

Technology and Applications for Caregivers

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INTRODUCTION

The computer and the Internet are revolutionizing our society. Some have likened it to the plow that pushed humans into the agricultural age, and the motor that propelled us into the industrial age (Schwartz & Leyden, 1997).

The computer digitized information and pictures. The Internet removed the elements of time and space from communication. We are now entering an age of instant communication from anywhere to anywhere in the world. Soon this instant communication will be wireless.

These changes have and are having a profound impact on individuals and society.

- We communicate with each other across vast distances more frequently, in real time through text, voice and video.
- We shop, bank, pay bills, get information, and make appointments and reservations from our personal computer or Personal digital assistants (PDA).
- We take courses, get degrees, complete on the job training over the computer from our homes.
- We get news from eyewitnesses of events instantaneously from anywhere in the world.
- We enter libraries and other databases and obtain information on virtually any topic from our offices and homes.
- We can access thousands of interest groups to obtain and share information and opinions 24 hours a day.
- We can monitor our children and family members at home, at school and in other living facilities on a continuing basis.

Technology is ubiquitous. We are continually attempting to integrate it into our lives. With these changes come positive trends as well as negative elements that have to be addressed as we move forward (Leyden, 1995).

PURPOSE

The purpose of the monograph is to describe some of the potential uses of the computer and Internet technology that may be helpful to caregivers and to identify potential uses for the aging network as it implements the National Family Caregiver Support Program. Various successful examples of applications of the technologies are identified and discussed with a focus on the benefits and drawback, of each.

The monograph is divided into two sections. Section one addresses:

- How older adults presently use the computer and the Internet, and

- The basic hardware and software that are needed to use these technologies,

Section two will discuss the common applications of these computer Internet technologies:

- E-mail – The electronic exchange of information through text, voice, and video, and the participation in Listserv and on-line discussion groups.
- Real Time Communication – the exchange of text, voice, and video in a real time format.
- Information Processing – this includes surfing and searching the web for information of need or interest.
- Monitoring systems – used to monitor individuals in residential and home settings.

PART 1 – SENIORS’ USE OF HARDWARE, SOFTWARE

How Older Adults Use the Technologies

The 65+ population comprises about 13% of the U.S. population, and just 4% of the U.S. population that uses the Internet. The Pew Internet & American Life Project surveyed 26,094 adults aged 18+ in 2000, of which 4,335 individuals were 65+ (Fox, 2001). The survey found that 670 from the 65+ group used the Internet.

Findings revealed that older adults who use the Internet report improved connections with their families. They are devoted Internet users with nearly 69% going on-line daily as compared to only 59% of all Internet users. Older adults use the Internet for email (93%), to obtain hobby information (58%), to read the news (55%), to obtain health and medical (53%), to browse the Web for fun (53%), and to check weather updates (53%).

The 50 to 64+ cohort, is three times more likely to access the Internet than the 65+ population (51% vs. 15%). The 50 to 64+ group uses the Internet for email, getting general and political news, checking weather, and doing research for their jobs just like the age 18 to 49 population of Internet users. While 68% of the 65+ group report they would miss the Internet if they could no longer use it, 75% of the 50 and 64+ group identifies the same feeling. The important fact is that many of today's 65+ adults are online, and the age 50 – 64 group is the most wired (Rainie & Packel, 2001).

The Hardware

The term hardware describes the physical aspects of computers and related devices. To participate in the technology revolution, one needs a computer, printer, and connection to the Internet through an Internet Service Provider. Today’s computer should have the following components. The following material was developed using The Computer Glossary (Freedman, 2001).

Central Processing Unit

The Central Processing Unit (CPU) is the computing part of the computer, and is known

as the "processor." The speed of the processor is important if the user plans to process images like pictures, drawings, etc. If the computer is to be used for creating textual images and to surf the Internet then speed is not important.

Random Access Memory

Random Access Memory (RAM) is a group of memory chips that function as the computer's primary workspace. More RAM in the computer means more applications can be made instantly available to the user, and the faster the computer runs. 64 to 128 Megs of RAM is appropriate for most computers. More may be desirable based on the programs used by the operator.

The Monitor

The Monitor is a display screen used to present output from the computer. Today, most monitors produce color images. Monitors are typically 15, 17, 19, and 21 inches. The monitor is measured diagonally. Manufacturers are required to indicate the outside and inside measurements. The amount and type of computer use should determine the size of the monitor. A 15-inch monitor serves most situations.

The Keyboard

The Keyboard is a set of input keys that includes the standard typewriter keys and several specialized keys. Keyboards usually come with a new computer. In today's market, they are inexpensive.

The Mouse

The Mouse is an object used as a pointing and drawing device. As it rolls across the desktop, the screen cursor (pointer) moves correspondingly. Some have a wheel that moves the cursor up and down the page for easier navigation through documents and Web pages.

The Trackball

The Trackball is an input device used as a mouse alternative. It is a stationary unit that contains a movable ball rotated with the fingers or palm and, correspondingly, moves the cursor on screen. For some people it is easier to use because it is easier to control the cursor on the screen. In some experiments, the mouse has provided easier navigation for older users.

The Hard Drive

The Hard Drive is the primary computer storage medium that is usually located inside of the CPU. Some newer varieties are portable and can be used by different computers. Most new computers today come with 10 GB hard drives. This amount of space provides ample space for today's software.

The Floppy Disk

The Floppy Disk is a reusable magnetic storage medium that was introduced by IBM in the early 1970s as a 6" square flexible format. Today, the floppy is not flexible and is approximately a 3.75-inch square medium. The floppy disk is the primary method for taking files and other materials from computer to computer.

The CD-ROM

The CD-ROM (Compact Disc Read Only Memory) CD-ROMs hold in excess of 650MB of data, which is equivalent to about 250,000 pages of text or 20,000 medium-resolution images. CD-ROMs became the main competitor to the Floppy disk in the mid 1990's.

The Printer

The Printer is a device that converts computer output into printed images. The most common types of printers are ink jet, and laser printers. Ink jet printers usually can produce color, and are inexpensive. The ink cartridges are the expensive items relating to printers and should be calculated when purchasing a printer. The lower priced laser printers print in black and white. Laser printer can produce color but at a high cost. Older printers were usually dot matrix printers.

The Modem

The Modem (Modulator Demodulator) permits a computer to access the Internet through a telephone line. It converts digital pulses to audio frequencies (analog) for the telephone system and converts the frequencies back to digital pulses for the computer. Modems dial the Internet Service Provider, answer calls to the computer and control transmission speed. Today's modems have speeds up to 56,600 bits per second (bps). Broadband technologies like cable modems and DSL lines are available to home users. Cable modems work off the cable that brings television programming to the home. DSL brings a fast Internet connection through existing phone lines and permits phone calls and Internet access simultaneously.

Software

Software is a general term for the various kinds of programs used to operate computers and related devices. Software is usually termed application, system, or utility software. System software usually refers to the software that runs the computer. Home computers are either PCs or Apple type computers. Apple has its own operating system. The PC uses Microsoft Windows and more recently Linux operating system software.

Application Software

Application software usually helps the user perform a specific function like word processing, browse the Web, send e-mail. There are two principle browsers used to "surf" the Internet: Microsoft's Internet Explorer and Netscape Communicator. Microsoft Network and America on Line use these browsers as a part of their software package.

Utility Software

Utility software is a small program with limited and specific purpose. An example would be the virus protection programs that are necessary in today’s computing world. These programs protect computer files and other software from viruses.

Viruses

Viruses are software programs written to infect a computer. They are usually buried within an existing program. Once the program is executed, the virus is activated. The effect of the virus may be simple and benign or it may destroy programs and data.

PART 2 – TECHNOLOGIES AND APPLICATIONS FOR CAREGIVING

E-mail – What Is It, How Does It Work, and What Do You Need to Use It?

Many older people are using E-mail to enhance their communication with family, neighbors, and friends. The number using e-mail, as indicated above, will continue to grow as “wired” segments of the population become seniors.

Using E-mail

E-mail is a computer program that sends data text, graphics, and pictures from one computer to another quickly. E-mail from New York to San Francisco usually arrives in seconds. Speed of the delivery is determined by the volume of mail being sent from a particular service. To send and receive e-mail, you need a unique address. The address has a specific format much like the address for regular mail. Succinctly stated, every e-mail address has at least three parts: the name, the ISP domain and the type domain that corresponds to either: commercial, educational, network, government, military or organizational domains. The first domain would correspond to the street part of a regular address, and the second domain would correspond to the town and state part of a regular address. See the example below.

	Name	ISP Domain	Type Domain
E-mail Address	Jsmith	@aol	.com
Postal Address	John Smith	123 Any St.	Town, State

E-mail can be sent to a single person or to a group of individuals at the same time. A person receiving e-mail can respond to the individual or the group with a few clicks of the mouse. Using the reply button, the e-mail is returned to the person who sent the e-mail. If the e-mail was sent to a number of people, clicking on the reply to all button will send a response to all of the people that the e-mail was originally sent to. If a person receives e-mail and the information would be of interest to another person, the individual can send that information to any one else with an e-mail address using the forward button. If set up properly, the e-mail will contain everything that all the individuals have included in the e-mails as they have been read and responded to. The list of all the

comments can be reviewed to keep the conversation in its context.

How Does E-mail Work?

E-mail from the sending computer is broken down into packets. Packets are frames or blocks of data used for transmission and switching to the next destination.

Each packet is sent from computer to computer using a piece of computer equipment called a router. The router looks for a computer that is free to receive and send a packet. The packets are reassembled when they reach the destination computer.

The destination computer is the network computer that belongs to the domain that provides the e-mail service for the Internet Service Provider.

In very rare situations, packets are lost and the e-mail does not arrive.

What Is Needed to Use E-mail

To use e-mail, a computer with access to the Internet through either a telephone or cable modem connected to an Internet Service Provider and a monitor, keyboard, and mouse are the basic equipment needed to access the Internet. A printer will be needed if material from e-mail or Internet requires printing.

To use e-mail, one must be connected to the Internet through an Internet Service Provider. The popular ISPs are America on Line (AOL), Microsoft Service Network (MSN), Netzero, and Juno. AOL and MSN offer free access during trial periods for a specified number of hours or months. One needs to call to cancel service at the end of the trial period or they will be billed the monthly rate which is approximately 20.00+ per month for unlimited access. Netzero and Juno have a free service, but limit usage to a specific number of hours per month. A credit card is required for billing for hours used over the set limit. They also offer a premium service for a low rate per month that is usually under \$10.00 per month. All of these services offer e-mail.

Application of E-mail for Caregiving

Enhance Communication with Elders

For distance caregivers, e-mail can help with staying in contact with the older person and the family members that are doing the hands on caregiving. The long-distance family can use e-mail to provide support by finding and contacting needed resources or conducting research on the conditions and possible treatment(s) for the older person. It might also provide an opportunity for long distance family members to be updated on information on the older person so that the planning of visits can be better coordinated. In many instances, the long-distance caregiver might have direct contact with health and social service providers.

Sharing Medical and Social Service Information

Family members and professional service providers need to share information and communicate with each other concerning shifts in client need, resources available, and suggestions for care. More and more health and social service agencies are connected to the Internet. Family members and caregivers can have connection to service providers working with their relative. The Internet can be used to exchange information, set up or change appointments and communicate care plan changes.

Communication/Decision Making Between Caregivers

At times, the primary caregiver needs to make important decisions concerning the family member. E-mail can enhance family decision-making by providing an opportunity for information-sharing among all significant family members on which a decision needs to be made. E-mail can also be a source of support for caregivers. Family members, no matter their location, can stay in touch and offer support to the primary caregiver.

Advocacy with Public Officials and Service Agencies

Caregivers can use e-mail to voice important information to agency executives, politicians and other government officials. Forwarding this material and experiences is an efficient method of self advocacy. Also, politicians and administrators can organize the material received to identify the patterns so that service can be improved.

Listservs

Electronic mailing lists are extensions of E-mail. Listserv is a type of software designed for managing all types of e-mail lists: newsletters, moderated and unmoderated discussions groups, and direct marketing campaigns. Text messages are sent to a central computer and resent to all people who have signed up to be a part of that list server. List servers are available on almost any topic imaginable.

Participants of the list server usually receive information about state-of-the-art and recent developments in the topic area covered by the list server. People are able to join and leave a list server at any time. People are able to post questions to the list, and receive helpful responses. There are a number of listservs that cover a range of topics on aging, health, social service, government funding and other topics of interest to the aging network. The <http://www.liszt.com> Web site has a comprehensive directory of lists.

List servers are useful since they provide an easy way to keep up with a given field. They also are convenient insofar as information is automatically forwarded on a frequent basis. Finally, since most list servers have large numbers of participants, participants typically get targeted, up-to-date, and relevant responses to their questions.

Aging Network professionals could initiate listservs to share family caregiver support program information with one another to assist in implementation efforts. The listservs could be developed using the e-group site that was recently taken over by Yahoo.

Cautions When Using E-mail and Listservs

E-mail needs to be used in the context of “good” relationships to enhance them. Since a message sent cannot be retrieved, caution about content is advised. Simply stated, E-mail is one tool that a caregiver has that can assist with the caregiving task. It cannot replace one-on-one personal contact.

Real-Time Communication

Real-time communication is an extension and refinement of e-mail. Real-time communication is also called “Chat.” Real-time communication is synchronous. If audio and video are used, it approximates one-on-one communication. Chat takes place in three formats: text, audio, and audio/video.

Using Real-Time Communication

Real-time communication uses the unique address of each party to connect using the Internet. Although e-mail addresses can be from different Internet Service Providers, the sender and receiver must use the same instant messenger program. Efforts are underway to make all instant messenger services compatible. The instant messaging software asks users to identify addresses of potential communication partners. Both parties must have their computers activated and the messenger software open to initiate communication. The sender’s software automatically identifies and connects to the partner if they are available.

Once the software is configured, and the user goes through the steps for making contact, the process goes as smoothly as e-mail. AOL, MSN, and Yahoo provide on line and phone assistance. Video and audio communication is more difficult to set up, but once configured, operates well.

Real-Time Communication Formats

Text – Real-Time Communication

Real-time communication using text is probably the most commonly used real-time communication format. Text real-time communication uses a software program that permits individuals to communicate using a keyboard or other input device. The information sent is displayed on a screen immediately after it is sent permitting the receiver of the message to respond.

America on Line (AOL), Microsoft Network (MSN), and Yahoo Messenger have free communication software called Instant Messenger that permits individuals to communicate in real-time. Both Microsoft’s Internet Browser and Netscape Communicator have similar capacities.

Voice – Real-Time Communication

Individuals using a computer that has a sound card, a microphone and speakers are able to communicate verbally with one or more people. It works like a ship to shore telephone.

Communicators have to permit one person to finish their statements before another can begin their response. Communication happens immediately with each individual hearing the actual voice of the person who is speaking.

Voice/Video Real-Time Communication

To use this method, an individual needs a sound card, microphone, speakers, and a videocam. The voice and picture of the sender and receiver are transmitted simultaneously. The speed of the modem determines the quality of the picture. With the increase of broad width from cable and DSL service, picture quality is improving. Video cams are relatively inexpensive with prices ranging from \$25 to \$50.

What Is Needed for Real-Time Communication

To engage in real-time text communication, a person needs a computer, monitor, modem, Internet Service Provider, and a software program. For real-time audio communication, a person needs a computer, monitor, modem, Internet Service Provider and a software program, microphone, sound card, and speakers. For real-time audio/video communication, a person needs a computer, monitor, modem, Internet Service Provider and a software program audio and video card, video cam and speakers. Once these components are equipped with the necessary software and configured, simultaneous communication is as easy as sending an e-mail. The computer should contain a Pentium class processor and cable or DSL service and modem for best results. Regular phone line service and a 56,600 bps modem works adequately for text and audio messaging.

Applications for Real-Time Communication

Facilitating Communication for Distance Caregiving

Distance caregiving is a reality of our mobile society. People providing distance caregiving have difficulty communicating with service providers, as well as, other caregivers and their family member. Real-time communication, especially with voice and video, offer an opportunity to participate in the caregiving process in a more personal way.

Caregivers Can See and Speak with Their Relatives in Real-Time

Seeing and speaking with an older person gives the caregiver a better sense of the need and the required support. The caregiver can monitor specific elements of the person's environment and personal activities. It also provides the family member with a connection to the caregiver.

A limitation of this technology is that as the condition of the family member worsens, assistance will be needed to manage the technology.

Participation in Care Planning Conferences and Decision Making

Caregivers, using real-time communications, especially with audio and video, can participate in care planning conferences for their family member in a personal and creative way. This technology offers the opportunity for the family member to present the preferences, history that the context for interventions. The technology also offers family members and all caregivers a role in sharing medical and other information and a role in the decision making process.

Support in the Caregiving Effort from Family Living a Distance.

In many situations, a primary caregiver lives near the family member and provides most of the hands on care. Family living at a distance can communicate with the primary caregiver to offer support and to provide activities that can be performed at a distance. This technology can reduce the isolation and guilt that distance caregivers experience.

On-Line Support Groups

On-line support groups are available 24 hours a day seven days a week. Caregivers may find themselves alone with no one to share their tensions and frustrations. On-line support groups offer the possibility to share the emotions of the moment or to seek information to deal with a specific issue.

The advantages of support groups for caregivers are many. Support groups provide the information needed to deal with and cope with the day-to-day situations that develop with caregiving. Support is realized when individuals see immediately that their situation is not unique. Finally, the groups are available when needed.

For caregivers who may experience the pressure of caregiving during the night time, the opportunity is available for them to receive support from caregivers in similar situations. Logging on to a discussion group could be one way to relieve tension and to gain support and advice. Participants are able to use discussion groups in the following ways:

- Receive information on almost any topic.
- Place questions and receive answers from people with varying information and experience.
- Follow trends and state of the art development in any area of interest.
- Become a part of a network where your experience and expertise could be helpful to others.
- Discuss their situation and receive support and feedback.

Discussion Forums

Discussion forums are typically organized by topic. The forums are real-time text oriented mechanisms that provide the opportunity for individuals to communicate around a certain topic in real-time. Many sites offer support for people with similar problems or situations.

Professionals working with specific client types can communicate with each other about best professional practices.

Caregivers can communicate with other caregivers to provide support. Caregivers can invite professionals to log on to their site to provide advice and information to assist with their caregiving efforts.

Advantages of Real-Time Communication

The advantage of real-time communication is that individuals are communicating in real-time so that the information shared, the questions asked, and opinions given are addressed immediately. Real-time communication more fully replicates one on one personal communication (Freedman, 2001). Costs, except for the purchasing of the equipment, are contained in the monthly Internet Service Provider fees.

The most difficult issue with real-time chat relates to the software set up. Once the software and hardware are configured, the service runs smoothly. If equipment is added to an existing computer, in most instances, individuals would benefit from installation by a professional.

Information Identification and Processing

The Web contains millions of pages of material. This material is located on sites that have unique addresses. The quality of the information varies. It is important to assess the validity and reliability of the writer, be cognizant of their sponsor for bias when assessing information.

Many times, individuals are directed to a specific Web site for information. In other cases, finding specific information can be a formidable task. Once at a Web site, the Internet user typically surfs the Web.

Finding Information

Surfing the Web

Surfing the Web, a term originated from "channel surfing," the rapid changing of TV channels to find something of interest. It is the scanning of online material by clicking one link after another. A link (a.k.a. hypertext link or hyperlink) is a pointer (an underlined word, Web address or picture) that is contained in a document that when "clicked" moves to another page on the Internet. Surfing provides an easy way to obtain

information of areas of interest, but it can also be confusing or take the surfer from the topic of the initial investigation.

Searching the Web

Searching the Web can be a confusing task. To assist with this task, a search engine is typically employed to find information. A search engine is a software program that searches for data based on some criterion. Presently, search engines do not locate every site on the Internet, but the techniques used get better every year. The user simply types in a term and the search engine examines the Internet to identify the sites that discuss the term identified. There are a number of search engines, each having strengths and weaknesses. There are also “tricks” that one can use to enhance the searching process, that are contained in the help menus for each of the search engines. The search engine watch site <http://www.searchenginewatch.com/> has a list of search engines, as well as tips on their best use. Yahoo was the first search engine to gain worldwide attention. Google is probably the most popular and efficient today. See (www.google.com).

Search engines can be helpful in retrieving information. See Appendix A for a list of sites that address the list of topics that follow (LeVan, B., & Worts, F. (2000). Additional sites covering caregiving and other aging resources are listed in Appendix B (LeVan, B., & Worts, F. (2000).

- health information
- Social Service information
- information on medication
- on-line support group
- virtual libraries
- newspaper clipping services
- full text reports and articles knowledge from experts
- ask an expert
- government reports
- university sites
- stress reduction

Sharing Information

Once a site is found, the information can be shared through e-mail. While on the page of interest, the user would click on the file tab, then the send tab, and then click on either the send page or send link. An e-mail screen will appear. Fill in the address text box as with a normal e-mail and click on the send button. The page or link will be forwarded to the addressee. This permits a caregiver to share information with a care receiver, other caregiver, or service provider.

What Is Needed

To share information, a computer with access to the Internet through either a telephone or cable modem connected to an Internet Service Provider and a monitor, keyboard, and mouse are the basic equipment needed to access the Internet. A printer will be needed if material from e-mail or Internet requires printing.

Training and Continuing Education

Training for caregivers (e.g., caregiver role, behavior management, coping skills, transfers and lifts) could be developed using the structure of on-line courses offered by universities. Some courses could use Course Info or Blackboard. Other courses might use HTML language with video and pictures to supplement the material. For aging professionals, AAAs could collaborate with educational institutions and/or public television to offer on-line continuing education. Training topics should be carefully selected to meet the advantages and disadvantages of the on-line medium. On-line training needs to address various learning styles and have well-developed materials. An advantage of on-line training is that staff have access to the material 24/7 and have less interruption in the work day, since many would not have to leave work to attend the training.

Monitoring Systems

The popularity of monitoring systems is increasing. From video surveillance to strategically placed sensor devices, more residential settings and homes are using these technologies. Using the basic technology described above, these systems send either video images or other data over telephone, cable, or satellite lines for analysis and utilization.

The technology raises issues relating to privacy, but also provides families, caregivers, and providers of service an opportunity to observe the family member in the service setting or home and be alerted to events. The goal of these systems is to respond to needs of the person in a timely manner to avoid or reduce problematic situations (Fox, 2001).

Types of Systems

Monitoring systems work through two formats: video and sensor.

Video System – Granny Cams

Video monitoring systems, also known as Granny Cams, work with small video cameras that are placed in specific areas in residential or private homes to observe the movement and activities of the family member/client/resident. The video cams send images to a central location where staff and/or family member(s) monitor for issues that might need attention. In an residential setting, direct service staff is notified, in a private setting, a pre arranged plan is activated.

Sensor Systems

Sensor systems work through passive sensors that send signals for assistance based on resident movement. Sensors are located to collect data that profile specific normative behavior. The data are recorded and stored in a database. The user identifies deviations from normative behaviors and when these outlier conditions occur, the computer triggers a signal to staff or a family member.

These systems monitor and insure the safety of the resident/family member by alerting caregivers and/or staff that a problem may have occurred or may be occurring in the very near future. It is particularly relevant for persons who cannot call out or signal for help on their own because they may be hurt or cognitively impaired.

What Is Needed for the Monitoring Systems

The video system requires the basic computer configuration described above, and a number of video cams to survey the space used by the older person.

The sensor system requires special sensors and a computer program to collect and analyze the data collected. Presently, these systems are new in the USA and require professional installation and some maintenance.

Application of the Systems

Granny Cams

Video monitoring systems are used in residential settings to ensure that residents are in no danger or that they are completing necessary activities. A camera films a resident and the images are monitored on screens in a central location. Direct service staff is notified when a problem arises.

When used in private homes, family members can record the actions of their family members to ensure safety. If problems are suspected due to a change in behavior, family members can play back the tape to determine if anything unusual occurred during the day. At times, families will monitor their family member and the caregiver to ensure that the care is appropriate.

The major drawback of video monitoring is a privacy issue for both the resident/family member, as well as, others in range of the camera. Additionally, the placement of video cameras limits the area under surveillance and may not record the behavior that is the reason for the monitor. Lastly, viewing the monitor either in real-time, or later, is a labor-intensive activity.

Sensor Systems

In a residential setting, sensors typically are located in five key areas: doorways, bathroom doorways, the center of the resident's room, in the resident's bed, and in the incontinence pad. Once the sensors are placed, specific normative resident behaviors are

profiled from data recorded in a database. Through the computer and computer program, deviations from normative behaviors are set. When a resident deviates from his/her usual pattern, the system alerts staff through a beeper or telephone.

In a residential setting, this system is most likely used at nighttime for a demented resident in the privacy of his/her own room. An example is a woman who typically rises twice a night to use the bathroom. Each trip takes approximately 10 minutes and both trips occur before 4 am. The signal is set to call for help if the woman takes longer than 10 minutes for the trip, makes the trip more often than two times, and/or fails to make two trips before 4 am. Any one of these three situations may reflect that the woman is in trouble and needs to be checked by a staff member.

When a sensor system is used in the home, the family members work with installation staff to determine the activities to be monitored. Sensors are then located to monitor those activities. Deviations from the behaviors within time limits are set. If the normative behavior does not occur within the time frames, a signal is sent to the caregiver who can be at quite a distance. Home sensor systems are typically used for older persons who may live alone or spend part of the day alone. An example is a frail woman who lives alone. She typically gets up at 8 am, goes to the refrigerator for her breakfast at 9am, turns on the television set at 10 am, and so forth. The system is set to signal her daughter if these activities fail to occur.

The benefits of sensor monitoring systems are numerous. Most importantly, it is unobtrusive, ensuring an excellent degree of privacy while offering safety and reassurance. It allows residents/family members to be alone, or live alone, yet calls staff or families when needed. It is an extender of caregivers, both formal and family, allowing them to do other tasks while the system is monitoring. It is time and effort efficient. Formal and family caregivers relate satisfaction in its use. For residential use, it costs no more than traditional nurse call systems and is easy to use. For home use, it is inexpensive requiring only an initial time output to set it up. On the other hand, its major drawback is that it requires the resident/family member to be somewhat normative in his/her activities.

AUTHOR DESCRIPTION

Frank Worts has over 30 years of experience in the aging, health, and social service fields. As a consultant, Mr. Worts has provided consultation and training on case management, aging related issues, mental health, housing, quality assurance, management and technology.

Mr. Worts currently teaches courses in Gerontology, Supervision, Management, Skills and Systems Theory at Temple University's School of Social Administration and Lincoln University's Masters of Human Services Program.

As a part of the of the Lincoln University LincServ program, Mr. Worts assisted with the development and implementation of technology training directed to enhance professional helping for health and human service practitioners in the Philadelphia region.

Mr. Worts is also the Coordinator of Continuing Education for the Lincoln University's Multidisciplinary Center on Aging, where, in conjunction with the Center on Aging at the University of Pennsylvania, he has developed a senior computer training program that has trained over 650 older persons.

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RANGE OF WEB SITES

Health Information

Health Information <http://drkoop.com/>Medical Sites <http://www.healthandage.com/>

Social Service Sites

Assistive Technology http://www.temple.edu/inst_disabilities/atlend/index.htmlAssisted Living <http://search.eldersearch.com/search.cfm?area=assisted>Home Care/ Hospice <http://www.nahc.org/Tango/HCLocator/locator.qry?function=form>Nursing Home <http://ecapps.health.state.pa.us/commonPOC/nhlocator.asp>

Virtual Libraries

<http://www.ncbi.nlm.nih.gov/PubMed/>

Full Text Reports

<http://www.healthandage.com/Home/gm=20!gid1=1030>

Ask an Expert

<http://www.askme.com/>

Government Reports

<http://www.aoa.gov/NAIC/query.htm>

University Sites

<http://www.med.upenn.edu/~aging/>

Stress Reduction Sites

Vacation Planning <http://www.looksmart.com/eus162920/eus155726/r?l&acq&>Sites for Hobbies <http://www.aceonline.org/>Music <http://www.sys-con.com/phantom/mc/sounds.htm>Games http://cgi.netscape.com/cgi-bin/games_online_feed.cgiJokes <http://www.netfunny.com/rhf/current.html>

WEB SITES OF CAREGIVER RESOURCES

Information about Services in Your Community

<http://www.aoa.gov/elderpage/locator.html>

Information for Older Persons and Their Families

<http://www.aoa.gov/elderpage.html>

Resource Directory for Older Persons

<http://www.aoa.gov/aoa/resource.html>

Administration on Aging Fact Sheets

<http://www.aoa.gov/factsheets/>

NIA Age Pages

<http://www.aoa.gov/elderpage.html#ap>

ElderAction

<http://www.aoa.gov/elderpage.html#ea>

Statistical Information on Older Persons

<http://www.aoa.gov/aoa/stats/statpage.html>

Information for Practitioners

<http://www.aoa.gov/practice.html>

Access America for Seniors

<http://www.seniors.gov/>

Healthfinder - a gateway consumer health information Web site

<http://www.healthfinder.gov>

National Organizations on Caregiving

National Family Caregivers Association

<http://www.nfcacares.org/>

National Alliance for Caregiving

<http://www.caregiving.org/>