	Medical and self-care information	Web	Mayclinic.com
WebMD	Self-help care website	Medical and self-care information	Web	Webmd.com
PatientsLikeME	Shared disease experiences	Sharing common disease management	Web social network	Patientslikeme.com
Diabetes Mine	Diabetes patients	Sharing, monitoring diabetes	Web social network	Diabetesmine.com
MDJunction	Shared diagnoses	Support groups	Web social network	Mdjunction.com
ConsultADoctor	Telephone, e-mail doctor consultation	24x7 access to a doctor	Virtual doctor service	Consultadoctor.com
TelaDoc Medical Services	Telephone doctor consultation	24x7 access to a doctor	Virtual doctor service	Teladoc.com
American Well (participating health plans)	Web, phone, video doctor consultation	24x7 access to a doctor	Virtual doctor service	Americanwell.com

Telecare: An Objective Overview of its Potential and Concomitant Technical, Policy, Economic, and Organizational Issues

By Jeff Brewer and Melissa Dark

Introduction

Telecare is the utilization of information technologies to provide home care and home health care for persons in need. It can also be used to detect deficiencies in functioning and whether or how a person may need support. It has uses with elderly persons with or without health concerns, designated healthcare patients, and persons with intellectual, physical, or developmental disabilities regardless of age. While the lines between telecare, telehealth, and telemedicine are blurred, *generally speaking, telecare focuses on preventive and supportive services* such as 1) alarms for notifying when the individual needs intervention, 2) monitoring to verify normal functioning or to detect ADL deficiencies, and 3) advice and feedback to guide and direct task performance as needed. Telecare systems often include monitoring devices in the home, but some also include audio/video components to allow two-way real-time communication with a professional or family member off-site. As an example, devices may be used in a person's home to alert distant family members if "Mom" does not get up in the morning or does not open the refrigerator all day. While a full listing of telecare products is beyond the scope of this article, we have listed a few for readers: eNeighbor, GrandCare, HomMed, QuietCare, Rest Assured®, SimplyHome, and WellAware. The reader might also wish to review the web site of the American Telemedicine Association. (The web addresses for these are provided in the reference section of this article for those who wish to learn more about them.)

Telecare offers elderly persons 1) the opportunity to age in place, which is preferred by most older persons, 2) increased independence for the individual, and 3) an expansion of the possible care giving group to more easily include friends, family, and neighbors, as well as health care staff in a variety of locations.

Telecare is currently viewed as part of the solution to caregiving workforce shortages, where chronic shortages of direct care staff are the norm in many parts of the long-term care industry. Low wages are endemic, turnover is significant, and competition among like industries in the field (e.g., home care for the elderly, home care for individuals with developmental disabilities, day care centers, assisted living centers) strips away potential resources (BDO Seidman LLP, 2005). The demand for direct care workers is rapidly growing as the general population ages (Larson et al., 1992; Lewin Group, 2001; Parish et al., 2005; Polister, et al., 2003) and as the numbers of others needing long-term care, such as persons with developmental disabilities, continue to increase (United State Department of Health and Human Services, 2006). However, the targeted age group that generally fills these positions (ages 20 to 39) will increase by less than ten percent (U.S. Census Bureau, 2000). As a result of the predicted shortages, telecare alternatives to the standard models of care are being explored.

The Potential of Telecare

Telecare solutions offer many potential benefits including improved quality of life, cost savings, quality of service, and accessibility of service. Telecare offers elderly persons 1) the opportunity to age in place, which is preferred by most older persons, 2) increased independence for the individual, and 3) an expansion of the possible care giving group to more easily include friends, family, and neighbors, as well as health care staff in a variety of locations.

Telecare holds promise for a variety of cost savings, such as reduced travel costs for caregivers. Families or care managers can make virtual home visits in between in-person visits to the senior. Health care professionals can use telecare to provide care to more elderly persons due to the time saved in reduced travel. In a study by Rooney (1997),

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Telecare: An Objective Overview

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it was found that nurses can make eight times as many telecare visits with their older patients per day as they can in-home visits, a figure that surely would not be negligible when scaled up. While aggregate figures on cost savings are difficult to calculate, studies such as this one provide glimpses into how telecare options enable staff, who are limited in number and time, can serve a larger population thereby making systems more cost-efficient. Telecare systems can help people to age in place, and because research has shown that supported home care is linked to fewer hospitalizations (Chumbler, Neugaard, Kobb, Ryan, Qin, and Joo, 2005), avoidance of unnecessary hospital stays (Barnett, Chumbler, Vogel, Beyth, Qin, and Kobb, 2006), and shorter treatment periods for those who are hospitalized, telecare can contribute to cost savings while not compromising patient health and safety.

Telecare is also viewed as a tool that, when used appropriately, can enhance the quality, level, and types of care services provided. For example, telecare enables opportunities for 1) expanded counseling and education offerings, 2) enriched access to families, care managers, and others, or 3) added opportunities to join online social support groups and information-sharing services that can more readily come into the home and enhance the life and quality of care of the individual.

Telecare technologies can also be used for remote medical monitoring, functional monitoring, and health management. Given increased access enabled by technology, monitoring can be more frequent or more continuous. Blood pressure readings, heart rate monitors, glucose readings, or weight monitors, to name a few, can transmit findings directly to medical professionals for review and follow-up. Results can be shared more quickly with healthcare providers and family. The result is improved diagnostic times, which contributes to improved care and can translate into cost savings. In the realm of functional performance, gait monitors, fall sensors, or motion detectors, as examples, can alert families or professionals to changes in habits that may signal problems.

Lastly, telecare allows for greater accessibility of service for the elderly. Telecare can enable services for rural/remote elderly persons living in underserved areas.

Chumbler et al. (2005) evaluated veterans with diabetes and found after one year of using a telecare support system, patients experienced a 50% reduction in hospitalizations, an 11% reduction in emergency room use, and a three-day reduction in the average number of bed days of care.

Telecare as a Part of the Care Delivery System

Telecare, if implemented correctly, can be an integral part of the care delivery system, augmenting and, in many cases, improving the ability of all stakeholders to be involved in caregiving. Stakeholders include medical professionals, geriatric care managers, service providers, family members, and the older individuals being served.

Research indicates that the patient's as well as the main caregiver's quality of life can be improved using telecare services. Arnaert and Delesie (2001) report that older adults benefited from the opportunity to use telecare equipment to communicate with a nurse about their needs, expectations, and feelings. Benefits in telecare extend beyond patient satisfaction to improved patient health. Chumbler et al. (2005) evaluated veterans with diabetes and found after one year of using a telecare support system, patients experienced a 50% reduction in hospitalizations, an 11% reduction in emergency room use, and a three-day reduction in the average number of bed days of care. Improvements in the quality of life were linked to improvements in physical functioning, reduced bodily pain, and increased social functioning. These positive results suggest that telecare may have the potential for reducing the time elderly persons spend in assisted living and skilled nursing facilities.

Telecare will not be appropriate for all, nor be used in the same way with all patients. In some instances telecare may be able to replace the home caregiver completely; in other situations telecare may be used along with home care staff; and in still other situations, where elderly persons need constant monitoring and immediate hands-on care, telecare solutions simply are not appropriate. There are also some cases where individuals may be better off (safer, more secure) through real-time continuous monitoring. Systems that are scalable and can be adapted to individuals' changing needs are a goal. It will be critical that telecare solutions provide the equivalent or better levels of care with regard to safety, security, and privacy.

Research is currently being conducted to ascertain just how far telecare solutions can go in the support of persons with varying needs. A recent study on eight home telecare services in Europe found that participants (medical staff, patients, and caregivers) rated these systems as good or excellent and

found that all participants agreed that personal information was treated confidentially and that there was little risk in using the telecare services (Guillen, Arrendondo, Traver, Valero, Martin, Traganitis, Mantzourani, Totter, Karefilaki, Paramythis, Stephanides, and Robinson, 2002). Another study looked at acceptance of environmental sensors in the home among an elderly minority population (Bertera, Tran, Wuertz, and Bonner, 2007). They found that the users were most receptive to using new technology to improve communications with care providers, especially when a medical emergency occurred. Respondents were least comfortable with the use of a camera to check on them in circumstances when they are unwell. A recent research study assessed the safety, security, and privacy of persons with intellectual disabilities who used a telecare monitoring service at night in place of onsite staff. This telecare service included monitors combined with two-way audio-video capacity. Findings show that the consumers, their caregivers, service providers, and state-employed case managers felt the telecare system afforded the consumers an equal amount of privacy, and equal-to-higher levels of safety and security when compared to having staff present in the home (Brewer, Doughty, and Kubik, 2010).

Privacy issues are present when telecare services are used. When systems are web-based the sharing of medical data electronically makes it accessible to a vastly larger population and therefore more vulnerable. While privacy has been noted as a concern, a recent research study (Steele, Lo, Secombe, and Wong, 2009) of elderly persons' attitudes toward wireless sensor networks found that respondents showed little concern for having personal health information transmitted wirelessly. However, this may be a function of their lack of understanding of how these data could be exploited. Furthermore, informational privacy is not the only privacy concern. Social and physical privacy may enter into the picture as well. The comfort of individuals having monitors and perhaps cameras in their home can vary. Researchers are exploring these issues. Questions about privacy often hinge on the point of comparison: Is there more privacy with a camera and monitors than having a person on-site? Is monitoring more attractive than relocation to a facility? Lastly, concerns can be raised about the potential impact of telecare on social relationships: telecare could offer more physical privacy, but that could foster greater levels of isolation for some which would be undesirable.

We have identified four essential infrastructure components: technical, economic, organizational, and policy. The two challenge areas in the technical realm are interoperability (different computer systems working together) and usability.

Implementation Challenges

In order to realize many of the benefits of telecare, we will need to overcome challenges to implementing an infrastructure that allows telecare to be pervasively and appropriately deployed. We have identified four essential infrastructure components: technical, economic, organizational, and policy. The two challenge areas in the technical realm are interoperability (different computer systems working together) and usability.

Telecare has largely been a cottage industry to date. The piecemeal development of technology and custom-built systems has resulted in a variety of applications that function independently, but cannot be easily integrated with other applications to form a larger, robust, holistic system. Further work is needed to develop technical standards in order for interoperability to become a foreseeable reality.

Then there is the problem of usability. According to research in telecare (Botis and Hartvigsen, 2008), the main problem in home monitoring is the inability of consumers to use the equipment provided. These systems must be functionally accessible and address the needs of users. The technology development community needs to be mindful that elderly persons are not static entities – their health, mental faculties, moods, and physical abilities are variable. Therefore, functional systems in telecare need to have adaptability and intelligent capabilities that include appropriate usability.

Creating an economic climate that promotes telecare will be as important as advancing the technology. To date, economic analysis in telecare implementation is relatively sparse. The field needs longitudinal studies that measure costs and benefits. A second economic challenge will be providing sufficient incentives and support to various stakeholders.

Organizational structures and processes are also part of the necessary infrastructure. Telecare implementation will require changes in operational routines and policies and procedures. This could mean the introduction of new positions, e.g., Director of E-Care, for example. As the use of telecare services increases, the industry will encounter a nontrivial growth in data. Data management and knowledge extraction will become more important skills in the future, and it

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is conceivable that there will be a need for new classifications, such as a Homecare Information Specialist and Healthcare Data Administrator. It is conceivable that telecare could eventually alter the structure and functioning of a majority of the homecare industry.

Last, but not least, it will be necessary to address a variety of policy challenges as we build an infrastructure for telecare. One area where policy changes will be required pertains to private and public payer reimbursements. According to Whitten and Buis (2007), while a universal private payer system in the USA is progressing, the slow pace of progress is acting as a deterrent to telecare deployment. For example, a study conducted by Hersh (2001) and verified by Whitten (2006) found that due to reimbursement constraints, fewer than 200 of 7,000 Medicare-certified home health agencies regularly use telecare.

Another policy void regards malfunctioning equipment. If a telemonitoring system fails resulting in harm to the person being monitored, it is not clear who will be liable and for what. A third policy challenge will be determining appropriate ways to incentivize caregivers to adopt telecare.

Finally, geriatric care is provided by a vast network of nurses, social workers, care managers and other professionals. For these professionals, licensure is by state and states vary in their requirements. This presents challenges for providing services across state lines. Interstate licensure agreements and malpractice standards will be needed to address this challenge (Miller, 2007).

Conclusion/Summary

Telecare holds much promise. Studies show that: 1) telecare consumers, caregivers, service providers, and independent case managers regard telecare services as providing improved safety, security and privacy, and 2) that there are significant cost savings to be realized for our nation with telecare innovations. Our challenge will be to create the needed technical, policy, economic, and organizational infrastructures to realize these benefits for care recipients and societal welfare.

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Aging Safely at Home:
The Use of Technology to Address Location Management and Wandering for Persons with Alzheimer's Disease

By Beth Kallmyer and Nancy Cullen, Alzheimer's Association

Alzheimer's disease and aging safely in the home

As Americans continue to live longer, the number of Americans with Alzheimer's disease is expected to skyrocket from the current 5.3 million persons to as many as 16 million by 2050. This progressive and fatal disease poses immediate safety concerns for the people living with the disease, and enormous challenges and stress for their caregivers.

Individuals with Alzheimer's require considerable amounts of assistance with activities of daily living and the type of assistance only increases as the disease progresses. A report by the Alzheimer's Association and the National Alliance for Caregivers states that only half of care is provided by paid caregivers.[1] Adult children are most often the primary caregiver, and over half of them do not reside with the person with Alzheimer's.[2] Even so, 70% of people with Alzheimer's live in the community.[3] The ability to age at home is a desire expressed by most Americans. A report commissioned by Clarity and the EAR Foundation found that 89% of seniors want to age in place, yet over half of them also expressed concern about their ability to do so.[4] Moreover, among the greatest fears reported by seniors, the loss of independence and placement in a nursing home were rated higher than the fear of death.[5]

With early detection growing and disease-modifying drugs in the pipeline, the families currently impacted and the 10 million baby boomers who will develop Alzheimer's[6] will continue to seek innovative and cost-effective solutions to help provide quality efficient care and allow the person with Alzheimer's to age safely at home

The problem of wandering and getting lost

Alzheimer's disease destroys brain cells responsible for memory, thinking and behavior. As a result, people living with Alzheimer's may become disoriented and lost, even in their own neighborhood or places that are familiar to them. Due to confusion, they are often unable to ask for help, leaving them vulnerable to weather, traffic and those who prey on the less fortunate.

Wandering is described as behavior that includes walking about or pacing either aimlessly or with a purpose. Wandering can lead to the person with Alzheimer's leaving the home or becoming separated from family members in a public environment. The causes of wandering can include response to pain, anxiety, a need for exercise or a mistaken belief about attending to a past obligation such as going to work. It may also occur when people with dementia become confused about their location. Estimates of the occurrence of wandering vary, but it is widely believed that up to 60% of people with Alzheimer's will wander at some point.[7] One-third of families trying to manage the care of persons with Alzheimer's report needing help with challenging behaviors, including wandering.[8]

Not only is wandering a prevalent problem for persons with Alzheimer's, it is also a very dangerous behavior. It is estimated that if the person is not found within 24 hours, the incidence of death or serious injury is at least 25% and can be as high as 46%, depending on location and weather conditions.[9,10] Wandering can occur at any time and is difficult to predict.

In spite of the inherent dangers of wandering or getting lost, there are barriers to families taking appropriate action to ensure safety. The first barrier is awareness that wandering or getting lost is a common occurrence with Alzheimer's. But a second, more insidious barrier is the caregiver's underlying belief that wandering will not be an issue in their situation.[11] When asked if wandering precautions have been put in place, it is not uncommon for a caregiver to state, "Dad is not that bad. We haven't had that problem." Even for those caregivers who understand the need to protect against wandering and getting lost, another problem lies in finding adequate methods of providing and maintaining safe environments while at the same time respecting the person with Alzheimer's need for autonomy, independence, and quality of life. This balancing act can have significant ramifications for both persons with dementia and their families.

Emergency Assistance Products

The goal of keeping the person with dementia safe, while maintaining an active lifestyle and independence for as long as possible, requires education so that families can choose the right solution for their situation. Products range from low tech to high tech and can be reactive or proactive. Emergency assistance or reactive products include jewelry

identification programs or programs using bracelets equipped with radio frequency technology. These types of products are activated when a person has wandered or become lost. Some examples of emergency assistance products include: MedicAlert + Alzheimer's Association Safe Return[12], LoJack® Safety Net™[13], and Emfinder's EmseeQ[14]. Families might consider these products if the person with dementia has wandered before, since they can be highly successful in returning the person home or in the midst of a critical search and rescue. Additionally, emergency assistance products are typically more affordable than other products that may have higher network costs. What the emergency assistance products are unable to do is to help families manage the location of the person with dementia before he or she wanders or becomes lost at all. Due to the explosion of technology over the past several years, new options for managing a person's location have become available.

New technology

Technology now offers the ability for families to take *proactive* measures in monitoring the safety of persons with Alzheimer's. In the past, location management services and devices were bulky, complicated and/or prohibitively expensive. Advances in technology have now made these solutions more discrete, simple, and affordable. Yet despite the fact that GPS and other similar technologies have become part of the country's vernacular, there is not a "perfect" solution to tracking or locating persons with Alzheimer's disease.

There are a variety of reasons that affect the use of GPS technology as a solution to wandering, including actual limitations of the technology and availability of appropriate devices and networks in all areas. In addition, other notable issues include the size of the device, aesthetics, battery life, affordability and the appropriate type of device (portable or wearable) for the person with Alzheimer's. The overriding quandary in this technological arena is the complicated nature of how the technology works and most importantly, knowledge of what the limitations are.

In order for families to take advantage of technological tools to manage the location of persons with dementia, it is essential that they educate themselves about available devices and the technology they use, what will work in the area where they live, and how to make the best choice given their particular circumstances.

Types of tracking technology

There are three main types of tracking technology currently available, although other types are in development. GPS, or global positioning system, is one of the most common types of locating technologies. It operates by communicating with satellites that orbit the earth. In terms of providing location, it only works when there is a clear line of sight between the device and the satellites. This means that in order for GPS to provide a location, the device must be outdoors. Moreover, the location can be obscured by large bodies of water, mountains, or even clouds. GPS is one of the technologies that provide navigational directions in cars. For use in tracking a person with Alzheimer's, GPS has obvious limitations since it generally does not track indoors.

One-third of families trying to manage the care of persons with Alzheimer's report needing help with challenging behaviors, including wandering.

Network Assisted GPS (A-GPS) is another technology that works in conjunction with GPS by using cell towers to triangulate locations. The cellular technology of A-GPS enhances the GPS technology. One of the biggest benefits of A-GPS is its ability to provide indoor locations. Additionally, if there is not a clear line of sight from the satellites to the device, A-GPS can provide the location using cell towers. However, the reliability of A-GPS is impacted in urban areas by large buildings or other infrastructure and in rural areas by inadequate network coverage.

A third type of available technology is Radio Frequency Identification (RFID). RFID works through the transmission of radio waves between a transponder, an antenna, and a receiver. Some products that utilize RFID technology are available directly to the consumer while others work through local law enforcement.

Deciding on a system

In some respects, choosing a location management or tracking system is similar to choosing a mobile phone. Given the complexity of the technology as well as the variable needs of the person with Alzheimer's, there are several things to consider before choosing a system.

Types of devices

Devices have many form factors. There are some devices that can be installed in a car while others can be worn like a watch or carried like a mobile phone. In the earlier stages of the disease, the person may still be driving and a car-installed device may be a good choice. Later in the disease, a device that can be worn (and therefore, less easily forgotten) is a better choice. For devices that can be worn, the size of the device can be an issue for some people. For others, a device they can carry in their pocket or purse is a good choice.

Battery life is another aspect to consider. If the system requires the device to be receiving signals regularly, it will need to be recharged more frequently. As with a mobile

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phone, batteries drain with use. If the system relies on GPS or A-GPS, then it is sending signals on a regular basis and the battery needs to be recharged frequently. For a person with Alzheimer's, remembering to recharge a device can be a challenge. Devices that use RFID typically have longer battery life because they are not sending signals regularly.

Location

Once a family determines where they want to track the person with dementia, they can choose a system that will work best in that environment. For example, GPS generally tracks best outdoors. A-GPS tracks indoors, but presents challenges in both urban and rural areas. Some RFID systems require the involvement of law enforcement agencies, so it is important for families to determine if their local agencies participate in the program.

Frequency of locating

Deciding how frequently a family will want to locate the person with dementia is another issue to consider. In order for a family to find a person's location "on-demand" or whenever they want, the device needs to communicate at regular intervals with the system.

The benefit of "on-demand" location is that it can be used by a family member to check in on the location of the person with dementia in non-emergency situations. During a wandering incident, "on-demand" locating can assist in the search-and-rescue operation. These types of systems work through GPS or A-GPS.

When a device communicates frequently with a system, the cost of using the data network is higher however. Some systems have the ability to provide "constant tracking" that will show the person's location as they move about over a period of time. Typically, "constant tracking" sessions will add to the monthly cost of the service.

Interacting with the system

Some systems provide the ability for the family to use an online location mapping service which permits the family to look up the person's location independently. Alzheimer's Association's Comfort Zone™ powered by Omnilink[15] is one example of such a product. Comfort Zone provides an online platform that works with a variety of devices and plans, allowing families choices based on their specific needs. Other products that utilize GPS and A-GPS technology with an online platform include Pocketfinder®[16], Zoombak®[17] and SentryGPSid™.

Through these types of services, families can locate the person at any time they have access to the Internet. This allows them to actively manage the location of the person with dementia. For example, if the person with dementia generally calls at a certain time each day, but one day is late in calling, the family member can easily use the system to find out where the person is.

For family members who are long-distance caregivers, or when the person with dementia lives alone, the ability to determine location from afar can be very comforting. Additionally, systems with online mapping features may offer access to as many family members as desired. A system that accommodates multiple users takes the burden off of one specific caregiver.

Some online location mapping services also afford the family the ability to determine safe zones or areas, sometimes called "geo-fences," and the system will send an alert when the person leaves the zone. When a person with dementia goes on vacation, the zones can be changed to that location. In the early stages of the disease, the zone may be set widely and as the disease progresses, it can be decreased as appropriate. The size of the zone can also be changed depending on whether it is daytime or nighttime.

When a system offers geo-fencing, the family members can decide how they want to receive alerts should the person with dementia leave the zone. Typically, alerts are sent via text message or email, or both. Families can also decide and change over time who receives these alerts. This type of feature offers flexibility for families and allows responsibilities to be shared.

Some families may not have regular access to the Internet or may not be comfortable using it. In these cases, a system that has a 24/7 monitoring center may be a better choice. Comfort Zone and Zoombak® are examples of products that offer 24/7 monitoring centers. When a family member is concerned about the location of a person with dementia or the person is lost, he or she can call the monitoring center to obtain the person's location.

Price

Tracking devices and systems vary in price and usually include a one-time purchase fee for the device and/or system, an activation fee, and a monthly plan, much like mobile phones. And like mobile phones, usage will impact the cost of a monthly plan.

Comprehensive Safety Plan

In summary, location management systems are tools that enhance a family's ability to monitor the safety of a person with dementia while allowing for independence and quality of life. Once a family becomes educated about the realities and limitations of the technology, location management systems can become an important part of a comprehensive home safety plan for persons impacted by Alzheimer's disease.

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[16] Alzheimer's Association Comfort Zone
www.alz.org/comfortzone

[16] Pocketfinder
www.pocketfinder.com

[17] Zoombak
www.zoombak.com

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Using Technology to Support Social and Intellectual Engagement

By Julie Menack, MA, CLPF, RG

Recent studies have shown that remaining socially and intellectually engaged significantly reduces the risk of age-related disability and cognitive decline and can also extend life[1,2]. The use of technology supports older adults' quality of life by reducing boredom and loneliness and helping them feel more connected to those outside their homes. These technologies can enhance social interaction, provide an opportunity for lifelong learning and personal engagement, support emotional and spiritual well-being, and create leisure activities[3]. Researchers at the Massachusetts Institute of Technology AgeLab suggest that the basic needs hierarchy of Maslow, with health and safety as the foundation, and the three "higher" needs of "connectivity, contribution, and legacy" can all be supported by technology. They further suggest that older adults and family members are more likely to be willing to spend disposable income on the "higher" needs[4], and that "technology provides a way to make new connections, new friends and new senses of purpose"[5]. This article outlines some technologies that the care manager can recommend to support those "higher" needs.

Social Engagement

One important care management task is to encourage ongoing communication between the older adult and local and long-distance members of the care team to help reduce the feeling of isolation and also to monitor well-being. Increased communication can also promote independence and help keep a frail elder out of an institution[6]. Computer and noncomputer-based communication devices, cell phones, and teleconferencing (virtual visitation) devices, discussed below, all provide technological support in this area.

Computers

Computer usage provides a greater ability to reconnect to people, places, and ideas. This can be in the form of email, chat rooms, health information gathering, news, and games, as well as a network of supportive relationships through on-line interaction[7]. According to the Pew Internet and American Life Project, the largest percentage increase in Internet use since 2005 has been in the 70-to-75 age group.[8] Although only 7% of those 65 and older use social networks[9], Facebook's own research indicates that in 2007 in the United States there was a massive 1230% spike in usage amongst those over 64.[10] According to a recent study, after three months of using a simplified computer, older adults had significantly greater energy levels, participated more in social engagement activities, were less depressed, demonstrated great self-efficacy, and experienced greater quality of life[11].

Many of our clients are capable of using conventional computers and in fact some already own computers. The care manager can suggest local vendors who can set up the computer system and resources to train the older adult how to use the computer. Many local senior centers offer computer classes tailored to a senior's skill level and learning pace. The care manager might also suggest hiring a companion who can help to determine how a computer can enhance a client's life. This includes setting up the client with appropriate Internet service and engaging the client to use the system. If a client has a particular interest, the companion can use the Internet to stimulate conversation about that topic. Such companions are available in the San Francisco area from a company called **Engage As You Age** (engageasyouage.com). My Way Village's **Connected Living** (mywayvillage.com) program provides "ambassadors" who conduct home visits in several cities in the United States to provide one-on-one coaching.

Because conventional computer technology can be a challenge for many seniors, simplified computer interfaces are available. Those that are geared to this market typically provide features such as touch-screen technology, large buttons, and scalable text. Some provide communication tools, including webcams and audio email, and others provide simplified web browsing and email, games, or a place to store and upload photographs or create a memoir. The **GO Computer** (gocomputer.com) bills itself as a computer that is impossible to break, crash, or confuse, and includes 24-hour technical support for a monthly fee. There are also software products that can be used on standard computers including **IN2L.com** (It's Never too Late), **PointerWare.com, Connected Living,** and **BigScreenLive.com**. Many of these products are being offered at senior living communities, and some are also offered for in-home use.

Computer education geared to older adults is another way that computers can be made more accessible. The care manager can help to identify these resources in the local community, at senior centers, or perhaps a local extended education program for seniors at a local college. Others include **SeniorNet.com**, a nonprofit that provides basic and advanced computer training both on-line and at over 200 volunteer-staffed learning centers across the country;

FloHclub.com, which is a telephone computer support service for older adults; and **Computer School for Seniors** (cs4seniors.com), a virtual campus offering online computer and Internet classes.

Social Networking

Social networking technologies focus on building communities that help older adults communicate, organize, and share with other older adults and their care providers[12]. A **Facebook** site dedicated to the older adult can enable that person to connect with friends and younger family members. **PatientsLikeMe.com** is another form of social networking where members share treatment and symptom information on chronic diseases. There are also web-based platforms for care coordination and communication, which include scheduling, task planning, messaging, and storytelling around an older adult or person with disabilities. Examples include **Tyze.com, Famililink.com,** and **Kinnexxus.com**. Using these systems, the older adult and care team can communicate via email, and a care provider can make calendar entries to remind the older adult to go to an appointment or take their medications and can also share photos of friends and family.

Computerless Internet Services

There are several products that allow communication via the Internet without a computer. They all require subscriptions and are connected to a phone line without interfering with regular phone service. Only those individuals who are identified by the product manager (someone on the care team) can send emails, preventing unwanted spam. The **Presto Printing Mailbox** combined with the **Presto Service** (presto.com) is a one-way email device that was designed for the older adult. It receives and provides easy-to-read color printouts of emails and photos sent by family and friends. The device uses standard printer paper and ink cartridges. A two-way service where the older adult can both send and receive emails to specified family and friends using a standard fax machine is **MyCelery.com**. The **Landel MailBug Email Appliance** (landel.com) allows the older adult to check email without using a computer. The **CEIVA Digital Photo Frame** and **Kodak Pulse Wifi Frame** (available in 2010) are photo frames that can receive photos uploaded by family and friends.

Cell Phones

The easiest way for some of our clients to stay connected is by telephone. If a client is capable of learning something new, a cell phone can be used to improve family communication and makes it easier for others to reach the care recipient when they are not at home or in their room at a long-term care facility. It also gives the care recipient more freedom to go out because they are not sitting by the phone waiting for a call

The use of technology supports older adults' quality of life by reducing boredom and loneliness and helping them feel more connected to those outside their homes.

Cell phones that we recommend should be easy to use with a large and easy-to-read display, big buttons, simple navigation, and clear sound. Several phones that meet these criteria include the **Samsung Jitterbug** (jitterbug.com) phone which has a unique personalized operator assistance feature; the **Doro PhoneEasy**; and the **ClarityLife C900**. There are several cell phone services which offer plans geared towards seniors, for example the **Verizon 65 Plus Plan**, the **AT&T Senior Nation Plan**, and the **Consumer Cellular Plan** (consumercellular.com) offered by AARP. A **Clamp-on Cell Phone Holder** is one supporting device by Ableware that provides a convenient place to store cell phones on wheelchairs, walker, bed rails, and other one-inch diameter tubing.

Videoconferencing

Videoconferencing or video visiting allows all those involved to both see and hear each other in the way that comes most naturally to everyone—traditional face-to-face communication.[13] It is a way to share favorite people (e.g. a new baby, the care recipient's favorite nurses aide), places (e.g. photos or a video of a vacation), and things (e.g. a new home or animal). Videoconferencing has been shown to reduce the feeling of isolation and loneliness of the older adult who has moved to a retirement community[14].

Additionally, videoconferencing is also a way for the long-distance caregiver to monitor well-being and quality of care and may also validate their experience of the older person's decline. It should be noted that limitations, such as physical impairments (e.g. vision, hearing loss), technical difficulties, and impaired cognitive ability may limit the use of this technology by the care recipient. Support from a care provider can easily help overcome some of these difficulties, however. Several studies have shown that the frail elderly population is capable of participating in videoconferencing, including those residing in nursing homes.[15,16,17,18,19]

Videoconferencing can be accomplished by using a dedicated video telephone, computer, or cell phone with picture and/or video capability. Having one of these devices might enable a family member or care manager to contact the care recipient from anywhere in the world where wireless broadband is available. For those who are not comfortable using a computer, a dedicated stand-alone video telephone device may be a better choice. However, if a stand-alone video telephone is selected, all

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Using Technology to Support Social and Intellectual Engagement

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parties typically must have the same device in order to be connected.

Computer-based videoconferencing requires a personal computer; webcam, microphone, and speakers (often included on laptops); high-speed Internet (cable or DSL); and a security solution like a DSL or cable router and firewall software. Free software such as **Skype.com** for PCs and Apple computers or **iChat** for users of Apple computers are available and for both users just need to create an account, log in, and download the software. If the computer does not have a camera, a camera can be plugged into the computer's USB port. There are also products designed specifically for the senior market, such as **Virtual Interactive Families and Friends** (vifamilies.com), **AttentiveCare** (caregivertech.com), or **Familyvirtualvisits.com**. Features might include the controls being only at the caregiver's end, multiple simultaneous connections, multimedia support including voice and text reminders (the caregiver's voice can say "wake up now" or "take your medications today"), and slide show capability. The care manager can help the family determine what system would work for them.

Intellectual and Physical Engagement

Making sure that our clients remain both mentally and physically stimulated is an important care management task and are essential to our clients' quality of life. Brain fitness programs are a popular way to continue to develop cognitive skills, and music is known to stimulate the brain. Fitness games enable the older adult to improve their fitness by playing their favorite games in a simulated environment.

Brain Fitness

There is currently an emerging brain fitness movement and debate regarding whether the new computer technologies can actually improve memory and delay the onset of dementia. According to experts in the field, brain fitness is the brain's ability to strengthen connections between neurons and to promote new neurons in certain parts of the brain to maintain important brain functions.[20] While there are many products available for the average adult (for example **Posit Science's Brain Fitness Program** and **Brain Age** for the Nintendo DS), there are a few products that are designed for older adults. The more successful technologies are typically fun to use and have age-appropriate content. Games typically focus on long-term and short-term memory, language, executive function, computation, visuospatial orientation, and critical thinking.

One such product, the **Dakim BrainFitness Program for Seniors,** adjusts as the user plays, with new games downloaded automatically every night. The product has only been available as a packaged gaming device, but in Spring 2010 will be released as a software product more affordable for in-home use. The software will work with a mouse, but it is best suited to a touch screen. There are now some reasonably priced all-in-one computers with large touch screens available.

CogniFit, including the CogniFit Personal Coach Program and the CogniFit Senior Driver Program, claims to be a scientifically proven and validated brain fitness program. It uses a baseline assessment of up to 14 different cognitive areas and creates a systematic personalized training program to enhance abilities based upon the assessment. These programs are available on-line by subscription.

Music

Although they may not remember the name of a song or why they know it, those with Alzheimer's disease and other memory impairments remain very responsive and obtain great pleasure from music from their past.[21] By reconnecting clients with their favorite music, the result is often increased attention, improved cooperation and mood, and reduced depression, agitation, and anxiety.[22] Anecdotal evidence that indicates increased cognitive function in dementia patients after music therapy has recently been confirmed by functional MRI studies. The functional MRI shows that the medial prefrontal cortex, or the area of the brain that associates music and memories, is one of the last parts of the brain to atrophy as Alzheimer's disease progresses, and that songs that conjure up a specific personal memory result in particularly strong activity in that area[23].

The Institute for Music and Neurologic Function at Beth Abraham Health Services in Bronx, New York is spearheading a new program to provide **iPod Shuffles** loaded with customized playlists to help spread the benefits of music therapy to Alzheimer's patients[24]. They provide technical assistance for health care professionals to provide this service. This type of program can also be implemented by care managers for clients both at home or in residential facilities. Recommended music lists can be found on the Institute's web site, which has lists of preferred music from various decades with direct links to iTunes[25]. The iPod Shuffle is recommended because it just has an on/off button with no screen or click wheel and starts playing automatically when turned on.

Care managers might keep the following guidelines in mind when implementing music with an iPod Shuffle: 1) music from a person's teenage years through their early 20s is often a good selection, as is music that a person loved throughout their lives such as opera, classical, religious, or jazz; 2) make the music available only as long as the person is interested; 3) share the music if possible, as the music can be a starting point for engagement and communication – listeners can reminisce together about what the music reminds them of or just hold hands to be more connected; 4) use the music to enhance intergenerational interaction, as young family members can drum along; and 5) be prepared that music can evoke a multitude of emotions and memories both happy and sad.

Physical Fitness

Participants at innovative adult day health programs, rehabilitation programs, and residential facilities as well as those still in their homes are enjoying what has been termed "Wii-hab", or the use of the **Wii** program for rehabilitation.[26] Wii is a simulation gaming device from the Nintendo Company that is played on a television. "Wii Fit" is a game that incorporates yoga, strength training, balance, and aerobics and "Wii Sports" is a game that offers golf, tennis, bowling, boxing, and baseball. There are many other available games, including those that simulate skiing, dancing, cooking, or playing instruments. All of the games are interactive and require the player to physically move. The exercises are reported to improve general fitness as well as strengthening the arms and legs and promote dexterity, balance, reaction speed, memory, and coordination while being fun and motivational to those who may have previously been reluctant to move. Some of the games can be done from a seated position. Wii is enjoyed by all ages and is a wonderful intergenerational activity.

Before recommending the purchase of Wii, it would be advisable to make sure that the client receives the approval of a medical professional and is properly supervised when using it. It should also be noted that video games can cause physiological concerns such as seizures, repetitive strain injuries, and motion sickness; interference with nearby electronics; and other concerns. Care managers can help families evaluate what is most appropriate for the client's needs.

Conclusion

There are many tools available to the care manager who wishes to utilize technology to help enhance a client's need for social, intellectual, and physical engagement. This article mentions a few of the technologies that are currently available.

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How to Utilize Technology with Care Management Clients

By Dianne Smith, RN, MA, CMC

This article will provide insights into assessing needs and using technology that can help our clients to remain independent longer. Technology can be integrated seamlessly into a care management practice by care managers who are willing to experiment with new innovations. This article provides a set of steps that can be taken that will enable care managers to incorporate technology into their practices.

High risk clients or the "frequent fliers" in the hospital emergency department are most likely to benefit from the use of technology. These clients often have chronic illnesses such as COPD, CHF, diabetes, or dementia, and despite diligent medical care, are uncontrolled in their disease process. They are responsible for most of our night and weekend care management calls due to falls, infections, medication errors, and uncontrolled behaviors. Utilizing technology can allow the care manager to manage these cases by minimizing the occurrence and duration of hospitalizations and by closing gaps in care. It can also assist us in helping our clients to remain in their own homes and avoid placement for a longer period of time.

Any technology that is considered should address a care plan goal or at least bring the care manager closer to the stated objective. Depending on the chosen technology, a care manager may be able to help a client avoid a care transition, decrease falls, avoid medication errors, decrease the workload on the caregiver, provide additional oversight, or help manage assets by streamlining care and minimizing disruptive behaviors. The process of implementing a technology begins with a geriatric assessment and is followed by investigation, implementation, follow-up problem-solving, and evaluation.

Assessment

As with any assessment, the goal of the technology-oriented geriatric assessment is to identify the concern, including the physical, mental, and emotional issues that could be improved or stabilized. With technology, the care manager must be especially sensitive to establishing a good relationship with the client, as an atmosphere of trust is so important for the innovation to be accepted and implemented. The following questions are recommended as part of the technology-based assessment:

Utilizing technology can allow the care manager to manage these cases by minimizing the occurrence and duration of hospitalizations and by closing gaps in care.

- What can be done to improve client safety, enrich their life, and meet their stated goals and objectives?
- How can technology be used to promote and ensure compliance?
- What will it take to get us to our goal?

As with any assessment, it is important to listen to what the caregivers, family, friends, and the client are saying. In this way, the resources and energy can be focused into solving problems and finding more beneficial outcomes. Gaps in care should be identified so that technology and other solutions can be identified to close those gaps.

Collateral problem-solving of several areas can be vastly beneficial to our clients. A fifty-percent improvement in several areas will result in a significant impact in a client's life. For example, placing an alarm on the doors may not keep the client from exit-seeking, but it will alert the caregiver of their impending exit. While this intervention will not totally solve the problem, you helped the caregiver be aware of the client's movements while you search for technology or other solutions to the exit-seeking behavior.

Installing a PERS in the event your client has a problem and needs to seek help does not guarantee the client will remember or decide to use the system. But the benefit of training the client and re-testing the system weekly is that they may remember and feel the need to use the system if they need help. It also gives some peace of mind to the family that a system is in place and could be useful in a problem situation,

If a problem is well stated, the solution will be closer at hand. For example, if there is a concern with wandering, the care manager might ask: when are they most likely to wander and what are the safety concerns for this particular client?

Investigation

Once the client's needs have been identified, the care manager can start to identify helpful technologies. The technology must fit the client's budget, lifestyle, cognitive abilities, and physical strength. It is also important to make sure that it allows the client to be as independent as possible, to be safe in their own environment, and to improve the ability to monitor their health and well being. An important

factor to consider is the risk versus benefit. There may be instances where you identify a wonderful technology, but it may prove difficult to overcome the client's barrier to learning. It may help to have a discussion with the client about the need to perform tasks differently and the value that can be gained by the change or addition of technology. The care manager's job is to assess which option will most benefit the client and to recommend a product. The following investigation steps are recommended:

- Keep a file of equipment and technologies available.
- Network with other professionals in your area or on the Internet who have faced the same client problem and ask how they resolved their concern.
- Uncover innovations that can then form the basis for effective strategies.
- Search the Internet for technology options.
- Ask what worked and what did not work for others and if there were factors that limited the success of the technology and how these limitations were overcome.

The main thing is not to be afraid to ask lots of questions. Many of us have a fear of technology, so it is best to investigate technologies with one client concern in mind.

Implementation

The implementation phase can begin with the care manager sitting down with the care team (family and/or care providers) to identify risks and concerns. The team works together to determine how the technology can provide a solution and become integrated into your client's home. This step will allow you to evaluate the readiness of the client and their care system to understand and utilize the innovation. You will also need to demonstrate to the client how the technology works and its benefits and shortcomings. It is important to show the value of technology by demonstrating both how the client will benefit and how the care team's stress will be reduced. If we can inspire confidence in those involved that the innovation will produce positive change, we have succeeded.

It is important to make sure to do your homework and answer all of your own questions. Another important task is to ensure that the home has the appropriate electrical outlets, phone jacks, and space. Don't forget to purchase any additional batteries, extension cords, or power strips and provide clear, boldly printed instructions for the care team, and make sure they know how to reach the product technical support team.

Follow-up Problem Solving

The care manager should schedule follow-up visits at regular intervals either in person or via telephone or e-mail. During these visits, listen carefully to make sure the technology is being used correctly. Address any concerns and provide additional instruction or training promptly. As with any client issue, it is the care manager's job to be sensitive to the changes that are affecting our client's home environment. Once the client or care team becomes disillusioned or negative toward the technology that you have recommended, it is difficult to restore confidence. Never underestimate the benefit of a positive attitude and having the entire care team and your client involved in supporting the technology. Remind everyone that the more you use the technology the more familiar it will become. Set the tone so it will be a positive experience.

Evaluation

After a technology has been operational for some time, it is critical to determine whether the initial goal has been met in full or in part by the technology. If the goal has not been reached, your job is to evaluate whether additional training and support or supplemental technology are needed, or if the technology product should be removed altogether. The care manager should not be afraid to continue to search for solutions that meet the client's needs and budget,

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Example: Remotely-Monitored Locked Medication Dispenser

Assessment: Medication management is an excellent use of a technology-based solution since reduction of medication errors is known to reduce the potential for hospitalization. A remotely-monitored and locked medication dispenser can work well for clients who play with their pills, mix up the pill bottles, or over- or under-medicate. A medication dispenser may not be appropriate for clients who cannot be trained to use a new device, for "tinkerers" who may want to take a machine apart to see how it works, and those who are violent and might destroy expensive equipment. The potential financial cost and emotional stress of a hospitalization for a medication error versus the use of the medication dispenser should be considered.

Investigation: You will find that there are many ways to manage medication using technology. For example, for a higher functioning client, you might try a cell phone that rings when it is time to take the medication. A lower-functioning client might need a computerized medication dispenser that has the medication under lock and key, dispenses medication at pre-set times and can also call the caregiver or family member if the medication is not dispensed on schedule.

Some medication dispensers are connected to the Internet via the phone

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line and can be monitored on-line. If doses are missed, the caregiver or family will be notified so they can promptly intervene. These machines have a maximum capacity of doses so it is necessary to refill them regularly. Many machines can be set up to give additional instructions to the client, such as take the medication with food. Some can also dispense "PRN" or "as needed" medications.

Implementation: Setting up a remotely monitored medication dispenser typically requires calling a support center using a telephone other than the landline the medication dispenser is plugged into, such as a cell phone. The support center can detect problems and help you with concerns and questions along with troubleshooting issues that may come up. It will be necessary to have a person who is legally permitted by your state to fill the dispenser.

The following procedure is recommended to educate clients, particularly those with early or mid stage dementia, on how to use a medication dispenser:

1. Briefly explain the need for the equipment, and show how it works. Have the care team who will be supporting the client on a frequent basis present, if possible.
2. Make sure the care team members are calm and reassuring. Project confidence that the client can learn to use the machine.
3. Be present for the first couple of doses and have the client walk to the machine with you and press the button. Genuinely praise them when they are able to complete part of the process.
4. Next let the care team member stand by but not help when the machine prompts…just observe. Offer assistance without causing concern for the client.
5. When the client has learned to use the machine with the care team member watching, have the care team member arrive a few minutes after the medication is dispensed to check for accuracy. Have the care team member do this until you feel confident the client knows what to do when the machine prompts them.

Follow up Problem Solving

Follow up by meeting with the care team. The care manager should ask the care team whether the client is responding to the machine when he is alerted and taking the medication promptly. If there are areas of concern, the care manager should request that the care team repeat step 4 for a few doses. Again, offer genuine praise when the client follows the steps set out for him. Re-training usually solves problems in follow-through. If there are additional concerns, brainstorm with the care team on solutions for the concerns. It may help to call the technical support team for additional guidance.

Evaluation

After a reasonable time, ask the care team if the client is taking his medication correctly and determine whether the team is satisfied with the outcome. If after re-training the client is not benefitting from the technology, remove the dispenser and thank the team for their efforts. Resume your search for innovative solutions. Most often, the results are positive and you have succeeded in supporting your client through the use of technology.

How to Utilize Technology with Care Management Clients

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but if the technology is clearly not working, it is okay to admit it and thank all those involved for their efforts.

Conclusion

Providing state-of-the-art care through technology in the client's home ensures our clients every chance of staying active and independent for longer periods of time. Care Managers who access technology for their clients benefit by having healthier clients and an expanded knowledge of the use of technology in their practice.

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Dianne spoke on Technology for Technophobes at the NAPGCM National Conference in 2008 and has integrated the use of technology into her practice. She is currently involved in the study of care transitions as they relate to the elderly population and the prevention of errors inherent in multiple care transitions. Dianne is President of FHL Care Management, LLC in Orlando and can be reached at dsmith@FHLCareManagement.com.

Telecare in Action: A Case Study

By Kim Olmedo, LCSW, CCM, CSW-G

When I first met Mr. Hanson, his wife had just been moved to a skilled nursing facility after a lengthy hospital stay (all names have been changed to protect confidentiality). Mr. Hanson was accompanied to our meeting by a friend from church, Margie. During that meeting I learned that Mr. and Mrs. Hanson had been married for about seven years; it was a second marriage for both of them. Mr. Hanson had a stepson from his previous marriage who lived in another state.

Mr. Hanson was in his mid-eighties, and he obviously had Parkinson's disease, which he confirmed during that initial meeting. He walked with a walker, and after sitting for the entire interview, he needed assistance with standing. Mrs. Hanson, only 62 years old, had recently had a severe stroke.

Margie was responsible for the initial meeting with Mr. Hanson. With his wife in the hospital, it had become very apparent to his friends how dependent he was on her, and that dependence had now been transferred to his circle of friends. While he claimed he was still capable of driving, his friends had convinced him not to drive, and they took him to and from the hospital every day, as well as to the grocery store and to his own doctor's appointments. He was able to prepare very simple meals at home, but his friends had concerns about his safety doing that task. He did have a housekeeper, and she had started coming weekly instead of every other week. After weeks of providing care for Mr. Hanson, his circle of friends was beginning to get worn out, so they convinced him to look for assistance.

Mr. Hanson expressed unrealistic expectations in that first meeting, because he fully expected his wife to return home soon. I suspected this was unlikely, and after meeting her, that suspicion was confirmed. She had significant physical disabilities and some mild cognitive deficits as well. She was able to speak slowly, though not always clearly. Mr. Hanson made it clear that he had no intention of leaving his home, and he was not interested in having a caregiver at home.

Over the course of several weeks and many lengthy meetings, I got to know Mr. Hanson very well, and he began to trust that I would he honest with him, that I would be his advocate, and that I would also sometimes tell him things he did not want to hear. It also became increasingly clear that he was not safe at home alone. I witnessed him having difficulty getting up after sitting for prolonged times; I learned from Margie that he had attempted to drive once, but luckily gave up when he could not get into the car by himself. He experienced auditory hallucinations on occasion, and he was easily distracted, which was a concern when he was using the stove. He was also not taking his medications properly.

It eventually became necessary to confront him with his increasing difficulty at home, including pointing out to him that he was now becoming something of a burden to his friends. This meeting took place at his home, and included in this meeting were Margie and his friend Floyd, whose judgment he trusted completely.

Margie and Floyd took the lead in this meeting, presenting Mr. Hanson with evidence of his increasing dependence: inability to drive, unsafe mobility, poor eating habits, not taking medications correctly and poor decision-making. It was pure coincidence that his home health physical therapist arrived during this meeting, and he added his input regarding Mr. Hanson's unsafe mobility. In fact, the therapist was so concerned that he spoke to me privately about considering making an adult protective services referral.

My role in the meeting was to help Mr. Hanson understand the concerns his friends and his therapist had, and to help him understand some of the possible consequences of maintaining his current state at home. We all acknowledged that he did not want to leave his home—he had been in this home for 35 years-- but we had to help him understand that his safety and security were paramount. As stated earlier, he did not want a caregiver in the home, but financial concerns were a real issue as well. Although he had a very comfortable income, including Social Security and military pensions, he had very little in savings. Fortunately his wife was going to qualify for Medicaid to help pay her nursing home expenses.

In considering services available to help Mr. Hanson stay in his home, I considered a number of possibilities. Obviously, direct caregivers would be preferred, but he was reluctant to have full-time caregivers and could not afford them for more than a few hours a week. He already had an emergency response system in place. He had difficulty taking his medications correctly, and I could certainly suggest some type of automated dispenser such as a MedReady dispenser. As good as those devices are however, they do not guarantee that a person takes the medications. I had another client with an elaborate computer monitoring system similar to a Nanny-cam between rooms in the home, but this system was monitored internally by family members who were also in the home most of the day.

As I was assessing different caregiver options and agencies, I

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remembered that a local contact had given me some information on a web-based telecare monitoring system they had. I mentioned this service as a possible alternative to Mr. Hanson. He and his friends were intrigued, and asked me to make a referral.

I was able to meet the representative at Mr. Hanson's home for the intake interview. She described the Rest Assured® system and explained that there were a variety of options available, including cameras, fall sensors, and an emergency response system. She did an assessment of the home's layout, and we discussed placement of cameras. It was decided to place one in the kitchen/breakfast room area, because Mr. Hanson spent most of his time in this room. This camera could rotate and zoom, so it could see all three entrances to the room. It was decided that a second, fixed camera would be installed in the hallway outside the master bedroom. This camera would view the entrance to the hall bathroom, as well as the entrance to the master bathroom. It did not view the bed in the master bedroom, so Mr. Hanson would have complete privacy in the bedroom and bathrooms.

In a later phone conference with the agency, Mr. Hanson and his friend Floyd were able to negotiate a monthly rate that included monitoring by the offsite "tele-caregivers" and nine hours of onsite personal care a week. The agency provided a computer monitor and DSL connection so Mr. Hanson could have face-to-face contact with the tele-caregivers. The decision was made that the cameras would not be on all the time; rather, the tele-caregiver would check on Mr. Hanson every two hours during his normal waking hours.

This arrangement pleased Mr. Hanson. He was able to maintain his privacy, he had some help in the home, and he had a way to get help in the home when he was there alone. His friends had more peace of mind about his safety when he was alone at home, knowing that someone would be checking on him on a regular basis. By this time Mrs. Hanson was also more aware of her husband's situation and it made her feel better knowing there were people helping her husband. She knew better than anyone how much help he really needed, and it helped her concentrate on her own rehabilitation, rather than spend time worrying about his safety.

This arrangement pleased Mr. Hanson. He was able to maintain his privacy, he had some help in the home, and he had a way to get help in the home when he was there alone.

I had the opportunity to see how the system worked on more than one occasion. The "tele-caregiver" would ring and then appear on the computer screen in his home when they turned the system on for a drop-in visit. If they did not immediately see Mr. Hanson, they would call him by name. Whenever I was present, they would speak to me as well as to Mr. Hanson. I observed one tele-caregiver call Mr. Hanson by the honorific title "Lieutenant," and she asked about his breakfast, what he planned to eat for lunch, and whether he had taken his scheduled medications. If he was going to visit his wife or to an appointment, he used a white board to write the time he left and when he expected to be back. He could prop this up on the kitchen counter and the tele-caregivers could see this. If he forgot to do this, the tele-caregivers would call him on his cell phone to check on him and make sure he was safe. On one occasion when his friends and I were having a rather serious meeting with Mr. Hanson, the tele-caregiver did not disturb us at all. After the meeting I happened to be talking to the agency administrator and mentioned that no one had checked in at the scheduled time. He checked with the tele-caregiver and learned that she had dropped in, seen we were meeting, and decided to exit without interrupting us.

Mr. Hanson suffered a stroke about five weeks after the telecare services were put into place, and he and his wife continued their rehabilitation in the same nursing home. After several months in the nursing home, they were both able to return home. They decided they wanted twenty-four hour care at home, so the tele-monitoring system was not continued when they went home.

Resources:

For a variety of medication systems and dispensers:

MedReady Medication Dispensers: http://www.medreadyinc.com/

For video-monitoring equipment: http://webcam-software.net/www.amazon.com

For information about the Rest Assured® program: http://www.restassuredsystem.com

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Managing Your Business with Technology

By Lisa Moody

All businesses, regardless of size, require infrastructure to function properly. A key element in running a successful business is the appropriate use of business technology. With the correct technology in place, the business can operate efficiently and grow more successfully. This article prescribes a description of technologies that can be used to simplify the infrastructure of a care management practice.

Use an Information Technology Consultant

The first step to create successful technology infrastructure is the presence of a qualified Information Technology (IT) consultant on your team. Just as a business needs a CPA or an attorney, it also needs an IT consultant to guide technology efforts. The consultant must be familiar with the most current technology and able to demonstrate how the technology fits with your business model. The IT consultant provides advice on the most efficient way to utilize current technology and offers a plan for growth that meets the needs of the business owner. Utilizing an IT consultant who agrees to charge a project-based fee is recommended as this will benefit both parties. The consultant will agree to perform work that they understand and can complete in the quoted time, and the business owner will be able to budget appropriately if the amount of the investment is known in advance.

Some areas that an IT consultant will help with are finding the right computers for the business, implementing a network to share information with multiple employees, helping with printer and scanner setups, and answering questions related to maintaining secure storage and backup of information.

The best way to find an IT consultnt is to talk to other local business owners to find out who they use. Referrals from trusted sources will be more likely to work out. For example, physicians' or attorneys' offices often have an IT consultant that they have used for a long time who they will refer. Another place to look is the local Chamber of Commerce where their membership databases are usually categorized by services offered. Also effective, is belonging to larger networking groups such as BNI (Business Networking International – www.bni.com).

Presenting a Professional Image on the Internet

The Internet is now an integral part of marketing and packaging a small business. It is commonplace for consumers to research a company's web site prior to making their initial contact. This requires a web presence that portrays the professional image desired for the business. There are several key factors to explore in order to create a successful web presence.

Purchasing a Domain Name

A domain name is the address for a web site and for a professional e-mail address. For example, the NAPGCM web site's domain name is www.caremanager.org. Domain names are purchased through a domain registrar, such as www.godaddy.com, www.netsol.com, and www.register.com. A Domain Name belongs to the purchaser from the date that it is purchased and for as long as the annual renewal fee is paid. It does not matter which domain registrar is used but differences in pricing should be considered. All registrars tend to offer low pricing when a Domain Name is first purchased with prices that increase in subsequent years. Paying up front for multiple years will keep the overall cost low. Today, finding a Domain Name that matches the name of the business requires creativity. The name chosen should be easy for clients to remember and generally should stay within the .com realm to be easily found.

Often businesses will utilize the name of the company within the domain name; however, it is becoming increasingly difficult to incorporate many of the geriatric care business names. For this reason, it might be beneficial to consider a portion of the business name or highlight a specific service that is offered. It is important to consider the length of the name. If it is too long or abbreviated in an unusual way, there will be chances for mistyping. A benefit of the domain name registrars, like GoDaddy, is that the desired name is entered in a search box, and if it's not available the registrar will suggest alternatives. These are not always creative, but the right match can sometimes be found this way.

Business Web Site and E-mail

Once a Domain Name is purchased, a web site hosting account is required along with at least one e-mail account. The listed registrars also sell web site packages that include one or more professional e-mail accounts. The options available are usually Windows and Linux options. It is typically better to select the Windows option as it tends to make the creation of databases and

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other specialized web tools easier to manage. Also, the Windows interface is more familiar to care managers and a wider range of IT specialists. Since most web site packages come with at least one e-mail account, this gives the opportunity to create a professional address for the business owner. All of the primary domain registrars offer web site template options that allow information about the care management practice to be plugged directly into a pre-selected set of formatted pages to create an instant, professional looking, fully-functional web site.

A very important part of the site is the contact page. The reason that a web site exists is to drive business to the company. If the potential clients cannot easily contact a care manager via their web site, many will search for another care manager.

E-mail included in a web site package comes with an option called POP3. This option means that the e-mail can be pulled into Outlook or into a portable device such as iPhone, BlackBerry, and other web connected PDAs. A setting in Outlook will leave a copy of e-mail on the web server so that e-mail can be pulled into multiple devices rather than having e-mail delivered piecemeal to the devices.

Search Engine Optimization

Search Engine Optimization (SEO) is important if the care manager wants to be found by potential clients. SEO will make your web site appear first, or near the top, of the search engine results based on key words used in the web site. When a search engine (such as Google or Yahoo) crawls a site, it indexes the words in the written content. It is vital for care managers' web sites to include the names of specific locations served including, cities, counties, and zip codes within the text of their web site, allowing the site to be found based on the proximity to the client. There are SEO companies who do this work for you for a fee. A technique called "Organic SEO" brings web sites to the top of search engines for free by placing key words within the content of the web site.

Submission to a search engine will shorten the amount of time it takes for the search engine to find the web site and index it for searching. Waiting for the search engine to find the site will take much longer than submitting the site directly. The primary search engines have free submission. To find the free submission sites, put the name of the search engine with the words "free submission," in your favorite search engine, to be directed to the free submission sites. Enter the full name of the site, including the http:// www at the beginning of it for proper submission.

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Pay-per-click (PPC) advertising is an advertising method offered by search engines. Keywords are purchased in an auction-type style. For example, if you want the keyword "geriatric," then you would put that in your list of bidding terms, and the search engine will tell you what the price is for that keyword. The more people who use that keyword, the more the price goes up as each person bids to use that keyword to be higher in the results. At the time of the writing of this article, the keyword "geriatric" is at about $4.00 per day on Google. PPC needs to be utilized very carefully. All of the tools have an option to set a top budget amount per day. To use PPC correctly, data must be gathered about leads converted from PPC. One of the main ways this is done is to create a special landing page, with a special offer, that is just for your PPC ads. On that page you will want to have the person fill out brief name information to receive your special offer. This way you can track which of your leads came to your site through the PPC ads.

Internet Research

The Internet provides a vast information resource for care managers; however, caution must be used to determine the validity of information found on the Internet. NAPGCM's web site, www.caremanager.org, presents current public relations topics, including articles mentioning care management, videos promoting care management, and internal member resources, such as a review of certification. In the secured Members Only section of the web site there is a link to SNAPforSeniors, created solely for care manager research. This Senior Housing Locator provides a method for care managers to find and compare housing options for their clients and to review licensure and other services available for clients.

Valuable Internet research tools include the U.S. Census for marketing research found at http://factfinder.census.gov. The American FactFinder provides data related to persons, by age, and residence location, allowing for research of specific market size in specified communities.

An abundance of medical research information exists on the Internet; however, caution is urged to verify medical information with trusted medical professionals. Several respected medical information web sites include www.mayoclinic.com,

www.webmd.com, and www.nlm.nih.gov/medlineplus. Care managers can also find useful resources on aging at www.alz.org, www.aarp.org, www.aoa.gov, www.medicare.gov, and www.nihseniorhealth.gov.

Operating Systems

The operating system is the software that runs the computer. There are two primary developers of Operating Systems, Microsoft and Apple. Microsoft's primary current Operating Systems are XP, Vista and Windows 7. Apple calls its Operating System Mac OS X, with the latest version being Snow Leopard.

Currently, the majority of Windows machines continue to use Windows XP Operating System. The latest Microsoft Operating System, Windows 7, has been well received by IT managers and early-adopters alike. It is recommended that a business work closely with their IT consultant to determine whether a new Operating System should be implemented. The IT consultant will be able to help with questions about stability, how to make it work on existing networks, and if it should be installed on existing machines or just on new machines that are purchased. Waiting to install a new Operating System is always recommended for a business. This allows time for the manufacturer to create the fixes needed for bugs found and to roll them out.

Apple Macintosh machines use the Mac OS X Operating System. Operating Systems are not interchangeable, so applications made for the Windows format will not work under the Mac format and vice versa. Several methods can be used to run applications that are written for Windows on a Macintosh. One of the options is a dual-boot system, which is available on several new models of Macintosh computers. This function allows for both Windows and Mac OS X to be installed on the same computer. To use Mac applications you boot the computer into the Mac OS side of it and to use Windows applications you reboot the computer and select the Windows OS side. This can be a tedious process if you actively use applications from both Operating Systems, so there is an option, called virtualization, that does not require rebooting. Virtualization on Mac is done with Parallels (www.parallels.com) or VMWare Fusion (www.vmware.com). Either product is installed on the Mac, along with the Windows Operating System, and it allows for a separate window to be opened on the Mac that contains all of the Windows-based applications that are used.

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Regardless of the Operating System selected, it is vital to check the features of the software being purchased. Windows versions and Mac versions of the very same software, such as Microsoft Office or QuickBooks, often have different features available.

Computer Options

Computers are becoming smaller and more mobile with technology advances. Today, phones, PDAs and other devices connect to the Internet for e-mail and other applications. There is a class of computing devices called UMPCs (Ultra Mobile PCs) which have 4 – 7 inch screens, small keys, touch screens, and the processing power of a full-sized laptop computer. There are Netbooks, also called Minis, which are basic devices that connect to the Internet and may or may not have storage on them for applications. Most cellular service providers have Netbook options available through their service so that they can be used in the field for note taking or for Internet searches.

The larger-sized notebook computers are also called laptops. Some notebook computers are Tablet PCs, meaning the user writes with a stylus directly on the screen and the written text translates to computer text on the screen in the application being used. Having a Tablet PC allows a care manager to easily handwrite notes in the field and also record notes via voice. All current Tablet PCs come with voice recognition capabilities which require the use of a USB microphone. Voice recognition is trained to the owner's voice using a series of setup tutorials and has become a reliable means of data entry. One drawback of speech recognition is that sometimes medical terminology requires intervention to edit the translated text for words that are not recognized.

Nuance makes a voice recognition product called Dragon Naturally Speaking; however, the technology used in Dragon is very similar to the free service provided from Microsoft. Users of Microsoft Office can install free speech recognition capabilities right from their Microsoft Office CD.

Desktop computing is evolving. The new TouchSmart computer by Hewlett Packard is an all-in-one computer, where the computer processor and the monitor are encased in one unit. The monitor has a touch screen like a Tablet PC. There are also new all-in-one computers where the whole computer is contained inside the keyboard device. These technologies

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are designed to take up minimal space. As technology progresses, devices are housed in smaller spaces while growing in capability.

Servers, which house data along with file and printer sharing, also have varying options in today's technology world. For example, most desktops today have the same computing power of the servers of yesterday. A high-end desktop can be used as a server in small operations. Growth requires the consideration of more complex servers with built-in redundancy, meaning that extra drives are added so that the information on the server is automatically copied as a backup to a partner drive. In the event of a drive failure, the backup drive is switched to be the main drive without downtime or data loss.

Virtual servers are hosted by offsite web service companies. They provide a full server with the hardware for storage and the Operating System. All maintenance is handled by the hosting company. The virtual server makes it possible for staff to securely log in and work remotely. Even Netbooks that don't have storage can use applications from a virtual server. Security is handled in the same way that it is handled with a regular server, and a qualified IT consultant will help configure security to maintain client confidentiality.

Access to virtual servers allows care managers to access company resources from any location that has an Internet connection. If using a centralized care management software solution, this allows the care managers to have access to that information from the field. It also provides access to centralized e-mail and calendars for a care management team.

Practice Management Software & Hardware Considerations

The use of accounting software should be considered a priority to run a successful company. Accounting software that is properly used helps the business owner to instantly understand their company's financial situation. The primary accounting software used by businesses is QuickBooks Pro. This product tracks all billing and payments (accounts receivable) along with all expenses and the payments made to vendors (accounts payable). It also has a payroll module. With complete information and a full Profit & Loss reporting system, a business owner can assess the financial health of the business in a few clicks. Owners can look at cash flow, manage budgets, or determine the bottom line at any point in time.

Many business owners find business accounting to be a challenge. Most community colleges offer evening courses in accounting; some even offer specific courses in how to do accounting in QuickBooks. Even if a business owner hires a bookkeeper, the business owner must know accounting basics to protect the interests of the company.

Many business owners find business accounting to be a challenge. Most community colleges offer evening courses in accounting; some even offer specific courses in how to do accounting in QuickBooks.

Just as a physician or attorney's office uses practice management software to automate their office, so should a care manager. Care management software provides benefits such as time savings by having information in a central location. The software should project a professional image by printing clear and concise reports, offer ease of communication by creating a way to share information to support clients, and provide legal protection by creating a business process that shows commitment to accurate client care tracking. A side benefit of using care management software is the ability to quickly and easily do monthly billing, by exporting the time tracking information to the accounting software. When care managers are on call they can easily see the shared information needed to support the clients.

Care management software includes full client demographic information, life domain assessments and care plans, along with ongoing progress notes and integrated time tracking. The software should also allow for easy exporting to external accounting systems. The two primary care management software solutions currently available are JewelCode's CareComplete Plus (www.jewelcode.com) and Planet Media Group's CareManager Pro (www.caremanagerpro.com).

Another important consideration is the reduction of paper use. While using accounting and care management software will reduce paper usage, there are options available to scan paper documents and reduce paper. Most small business scanners come with software to help organize scanned documents. Using a scanner will let you scan client forms and documents, making them available to send out via fax or e-mail from your computer. Many care management practices scan all of the incoming paperwork, resulting in a virtually paperless office.

Data Backup

The backing up of vital date is the most important aspect of technology in business. There are several methods to backup data, including transferring data to CDs or DVDs, external drives, servers, or web-based backup systems. To create backups in a local environment, Genie Backup Manager Pro (www.genie-soft.com), offers a good option. Web-based backup systems are becoming prevalent

with options being offered by anti-virus vendors and general vendors. A good product is Carbonite (www.carbonite.com) because the backup servers are all located within the U.S., and the data can be encrypted with a special key that only the user knows. Carbonite runs in the background on the computer, and any time a file changes the new version is backed up to Carbonite. If a computer fails, the backup can be downloaded onto a new computer. Backup is not something to take lightly and should be at the top of the technology list.

Avoiding Viruses, Trojans and Other Baddies

Many everyday web sites contain advertising on them that will put a hidden virus on a computer. These hidden items are called adware, spyware, or Trojan viruses. Seemingly harmless web surfing can infect a computer quickly and with drastic outcomes. Clicking on an unknown e-mail link can immediately unleash a virus that sends e-mails to all contacts in the address book, harming others in addition to the unsuspecting clicker.

Anti-virus software is important, but it is not all that is needed. Even the best anti-virus software programs, such as McAfee, Norton, and AVG Grisoft, do not always catch spyware. There are several programs to protect from spyware such as Super Anti Spyware, Spybot, and Ad-Aware. Every computer should have both anti-virus and anti-spyware installed and operating on the computer, with scheduled daily scans.

Conclusion

With so many technology options, it is important to create a plan that will safeguard the business and bring efficiency to the practice. However, with all of the new technology available, it can quickly become overwhelming to determine what is needed. The best way to plan is to create a list of requirements and tasks to be accomplished and work with a knowledgeable IT consultant to create a solution that meets those needs. The best IT consultants build systems that require less and less of their time to support. Good technology should reduce administration time and help make the running of the business easier. Technology can provide the care manager with more time to do the work they love and help improve the quality of life for their clients and themselves.

Lisa Moody *is the Founder and President of JewelCode Corporation, which is a provider of professional care management software and associated technology services to members of NAPGCM. She has over 30 years of technology experience in configuration, training, and support, with a focus on office automation and business process management. Her goal is to make technology easier to understand and to promote its adaptation in the infrastructure of the practice. Additional helpful resources can be found at www.jewelcode.com, under the Resources section.*

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