

**Overcoming the Psychological Barriers to Telemedicine:  
Empowering Older Americans' to Use Remote Health Monitoring  
Services**



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## Executive Summary

As the American population grays and the Baby Boom generation reaches retirement, there is a growing need for accessible health care that is both high in quality and low in cost. The vast body of research on telemedicine reveals strong evidence that new technologies can help to overcome many of the costs associated with the social and economic aging crisis. The use of telemedicine technologies, such as home health care monitoring, can relieve growing pressures on health care institutions and provide the expanding aged population with new avenues for independent living and efficient care.

The telemedicine community itself has identified several economic and public policy issues that are currently limiting the deployment of home health care monitoring. Privacy, security, and reimbursement issues are the leading policy and adoption barriers that require solutions in order to ensure greater use of remote health care monitoring. A more pervasive and less familiar problem may present the largest obstacle to home-based telemedicine adoption. There is a significant lack of attention given to the attitudes and apprehensions of patients, especially older Americans, who are uneasy about using telemedicine applications. Attitudes of older Americans are especially important because the aging community will likely have the greatest number of possible needs and therefore uses for telemedicine. The concerns held by older Americans about new technologies are often substantially different than younger generations. This “digital divide” can create psychological barriers that limit the interest of seniors in telemedicine applications. These psychological issues need to be explored to a greater extent to ensure the successful relocation of vital health care services to the home.

This New Millennium Research Council (NMRC) white paper examines and identifies the interpersonal psychological barriers and consumer fears regarding telemedicine technologies. Notably, research findings suggest that the use of remote home health monitoring equipment can lead to certain apprehensions in older patients who want to solely sustain their personal relationships with family and doctors. Older patients may also resist using home health care monitoring services to avoid ceding authority to their adult children, who often gain more control over the health and lives of their parents with the introduction of monitoring systems. Some fears held by older adults are possibly a response to societal “ageism.” Society stigmatizes signs of aging and weakness, which some older patients feel are enhanced through the public use of monitors.

Many older adults are not only apprehensive about the effects of home health care monitoring in particular, but are also hesitant about using unfamiliar technology in general. Wariness of new health-based technology among many older adults heightens fears about their personal information privacy and online security. Similarly, older patients’ preference for traditional medical treatments may prevent them from taking advantage of the full benefits of telemedicine/home-based medical technologies. Finally, older patients may hesitate to accept telemedicine products and services as they do not have confidence in their mental and physical capabilities to understand and use the technology effectively.

## **A Review of Older Americans' Attitudes Toward Telemedicine**

An extensive review of secondary sources citing older Americans' attitudes towards telemedicine reveals the prominence of perception barriers to the medical technology. While the technology to implement many telemedicine applications is widely available, many patients have serious reservations about using the new health systems. The following categories highlight the variety of perception barriers by older adults towards telemedicine:

### **Attitudes towards technology vary greatly by age group**

- Older adults, age 60 and over, may not readily adopt telemedicine because they have difficulties using and accepting new technology.
- The “digital divide” that develops between generations threatens the widespread implementation of telemedicine. Older adults tend to be indifferent in closing the generational gap in terms of new technology usage.
- Researchers suggest that the baby-boomer generation, ages 38-59, will be better prepared to use telemedicine because of their experience and familiarity with technology.

### **Interpersonal psychological barriers to telemedicine adoption are an important, yet under-scrutinized, issue in telemedicine research**

- Elimination of face-to-face care may create a perception that there will be a reduction of social interaction in the older person's life.
- Older adults can be uncomfortable with telemedicine because they fear it could create an awkward role reversal with their adult children and could lead to a loss of privacy.
- Older adults may be hesitant to use home health care monitors because they fear the social stigmatism associated with home monitoring and the threat of isolation it could create.
- “Ageism” discourages older adults from using new technologies, as negative stereotypes often enforce low confidence in mental and physical abilities when learning and using new technology.

### **Older adults have many personal psychological fears about new technology**

- Telemedicine use may heighten anxieties for older adults because of the possibility of sensitive private and personal information being exposed on the Internet.
- Effective remote health care consultations may be shunned because older patients' have concerns about the confidentiality of their personal information in “virtual” consultations.
- Older adults are increasingly concerned with the reliability of telemedicine applications because of the lack of human interaction and the risks of technology failure.
- Older adults' tend to focus on the ‘here & now’, which may create a disinterest and an indifference to investment in telemedicine applications because they are unable to see future benefits.

## Methodology

Using primarily online public and proprietary tools, the NMRC conducted research on the state of current scholarship regarding telemedicine applications and older Americans attitudes toward these technologies. Information and data were obtained from news sources, medical journals and scholarly studies. In addition, the researchers scrutinized association articles that focused on older Americans and telemedicine. Experts in telemedicine were consulted for relevant information.

## Introduction

The American population is growing older, with increasing lifespans made possible by technological advances and the large Baby Boomer generation now reaching retirement age. Continua Health Alliance, a technology and health care industry group that promotes personal telehealth applications states, “Globally, the number of persons 60 and older was 600 million in 2000. It is expected to double to 1.2 billion by 2025.”<sup>1</sup> Around the world, new technologies and health care techniques allow people to live longer through early detection, prevention and treatment of diseases and injuries. With an increasingly older population, concerns about how to maintain affordable, high quality health care have become a primary issue, especially in the United States.

It is imperative that the United States act now to develop a strategy that will improve the country’s health care issues associated with aging. According to the U.S. Department of Commerce, America’s population will soon consist of 45 million people age 60 and over plus another 76 million Boomers ages 38-59.<sup>2</sup> Telemedicine technology may be a useful tool to help support this ever-growing population.

### *The Shift of Health Care from the Doctor’s Office to the Home*

Medical technology centered in the home offers an especially potent and cost effective alternative to traditional health care services and can provide older Americans with new services that maintain their health for longer periods of time. As the American population ages, the number of chronic condition cases will likely increase; health care systems that monitor such conditions need to be more available. According to Continua Health Alliance, “Given the rise of chronic conditions and the rapid aging of the population, the methods of managing health will need to shift from traditional institutional settings to peoples’ everyday environments, including the home.”<sup>3</sup> The ever increasing older population could outgrow the support provided by traditional institutions such as hospitals and physicians’ offices. A shift of health care to the home may help alleviate this problem.

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<sup>1</sup> Continua Health Alliance, “Overview,” Available at [www.continuaalliance.org/about/](http://www.continuaalliance.org/about/)

<sup>2</sup> U.S. Department of Commerce Technology Administration (December 11, 2005) “Technology and Innovation in an Emerging Senior/Boomer Marketplace,” A US Department of Commerce Technology Administration white paper for discussion at the 2005 White House Conference on Aging. Available at [http://www.technology.gov/reports/2005/OTP\\_WHCOA.pdf](http://www.technology.gov/reports/2005/OTP_WHCOA.pdf)

<sup>3</sup> Continua Health Alliance, “Leading Health and Technology Companies Form Alliance to Improve Personal Health Through Connected Devices” Press Release June 6, 2006. Available at [http://www.continuaalliance.org/news\\_events/news/press\\_release.6.6.06](http://www.continuaalliance.org/news_events/news/press_release.6.6.06)

The evolution of health care from the traditional office setting to the home will require a robust nationwide broadband network to support advanced, communications-based health care applications. Richard Adler, Vice President of SeniorNet, a group dedicated to improving access to technology for older Americans, notes, “Broadband networks make it possible to deliver high quality medical services to older adults, including remote diagnoses and continuous health monitoring, in ways that are convenient for both patients and providers.”<sup>4</sup> Telemedicine networks need to be interoperable and interconnected so communications and information can be easily exchanged between the patient and health care provider. Through the broadband-powered network of telemedicine systems, health care can be provided in the patients’ everyday environment, increasing health care availability to the aging American population.

*Home Health Care Monitoring – Telemedicine as a Prominent Player in Health Care Services*

Telemedicine technologies can range from email correspondence between patient and physician to complex home monitoring and surgeries. In a Home Health Care Technology Report issued by the Civic Research Institute, home monitoring technology is defined as, “a variety of products, systems and services to aid disabled and senior populations, particularly the cognitively impaired, with every day tasks, health monitoring, early detection of diseases, and detecting and responding to emergency situations.”<sup>5</sup>

Through remote monitoring, physicians will be able to assist a greater number of older, chronic-condition patients. According to market research firm Parks Associates, “In-home health monitoring is a service that allows patients to use network connected measurement devices, such as glucose meters, weight scales, and peak flow meters, to collect vital signs at home and send electronic data to clinicians for ongoing chronic condition monitoring.”<sup>6</sup> The ability to transfer records and specific measures of the patient’s condition will allow physicians to see more patients while still providing effective and attentive care. Family members and other caregivers will also be able to remotely monitor their older family members.

Companies such as Intel and General Electric (GE) have already developed home monitoring technologies. According to CBS news, “Intel Corp. has been working since April 2002 on prototypes that incorporate networks of wireless sensors and digital devices to issue medication reminders and even determine a senior’s level of activity.”<sup>7</sup> These advanced technologies will allow patients to take care of themselves at home with the help of physicians in remote locations. According to Eric Dishman, Director of Health Research and Innovation for Intel, “We [Intel] have the potential to aim our innovation engine at the age wave to challenge and change the way we do health care from a crisis-driven, assembly-line, hospital approach to a

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<sup>4</sup> Adler, Richard (2002). *The Age Wave Meets the Technology Wave: Broadband and Older Americans*. A SeniorNet white paper. Available at <http://www.seniornet.org/php/default.php?PageID=6694>

<sup>5</sup> Blanchard, J., 2004. “Ethical Considerations of Home Monitoring Technology” Telemedicine Information Exchange: Home Telehealth. Available at [http://tie.telemed.org/articles/article.asp?path=homehealth&article=%09%09%09%09%09ethicsAndHomeTech\\_jb\\_hhct04.xml](http://tie.telemed.org/articles/article.asp?path=homehealth&article=%09%09%09%09%09ethicsAndHomeTech_jb_hhct04.xml)

<sup>6</sup> Parks Associates (2006). “In- Home Health Monitoring Market Faces Near- Term Uphill Struggle: Seniors and Baby Boomers Lukewarm to Service Concept, Frugal on Spending.” January 24, 2006.

<sup>7</sup> “Internet Aids Elderly Home Care” CBS News, September 16, 2003. Available at <http://www.cbsnews.com/stories/2003/09/16/tech/main573606.shtml>

personal-driven approach, with people taking care of themselves with help from family, friends and technologies.”<sup>8</sup>

General Electric is developing similar systems and projects that will allow caregivers, family members, and physicians to remotely monitor patients. According to a CBS news article, “In GE’s project, called Home Assurance, networked wireless motion detectors send data to a central device . . . Caregivers can log into the server over the Internet to check up on someone, or set up the system so it alerts them automatically by phone or e-mail.”<sup>9</sup>

Home health care monitoring is developing quickly and has the potential to be a leading form of health care delivery in the near future. According to Dishman, “Technologies that we need to invent this new health care system have been around in many cases for a decade or more. This is not so much a technology problem as an imagination problem.”<sup>10</sup> Getting telemedicine technology into the hands of seniors is the difficulty. In order to produce effective telemedicine technology, research needs to be conducted on the effects of home health care monitoring and the adaptability of the technologies for consumers.

### **Factors Impeding the Progress of Telemedicine**

Limited use and acceptance of health technologies by older Americans is a major impediment to the successful wide scale deployment of telemedicine services. “The U.S.’s senior and baby boomer populations are not currently receptive to in-home health monitoring,” according to Parks Associates’ report “Delivering Quality Healthcare to the Digital Home.” The same report concluded that, “two-thirds from both populations see little to no value in these services.”<sup>11</sup>

AARP believes that the older population has trouble adapting to technology because, “there may or may not be actual ability to access the technology, cost can be a factor, and learning new skills can be difficult. Older adults also often find little of interest to convince them of the value of making the change, and very frequently, poor design makes technology products very hard to learn or use.”<sup>12</sup> Further discussion of the patient’s response to telemedicine and the barriers that exist will open avenues for development of new and effective telemedicine applications for seniors.

### **Legislative Issues**

There are a range of public policy issues regarding telemedicine being debated which have slowed widespread expansion and adoption of this technology. Major areas of deliberation

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<sup>8</sup> Said, Carolyn, 2005. “Old age in the technology age: New devices to monitor health and well-being at home a growing new sector.” *San Francisco Chronicle*, August 8. Available at <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2005/08/08/BUG7PE2HL01.DTL>

<sup>9</sup> “Internet Aids Elderly Home Care” CBS News, September 16, 2003. Available at <http://www.cbsnews.com/stories/2003/09/16/tech/main573606.shtml>

<sup>10</sup> *Transforming an Aging Nation* 2006 CAST video. American Association of Homes and Services for the Aging. Available at [http://www.agingtech.org/imagine\\_video.aspx](http://www.agingtech.org/imagine_video.aspx)

<sup>11</sup> Parks Associates (2006). “In- Home Health Monitoring Market Faces Near- Term Uphill Struggle: Seniors and Baby Boomers Lukewarm to Service Concept, Frugal on Spending.” January 24, 2006.

<sup>12</sup> Carpenter, Mark (2005). *Serving the Consumer: Older Adults & Technology*. An AARP Presentation at the ATA 7<sup>th</sup> Annual Industry Briefing. December. Available at [www.atmeda.org/conf/2005.SBOTS.presentations/TATRC\\_Slide\\_Submissions/Mark\\_Carpenter.ppt](http://www.atmeda.org/conf/2005.SBOTS.presentations/TATRC_Slide_Submissions/Mark_Carpenter.ppt)

include privacy, security, state licensing, and jurisdictional issues. The following section provides a brief overview of each set of issues and perspectives from leading voices.

*Privacy and Health: Which Takes Priority?*

One major concern highlighted within telemedicine literature is patient privacy. The right to privacy in health care has been addressed in many court cases and legislation such as the Health Insurance Portability and Accountability Act (HIPPA). As telemedicine applications are developed and deployed, privacy questions and concerns will have to be addressed in the online context or concerns will continue to exist and possibly intensify.

Users of telemedicine services are often anxious because they are not guaranteed control over whom they can consult with on their condition or who reviews their documents and medical records. Joanne Kumekawa, Director of Policy at the Office for the Advancement of Telehealth (OAT), identified telemedicine consumer fears such as, “the presence of outsiders or non-clinical persons in teleconsultations, such as non-clinical technicians, camera people and schedulers located on either side of a telemedicine consultation or at the site of a service provider, either physically or via the technology they support. Clinical personnel who may not be visible or observable by the patient may also be involved in a teleconsultation. Patient information routinely stored electronically and/or physically at each site may not be protected by policies or procedures as effectively as information used in on-site encounters.”<sup>13</sup>

Health care privacy issues create an unusual situation because a patient’s privacy rights must be balanced with effective and safe health care. When monitoring a serious health condition, a patient cannot have complete privacy without compromising their safety. According to the Home Health Care Technology Report by Civic Research Institute, “the ability to maintain privacy in a monitored home is tenuous -- one cannot simultaneously be under real-time observation and still maintain the ability to decide what will be shared.”<sup>14</sup> There are few existing established standards that govern patient privacy in the telemedicine setting.

*The Use of the Internet in Home Health Care Monitoring Poses Security Issues*

Online security concerns held by users pose challenges to the full implementation of home health care technology. The Internet is a primary medium for exchanging and storing health records and personal information of patients in telemedicine applications. The Civic Research report on Home Health Care Technology states, “Currently, there are no standard protocols for protecting the security of email, telemetry, or electronic health records. Further, firewalls and encryption, while they may slow down the process, are unlikely to deter someone motivated to access personal health records. Wireless transmissions pose even greater concerns. Concerns regarding privacy, confidentiality, and security of health information have always existed;

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<sup>13</sup> Kumekawa, Joanne K. (September 30, 2001) “Health Information Privacy Protection: Crisis or Common Sense?” *Online Journal of Issues in Nursing*. Vol. #6 No. #3, Manuscript 2. Available at [http://www.nursingworld.org/ojin/topic16/tpc16\\_2.htm](http://www.nursingworld.org/ojin/topic16/tpc16_2.htm)

<sup>14</sup> Blanchard, J., 2004. “Ethical Considerations of Home Monitoring Technology” Telemedicine Information Exchange: Home Telehealth. Available at [http://tie.telemed.org/articles/article.asp?path=homehealth&article=%09%09%09%09%09ethicsAndHomeTech\\_jb\\_hhct04.xml](http://tie.telemed.org/articles/article.asp?path=homehealth&article=%09%09%09%09%09ethicsAndHomeTech_jb_hhct04.xml)

however, the ease with which, the extent to which, and the context within which they may be breached are intensified with the electronic exchange of information.”<sup>15</sup>

Security issues also need to be addressed and trustworthy systems are required so that access to personal health records will be limited to doctors and patients. Patients must feel safe from “nightmare scenarios,” which include accidentally transmitting medical information to the wrong address (or to someone masquerading as a physician) and allowing hackers to break into medical information that they then broadcast over the Internet. A more likely but equally troublesome possibility is that medical information could become more readily available to non-clinical staff.<sup>16</sup> The American Association of Homes and Services for the Aging (AAHSA) believes that scenarios such as these could be avoided by basing telemedicine applications in nursing homes because they, “keep data transmission limited to an ‘in-house’ network” and therefore “face less risk sending personal medical information onto a wireless system.”<sup>17</sup>

Secure networks have helped assuage patient fears. According to the American Telemedicine Association, “many SNFs [skilled nursing facilities] and assisted living facilities have shown themselves to be consistently more open to innovation than smaller-scale home healthcare agencies,”<sup>18</sup> because they have secure methods of exchanging information that home telemedicine systems have not yet adopted.

### *Varying State Regulations for Practitioners*

Policy differences among the states also hinder the widespread use of remote health monitoring. Licensing liability and provider identification can be confusing when remote health care is being practiced across state borders. For example, when a clinician in Nebraska is monitoring the health of a retired farmer living in rural Kansas, in which state is medicine being practiced?<sup>19</sup> With the current licensing policies, it is impossible for a patient to seek care from a physician that does not practice in the patient’s state. “A patient in Oregon could not be treated remotely by a New York doctor, even if that physician were the country’s foremost expert on the patient’s disease.”<sup>20</sup> This is detrimental to the patient’s health because the individual might not receive the best care possible, and according to Intel’s Eric Dishman, “it hinders telemedicine.”<sup>21</sup>

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<sup>15</sup> Blanchard, J., 2004. “Ethical Considerations of Home Monitoring Technology” *Telemedicine Information Exchange: Home Telehealth*. Available at [http://tie.telemed.org/articles/article.asp?path=homehealth&article=%09%09%09%09%09ethicsAndHomeTech\\_jb\\_hhct04.xml](http://tie.telemed.org/articles/article.asp?path=homehealth&article=%09%09%09%09%09ethicsAndHomeTech_jb_hhct04.xml)

<sup>16</sup> Jerant, Anthony F., and Loretta Schlachta, and Ted D. Epperly, and Jean Barnes- Camp. “Back to the Future: The Telemedicine House Call” *Family Practice Management* American Academy of Family Physicians 5.1 (1998). Available at <http://www.aafp.org/fpm/980100fm/lead.html>

<sup>17</sup> Stoi, Michael J., 2004. “Technology as a solution—and a policy problem?” *Nursing Homes*, May. Available at [http://www.findarticles.com/p/articles/mi\\_m3830/is\\_5\\_53/ai\\_n6066246](http://www.findarticles.com/p/articles/mi_m3830/is_5_53/ai_n6066246)

<sup>18</sup> Ibid

<sup>19</sup> Ibid

<sup>20</sup> “Said, Carolyn, 2005. “Old age in the technology age: New devices to monitor health and well-being at home a growing new sector.” *San Francisco Chronicle*, August 8. Available at <http://www.sfgate.com/cgi-bin/article.cgi?f=c/a/2005/08/08/BUG7PE2HL01.DTL>

<sup>21</sup> Jerant, Anthony F., and Loretta Schlachta, and Ted D. Epperly, and Jean Barnes- Camp. “Back to the Future: The Telemedicine House Call” *Family Practice Management* American Academy of Family Physicians 5.1 (1998). Available at <http://www.aafp.org/fpm/980100fm/lead.html>

Key changes in legal standards and licensing procedures are necessary to promote wide usage of remote health monitoring systems. Health care policies for telemedicine practices need focus on a national scope, since the technology is not limited by state borders.

### **Financial Issues Limiting Telemedicine's Growth**

The literature suggests that the upfront costs for installing telemedicine equipment are a concern. Additionally, it is unclear who will pay for telemedicine services. Traditional health care services are covered by employer or government provided insurance programs. Telemedicine is not yet recognized by many insurance companies for full reimbursement of services.

#### *Reimbursement and Telehealth Equipment Costs Post Major Hurdles*

Despite the health benefits and long term cost savings made possible by telehealth services, research indicates that patients are often unwilling to invest in home health care monitoring systems. Parks Associates reports, "Of the one-fifth who find the service valuable, sixty percent would still not spend extra money, either out-of-pocket or in higher healthcare premiums, for in-home health monitoring."<sup>22</sup> Most Americans rely on a third party, usually government or employer provided health insurance, to pay for their health care and rarely make out-of-pocket health purchases. Patients also rarely make preventative health care purchases, which further makes home health care monitoring systems an unattractive investment.<sup>23</sup>

However, as evidence mounts of telemedicine's benefits, insurers may be more willing to cover the associated costs. Elizabeth Boehm, Principal Analyst for Health Care and Life Sciences at Forrester Research said, "Insurers and Medicare will start to cover them [telemedicine] within the next few years – partially under pressure from advocacy groups like AARP."<sup>24</sup> The advancement of telemedicine is greatly dependant on the purchasing power of the patients. If there is no insurance coverage for telemedicine equipment, it will be difficult for the discipline to develop into a widespread, accessible and cost effective health care system.

According to an article by the Department of Family Medicine in the *Mayo Clinic Proceedings Medical Journal*, "The future of telemedicine depends largely on whether the services provided via a telemedicine link will be reimbursed by third-party payers (Medicaid, Medicare, and various insurance providers)."<sup>25</sup> Current policy requires that insurance providers only cover certain kinds of telemedicine services. According to the Center for Medicare and Medicaid Services (CMS), "telehealth services include those services that require a face-to-face

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<sup>22</sup> Parks Associates (2006). "In- Home Health Monitoring Market Faces Near- Term Uphill Struggle: Seniors and Baby Boomers Lukewarm to Service Concept, Frugal on Spending." January 24

<sup>23</sup> Said, Carolyn, 2005. "Old age in the technology age: New devices to monitor health and well-being at home a growing new sector." *San Francisco Chronicle*, August 8. Available at <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2005/08/08/BUG7PE2HL01.DTL>

<sup>24</sup> Ibid.

<sup>25</sup> Bratton, Robert L., and Caroline Cody. "Telemedicine Applications in Primary Care: A Geriatric Patient Pilot Project." *Mayo Clinic Proceedings* 75 (2000): 365-368. Available at <http://www.mayoclinicproceedings.com/inside.asp?AID=1412&UID=8934>

meeting with the patient...Such reimbursement is limited to the type of services provided, geographic location, type of institution delivering the services and type of health provider.”<sup>26</sup>

The Centers on Medicare and Medicaid, (formerly the U.S. Health Care Financing Administration - HCFA) expresses the same views on these policies. According to Dr. Rashid Bashshur, University of Michigan Telemedicine Director and Editor-in-Chief of *Telemedicine Journal*, “some elements within HCFA would not be disappointed if telemedicine were to fade away, never to be heard from again.”<sup>27</sup> Under provisions in the 1997 Balanced Budget Act, Medicare does reimburse some telemedicine applications but “this reimbursement only covers geographic areas with a shortage of health professionals,” and is only for “teleconsults provided in real time and does not make provision for store- and- forward consultations, in which information is gathered and stored for a physician to evaluate at a later time.”<sup>28</sup> These types of restrictions on reimbursement will hinder the deployment of telemedicine to those in the aging community and deter the further use of telemedicine technologies. Neither the patient nor the health care provider can afford to invest in telemedicine technologies without the assistance and reimbursement of health insurance provider. Telemedicine experts suggest this hurdle needs to be overcome to encourage greater use of the applications.

#### *Health Care Providers Have Few Incentives to Conduct Home Health Care Monitoring*

Similar to patients, research has shown that health care providers have little motivation to integrate telemedicine services into their practices due to the tremendous initial investment required. Spyglass Consulting Group conducted a study which interviewed organizations likely to perform remote health care monitoring. The study found that hospitals and clinics are reluctant to integrate telemedicine services into their practices until it is fully covered by insurance because, “doctors usually don’t get paid for interpreting data collected remotely, but they can still get sued if they make a mistake.”<sup>29</sup> Not only are clinics reluctant to provide telemedicine services because of payment complexities, but information technology (IT) systems, including telemedicine applications, “usually involve large- scale budgets.”<sup>30</sup> Therefore, information technologies such as telemedicine and home health care monitoring systems “can be difficult to ‘sell’ to medical staff and healthcare managers.”<sup>31</sup>

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<sup>26</sup> Center for Medicare and Medicaid Services, *Medicare Payment of Telemedicine and Telehealth Services*. An CMS White Paper, May 15, 2006. Available at <http://www.atmeda.org/news/Medicare%20Payment%20Of%20Services%20Provided%20Via%20Telecommunications.pdf>

<sup>27</sup> University of Michigan Medical School. “Telemedicine: Caveats and Questions” *Medicine at Michigan* Spring, 1999. Available at <http://www.medicineatmichigan.org/magazine/1999/spring/telemedicine/caveats.asp>

<sup>28</sup> Bratton, Robert L., and Caroline Cody. “Telemedicine Applications in Primary Care: A Geriatric Patient Pilot Project.” *Mayo Clinic Proceedings* 75 (2000): 365-368. Available at <http://www.mayoclinicproceedings.com/inside.asp?AID=1412&UID=8934>

<sup>29</sup> Association of Telehealth Service Providers (2006). “Study: Telehealth Barriers Remain.” ATSP Online. Available at <http://www.atsp.org/news/research.asp?contentID=1833&FullStory=>

<sup>30</sup> Pont Topic (2005) “Telemedicine.” October 18. Available at <http://www.pont-topic.com/content/bmm/profiles/bmmtmedrep051018gen.htm>

<sup>31</sup> Pont Topic (2005) “Telemedicine.” October 18. Available at <http://www.pont-topic.com/content/bmm/profiles/bmmtmedrep051018gen.htm>

## Older Americans and the Digital Divide

Although selected outstanding health-related policy issues may be seen as discouraging certain Americans from using telemedicine, older individuals in particular are less receptive to new, technology-based health care applications. One possible explanation for this trend is that older Americans have greater apprehensions about new technology. This reluctance may lessen in the near future as the Baby Boomer generation ages. The next wave of older Americans may prove to be more technologically savvy. This phenomenon will hopefully diminish the age-related “digital divide” and positively influence telemedicine’s future as a primary method of health care services.

### *Older Adults have Difficulties Using and Accepting New Technology*

A great deal of research has demonstrated that older Americans have greater difficulty using and accepting new technologies than their younger counterparts. When computers and the Internet developed into the indispensable technologies that they are today, seniors showed more difficulty in using them than younger populations. In a Nielsen Norman Group study that looked at computer comprehension among different age groups, it was discovered that, “a group of users over 65 has a success rate of just 52.9 percent in completing a series of assigned tasks (such as finding information and making a purchase online), compared to 78.2 percent success rate for a group of younger users. The seniors also made an average of 3.7 errors on each assigned task, compared to 0.6 errors for the younger group.”<sup>32</sup>

Research analyst Henry Want of Parks Associates found that, “low interest in [telemedicine] among the grey-power generation and the Baby Boomers stems from multiple reasons, including the fact that the service is a novelty to many senior citizens, who are typically slow to adopt new technologies in the first place.”<sup>33</sup> The same hesitation to accept and use technology has been reported by the U.S. Department of Commerce. When examining older adults and their use of the computer and the Internet, the Commerce report found that, “older adults continue to lag behind younger people in using PCs” and “more than half of all Americans between the ages of 10 and 55 now make use of the Internet, but that Internet use falls off steadily after age 55.”<sup>34</sup> Older Americans’ tendency to avoid computers and the Internet offers an important explanation as to why this population segment may have a lower acceptance rate of broadband-enabled telemedicine applications.

### *Opportunities to Educate Older Adults on Overcoming the Digital Divide*

According to a poll conducted by National Public Radio, the Kaiser Family Foundation and Harvard’s Kennedy School of Government:

“Americans over age 60 are the most likely to be left out when it comes to computers and technology, but they do not appear to be worried about being left behind. Only around a quarter of

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<sup>32</sup> Adler, Richard (2002). *The Age Wave Meets the Technology Wave: Broadband and Older Americans*. A SeniorNet white paper. Available at <http://www.seniornet.org/php/default.php?PageID=6694>

<sup>33</sup> Parks Associates (2006). “In- Home Health Monitoring Market Faces Near- Term Uphill Struggle: Seniors and Baby Boomers Lukewarm to Service Concept, Frugal on Spending.” January 24, 2006.

<sup>34</sup> Adler, Richard (2002). *The Age Wave Meets the Technology Wave: Broadband and Older Americans*. A SeniorNet white paper. Available at <http://www.seniornet.org/php/default.php?PageID=6694>

Americans over age 60 have computers at home (27%) and use the Internet or e-mail at home (24%). But while three-quarters (75%) of Americans over age 60 recognize that they are being left behind when it comes to computers, only 11% say that not having a computer is a problem for them. The most common reason over-60s without computers give for not having a computer at home is that they don't need one (64%). Nonetheless, more than half of Americans over age 60 say that computers (69%) and the Internet (50%) are making life better for Americans.”<sup>35</sup>

Most of the older adults in the NPR survey believed that they did not need the technology and that they were not worried about the effects of rejecting new digital services. According to AARP, this attitude and the acceptance of their place in the age-related “digital divide” is a result of demographics that influence exposure, motivation and experience to new technology.<sup>36</sup>

Older individuals make up the majority of Americans who have never used the Internet. According to Pew Internet, “eight in ten off-line seniors do not think they will ever go online.”<sup>37</sup> A lack of proximity to someone who uses the Internet on a regular basis and encourages the older adult to go online “can have significant effects on a senior’s interest or ability to go online.”<sup>38</sup>

### *Baby Boomer Generation Provides Hope for Expanded Use of Telemedicine*

Altering the older population cohort’s attitudes towards technology remains an important task. That said, among researchers there is hope of improvement as the more technologically savvy Baby Boomer generation ages. Wang of Parks Associates said, “The [telemedicine] industry is still attractive in the long term. As the nation’s population ages, wealthy Baby Boomers will bring their do-it-yourself lifestyles to the personal care management business.”<sup>39</sup> Today, the Baby Boomer cohort is active members of the online community. According to a survey by Pew Internet, 82 percent of Boomers (ages 38 to 56) use computers and 68 percent are online which is not far behind the 86 percent and 78 percent of younger adults (ages 18- 37) who are on computers and the Internet respectfully. By contrast, only 43 percent of older adults (ages 57 and up) use computers and 34 percent are online.<sup>40</sup> Baby Boomers use present technology almost twice as much as the current older generation and just as much as younger adults. As the Baby Boomers age and require efficient and accessible health care, they will “have carried that history of using the Internet at work and in their past into their senior years.”<sup>41</sup> This will prepare them to use the telemedicine technology that older adults have difficulties with today.

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<sup>35</sup> NPR Online (2000). *Survey Shows Widespread Enthusiasm for High Technology: Americans Love Their Computers and the Internet; 'Digital Divide' Still Exists, but There Is Good News, Too*. A National Public Radio, Kaiser Foundation, and Harvard Kennedy School of Government Publication, February 29. Available at <http://www.npr.org/programs/specials/poll/technology/>

<sup>36</sup> Carpenter, Mark (2005). *Serving the Consumer: Older Adults & Technology*. An AARP Presentation at the ATA 7<sup>th</sup> Annual Industry Briefing. December. Available at [www.atmeda.org/conf/2005.SBOTS.presentations/TATRC\\_Slide\\_Submissions/Mark\\_Carpenter.ppt](http://www.atmeda.org/conf/2005.SBOTS.presentations/TATRC_Slide_Submissions/Mark_Carpenter.ppt)

<sup>37</sup> Fox, Susannah (March 25 2004) “Older Americans and the Internet.” A Pew Internet White Paper. Available at [http://www.pewinternet.org/pdfs/PIP\\_Seniors\\_Online\\_2004.pdf](http://www.pewinternet.org/pdfs/PIP_Seniors_Online_2004.pdf)

<sup>38</sup> Ibid.

<sup>39</sup> Parks Associates (2006). “In- Home Health Monitoring Market Faces Near- Term Uphill Struggle: Seniors and Baby Boomers Lukewarm to Service Concept, Frugal on Spending.” January 24, 2006.

<sup>40</sup> Hesdanun, Anick (2004), “Boomers Closing Digital Divide” CBS News 8 April 2004. Available at <http://www.cbsnews.com/stories/2004/04/08/tech/main610937.shtml>

<sup>41</sup> Ibid.

## Older Americans and Under-Studied Psychological Barriers to Telemedicine Use

A review of available literature within the topic reveals that older adults may form mental barriers that affect their use of telemedicine applications. One major fear noted is that telemedicine will affect their personal interactions with others. Issues such as the need for human contact, role reversal implications within the family, a fear of appearing weak, and low confidence all contribute to a high resistance to telemedicine applications. For telemedicine to become more widespread, authors note that these psychological issues need be acknowledged so that barriers to accepting telemedicine can be broken.

### *A Need for Social Interaction*

Findings regarding social interaction suggest that older patients may be hesitant to use telemedicine services because they do not satisfy the individual's need for personal interaction in medical care. A European study in the *Journal of Telemedicine and Telecare* included a survey which showed that interest in e-health applications such as home health care monitoring decreased with age and that, "the older people get, the more they depend on medical and social care, and the more they tend to live alone, without a family member to look after them."<sup>42</sup> While home monitoring may improve patient medical care, it may also reduce social interactions with caregivers for older adults. Therefore, older patients who use new technologies that allow them to live alone at home, risk a decline in social and personal contact.

An article in the *Journal of Internal Medicine* states that, "no amount of technology can remove the basic need for human and social contact or for exposure to a wider and more stimulating environment than simply the inside of our own homes."<sup>43</sup> Older patients' resistance toward telemedicine may arise because they feel that the new technology will limit their universe to their home and negatively affect their social and personal contacts. The personal need for social interaction may be strong enough for older patients to consider refusing a technology that will ultimately improve their health and lives.

Older patients' fear of losing closely held personal relationships can also induce depression, causing further rejection of new health care monitoring technologies. Studies suggest older patients may become depressed because "the exchange of assistance between aging parents and adult children will always be a key factor in the well-being of the depressed elderly."<sup>44</sup> A disability, inhibiting illness, or a restricting monitor that does not allow the patient to move freely can also lead to depression because "restricted activity means reduced social interaction, reduced sense of impact and value as a person, and increased dependence in order to get through the day,"<sup>45</sup> even if the dependence is on technology.

Home health care monitoring allows an older adult to "age in place," residing in one's home instead of being relocated to a care facility. However, this is not seen as a favored way of

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<sup>42</sup> Stroetmann, V.N., and T. Hüsing, and L., and K.A. "The attitudes, expectations and needs of elderly people in relation to e-health applications: results from a European survey" *Journal of Telemedicine and Telecare* 8 (August 2002): 82-84. Available at

<http://www.ingentaconnect.com/search/expand?pub=infobike://rsm/jtt/2002/00000008/A00202s2/art00038&unc>

<sup>43</sup> Stanberry, B., 2000 Telemedicine: barriers and opportunities in the 21<sup>st</sup> century *Journal of Internal Medicine*, 247, 615. Available at [www.blackwell-synergy.com/links/doi/10.1046/j.1365-2796.2000.00699.x/full/](http://www.blackwell-synergy.com/links/doi/10.1046/j.1365-2796.2000.00699.x/full/)

<sup>44</sup> Zullo, Nick. "Depression in Elderly Care Recipients." *National Care Planning Council's Guide to Long Term Care Planning*. Available at [http://www.longtermcarelink.net/eldercare/depression\\_elderly\\_care\\_recipients.htm](http://www.longtermcarelink.net/eldercare/depression_elderly_care_recipients.htm)

<sup>45</sup> Ibid.

life for older patients. According to the *Seattle Times*, many older patients see this phenomenon, which is increasing, as a negative aspect of telemedicine and would rather “age in community”<sup>46</sup> with an emphasis on social interaction. Growing old with sufficient interpersonal contact is not only important to an older patient’s health, but also a critical aspect to an older adult’s quality of life.

### *Roll Reversal and a Loss of Control for Older Patients*

Research shows that widespread use of home health care monitoring may allow adult children to monitor their parents, potentially causing a role reversal and loss of control which concerns many older patients. Home health care monitoring can include an invasive form of monitoring known as a “granny cam” which records an older patient’s every move in full detail. According to Russell Bodoff, Executive Director of the Center for Aging Services Technologies (CAST),<sup>47</sup> the invasion of privacy that the “granny cam” can create is met with “tremendous resistance” by older patients. Other less invasive monitoring devices that record only motions and vital signs have since been developed so that there is more privacy for the patient.

Through the “granny cam” and other, less invasive applications, “adult children will be able to remotely watch over their aging parents and proactively help them manage safely in their own homes.”<sup>48</sup> However, this role reversal within the family can cause unwanted tension. An article in the *Chicago Tribune* reveals one case in which an older patient, “describes how one of his children went too far with the family portal and her monitoring of his ever-increasing weight. ‘I had to fire her from being able to look in on me.’”<sup>49</sup> The ability for adult children to closely monitor their aging parents gives them an increased sense of obligation to take advantage of such technologies and many feel they must care for their parents in every possible way. However, a sense of obligation can quickly turn into an invasion of privacy for the older patient, making home health care monitoring an unattractive choice.

Even when experimenting with new technologies, older patients are reluctant to integrate the services into their daily life because they have, “a great deal invested in their self-esteem and they don’t want to look like a fool in front of their kids or grandkids.” Therefore older adults, “tend to be unwilling to take risks with technology.”<sup>50</sup> While home health care monitoring was developed with the intention of allowing older patients to have more control over their lives, it is important to work on systems that counter invasive technologies and help seniors feel less vulnerable and more in control of their health.

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<sup>46</sup> King, Marsha. “Elderly seek to grow old together, form new support groups; Circles of Caring catch on” *The Seattle Times* 1 May 2006. Available at

<http://www.innovations.harvard.edu/news/12237.html>

<sup>47</sup> Said, Carolyn, 2005. “Old age in the technology age: New devices to monitor health and well-being at home a growing new sector.” *San Francisco Chronicle*, August 8. Available at <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2005/08/08/BUG7PE2HL01.DTL>

<sup>48</sup> Continua Health Alliance, “Leading Health and Technology Companies Form Alliance to Improve Personal Health Through Connected Devices” Press Release June 6, 2006. Available at

[http://www.continuaalliance.org/news\\_events/news/press\\_release.6.6.06](http://www.continuaalliance.org/news_events/news/press_release.6.6.06)

<sup>49</sup> Global Action on Aging (April 9 2006) “Keeping Track of Dad” *Chicago Tribune*. Available at

<http://www.globalaging.org/elderrights/us/2006/keepingtrack.htm>

<sup>50</sup> Global Action on Aging (October 21 2005) “Researchers: Technology Can Help Elderly” *Associated Press*. Available at <http://www.globalaging.org/elderrights/us/2005/helpelderly.htm>

### *Social Stigmatism Associated With Health Monitors*

Another barrier identified by researchers that older patients may have to overcome is the fear and stigma associated with using health monitors. Older adults may refuse to wear a health monitor, especially in public, because they fear they will be perceived as old and weak. In a study in *Medical Informatics and the Internet in Medicine*, “three participants stated that they could think of friends or relatives who would refuse to ‘wear’ a device, being afraid that it would stigmatize them as frail or needing special assistance.”<sup>51</sup> This same fear can be seen in older adults’ unwillingness to use hearing aids although the devices would improve their lives and enhance their capabilities. According to a study in the *Journal of Rehabilitation*, “the stigma associated with the wearing of hearing aids may preclude the necessary commitment of clients to wear their hearing aids. The tradeoff between social acceptance, vanity, personal appraisal about aging, and other issues may play a pivotal role in improving the quality of lives for millions of Americans with hearing losses.”<sup>52</sup> Just as older adults may choose the frustrations and difficulties that result from hearing loss in exchange for social acceptance, older patients may cede the benefits of real-time health monitoring as they believe the monitoring devices signal their diminishing health to others.

According to a study in the *Nursing Administration Quarterly*, wearing monitors regularly can deter a patient from accepting the technology as they do not want to “feel trapped inside their homes.”<sup>53</sup> A patient may refuse to wear a monitoring device because it may only work in certain areas and the patient may wish to travel to other locations.<sup>54</sup> Wearing a monitor that only works in certain areas forces older patients to decide whether to wear the device at all times. In addition, older patients may develop a fear that their health will fail if the monitors are not functioning properly. The threat of this additional concern may be powerful enough to discourage older adults from using health care monitoring devices.

### *Societal Ageism Negatively Affects Older Adults’ Confidence*

A study of seniors and the Internet by the International Federation of Library Associations and Institutions found that, “we live in a society that devalues the aging experience,”<sup>55</sup> and older adults can feel incapable of learning to use new technologies. It has been found in previous studies that “negative stereotyping of elderly people can have a serious effect on those who are being stereotyped.”<sup>56</sup> If society fails to value older people and believes

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<sup>51</sup> Demiris, George, and Marilyn J. Rantz, and Myra A. Aud, and Karen D. Marek, and Harry Tyrere, and Marjorie Skubic, and Alia Hussam. “Older adults’ attitudes towards and perceptions of ‘smart home’ technologies: a pilot study.” *Medical Informatics and the Internet in Medicine* 29.2 (2004): 87-94

<sup>52</sup> Blood, Ingrid M., “The hearing aid effect: challenges for counseling” *Journal of Rehabilitation* Oct-Dec 1997. Available at [http://www.findarticles.com/p/articles/mi\\_m0825/is\\_n4\\_v63/ai\\_20209746](http://www.findarticles.com/p/articles/mi_m0825/is_n4_v63/ai_20209746)

<sup>53</sup> Cheek, Penny, and Linda Nikpour, and Heather D. Nowun. “Aging Well With Smart Technology.” *Nursing Administration Quarterly* October- December 2005

<sup>54</sup> Demiris, George, and Marilyn J. Rantz, and Myra A. Aud, and Karen D. Marek, and Harry Tyrere, and Marjorie Skubic, and Alia Hussam. “Older adults’ attitudes towards and perceptions of ‘smart home’ technologies: a pilot study.” *Medical Informatics and the Internet in Medicine* 29.2 (2004): 87-94

<sup>55</sup> Williamson, Kirsty (March 1997) “Older People and the Internet” International Federation of Library Associations and Institutions Annual Conference. Available at <http://www.ifla.org/IV/ifla63/44pt2.htm>

<sup>56</sup> Hausdorff, J., Levy, B. and Wei, J. (1999) The influence of ageism on gait. *Journal of the American Geriatric Society*, Vol 47, pp1346-1349.

them to be incapable of learning new concepts, then older adults will have a tendency to embrace the same view.

According to experts, physical disabilities associated with aging can also decrease an older adult's confidence in learning about new technology. A study in the *Nursing Administration Quarterly* shows that a "lack of confidence in their computer skills and slower retrieval of information, especially in regard to processing speed and psychomotor skills"<sup>57</sup> can cause a decrease in confidence. The inability to use technologies as efficiently as younger generations encourages and reinforces the "ageist" stereotype in the minds of older adults.

### *Personal Privacy is a Priority for Older Patients*

Similar to the policy issues that hinder the more widespread use of telemedicine technologies, the literature suggests that privacy and security are also central personal concerns for older adults. Privacy is a primary anxiety with all users of telemedicine as these online health applications transport personal information and health records across the Internet. Older adults are also sensitive to privacy concerns and wish to have greater reassurance that their personal information is concealed from outsiders. A Pew Internet survey shows that, "sixty-one percent of those 65 and older say they are 'very concerned' about businesses and people they don't know getting personal information about them or their families, compared to forty-six percent of Americans between ages 18 and 29."<sup>58</sup> New privacy safeguards in home health care monitoring may be necessary for the full acceptance of telemedicine by older adults.

Reports also note that many seniors may also risk their health by refusing to wear monitors because they fear the transmission of the health monitoring reports may be insecure. A *Chicago Tribune* article states, "some [patients] insist that they would remove the bracelet--the device necessary to trigger the sensors on objects they touch--when they want privacy." One patient notes that, "she ate chocolate cake for breakfast and would do whatever necessary to hide that from her children."<sup>59</sup>

In a study published in the *Journal of Postgraduate Medicine*, patients were asked to use telemedicine applications and researchers found, "the only negative comments within this group focused on concerns about the confidentiality of teleconsultations."<sup>60</sup> Similar studies of older patients show that they would rather be confident that their health information is secured than have better health care. When doctors ask patients for personal information in order to make an accurate diagnosis, patients will withhold information if the doctor cannot provide assurance that the information will be kept confidential.<sup>61</sup> This naturally extends to telemedicine encounters.

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[http://www.computing.dundee.ac.uk/acprojects/utopia/publications/Univ%20des\\_alm\\_et%20a1%20Japan%202002.pdf](http://www.computing.dundee.ac.uk/acprojects/utopia/publications/Univ%20des_alm_et%20a1%20Japan%202002.pdf)

<sup>57</sup> Cheek, Penny, and Linda Nikpour, and Heather D. Nowun. "Aging Well With Smart Technology." *Nursing Administration Quarterly* October- December 2005

<sup>58</sup> Fox, Susannah (October 5 2004) "Digital Divisions." A Pew Internet White Paper. Available at [http://www.pewinternet.org/pdfs/PIP\\_Digital\\_Divisions\\_Oct\\_5\\_2005.pdf](http://www.pewinternet.org/pdfs/PIP_Digital_Divisions_Oct_5_2005.pdf)

<sup>59</sup> Global Action on Aging (April 9 2006) "Keeping Track of Dad" *Chicago Tribune*. Available at <http://www.globalaging.org/elderrights/us/2006/keepingtrack.htm>

<sup>60</sup> Whitten P, Love B. Patient and provider satisfaction with the use of telemedicine: Overview and rationale for cautious enthusiasm. *J Postgrad Med* 51 (2005): 294-300. Available at

<http://www.jpgmonline.com/article.asp?issn=0022-3859;year=2005;volume=51;issue=4;spage=294;epage=300;aulast=Whitten>

<sup>61</sup> Dr. S. B. Bhattacharyya <http://www.geocities.com/sbbhattacharyya/Telemedicine/tmtech.html>

### *The Inability to Perceive Benefits Limits Interest in Technology Use*

Older patients may also have difficulties using telemedicine equipment because of low motivation to learn how to use new technology and apply it to their lives. An American Psychological Association paper cited a recent study which, “suggested that older adults might not be motivated to buy a computer or to learn new skills, even if they could, as they do not perceive the expected result as desirable or helpful.”<sup>62</sup>

New technology is not viewed by older adults as detrimental to their lives but, “benefits of that technology are not apparent to the older adults. Either the technology in question does not meet the needs of older adults, or older adults do not understand it well enough to perceive the benefits.”<sup>63</sup> Older adults have difficulties seeing the benefits of new technologies as they are “present-oriented and less willing to spend their time in an unpleasant way for a future goal.”<sup>64</sup>

The lack of motivation to use telemedicine in the home is not always the result of inexperience or insufficient resources. It often stems from an inability to understand how the technology will make dramatic improvements in quality of life. For telemedicine to become a more widespread application, older adults need to adopt positive and imaginative perceptions and attitudes towards new technologies.

### **Solutions to Reduce Barriers and Further Advance the Adoption of Telemedicine**

Beyond the need for discrete public policy actions to address privacy, security and reimbursement issues in telemedicine, the compendium of literature suggests there also needs to be more research on the attitudes and perceptions of the patient, especially older adults. Further research can help the telemedicine community at large better educate patients and create awareness of the psychological barriers to telemedicine. This in turn will allow older adults to better understand and effectively use the new form of health care to its fullest potential.

#### *Additional Research on Patient Attitudes*

Further insight into the patient’s perspective on the range of related technologies will allow telemedicine equipment manufacturers and medical personnel help to customize services around the preferences of older patients. This research will also further educate policymakers as to the effective methods of patient acceptance of telemedicine. Education of older patients will foster greater awareness regarding the myriad ways telemedicine can positively affect their lives.

Research can also lead to new solutions and modifications in technology to increase the acceptability of various applications. There have been numerous improvements to date on present telemedicine technologies based on expressed privacy concerns. For instance, older adults showed concerns in a study regarding their attitudes towards “smart home” technologies

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<sup>62</sup> Melenhorst, Anne-Sophie, & Rogers, Wendy A, & Bouwhuis, Don G. “Older Adults' Motivated Choice for Technological Innovation: Evidence for Benefit-Driven Selectivity.” *American Psychological Association* 21(1) (2006): 190-195. Available at <file:///c:/Documents%20and%20Settings/jrogers/My%20Documents/Telemed%20Barriers/Research/Older%20adults%20motivated%20choice.htm>

<sup>63</sup> Ibid.

<sup>64</sup> Ibid.

that “the use of cameras within their homes for the purpose of identifying falls or other accidents was ‘obtrusive’ and would be violating the resident’s privacy. When asked if the use of such cameras were to be ‘anonymized’ where shadows or movements would be depicted but one could not identify the features of the individuals, many participants felt that this solution was more appropriate.”<sup>65</sup> General Electric (GE) also integrated patient concerns into the development of their Home Assurance monitoring system. GE uses motion sensors instead of cameras and developed a feature for customized access to the information only by people chosen by the patient.<sup>66</sup> In this way, older adults were able to welcome telemedicine into their lives more easily, potentially improving their health and further advancing the widespread use of telemedicine.

### *Demonstrating Telemedicine’s Benefits and Boosting Patient Confidence Through Support Groups*

Studies suggest that putting older adults in contact with technology support groups may reduce their low confidence levels on technology issues. Peer group learning and training can be especially beneficial and effective because the older adult “avoids the embarrassment the learner might feel with a younger person who knows all about the technology and who the older person might worry is becoming impatient with them. Also, having an older person as a teacher provides a constant role model, and proof that the technology can in fact be mastered by someone who is no longer young.”<sup>67</sup> By working with peers who are already comfortable with the new technologies, the older adult may feel more at ease and learn and work with the new technology more readily.

Telemedicine service providers are also attempting to increase patient confidence in utilizing the new technology. Medic4all, a telemedicine systems provider, tailors their programs for each patient so that the individual is not overwhelmed with technology and training that is not relevant to their needs.<sup>68</sup> By focusing on specific aspects of technology that would be most beneficial to their health, individual patients may be able to master the technology more easily.

Patient confidence can also be increased when younger adults educate older individuals on the benefits of technology. In the past, younger generations have helped older adults overcome their difficulties with using and accepting technology. This may also prove to be beneficial in facilitating older adults’ acceptance of telemedicine. John Huth, vice president of the John J. Barcklow Foundation, which, “focuses on improving the quality of life for the nation’s senior citizens,”<sup>69</sup> provided mentorship to high school students in their teachings of computer technology to older adults in nursing facilities. The high school students were able to

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<sup>65</sup> Demiris, George, and Marilyn J. Rantz, and Myra A. Aud, and Karen D. Marek, and Harry Tyrere, and Marjorie Skubic, and Alia Hussam. “Older adults’ attitudes towards and perceptions of ‘smart home’ technologies: a pilot study.” *Med Inform Internet Med* 29.2 (2004): 87-94

<sup>66</sup> “Internet Aids Elderly Home Care” CBS News 16 September 2003. Available at <http://www.cbsnews.com/stories/2003/09/16/tech/main573606.shtml>

<sup>67</sup> Alm, Norman, & Gregor, Peter, & Newell, Alan F., (2002) *Older People and Information Technology are Ideal Partners*. A University of Dundee White Paper: A Product of the Applied Computing Division, Nov. Available at [http://www.computing.dundee.ac.uk/acprojects/utopia/publications/Univ%20des\\_alm\\_et%20al%20Japan%202002.pdf](http://www.computing.dundee.ac.uk/acprojects/utopia/publications/Univ%20des_alm_et%20al%20Japan%202002.pdf)

<sup>68</sup> Medic4all Services International, “Telemedicine Home,” Available at <http://medic4all.com/>

<sup>69</sup> Buie, Jim. “Bridging the Digital Divide: Teens Help Seniors Go Online.” *The Washington Post* 3 August 2004, C09. Available at <http://www.washingtonpost.com/wpdyn/articles/A35598-2004Aug2.html>

shift attitudes of the older adults at the nursing home from “wary residents” who “found the computer keyboard confusing” to excited and frequent users of computers.<sup>70</sup> One resident, a “retired history professor, initially thought a computer could only offer him headaches. ‘I may not choose to participate in this,’ he groused early on. Recently he said proudly, ‘I have been inducted into the world of computers.’”<sup>71</sup> Many residents benefited from their newly acquired computer skills by communicating and reconnecting with their families through the Internet. Through the education of older adults by younger generations, the “digital divide” can be narrowed. In addition, potential users of telemedicine can be shown that learning how to use technology is possible and can be beneficial in their lives. Through peer support and teaching, older patients can learn how home monitoring can improve their lives.

## **Conclusion**

The review of the relevant literature demonstrates that there is an opportunity to bolster telemedicine usage among older adults by developing a greater understanding of the psychological barriers and personal perceptions these patients hold of the technology. Primary research of the older patient’s attitudes and apprehensions towards home health care monitoring may yield important results that will help patients, medical practitioners, and telemedicine equipment manufacturers. Many researchers believe advances in telemedicine technology may help solve important aspects of today’s health care crisis associated with the graying of America. To move towards this goal, the research reviewed by the NMRC suggests that in addition to solving the public policy issues of privacy and reimbursement, the telemedicine community can make great advances by developing greater understanding of older Americans’ telemedicine fears.

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<sup>70</sup> Ibid.

<sup>71</sup> Ibid.

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