

**The Value of the Internet
Improving Healthcare for Older Adults**

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The arrival of computers and new technology into mainstream life impacts the way in which people receive and disseminate information on a variety of topics, particularly healthcare. Governmental agencies such as the National Institute for Aging, the National Library of Medicine, and Medline Plus, publish websites with hundreds of health topics. Insurers are also moving online to provide consumers with information regarding costs and medical treatment options. In an article published by the Healthcare Forum Journal, David Weber claims that "consumer-oriented healthcare delivery ... [is] the next 'megatrend' for the [healthcare] industry" (99). Why is that? Patients want to become more knowledgeable about their health. This fact is not new. In 1785, a British physician, Dr. William Buchan, published the first home health care book, Domestic Medicine, which sold over 80,000 copies, in 19 English editions, and was translated into all the main European languages before his death in 1805. Perhaps Dr. Buchan was a visionary who anticipated the need for medical consumers to become knowledgeable about their health:

The cure of diseases is doubtless a matter of great importance; but the preservation of health is of still greater. This is the concern of every man, and surely what relates to it ought to be rendered as plain and obvious to all as possible (xi).

Over two hundred years later, we are still reaching for this goal. For adults currently 65 or older, printed media, physicians, and advocacy groups still dominate as preferred sources of healthcare information. The Internet is gaining respect, though, as an alternative source of data for medical consumers. Advances in technology and the demographics of aging baby boomers are significant marketplace factors that will change the way in which consumers of healthcare services manage costs, treatment, and medical options. However, as is often the case with new and complex technologies, their use frequently comes as a mixed blessing.

Medical information is a topic of high priority interest to older adults. According to the Pew Internet and American Life Project, of the 8 million seniors online, 66% report using the Internet for healthcare related information research (Fox). Older adults, many who are unfamiliar with the use of computers and the Internet, may be disadvantaged in their quest for information that could improve the quality of their health and reduce their medical costs. In addition, there are thousands of websites that provide health related information, making the Internet a confusing and intimidating source of information.

Since older adults generally have more chronic illnesses, the anticipated trend of rising healthcare costs will be significant. The aging of baby boomers within the next 10-15 years further supports industry and government concerns over managing the rising cost of public healthcare. To address these issues, government and insurers are now attempting to provide reliable online information in an effort to make policies, coverage options, and costs easier to understand (Rideout). However, according to a report published in the Journal of Nursing Care Quality, there are many websites that provide inaccurate or incomplete information (Owermann, et al. 123). This is partially due to the fact that web content is virtually unregulated. In order to improve reliability, online information should adhere to standards in which the information is vetted among dependable sources. This is particularly significant in order to establish trust from users of the information. Many older adults have expressed concerns about trust, privacy, and advertising when using the Internet as a source of medical information. Advocacy groups and other public healthcare providers have compiled lists of websites that can be considered trustworthy sources. They are using public forums to distribute this information to the general population.

According to Russell Morgan, CEO of the SPRY (Seniors Planning for Retirement Years) organization, managing well-being through the acquisition of reliable information on treatment options, disease management, drug interactions, and preventative measures can empower consumers of health care services (480). Older adults generally opt for traditional sources of medical information – doctors, insurance companies, friends, printed media, and advocacy groups – because they are familiar with them. However, these sources generally do not provide “just-in-time information” – specific information, on a specific topic, at a specific moment in time. The Internet provides a source of “just-in-time” data that has the potential to help seniors make well-informed decisions regarding health care options.

Training and access to technology is one factor that seems to be slowing the adoption of Internet use in older adults. Public health advocacy groups and government institutions are helping to address this problem by providing computer access and training in public libraries and social centers. Based on a report published by the Pew Internet and American Life Project, demographics of older adults that use the Internet indicate that usage is based on literacy and economic factors (Fox). It seems that minorities and older adults living at poverty levels are disadvantaged in their quest to obtain quality medical information due to their lack of training and access to computers.

In an interview with Olga Koz, Head Reference Librarian and Technology Manager at Largo Library, many seniors who attend their public computer classes experience fear of the technology. For many students, mastering use of the mouse is a difficult hurdle. The Largo Library and other libraries in Pinellas County offer free training for seniors and patrons of all ages, including personalized one-on-one training sessions for older adults. They have discovered that intergenerational classes have also been successful in reducing fear of the technology. These

classes are provided with the goal of teaching older adults the mechanics of using computers and keyboarding, as well as assisting them in making sense of the information they retrieve from the Internet. Findings from studies performed by the National Institute on Aging and other organizations report that older adults can learn to use technology and the Internet effectively (Morgan 478). Even though use of the Internet can become a learned skill, SeniorNet, AARP, and librarians like Mrs. Koz, generally refer older adults to printed sources of information, like a Physician's Desk Reference (PDR), before encouraging use of the Internet for healthcare related research. Fortunately, the Largo Library subscribes to the Thompson-Gale Health and Wellness database that contains reliable health related content.

Insurers also have a vested interest in providing quality information to older adults in an effort to help drive down medical costs as baby boomers age. Advocacy groups and government public health researchers view the aging population and rising medical costs as a serious public health issue that needs to be addressed. According to the Centers for Disease Control and Prevention, the number of persons aged 65 and older is estimated to exceed 71 million in 2030, a projected increase of almost 20% (United States Centers for Disease Control). Insurers are providing Internet portals that contain information regarding medical treatments and alternatives, prescriptions, and overall costs related to member's healthcare treatments.

Older adults who investigate their medical and healthcare options are more likely to have open discussions with their physicians, becoming more knowledgeable consumers of medical services, perhaps to the chagrin of some doctors. In addition, armed with this knowledge they are able to monitor their spending on medical treatments, become more informed about alternative treatments and therapies, and play an active role in managing their healthcare costs. Given the level of concern expressed by the government and other agencies over the rising costs of

healthcare, the aging population, and the value of reliable medical information, the trend toward online information and access will continue to be a significant factor toward managing the nation's future health care costs.

Web Content and the Medical Consumer

I know it will be said, that diffusing medical knowledge among the people might induce them to tamper with Medicine, and to trust to their own skill instead of calling a physician. The reverse of this, however, is true: persons who have most knowledge in these matters are commonly most ready both to ask and to follow advice, when it is necessary (Buchan ix).

Establishing reliable medical information sources from websites on the Internet is no trivial task. Developing quality content on the web can require a significant financial investment and a cadre of subject matter experts with backgrounds in medicine. Medical information changes as new studies are performed. Due to its dynamic nature, publishing medical information on the web or in print requires considerable effort to keep it current. We often discover new facts about drug interactions or new medical treatments and cures. The AARP, formerly known as the American Association for Retired Persons, maintains helpful information and tips on their website to help older adults sift through content in cyberspace. Some of the AARP recommendations include: looking for objective experts, reading the author's biography, and checking the date of publication or the last revision date (AARP). SeniorNet, an organization dedicated to helping older adults learn to use computer technology and the Internet, provides a list of trustworthy health care websites (SeniorNet). Accurate, reliable, relevant, and timely medical information is critical for medical consumers. Fortunately, a few organizations have researched and published their findings to help seniors locate reliable health care content on the Internet.

The United States federal government also recognizes the importance of authoritative health related web content. In a speech presented for the Symposium on Healthcare Internet and E-Commerce, Mr. John Bentivoglio, Special Counsel for Health Care Fraud and the Chief Privacy Officer of the U.S. Department of Justice, clearly stated that the government is well positioned to prosecute any violations of “fraud or false statements, kickbacks and self-referrals, unauthorized distribution of drugs or medical devices, and individual privacy infringement” (United States Department of Justice). Although federal laws exist to govern health related content and E-commerce, trust remains an issue for older adults.

Finding a reliable website is only the first step when using the Internet for health related research. Most importantly, content must be written in layman’s terms to enable straightforward understanding. For the general population and older adults, Medline Plus is a quality source of healthcare information. This website contains up-to-date medical information presented in an easy to understand format. Since the U.S. government publishes the data contained on Medline Plus, the potential market bias of insurers, pharmaceutical companies, and marketers is avoided. SeniorNet endorses Medline Plus and provides detailed instructions on how to navigate and search this website (SeniorNet). In addition, to make it easier for older adults to read and understand the information, much of the content on the Medline Plus website is presented in audio/video format. According to a study by the Kaiser Family Foundation, 34% of online seniors say that advice available on the Internet has improved self-care and 23% said they were influenced in their decisions to treat illness. Overall, 62% claim that they feel more informed as a result of their online research (Rideout).

Web Content and Health Professionals

The generality of people lay too much stress upon Medicine, and trust too little to their own endeavours. It is always in the power of the patient, or of those about

him, to do as much towards his recovery as can be effected by the physician
(Buchan ii).

Medical consumers are not the only ones who can benefit from Internet based research. Physicians can also use information presented over the Internet for decision support purposes in their practice. The nature of a doctor's job generally requires real-time information synthesis while they carry out diagnosis, treatment, and patient follow-up. In the past, physicians relied on memory and journal publications as a source of decision-making. Evidence-based clinical information is becoming a customary source for the application of medical care (Anderson). Much of this literature is currently in print; however, analysts with extensive medical expertise are accumulating results of clinical trials and presenting this information over the web. Given the monumental task of sifting through and absorbing relevant medical data, electronic access via the Internet has the potential to positively impact a physician's decision-making process. Obviously, the more informed a physician becomes, the better he is able to serve his patients.

Regardless of whether the user is a medical consumer or a medical professional, a key issue regarding content, above and beyond its availability and timeliness, lies in the process of aggregation and synthesis. The National Health Information Infrastructure (NHII) is a division of the Centers for Disease Control. Their vision includes development of a national database that can provide up-to-date, "womb to tomb" medical literature for adults and physicians (Yasnoff). If medical information such as procedures, treatments, and prescription drugs are coded according to a common standard, then the accumulation of large amounts of data on a national basis is viable. While the NHII vision is a noble goal (e.g. national standards), at the present time, each point in the process of health care delivery maintains its own set of coding standards. The lack of universal coding standards, while not prohibiting the collection of relevant clinical information, generally makes the process more difficult, costly, and time consuming. Consider a

patient with recently diagnosed cardiac problems seeking information about high blood pressure. This condition could be called “Hypertension” or “Cardiac Acceleration”, or some other name that represents the same problem. Standardization, in any industry, is worth the time and effort if benefits can be obtained from consolidation of disparate data sources; although, someone must be willing to bear the cost. Interestingly, the Department of Veteran affairs in Florida and the IEEE Geriatric Care Information Technology group are working together to introduce patient medical records systems that can be accessed remotely by selected physicians (Addressing the Healthcare Needs).

Website Usability

A child of five would understand this. Send someone to fetch a child of five.
(Groucho Marx Quotes)

Publishing reliable content on websites is the first step toward achieving effective use of the technology. Usability is another key issue regarding computer and Internet use for older adults. Usability implies that fonts, background and foreground colors, and contrast on websites are used in a manner that makes reading easier for visually impaired adults. For example, a light font color on a white background is not easy to read – at any age. In addition to color and contrast, for older adults who suffer from arthritis, use of the mouse to navigate from page to page can be challenging.

Usability is also related to a website’s organization and its navigation. Complex navigation on a website will drive away older users. Imagine reaching an interesting web page only to find that you are unable to locate the company’s contact information – a common design flaw. Effective web site design means that anyone can find what he or she is looking for. This is particularly important for older adults who are less experienced with the use of computers and the Internet. They need to be able to find information readily, even with age-related handicaps.

According to Shirley Becker, a professor of computer information systems, barriers regarding the use of the Internet for older adults can be attributed to “vision, cognition and physical impairments” (Becker). Generally, websites that are designed to overcome these barriers will adopt some of the following recommended design components. First, advertisements can be a source of visual clutter. Users are distracted from the purpose, content, and navigation of a website when it contains pop-up windows, or blinking, non-relevant, advertising. Second, use of visual clues for navigating a website can provide the user with an intuitive understanding of how a web page can be used (Becker). Visual clues can include links that change color when the link has been accessed. A frequent design flaw of web pages is that there is no button or menu that will take the user back to the home page. As a result of these and other web page design inconsistencies, a user can get “lost” in cyberspace. When Microsoft Windows first appeared on the market, Microsoft published a guide for developers that contained a recommended design framework for developers. To date, there are no commonly accepted standards for web page design. The result is that few web pages have a standard “look and feel” for navigation, content, and graphics placement. While diversity in web page design can promote creativity, originality, and corporate branding, the lack of design guidelines often presents a dazzling array of confusing websites.

Key design components for older adults include mouseovers, font size and screen length (Becker). Mouseovers are buttons that can change color or visual characteristics when the mouse crosses over them. For older adults with impaired motor ability, mouseovers, due to their precise mouse movements, can be cumbersome and difficult to use. Small fonts – less than 12 point – can impair readability. Background patterns may also inhibit readability. Some websites contain options to increase font size making the choice available to those with visual difficulties. Finally,

lengthy web pages that require excessive vertical scrolling may also turn users away. On the other hand, performance is an area of widespread consideration for web developers. If a web page takes longer than 10 seconds to load, users will lose interest and go “surf” elsewhere. For older adults, many of whom use dial-up Internet access, performance becomes a key issue.

Internet Infrastructure

... infrastructure ... consists of core telecommunications networks, databases, software, hardware, and procedures (Information System).

The Internet would not be possible if it were not for its ubiquitous infrastructure. Internet protocol (IP) and the hardware that supports it, is reliable enough that it is generally available on a 24/7 basis. Analogous to the telephone and electricity grid systems, IP infrastructure is the foundation of the Internet. A robust and highly available infrastructure has contributed to the emerging field of telemedicine. Telemedicine (among other things) is a form of patient-physician video conferencing to affect health care delivery for immobile older adults or those who live in rural areas. Mr. Charles Schmalstig, a user of telemedicine for pacemaker status monitoring, expressed negative feedback during an interview regarding the value of telemedicine, citing that it was inconvenient and expensive for both he and his doctor. Since he is neither immobile, nor living in a rural area, telemedicine monitoring of his pacemaker status was discontinued. While the advantages of telemedicine are still being evaluated by the industry, it may have some potential benefit toward meeting very specific needs for some older adults.

Other home-based technology “agents,” such as robotics and sensors are also being evaluated for practical use. In October, 2004, a symposium was sponsored by the IEEE to discuss geriatric care technologies. Participants included the IEEE, Mitretek Systems (a non-profit scientific research and systems engineering group), and the worldwide computer chip powerhouse, Intel. Some of the key recommendations from this symposium – reading between

the lines and making inferences regarding the non-specific nature of the recommendations – seem to point to the fact that while there is great interest from a range of industry players, it is still early in the evolution of what will ultimately become a significant market, social, and political phenomenon (Addressing the Healthcare Needs). Although all of these efforts are certainly directed toward addressing the nation’s rising health care costs, IP based networks and the technologies that they enable, are still years away from being either as simple or as reliable as the electricity grid.

The Future

Diffusing medical knowledge among the people would not only tend to improve the art, and to banish quackery, but likewise to render Medicine more universally useful, by extending its benefits to society (Buchan xi).

The Internet may yet provide significant – and recognizable – value regarding health care for older adults at some point in the future; but for now, most seniors are concerned with the more mundane aspects of effectively using the technology for email and leisure activities. That said, older adults have shown considerable interest in prescription drug research as well as research related to specific illnesses. Slow adoption of technology by older adults seems to stem from three basic issues: trust and confidence in web content, complicated technology use and overwhelming volumes of information. Hopefully, effective use of technology in the future will include medical “Smart Card” technologies. Already used in Southeast Asia and in Germany, Smart Cards containing patient health records have shown to be an effective tool for use during emergency medical treatments. Also, the NHII’s vision toward the collaborative use of local healthcare databases has the potential to improve medical treatment alternatives, as well as potentially lowering costs that result from administration of redundant tests during diagnosis of illnesses. According to the SPRY foundation, possible future uses of technologies could include:

patient initiated medical response systems, home monitoring systems, mobile robotic devices, and online support groups that sustain care of older adults in the home (Computer-Based Technology). Other possible areas for future technology advances could include “wellness programs, disease management for chronic conditions and pharmaceutical management” (Morrison).

Ultimately, patients have the most vested interest in managing their health and related costs; they are the quintessential intelligent “agents”. From an industry perspective, focus on local healthcare markets as central delivery points and relevant data collection at that level, could bring about significant changes in the way that health care is delivered in the future. Clearly, the aging computer-savvy baby boomers are poised and ready to demand and expect, quality healthcare information, services, and treatment within manageable cost structures. The Internet and practical uses of technology could have a positive impact, but more research and development is needed before widespread benefits can be achieved.

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