

**MODELING THE CONSUMER HEALTH INFORMATION-SEEKING BEHAVIORS OF
PRIMARY CARE PHYSICIANS WHO TREAT ELDERLY DEPRESSED PATIENTS
AND THEIR CAREGIVERS**

by

Mary Jo Dorsey

BS, Biology, Carlow College, 1988

MLS, University of Pittsburgh, 1990

Submitted to the Graduate Faculty of
The School of Information Sciences in partial fulfillment
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UNIVERSITY OF PITTSBURGH
SCHOOL OF INFORMATION SCIENCES

This dissertation was presented

by

Mary Jo Dorsey

It was defended on

May 16, 2008

and approved by

Daqing He, PhD, Assistant Professor, Program in Library and Information Science

Stuart Shulman, PhD, Associate Professor, Program in Library and Information
Science

Charles F. Reynolds, III, MD, Senior Associate Dean, Professor, School of Medicine

Dissertation Advisor: Ellen G. Detlefsen, DLS, Associate Professor, Program in
Library and Information Science

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Objective

Physicians' clinical information-seeking behaviors have been a major target of investigation among the LIS, IS, and biomedical informatics professions for the past twenty or more years. Practicing evidence-based medicine (EBM) has become an expected standard in current health care with EBM curricula incorporated with the didactics in medical school education. This project focuses on the point where evidence-based medicine integrates with the delivery of information to the senior patient in a way that is meaningful to the patient. This study investigates the information-seeking behaviors that seniors' primary care physicians exhibit in order to educate themselves about current consumer health information (reading materials, websites, news, educational narratives) and how they currently disseminate educational information to patients and their caregivers.

Methods

A grounded theory framework was conceived to administer a multimodal method of data collection. Primary care physicians who see elderly patients primarily in a large urban academic setting were recruited to participate in semi-structured interviews, a self-evaluative confidence scale, and an environmental office scan.

Results

The consumer health information-seeking model indicates three information-seeking stages. Each stage is indicative of unique sets of events which occur 1 - prior to a patient visit when physicians exhibit self-study exercises such as reading journal and news articles, receiving web updates or listening to television or radio health news stories; 2 - during a patient encounter when the physician actively assesses the ability of the patient and/or caregiver to receive and assess information regarding a health topic; and, 3 - after the patient visit when the physician may refer a patient and caregiver to websites, written literature or to a follow-up appointment with another health clinician for further information counseling.

Conclusion

The proposed model suggests that physicians of a similar demographic setting exhibit similar patterns of consumer health information-seeking behavior. This study proposes an ISB model of the series of behaviors of a specific group of physicians that suggests how they collect and distribute consumer health information to their elderly patients and caregivers.

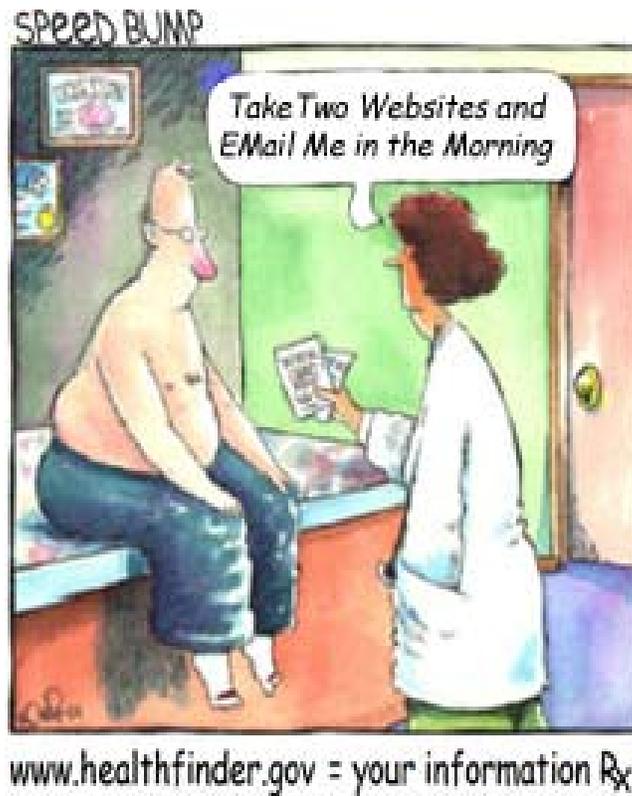


Figure 0.1: Current stereotype.

Physician-to-patient consumer health information interaction.

(© Cartoon U.S. Department of Health & Human Services
Consumer health website, <http://www.healthfinder.gov>)

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I love living in the northeastern United States, seeing four very distinct seasons that cycle the year, much like the phases of our lives. Whether we experience bright, heated days of summer or take refuge during cold, dark nights of winter, we are reminded that our lives pattern the phases of the seasons with constant change and cycle.

As I have cycled through these past years of work and school, falling in love, and making a family of my own, I have experienced one of the best and longest stretches of summer I've ever known. This part of my education and life phase has not simply been about receiving a degree from a university. It has been about learning from my past realizing what works in life and what doesn't work. It has been a comprehensive examination of how to live; how to love; how to grow; and how to be exactly who I am supposed to be.

I have great respect for those around me who have inspired me and helped show the way every now and then. But, I'm most thankful for the chance to meet myself and take stock in the fact that I, as much as anyone else, great or noble, weak or struggling, am alive.

When I was a young girl and it was fun to keep an autograph book, my grandmother, Mary Christine Kornick, wrote the following in my book: *Dear Mary Jo, You will be truly a good girl if you desire always the inspection of good women.. Gram.*

I did not fully understand, nor did I appreciate, this comment when I was young. In fact, it occurred to me only in recent years that my grandmother was telling me, simply, to watch people and from watching, I would learn and be. Simple advice. She loved me fiercely in her stoic Victorian way.

In that light, I reach out to my grandmother's spirit and smile with her. I get it now. I just have to *be*.

I see the seasons. I watch them come and go. And, I know now that each season lasts with its own finite glory.

What I want to do is important. What I want to "be" is, really, already who I am. Just keep going!

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1.0 INTRODUCTION

In today's current trend of information-shopping on the World Wide Web for health information, 80% of internet users in America have indicated that they have searched for health information.¹ While it is true that many Americans search for health information online, what is not entirely known is how the searchers are using the information.

The following statement, extracted from a study that recently examined the information needs of depressed patients, calls attention to a certainty that two-thirds of the patients interviewed believed that their general practitioner played an essential information role.²

“Patients expected their GPs to be a first and main source of objective information and discussion about depression and treatment and to provide emotional support for decision-making. Patients also identified needs for additional information about depression and its treatment, as well as concerns about certain aspects of treatment.”²

While the physician is a line of information, a first line or a later line, how are physicians talking to their patients about their specific health concerns? Is the physician using a familiar language, one in which patients (health care consumers) are accustomed? Are physicians aware of what their patients are reading in the press, on the Internet, or hearing in other various media forms?

1.1 STATEMENT OF THE PROBLEM

Despite useful studies that report the information-seeking behaviors of physicians who use the Internet, or physicians' clinical information-searching skills (such as evidence-based medicine), very little literature highlights physicians' consumer health information-seeking behavior. Where does a physician get information to give to the patient or to a caregiver?

In a rapidly growing market of consumer health information, what can a physician offer patients today?

In the early 1990's, the Consumer Health Information Subcommittee of the Committee on Applications and Technology, a part of the Clinton Administration's Information Infrastructure Task Force intended consumer health information, or CHI, to be:

“. . . any information that enables individuals to understand their health and make health-related decisions for themselves or their families. This includes information which supports individual and community-based health promotion and enhancement, self-care, shared (professional-patient) decision making, patient education and rehabilitation, how to use the health care system and select insurance or a provider, and peer-group support. The nature of CHI can be economic, technical, logistical and/or qualitative. It is available in health care settings as well as such locations as homes, schools, libraries, work-sites, stores and other arenas open and accessible to all. To be effective, CHI must be tailored to the interests, literacy, language, cultural background, emotional state and desires of its user. From the standpoint of providers of CHI, effectiveness may be measured both by how rapidly and completely desired messages are communicated and by how completely changes in behavior occur. Ultimately, for both producers and consumers of CHI, effectiveness will be measured by individual and population improvements in health status and quality of life.”³

A 2007 interpretation of consumer health information may be diluted from its earlier intentions. At present, consumer health information is perceived as something

that the consumer initiates on one's own, finds on the web, in a library or bookstore, hears on the radio, or watches on television. One population caught in the information gap, which does not traditionally use the Internet, or actively look for their own health information is the senior population.

One noticeable problem that this presents is proof of the physician's awareness of the need to select and distribute appropriate materials to their patients and caregivers. While the web is currently replete with consumer health information materials, and it is readily available in print in settings such as public libraries, hospital libraries, and bookstores, there are consumers on the periphery who are left out and do not know how to seek consumer health information on their own, or those who prefer to receive the information directly from their physician.

"If we are to prepare for the increasing need for mental health services among older persons and to ease the burden of disability associated with depression, we must engage primary care practices as partners in developing services that interrupt the pathway from depression to death."⁴

1.1.1 Information mandate: inpatient versus outpatient treatment

Standard PC.6.10 of the *Comprehensive Accreditation Manual for Hospitals*, set forth by the Joint Commission on Accreditation on Healthcare

Organizations, addresses the mandate that patients in hospitals, or inpatients, “must be given sufficient information to make decisions and to take responsibility for self-management activities related to their needs.” The mandate continues, “Patients and, as appropriate, their families are educated to improved individual outcomes by promoting healthy behavior and appropriately involving patients in their care, treatment, and service decisions.”⁵ However, stringent accreditation standards are not employed in outpatient settings. Patients are left to assume a greater degree of responsibility for their own health information and education needs when they are seen by their physicians on an outpatient basis. While large-scale studies such as the *Pew Online Health Search 2006*, indicate that 80% of today’s society self-seeks healthcare information on the internet,¹ a more significant question is, “What information does a physician give to outpatients and family members in order to educate them about their specific illness?”

This study will examine the consumer health information-seeking behaviors of physicians by identifying a specific population of senior consumers, and by investigating the steps their front-line outpatient caregivers (primary care or family practice physicians) take in order to make sure their patients have the information they need to understand their illnesses and to take part in a shared decision making process with regard to their treatment. The senior population with mood disorders has been selected for two reasons. First, senior citizens are a major demographic in today’s society. Second, access to populations of both primary care physicians and family practice physicians who are affiliated with the world-class center of care for elderly depressed patients and their caregivers is available at the University of Pittsburgh.

Charles F. Reynolds, III, M.D., Director of the Advanced Center for Intervention and Services Research (ACISR) for Late-Life Mood Disorders located at Western Psychiatric Institute and Clinic in Pittsburgh, PA, stated with co-author Dr. David Kupfer in a 1999 article:

“Geriatric depression is widespread, affecting at least one of six patients treated in general medical practice and an even higher percentage in hospitals and nursing homes. Depression in later life has serious consequences, including patients’ and caregivers’ distress, amplification of disability associated with medical and cognitive disorders of later life, increased health care costs, and increased mortality related to suicide and medical illness.”⁶

By first understanding the information-seeking behaviors of the patients and their caregivers, it will be more realistic to know what to expect the physicians should be providing when they are offering information to their patients.

1.1.2 Health information-seeking behaviors of seniors

Does old age have a start point? Who is the geriatric patient? In their chapter on *Interviewing the Geriatric Patient*, Coulehan and Block point out that “the approach to older persons is individualized and geared to the patient’s life experience, without making rigid classifications based on chronologic age.”⁷ An illustrative example of their point follows in this brief introductory clinician-patient interaction:

Clinician: So how are you?

Patient: Okay, I guess. I guess it’s just old age.⁷

What about old age? In this instance, the patient was 88 years old. Coulehan and Block ask the clinician to consider the possibilities if this patient were actually 78, 68, or 58 years old, making the same statement. Older persons may attribute symptoms to “normal aging” and may require further clinician prompting in order to gain an adequate physiological (or mental) assessment.⁷

Furthermore, the National Institute of Aging’s publication, *Working with your older patient, a clinician’s handbook*, emphasizes that what might be unimaginable circumstances under which a 40-year old might live “may be fine for a 90-year old.”⁸ Direct communication with a person and his or her caregivers is the key to understanding the expectations of others.

For the purposes of this study, old age, “older,” “senior,” or “elderly” refers to patients 65 years of age or older.

Ybarra and Suman who traced sex and age differences in use of internet health information behaviors have found as a result of their Internet searches:

- Almost 84% of seniors felt more comfortable with information given to them by a health provider;
- Over half of this population contacted a health care provider;
- 40% actually tried to diagnose their own problems with this information;
- One-third sought support from others;
- Just over a quarter of this population tried to treat the health problem on their own.⁹

It should be noted that Ybarra and Suman’s senior population ranged in age from 60 to 97 years of age.

A 2005 report published by the Kaiser Family Foundation on *e-Health and the Elderly* along with a 2004 study conducted at three urban primary care clinics by

Dickerson, et al, concur that roughly 20% of seniors age 65+ have used the Web to seek health information.^{10, 11}

The 2006 *PEW Online Health Search* report mentions that 48% of health information searches are on behalf of someone else (friend or family member).¹ While this factor cannot be directly tied into the fact that younger generations are performing health information searches for their elder family members or friends, an interesting correlation to this assumption is noted in the Findings section of this study.

1.1.3 Consumer health information-seeking behaviors of physicians lacks significant research

A seminal article about physician information-seeking appeared in the *Annals of Internal Medicine* in 1985.¹² The study, entitled, "Information needs in office practice: are they being met?" investigated physician access to information during the time spent with patients. Overall, only 30% of physicians' information needs were met during the patient visit, usually by consulting another physician or other health professional. The reasons print sources were not used included the age of textbooks in the office, poor organization of journal articles, inadequate indexing of books and drug information sources, lack of knowledge of an appropriate source, and the time required to find desired information. This study posed an obvious, yet important, message: Better methods are needed to provide answers to questions that arise in office practice.

Since the 1985 study was published, roughly 54 studies in 22 years have addressed information-seeking behaviors of physicians in a scholarly fashion. (Six studies have examined information-seeking on behalf of their patients.) Most

information-seeking behavior studies of physicians have focused on the physician's search for clinical information. Comprehensive qualitative research that examines physician's behaviors and attitudes towards CHI are beginning to surface in the LIS literature.

The premise of this article has resurfaced as conclusions drawn from this study indicate a perpetual "elusiveness" of what resources, technical or otherwise, are available in the clinical office setting and what is consistently used to educate a patient during an office visit.

1.2 SIGNIFICANCE OF THIS STUDY

Past patterns of information research suggest that information retrieval models have given way to information-seeking models and more qualitative approaches to understanding information behavior.

1.2.1 What is a model?

A model is a "flow chart that describes a series of steps through which individuals progress to seek information."¹³

As with any model, an information-seeking behavior model helps to *visualize* a user's (physicians') thoughts and actions when the user (physician) is faced with a need for information.

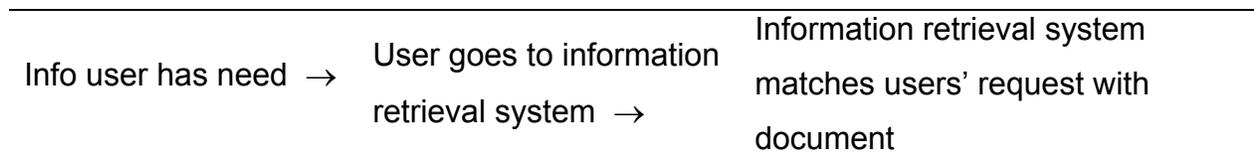


Figure 1.1: Sample linear model

Models are well-liked educational drawings usually because they are simple. However, a model is not always a linear progression, such as the example above. A more “fluid and nonlinear model” that provides “feedback loops” is suggested to be a more appropriate, more dimensional description of the information-seeking process.¹³⁻¹⁶

Information-seeking behavior models that have risen from LIS research have traditionally been constructed to show researchers', academics', or other professionals' pursuit of knowledge which leads to the production of new knowledge.¹⁷ While some studies allude to physician's consumer health information knowledge, no consumer health information-seeking behavior model exists. Thus, a new concept that will help us visualize a physician's stake in the active and ongoing process of health education with their patients is needed. The components of a CHI-seeking behavior model can be a template for the physician's role in their patient's health care delivery experience originally defined in the 1995 Federal government perspective on consumer health information.³

1.2.2 Why are models important?

- Medical educators use models to help teach physicians from the beginning, areas of information awareness
- Physicians use models to build awareness of their own behavior

- Information professionals use models to develop information-seeking and retrieval processes for this group

1.3 RESEARCH QUESTIONS

This study attempts to uncover the consumer information-seeking habits of primary care physicians who see large populations of elderly depressed patients.

1. How are these physicians searching for consumer health information?
2. How are physicians responding to health information requests from their patients or caregivers?
3. Can a model of physicians' consumer health information-seeking behaviors that is significant for the medical, LIS and informatics professions be constructed?

1.4 LIMITATIONS

This is an attempt to create a new information-seeking behavior model. While it is suspected that physicians' consumer health information-seeking behaviors differ from their clinical information-seeking behaviors, there is no guarantee that the results of this model will show unique or newly identified habits.

A second limitation may be the homogenous sample of physicians selected for this study. While the study was designed to investigate a sample of primary care

physicians who care for and treat elderly depressed patients, the qualitative interpretations gained by this study have made it clear that subsets of primary care physicians exist even within this seemingly narrow group. The study shows that information behaviors of primary care physicians from large urban, multi-campus university settings vary from those of smaller academic settings which vary again from non-academic settings and yet again to rural settings.

Similarly, while health information-seeking behaviors of Americans as a whole have been substantially studied and documented over the past five years, the data pertaining to the elderly population does not provide a broad spectrum for general assumption of all senior citizen's (age 65+) internet or e-health activities.

1.5 DEFINITIONS OF TERMS

Elderly, older, senior, aged - For this study, “elderly,” “older,” “senior,” or “aged” refers to patients 65 years of age or older.¹⁸

Clinical Information – information involving or concerned with the direct observation and treatment of living patients; applying objective or standardized methods to the description, evaluation, and modification of human behavior.¹⁹

Consumer Health Information (CHI) – “. . . any information that enables individuals to understand their health and make health-related decisions for themselves or their families. This includes information which supports individual and community-based health promotion and enhancement, self-care, shared (professional-patient) decision making, patient education and rehabilitation, how to use the health care system and select insurance or a provider, and peer-group support. The nature of CHI can be economic, technical, logistical and/or qualitative. It is available in health care settings as well as such locations as homes, schools, libraries, work-sites, stores

and other arenas open and accessible to all. To be effective, CHI must be tailored to the interests, literacy, language, cultural background, emotional state and desires of its user. From the standpoint of providers of CHI, effectiveness may be measured both by how rapidly and completely desired messages are communicated and by how completely changes in behavior occur. Ultimately, for both producers and consumers of CHI, effectiveness will be measured by individual and population improvements in health status and quality of life.”³

Information-Seeking Behavior (ISB) – a term used to describe how humans seek, organize and use information. Library and Information science is a leading discipline in conducting research in order to understand human information-related behaviors.²⁰

CHI-SB – Consumer Health Information-Seeking Behaviors

IS – Information Sciences

LIS – Library and Information Sciences

Model - a description or analogy used to help visualize something (as an atom) that cannot be directly observed.¹⁹

- “a flow chart that describes a series of steps through which individuals progress to seek information.”¹³

ISB Model – a visualization of the information-seeking behavior process; a diagram, drawing, or chart.

PCP – Primary care physician. Includes internal medicine or family medicine physicians.

NP – Nurse practitioner.

2.0 REVIEW OF THE LITERATURE

A review of literature is included to demonstrate the progression of health information-seeking behavior studies on several levels. ISB of (1) seniors and of (2) physicians were examined to note methodological strategies, data collection techniques as well as any descriptive or prescriptive analysis that could be drawn. A third sorting of the literature separated those studies that produced quantitative or descriptive data versus qualitative, or prescriptive, data which may have included a visual model of information-seeking behavior.

2.1 LITERATURE REVIEW METHODS

In order to synthesize the information-seeking behaviors of physicians who treat elderly depressed patients and to further develop a model of physicians' consumer health information-seeking (CHI-seeking) behaviors, a review of the literature of the following topics was performed and compared:

- a. the CHI-seeking behaviors of seniors;
- b. the CHI-seeking behaviors of physicians;

- c. information-seeking behavior studies that employ qualitative methods of data collection in order to formulate models of information-seeking behavior;

Lastly, literature that supported a grounded theory methodological approach for the study and implementation of a consumer health information-seeking behavior model was searched and evaluated.

MEDLINE[®]; Cumulative Index of Nursing and Allied Health Literature (CINAHL[®]); Ageline[®]; PsycINFO[®]; Library & Information Science Abstracts (LISA[®]), Library Literature & Information Science; Library, Information Science & Technology Abstracts (LISTA[®]) databases, as well as the Scopus[®] database, were searched for scholarly literature.

2.2 INFORMATION-SEEKING BEHAVIORS OF OLDER AMERICANS

Health information-seeking studies are conducted by a range of professionals from nurses to sociologists to academic librarians. The literature cited in this review is a reflection of the interest groups and researchers who have stock in reporting how information is used, by whom and for what purposes, and what such trends may mean to the marriage of consumer health information, its availability to specific user groups, and the influences made by and received from information sciences professions.

According to the 2006 version of the Pew Internet Online Health Search report, 10 million American adults looked for health information online in a typical day.¹ The report identified the American adult as the age group consisting of 18 – 65 year old persons. Less than one-third of the age 65 and older population, however, had ever

been online seeking general information,¹¹ while even less sought health information online. The literature indicated that that the majority of this population who had been studied so far was unlikely to use the Internet as their first source of health information. The Kaiser Family Foundation's 2005 large-scale national survey of seniors reported the trends of how seniors are using the web in order to seek health information.¹¹ Seniors' online behavior had not been studied as closely as that of other age groups. Key findings of this nationally representative sample of 1,450 adults age 50+ (including 583 respondents age 65+), suggested that less than one-third of seniors age 65+ had ever gone online to use the Internet. Only one percent of those patients 65+ said a physician had recommended a health or medical website.¹³ While senior Internet users are likely to increase as the baby boomers enter this age category (they are already big users of the Internet), those who are not presently online probably will not be inclined to change.¹¹

Ybarra noted that "age-specific lifestyle trends" (for example, middle-aged adults who were becoming caregivers for their older parents as well as being caregivers for their children) along with usual health status and disease risk change as one grows older. These trends and changes were likely to influence the health information sought on the Internet by these age-specific groups.⁹ Data gathered from a larger study, *The Digital Future Report, Surveying the Digital Future, Year 4*,²¹ a nationally representative quantitative telephone study (which included 159 respondents age 60-97 years old) showed that almost two-thirds of the users reported their reason for using the Internet to find health information was for themselves or for a loved one. When asked if they were satisfied with the information they found, two-thirds said that they were satisfied, but

almost one-third of the group wanted more information but did not know where to find it. More importantly, almost one-quarter of the 60-97 year old population reported that the process took a lot of effort. And, as previously noted, as a result of their Internet searches, almost 84% of this population felt more comfortable with information given to them directly by a health provider.⁹

The Kaiser Family Foundation (KFF) survey further pinpointed divides among senior groups based on demographics including income, education levels, age and gender: Seniors with higher household income and higher education levels tended to have been online more than those with lower income and education levels. Older seniors (75+ years) were less likely to have been online than 65-74 year old seniors. Senior men were more likely to have been online than senior women.¹¹

Flynn's 2006 study (with data gathered from surveys of the Wisconsin Longitudinal Study, predominately white respondents aged 63-66 years) reported parallel findings that seniors with more education and who were open to new experiences were more likely to use the Internet to look for health information. "Health-minded or otherwise anxious" individuals generally used the Internet to get information before a doctor's visit. On the other hand, those individuals who were sicker used the Internet to get information following a doctor's visit.²²

The KFF survey indicated that many seniors do not trust the Internet for health information and have stated that they have not found the Internet helpful. Traditional media such as television, newspapers, magazines and radio were still among the more likely places seniors turned for health information.¹¹ The 50-64 year old group used the

Internet above the other media types, so a trend is about to shift as the 50-64 year-old group ages into the 65+ age group.

The literature revealed that seniors were not using the Internet to look for Medicare information.¹¹ One-third of the senior respondents in Flynn's study had searched for information about their own health or health care. Half searched for health information that was not related to their last doctor visit. One-third searched for information after a doctor visit while one-sixth searched for information before a doctor visit.²² Seniors reported that their physicians do not encourage them to use the Internet for health information. Of seniors surveyed who have ever gone online, the most popular topics searched include (in this order) prescription drug information, nutrition/exercise issues, cancer, heart disease, arthritis, high cholesterol, Medicare, diabetes, health policy, health providers, alternative treatments, health insurance, osteoporosis, mental health, Alzheimer's Disease, and Medicaid.¹¹

Further literature illustrating a digital divide, or indication of a gap of internet use between the senior population and the younger generations, is evidenced in studies by Ybarra, Flynn, Meischke, Wicks, Dickerson, Robb, and Williams.^{9, 10, 22-26}

A second fact that compounds the digital divide in access to Internet services (and its corresponding health information) is illustrated by Lorence's study of education disparities and seeking health information. If we look at seniors 65+ exposure to and educational opportunities related to modern technological systems, the following is true for the degree of seniors' technological education:

“Web search activity is still constrained by a digitally underserved group, determined in part by level of education, the persistence of which effectively limits the full benefit of a proposed national health architecture to the least

educated, and most need, population. This exploratory study highlights the need for health information technology designers to differentiate and delineate information-seeking behaviors, and promote desired behaviors, across targeted health care subgroups."²⁷

2.2.1 Behaviors of Caregivers

Feltwell and Rees study the partners of men with prostate cancer. The men felt shock after the initial diagnosis which barred them from choosing proper coping tactics, such as searching for educational information. Some of the partners of these men stepped into the information-seeking role for the men.²⁸ This set the stage for the researchers to examine both information-seeking and information-avoiding behaviors of the partners.

Six couples took part in this pilot study, with the men's median age of 67 years. Some partners sought information directly about prostate cancer while some partners sought information to for their feelings of uncertainty and anxiety. Some partners described a conflict they experienced between wanting to avoid information versus wanting to have information about her husband's condition so that she could care for him. The authors discuss the three themes which stemmed from this study: partners' information-seeking behaviors; partners' information-avoiding behaviors; and their conflict between seeking and avoiding information.

Innovative and interesting ways of reaching the senior population with understandable health information need to continue to be developed. Senior friendly web sites, while noble, are not the answer for this segment of the population. Included is a list of premier health web resources designed specifically for seniors (Appendix A). While the resources are impressive and complete, research needs to continue in order

to fill the void felt by four-fifths of the senior population who never sees these web sites. Furthermore, West and Miller point out that the pamphlets and educational materials of some public health entities are sometimes too complicated for their targeted populations, thus illuminating the fact that 5th-grade reading level Americans, on average, cannot comprehend health care information (which is written at an average 10th-grade level or higher).²⁹ In a separate study of public versus private care websites, Miller and West point out in their study that when seniors use the internet, because they are less likely to have computer skills or own a computer at all, they are more likely to access the Internet at a senior center or at a public library. These institutions may, in turn, be more likely to steer seniors toward public rather than private sector web sites for some services and health information.³⁰

2.3 INFORMATION-SEEKING BEHAVIORS AND MODELS OF ISB IN THE HEALTH SCIENCES

Clinical information-seeking behavior studies that have been conducted over the past decade *describe* physicians' use of knowledge resources range from a pool of common resources.³¹⁻⁴⁷

1. They use printed information such as textbooks, journals and journal articles, pamphlets, and pharmacological product inserts in hard copy.
2. They use electronic or digital media, including online or electronic textbooks, databases, journals and websites, audiovisual materials.

3. They use human resources such as colleagues or others knowledgeable in a field of expertise via the telephone, in person, or through some electronic mechanism.

Detlefsen's keen 1998 observation on information behavior by health and life scientists states that "most of the literature (in health sciences information-seeking behavior) is *descriptive* rather than *prescriptive*."⁴⁸ Simply put, ISB in the health sciences was more quantitative, or descriptive in nature, rather than qualitative, or a "social mapping" of health scientists' information characteristics, needs, and interpretations of use. To date, despite this straightforward observation, little noticeable change has occurred in the information-seeking behavior research of the health science professions.

Interviews and observations are classic qualitative research methods used to produce results that can suggest or imply behavior. By using solely quantitative methods, research loses a social and sometimes cognitive aspect of behavior that we will see is necessary when defining a model of information-seeking behavior.

Results have shown that qualitative research is appropriate to studying information-seeking behavior for several reasons.⁴⁹ Investigators work to uncover *characteristics* of "everyday life" of those being studied. Once investigators identify the facts or characteristics of individuals, they try to understand the *needs* that accompany the characteristics of information-seeking behavior. When investigators understand these needs with which the individual struggles, they can better understand the *meaning* or value the user places in the information. Ultimately, when investigators have a better understanding of the individual's information characteristics, needs, and value, efforts can go forward to design effective information systems."⁴⁹

2.3.1 Information-seeking behavior models

Information behavior models have traditionally come from research performed in the social sciences, in particular, the study of social scientists. Some of the early researchers of information behavior who developed standard or temporal models of information seeking patterns of researchers include Ellis, et al;⁴⁹⁻⁵² Leckie, et al;¹⁷ and Cogdill,⁵³ and Kuhlthau.⁵⁴

2.3.2 Ellis

By analyzing the information-seeking patterns of social scientists, Ellis initially constructed a behavioral model to provide recommendations for the design of an information retrieval system.⁵⁰ Using Glaser and Strauss' grounded theory approach, Ellis employed a semi-structured interview method to gather information. This method ultimately shaped the theory of the basic characteristics of the social scientists' information-seeking habits. Grounded theory is, essentially, the discovery of theory from data.⁵⁵ Glaser and Strauss confirm that grounded theory "provides us with relevant predictions, explanations, interpretations and applications."⁵⁵ Therefore, Ellis' method of semi-structured interviews of social scientists enabled him to identify six characteristics of the researchers' information-seeking habits.⁵⁰ The six major characteristics identified in the information-seeking patterns--starting, chaining, browsing, differentiating, monitoring and extracting--are described in relation to retrieval

system facilities, and the possibility of implementing an experimental system in a hypertext environment is considered.

Using a similar methodology, Ellis furthered his investigation examining academic physicists and chemists and found similar information-seeking habits with the addition of two patterns of verifying and ending.^{49, 52}

In 1997, Ellis again used a behavioral method to model information-seeking patterns of industry research engineers and industry research scientists. By examining various phases of the researchers' activities, a model of eight major characteristics of information-seeking was derived. The patterns of the model included surveying, chaining, monitoring, browsing, distinguishing, filtering, extracting, and ending.⁵¹ While Glaser and Strauss's grounded theory approach was used, Ellis favored a "naturalistic inquiry" methodology including semi-structured interviews of the scientists to gather data.⁵¹

2.3.3 Leckie, Pettigrew and Sylvain

Leckie, Pettigrew and Sylvain generalized ISB of a range of professionals which included engineers, health care professionals and lawyers. Their model is drawn on previous research which parses the *work roles, tasks, and characteristics of information needs* (of each of the various professionals) which ultimately affect the users' *awareness* of information, the users' *sources* of information, and the *outcomes* (results) of the information-seeking process.¹⁷

2.3.4 Cogdill

A nurse practitioner (NP) is a nurse with advanced training, usually a master's or doctoral degree, and can perform many of the duties of a physician, in many states, without the authority of a physician. Most NPs have the authority to prescribe medications.

Cogdill's 2003 study examined the information-related behaviors of nurse practitioners, a demographic of "clinicians responsible for an increasing proportion of primary care."⁵³ Cogdill states that one might suspect the ISB of physicians might match those of nurse practitioners, given the similarities in responsibilities of NPs and primary care physicians. However, differences in education and training methods between NPs and physicians can prove to initiate varying behaviors.⁵³

Two methods of data collection were used. The first phase included a questionnaire sent to 300 randomly selected NPs in the state of North Carolina. The second phase consisted of interviews of twenty NPs who volunteered from a recruitment question contained with the initial 300 questionnaires.

Cogdill interviewed NPs immediately following an encounter with a patient to determine information needs that were resolved during the patient encounter and those that were not resolved during the patient encounter. Participants were interviewed a second time at the end of that day to see how and if unresolved information needs were pursued after the patient had left.

While questionnaire results were analyzed with SAS statistical software, interview data was reported with the use of SUDAAN statistical software. The category of needs, however, or, the information needs identified by the participants were

inductively identified after the data was analyzed. While the study ultimately presents three information themes: information needs, information-seeking and use of information resources, Cogdill presents a temporal model, or a model of information behavior “at that time” for information-seeking, the only behavioral-based result of the data gathered. The data suggests a mode of information-seeking by a NP during a patient encounter and how it may fluidly follow suit following a patient encounter.⁵³

2.3.5 Kuhlthau

Kuhlthau accounts the users’ perspective in a more personalized manner by observing not only physical and a cognitive processes, but also affective processes, or the feelings experienced by searchers, to model the process of information seeking. The Information Search Process (ISP), is “the users’ constructive activity of finding meaning from information in order to extend his or her state of knowledge on a particular problem or topic.”⁵⁴ The user’s sense-making process model, which includes physical, affective and cognitive feelings, is incorporated with the information seeking model. Kuhlthau continues with a hypothesis that information seeking is a process that begins with uncertainty and anxiety;⁵⁴ that cognitive uncertainty yields emotional uncertainty.

2.3.6 Descriptive versus prescriptive ISB literature on health and life scientists

Leckie and colleagues and Cogdill employed descriptive qualitative methods of data collection and analysis to create models of information behavior. The research focused on the user more than that of the system. Ellis' studies reflect the use of grounded theory qualitative analysis of a more prescriptive nature. Kuhlthau's early ISB studies were primarily qualitative explorations with later studies including mixed qualitative and quantitative methods.

Recent literature reveals that health sciences ISB research has employed more quantitative methods of data collection and analysis. While the work is categorized as information-seeking behavior, it is more system-focused than user focused. Researchers who have studied health sciences clinicians seem to have "stepped out of" the social science literature altogether and have approached health sciences ISB in a more clinical or quantitative approach. Information-seeking behavior in the health sciences appears to have lost or been lacking a qualitative approach more commonly and prescriptively used by social science researchers. While original ISB model research was conducted in the social sciences, developed from literature of the social science indexes, and published in social science journals, a review of the literature shows that health clinicians' ISB research (primarily performed by medical librarians) has been developed from clinical perspectives with quantitative approaches to their research. Sources used for characterizing the information-seeking behaviors of health scientists appears to have been searched from medical or clinical indexes, and has therefore, been published in clinical journals, often more quantitative in nature.

In a 1999 account of models in information behavior research, Wilson notes the early complaints (from the late 1940s through the 1980s) that information behavior researchers had not “built upon prior research in such a way as to cumulate a body of theory and empirical findings that may serve as a starting point for further research.”⁵⁶ Wilson goes on to suggest that one of the reasons for this situation is the use of quantitative research methods, which are “inappropriate to the study of human behavior.”⁵⁶ Things were “counted” which held few insights to the value of theory development. Information science researchers seem to have “ignored allied work in related areas” which could offer “theoretical models of human behavior.”⁵⁶

Wilson notes a change, however, in the past ten to fifteen years (prior to 1999), that more and more qualitative methods are being used in the information sciences that are more appropriate to studying human behavior and are “more likely to find theories and models in the social sciences that can be applied to the study of information behavior.”⁵⁶ He goes on to note that the models put forth by Ellis, Kuhlthau, and others have “gained strength” as they are being used as the foundation for further investigation.”⁵⁶

Wilson’s comments about the lack of qualitative research in the information sciences through much of the 1940’s through the 1980s are a strong basis for the parallel lack of qualitative research in health sciences information behavior research. Health sciences information research is a niche within the IR realm that needs to catch up from within and begin to produce the types of relevant human behavior research initially designed in the social science models. The quantitative research (which is representative of more than 70% of recent information-seeking behavior research of

health professionals) is not based on personal behaviors. It is resource-based rather than person-based with statistics focused on trends and counting the resources used.

Cogdill explains that a clinician's (NP's) movement throughout an encounter with a patient may not always follow prescribed, sequential steps. His model, therefore, encompasses concerns of diagnosis, treatment, and patient education along the continuum.⁵³

2.4 A THEORETICAL FRAMEWORK

Ellis' significant article on the use of a grounded theory approach for modeling the information-seeking behaviors of academic researchers was a baseline synthesis of literature and further justification for the qualitative approach in this research discipline.⁴⁹

Ellis emphasizes Wilson's argument for using qualitative research for information-seeking behavior because of its usefulness in helping to uncover facts of everyday life of those being investigated; because when the facts help researchers understand user needs; because when users are better understood, researchers better understand the user's meanings of information; and because of all of the above, researchers can design better information systems.^{49, 57}

Generation of a theory is not exclusive to just the conclusion of qualitative research projects.⁵⁸ Glaser and Strauss "readily accept the role of theory to help predict and explain, but for them such theory is a function of induction based on observation

and data analysis.” Glaser and Strauss refer to this as ‘grounded theory’ – theory that is grounded in the reality of observed data.^{55, 58} In other words, theories and models arise from the empirical data in the absence of a predetermined conceptual framework. During the process of data collection, the researcher inductively builds categories and models from the data.⁴⁹

2.5 RELEVANCE OF GROUNDED THEORY TO THIS STUDY: (1) SAMPLE SELECTION, (2) METHOD, (3) ANALYSIS, AND (4) EXPOSITION OF THE MODEL

Sample: Ellis’ model development incorporated Glaser and Strauss’s theoretical sampling, meaning that Ellis’ samples were selected on the basis of developing conceptual requirements. His samples were selected based on the intent of comparing between information-seeking behaviors of social scientists and scientists and humanities researchers.⁴⁹ For example, primary care physicians were selected for this dissertation study, because of the interest in comparing the consumer health information-seeking behaviors with clinical information-seeking traits in order to develop a new model of consumer health information-seeking behavior.

Method: Ellis repeats Wilson’s notion that “the ideal or root method of research is observation” and that indirect observation, or interviews may be used instead.^{49, 57} In the case of physicians, because information-seeking is so tied in with the all daily activities, observation would not be as practical as asking a set of similar questions to all participants by the use of a semi-structured interview tool.

Analysis: constant comparative method.

1. Comparing incidents applicable to each category.
2. Integrating categories and their properties in order to create a model: Ellis remarks that this is the most “creative and intellectually demanding part of the researcher’s task.” “The model will organize the features of the data in a coherent form that relates to the perceptions and concepts of those studied and to the viewpoint that the researcher is developing.” Ellis continues that the concepts or components of the model are not merely a restatement of the data, but the researcher’s embodiment of the perceptions and activities of the model in a way that allows them to be understood in other terms.”⁴⁹
3. Defining the theory.
4. Writing the theory.

Exposition: “selecting examples from the transcripts to illustrate in a concrete form the abstract features of the model.”⁴⁹

2.6 SUMMARY OF THE LITERATURE

A review of the literature indicates there is a need to know more about information-seeking habits of physicians. It is important because results will yield enhanced consumer health information-seeking behaviors for not only physicians and medical faculty, but for health care workers, medical librarians, public librarians in knowing how

to better serve both sides of the consumer health information equation: clinicians AND consumers.

In 1976, Roberts touted the importance of looking at social affects when defining information sciences by focusing on the needs and information-seeking activities of individuals. He stated that “expressions and observations of individuals in ‘information situations’ have a crucial role to play both in the resolution of practical problems and the formulation of theories.”⁵⁹ Even thirty years ago, there was unwillingness of information scientists to accept the fact that IS was a social discipline. He continues, IS methodologies “are those of social sciences where consideration of the individual cannot be excluded.”⁵⁹ In the context of this current study, the library and information sciences field grants an opportunity to research not only the provision of research of patients, but the steps (information-seeking behaviors) that physicians take to provide information to their patients.

3.0 METHODOLOGY

The premise of this dissertation was to provide a model of consumer health information-seeking behaviors of primary care physicians who treat older adults and their caregivers. In order to use the model as an aid for educating physicians, medical students, LIS and informatics specialists, having the tools to gather the logical information for the model would be required.

Theory of data collection shaped the methods used to acquire information for this study in three general modes.

3.1 GENERAL METHOD

Using a grounded theory approach similar to that used in Ellis' ISB model research of 1989, 1993 and 1997,⁴⁹⁻⁵² data was collected through personal interviews with Pittsburgh-area primary care physicians who see large numbers of elderly patients in their practices, together with environmental scans of their practice spaces and their responses to a standardized questionnaire on their confidence in using consumer health information with their patients. Glaser & Strauss' "constant comparative method"⁵⁵ helped lead to a generation of theory about the physicians' common ISBs from the

empirically collected data. Ellis highlighted what Glaser and Strauss' grounded theory approach emphasized

“the generation of theories and models inductively from empirical data and provided a methodological foundation for attempting to derive the kind of information about social scientists' information-seeking patterns that could be used as the basis for deriving a more accurate model of such behavior and that could, in turn, be used as the basis for making recommendations for information retrieval system design.”⁴⁹

With this in mind, use of a naturalistic inquiry method inspired by Ellis⁵¹ was used to synthesize the use of grounded theory approaches and related methodological issues for the specific purpose of creating an ISB model of primary care physicians who treat elderly patients, and, in turn, will be used in the future to educate clinicians and develop further information-seeking skills of medical students, interns and residents who are training to become better information providers for their patients.

3.2 SPECIFIC PROCEDURES

Data was gathered in three modes.

(1) Semi-structured interviews

Physicians were interviewed individually. The interview included a structured and semi-structured list of questions as proposed by Patton⁶⁰ and employed again by Ellis.⁴⁹ (Figures 3.1 and 3.2) Dee and Blazek's application of a case study of a small sample of rural physicians adds insight to the data collection procedure while meeting with physicians in their offices.⁴⁰ While some interviews were digitally audio-recorded,

not all physicians consented to this method of data collection. So, instead, detailed answers that were coincidentally being taken on a paper survey form were transcribed and codified using qualitative research software, Atlas.ti™. Codes were subsequently authenticated and adjudicated by means of the Coding Analysis Toolkit, currently in development at the University of Pittsburgh’s Qualitative Data Analysis Program, under the direction of Dr. Stuart Shulman. (<http://www.qdap.pitt.edu/cat.htm>). Full details of the coding analysis can be viewed in Chapter 5, Section 2.

Table 3.1: Semi-structured interview questions

I. Practice interests	
1	How long have you been practicing primary care/family care medicine?
2	How did you decide to practice this type of medicine?
3	How do you keep up-to-date with current primary care/family care medical information?
4	How often do you act on keeping up-to-date with current literature?
5	How do you keep up-to-date with patient education materials and consumer health information?
6	How do you approach the task of incorporating a topic in an area about which you know nothing about, in general?
7	Comments:
II. Characteristics of Information Use	
1	What are the main sources of information for your practice?
2	Are any sources more important than others?
3	What makes one source more important than another source?
4	Which are the most important types of information sources?
a	<i>Books (electronic/hard copy)</i>
b	<i>Journals (electronic/hard copy)</i>
c	<i>Reports (electronic/hard copy)</i>
d	<i>Conference proceedings (electronic/hard cy)</i>
e	<i>Newspapers (electronic/hard copy)</i>
f	<i>Online Resources (includes MDConsult[®], UpToDate[®], MEDLINE[®], MedlinePlus[®], credible websites)</i>
4	Which of the above resources do you employ during the time you spend with a patient?
5	How do you decide when you have reached enough information and you can stop searching?
6	What is the most difficult problem you experience in looking for information and/or keeping up-to-date, especially with consumer health information?
7	Comments:

III. General	
1	Have you ever used what we call consumer health “megasites” or consumer health information portals such as MedlinePlus [®] , WebMD [®] , NOAH, Intelihealth, healthfinder.gov, CDC website, a university health library system’s consumer health information web pages?
2	Have you found this/these resources useful?
3	Do you ever recommend particular websites to your patients?
4	Do you recommend specific health websites to your patients or to their caregivers?
5	Would you consider giving information created from within your practice, or from within ACISR (UPMC) to give to your patients?
6	Comments:

Table 3.2: Personal demographics section of survey

IV. Personal Demographics	
1	What is your age?
2	In what year did you receive your medical degree?
3	M.D. or D.O.?
4	Male or Female
5	What is your undergraduate degree?
6	Any other graduate degrees?
7	Do you have a computer at home?
8	Do you have children using a computer at home?
9	Do you have seniors using a computer at home (parents, in-laws, etc.)?
10	When you were in medical school, how did you research topics?
11	When you were in medical school, did you have access to online resources?
12	When you were in medical school, where did you study most? Home, library or other?

(2) Environmental scans

As each physician was interviewed, an environmental scan was performed and a checklist of noteworthy issues was kept with the interview script. The scan included personal evaluation of the physicians’ clinical or office space for evidence of information technologies and formats based on a preconceived checklist (Table 3.3). The environmental scan permitted time and opportunity for an inventory of the physician’s primary practice environment and to take notes with or without the need to ask specific

questions. A standard checklist of information-seeking materials, equipment or devices was used in all interviews/scans.

Table 3.3: Environmental Scan Inventory

y/n/declined	Office items	Comments
	Electronic Equipment	
	Computer	PC Mac laptop desktop speakers microphone
	Palm, Blackberry, etc.	
	MP3 player, iPod	
	Printer	
	Scanner	
	FAX	
	Photocopier	
	Cell phone	Blue Tooth capable
	Blue Tooth equipment	
	Electronic Resources	
	Internet access	Personal access Institutional access
	MDConsult	Personal access Institutional access
	FirstConsult	Personal access Institutional access
	UpToDate [®]	Personal access Institutional access
	Clinical Reference System	Personal access Institutional access
	Krames	Personal access Institutional access
	Other:	Personal access Institutional access
	Browser	IE Firefox Mozilla Netscape Opera Other:
	Search Engine	Google [™] Yahoo! Other:
	<i>Bookmarks to:</i>	
	MedlinePlus.gov	
	University consumer health website	
	Paper (hard copy) resources	
	Pamphlets	disease condition pharmaceutical care facility other:
	Hanging files	newspaper clippings journal articles other:
	Textbooks	professional level consumer level other:
	Consumer health information	specific texts brochures web print-outs other:

(3) Self-evaluative confidence scale

A physician-patient communications scale (Table 3.4), based on work done by Ashbury, et al,⁶¹ was used to show physician's self-reported confidence levels when providing consumer health information (CHI) resources to patients and/or their caregivers. Physicians' understanding of their personal interaction style with patients

regarding the patient’s and/or caregiver’s need for CHI will initialize a profile of the physician’s understanding of his or her own CHI-seeking behaviors.

Table 3.4: Physician Confidence Scale with Consumer Health Information

Communication Strategy	Confident: I do not really need to improve	Confident: but I believe I need to improve	Not very confident: believe I need to improve	Not very confident: not a priority to improve
a. Determining information-seeking options that will give you the best information to give to your patients and/or caregivers.	1	2	3	4
b. Helping your patients and/or caregivers cope with her or his worries by explaining aspects of depression to her/him in a manner that facilitates understanding.	1	2	3	4
c. Helping your patients and/or caregivers by giving them references to consumer health information resources (web sites, books, videos, etc.)	1	2	3	4
d. Explaining the possible benefits and risks to your patients and/or caregivers of the recommended reading information.	1	2	3	4
e. Conveying the importance to your patients and/or caregivers of having information about their condition.	1	2	3	4
f. Conveying empathy to your patient and/or caregiver regarding her/his diagnosis of depression.	1	2	3	4
g. Identifying and pursuing non-verbal cues given by your patient and/or caregiver.	1	2	3	4
h. Communicating effectively with your patient and/or caregiver even though you find her/him to be rather difficult.	1	2	3	4
i. Actively involving your patient and/or caregiver in the process of seeking adequate information.	1	2	3	4
j. Expressing your concerns and preferences about information resources for your patient and/or caregiver.	1	2	3	4

Adapted from Ashbury, FD, Iverson, DC, Kralj, B, *Physician communication skills: Results of a survey of general/family practitioners in Newfoundland*, Med Educ Online, 2001.6: 1. Modification approval from the author can be viewed in Appendix D.

3.3 RESEARCH POPULATION

The three specific procedures, structured interviews, environmental scans, and a self-evaluative confidence scale, took place with a purposive sample of physicians in large ambulatory primary care practices in urban Pittsburgh, Pennsylvania, who take care of large numbers of geriatric patients. Twenty physicians were interviewed from practices associated with the Advanced Center for Intervention and Services Research for Late-Life Mood Disorders (ACISR) at the University of Pittsburgh, as well physicians from the Department of Family Medicine at the University of Pittsburgh School of Medicine and The Western Pennsylvania Hospital, also located in Pittsburgh.

The University of Pittsburgh Medical Center's (UPMC) Western Psychiatric Institute and Clinic (WPIC) in Pittsburgh, Pennsylvania, is a National Institute of Mental Health (NIMH) Center of Excellence in Research and Treatment of Depression in Late Life. ACISR is charged with developing and testing new treatment methods for late-life depression, anxiety, grief and insomnia. Along with these clinical missions, the Center aims to train researchers and to disseminate information about the new treatments that work. While the Center's professional staff ranges from clinical, medical and program directors to nurse clinicians, therapists and geriatric psychiatrists, it is the primary care physicians who contribute to the research and who develop their clinical skills as the frontline team members as the clinicians most likely to first encounter elderly patients in a routine clinical practice.

3.4 DATA COLLECTION

Through environmental scans of their offices and interviews with these physicians who are affiliated with the ACISR, expected outcomes include a model of (1) common behaviors among this relatively homogenous group of physicians, and (2) how these physicians respond to their elderly patients and their caregivers with respect to the provision of consumer health information. A confidence-level survey was also implemented to assess the physicians' skills and personal comfort with consumer health information.

With the success of this project, data collection and analyses can be replicated across other physician specialties in order to gain a broader understanding of physician CHI-seeking behaviors in other medical disciplines.

3.4.1 Incentive for participation

Participating physicians were offered a \$25.00 gift card incentive to participate in this research. Ten of the twenty physicians interviewed accepted gift cards while ten donated the cost of the card back to the research study.

3.5 PILOT STUDY

A pilot study was conducted using the approved methodology in order to determine survey tool reliabilities.

3.5.1 Logistics of the pilot study

With assistance from Jeannette South-Paul, MD, (department chair), this methodology was piloted with three family medicine physicians who were recruited from the resident and attending physicians in the Department of Family Medicine at the University of Pittsburgh School of Medicine. Length of the pilot interviews averaged thirty minutes and included the personal interview (approximately twenty-five minutes), administration of the confidence-level survey (approximately five minutes), and a five-ten minute environmental scan of the clinical setting which took place during the confidence-level survey and continued independently by the researcher following the interview, when necessary.

After conducting three personal interviews, the researcher identified three redundant interview questions. It was determined that identical or overlapping data was being collected from three of the initial questions and that these questions could be eliminated without impacting the effect of the survey. The confidence-level survey, which was read and self-administered by the physician was understood by each physician and revealed no comprehension or context questions.

Barnes & Noble Gift Cards in the amount of \$25.00 were offered to each physician in the recruitment e-mail⁶² with the option to keep it for personal use or to

donate it back to the research study. Two physicians accepted the cards and one physician donated the card to the study.

3.5.2 Findings of the pilot study

Through environmental scans of their offices and interviews with these physicians who are affiliated with the ACISR, outcomes of the pilot include a preliminary model of (1) common behaviors among this relatively homogenous group of physicians, and (2) how these physicians respond to their elderly patients and their caregivers with respect to the provision of consumer health information. The preliminary model indicates three stages of information-seeking. (1) The *pre-patient visit* includes tasks such as listening to or reading current medical news that patients might be hearing, perusing websites that their patients (or their caregivers) may be familiar with, and looking for education materials on a case-based nature. (2) Information-seeking activities that occur *during the patient visit* primarily include reaching for the computer in the clinical office with the patient present and searching for a website or searching UpToDate[®] or MDConsult[®] for information to show the patient. Bulleted text and easy to read websites are preferred. During this stage, the physician gives the patient and caregiver website addresses written on a prescription pad to take home for further use. (3) Information-seeking behaviors which occur *following a patient visit* include website follow-up or notes to self in a palm or hand-held device to gather information at a later time or request a search from the library or an administrative assistant. Scans of the physicians' clinical environments revealed electronic equipment such as computers, hand-held devices and

electronic resources such as Internet access and use of MDConsult[®], UpToDate[®] or other specific consumer health resources were of particular interest. More obvious were textbooks, pamphlets, journals and wall hangings which were noted, in detail, in the environmental scan notes. Results of the confidence scale administered to the physicians during the pilot study showed confidence levels that ranged from *very confident need to improve*; to *confident but should improve*; to *not confident but should improve*. The majority of questions resulted in *confident but should improve*, thus initially indicating that although physicians are confident in providing information to their patients, they still feel that there is more to know about consumer health information.

3.5.3 The preliminary model

The preliminary consumer health information-seeking model of physicians interviewed during the pilot stage of this study begins by dividing the information-seeking into three stages described as a PDA, where the P is for Prior (pre-patient visit, anticipating a need), the D is for During (while patient is in office, direct question and answer session), and the A is for After (look at websites suggested by patients after patient leaves). (See Figure 3.1) *Practical uses* for a model of physicians' information-seeking behaviors include awareness and education. Awareness of trends of information habits can lead to awareness of one's own information needs and pursuits. Medical school educators instruct physicians in training, LIS faculty educate graduate library and information science students who, in turn as medical librarians, teach information seeking and retrieval methods to physicians. A synthesized behavior model can enhance this

educational process. *Finally*, a specific goal of this particular group of physicians (in Pittsburgh) is that if an understanding of the CHI information-seeking behaviors of this group of physicians is successful, then the ACISR can also create their own consumer health information materials based more precisely on their patients' and caregivers' information needs.

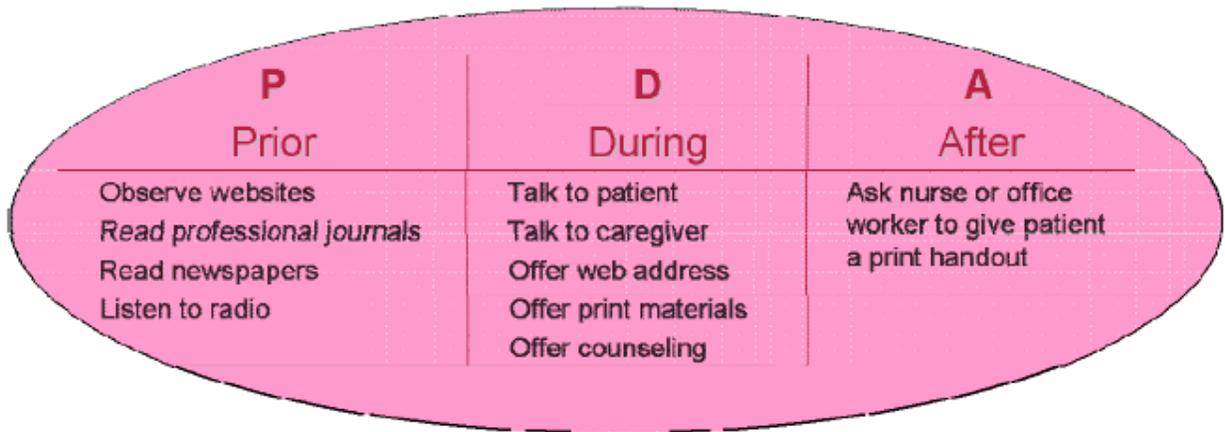


Figure 3.1: Preliminary CHI-Seeking Behavioral Model

3.6 DOCUMENTING AND CODING DATA

After each interview, data collected using each of the three instruments was recorded in Microsoft Excel® spreadsheets. First, the structured and semi-structured interview questions were transcribed from notes taken in survey sections I, II, and III and transferred into a data collection log in a Microsoft Excel® spreadsheet with reference to each individual question. Key words and phrases were identified as potential codes which could be later applied in Atlas.ti™ qualitative data analysis (QDA) software. Section IV of the survey was used to collect primarily demographic data about the

physician. Second, notes from the environmental observations during the interview were recorded in a separate observations spreadsheet. Third, numeric values of the physician's confidence survey were logged in a Microsoft Excel[®] spreadsheet designed to tally the physicians' cumulative levels of confidence as a group as the interviews progressed. Summaries of recorded results follow in Chapter 4.

4.0 FINDINGS OF PHYSICIANS' CONSUMER HEALTH INFORMATION-SEEKING BEHAVIORS

Results in this section integrate a demographic profile for this population of physicians along with the primary findings from the semi-structured survey, the physician confidence scale and the environmental scan as these findings relate to each of the research study questions.

Study Question 1: How are these physicians searching for consumer health information?

Study Question 2: How are these physicians responding to health information requests from their patients and caregivers?

Study Question 3: Can a consumer health information-seeking behavior model that is significant for the medical, LIS and informatics professions be constructed?

4.1 PHYSICIAN DEMOGRAPHICS

Data on 20 physicians was collected for this study. Baseline information of the physicians is in Table 4.1, and shows the age range of the physicians interviewed to be between 33 years and 65 years, with an average age of 48.4 years.

None of the physicians interviewed had experience with any online curricula in medical school or had access to online resources while a student. All physicians interviewed did experience using the paper copy of *Index Medicus* to research topics.

Each of the study participants had earned an M.D. from an accredited medical school. With respect to the gender of the physicians a slightly higher number of females participated than males.

Close to one-third of the physicians held a graduate degree beyond the medical degree. Degrees included the Master's of Public Health (MPH), Master of Divinity in Anthropology, and various Master's Degrees in Education. One physician also held a Master of Clinical Ethics Degree. Each of the graduate degrees, with the exception of one Master's Degree, was obtained following the M.D. degree.

What makes this group of physicians most homogenous, according to the demographic data and the clinical environment in which each of the physicians works, is the fact that ninety-five percent of the physicians interviewed currently reside in a large university medical center or hospital with an academic affiliation. The homogeneity of this group serves as a significant theme influencing the behaviors of this particular group of physicians.

Finally, and not surprisingly, every one of the physicians interviewed had at least one computer at home.

Table 4.1: Baseline physician information

Characteristic	Physician N=20	Mean	Standard Deviation
Age	33 – 65 years (range)	48.4 years	9.332
Year graduated from medical school	1967 – 2001 (range)		
Years in practice (beyond residency)	2 years – 36 years (range)	18.2 years	10.1649
M.D. or D.O.	100% MD		
Gender	55% Female 45% Male		
Other graduate degrees	30% hold another graduate degree		
Clinical setting	45% large university medical center 50% hospital w/ academic affil. 5% community medical center		
Computer at home	100%		
Observe another generation* (children or parents) using computer at home	50%		

The physicians' observations of another generation using a computer at home were not explicitly discussed with the physicians during the interview. One might assume that this data might suggest that a physician who observes a younger or older generation's computer or information-seeking behavior habits outside of the office, may be more attuned to the computer or information-seeking behavior habits of their varying generations of patients and caregivers, but it cannot be demonstrated from the data in this study.

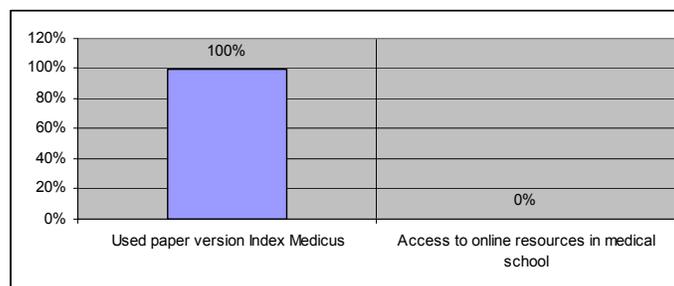


Figure 4.1: Medical School learning experiences – paper vs. online resources

4.2 STUDY QUESTION I: HOW ARE THESE PHYSICIANS SEARCHING FOR CONSUMER HEALTH INFORMATION?

The data reported here refers to the physicians' information habits, beginning with how they stay current with current practice or clinical literature for themselves and continuing with the methods they use to locate and view patient education materials, including consumer health information.

This group of physicians, as a whole, reported looking for medical or health information of some type on a daily basis. Responses for the frequency with which the physicians looked for individual types of medical or health information, including the use of specific resources, ranged from daily website perusing and journal reading, to weekly scanning of what they considered to be their core primary journal literature. Physicians tended to use news and health information websites on an ad hoc basis, yet referred to these sources consistently throughout the interviews.

Professional Clinical Literature

When referring to keeping their “clinical literature quotient” (or, the amount of exposure to clinical literature) at a personally acceptable level, physicians responded with the following types of comments such as these which illustrated their ease and access to the myriad of electronic (or online) or print clinical medical resources:

“I keep up with JAGS (the Journal of the American Geriatrics Society) and I use UpToDate[®] (UTD) almost regularly now.”

“I use InfoRetriever[®] (now Essential Evidence Plus[®]) on my PDA, and I search STATRef[®], Ovid[®], the Cochrane database and UpToDate[®].”

These typical physician responses replete with journal abbreviations, product names, and media used, as well as the ease with which each source is mentioned, was indicative of the physicians’ comfort level with how they described their scholarly information base.

Some common threads and information portals included:

- More than two-thirds used UpToDate[®]
- Over one-quarter regularly used MDConsult[®]
- One-fifth regularly used PubMed[®]
- Under one-fifth of the physicians liked using ePocrates[®], a portable personal digital assistant electronic resource particularly for its quick, convenient access to medication information.
- The University of Pittsburgh’s Health Sciences Library System (HSL) website
- All had access to journals such as *The New England Journal of Medicine* and *The Journal of the American Medical Association*
- Almost all of these physicians were in some stage of implementing or beginning to implement a University of Pittsburgh Medical Center (UPMC) e-health records system which integrates access to modes and applications to both clinical and patient information.

Consumer Health Information

Before beginning to speak to each physician, it was necessary to provide a definition of “consumer health information.” Consumer health information, for the purposes of the interview, was defined as health information that a patient could understand; health information, whether in electronic or print format, that could be suggested to a patient or caregiver, or information that could be printed from an electronic resources or was pre-printed in paper format that could easily be handed to a patient or caregiver.

Among the top resources used for access to consumer health information were (in preferential order):

- Google™
- WebMD®
- National Institute of Mental Health website
- American Academy of Family Physicians website
- Wikipedia®
- Medscape®
- MedlinePlus®

4.2.1 Tools physicians are using

In order to understand the technology used by physicians to access information, data was gathered by observation during the environmental scans as well as by asking the

physicians. This data is tabulated and illustrated in Tables 4.2, Table 4.3, Table 4.4, and Table 4.5.

While all of the physicians use a computer in their office, less than one-half used some type of hand-held device or personal digital assistant (PDA) (Table 4.2). The use of an MP3 player or iPod™ and Blue Tooth™ equipment was discussed to gauge the physicians' use of alternative media to gather information via podcasts or other remote or wireless device. All physicians had access to printers, FAX machines, photocopiers and cell phones, while three-fourths used or had access to a digital scanner. The one result that stands out is that only ten per cent of the physicians, while computer savvy and literate, had access to computer in the patient exam room to use while meeting with patients and family members.

Table 4.2: Electronic Equipment used by Physicians

Electronic Equipment	
Computer in office	100%
Palm, Blackberry™, etc.	40%
MP3 player, iPod™	5%
Printer	100%
Scanner	75%
FAX	100%
Photocopier	100%
Cell phone	100%
Blue Tooth™ equipment	5%
Computer in patient exam room	10%

Table 4.3 shows the most common electronic resources available to and used by the physicians. Not surprisingly, all had access to the Internet and a high percentage of physicians had access to and used commercially licensed products such as MDConsult® and FirstConsult®, as well as UpToDate®. The outlier physician(s) who did not access these resources had less access to the resources of a larger academic

institution as the primary place of practice. InfoRetriever[®] was used mainly by those physicians who were affiliated with a family practice setting and not strictly a geriatric practice.

Table 4.3: Electronic Resources available in physicians' offices

Electronic Resources IN OFFICE	
Internet access	100%
MDConsult [®]	95%
FirstConsult [®]	45%
UpToDate [®]	95%
Other: InfoRetriever [®]	10%

“UpToDate is like a continuously updated textbook!”

Enthusiastic statement made by a physician during an interview

Microsoft Internet Explorer[™] was the browser used by all of the physicians interviewed in this study.

Table 4.4: WWW Browser of choice

Browser of choice	
Microsoft Internet Explorer	100%

When asked what search engine to which they turned first, Google[™] was overwhelmingly favored over the less popular Yahoo![™], MSN[™] and Excite[™] search engines and web indices.

Table 4.5: Search Engine of choice

Search engine of choice	
Google™	85%
Yahoo!™	5%
MSN™	5%
Excite™	5%

The remaining portion of the environmental scan was reserved for those information resources that were found to be a part of the physician or physician groups' patient and family waiting areas. Table 4.6 is an inclusive list of all types of wall hangings (including posters on waiting room or patient exam room walls), topical handouts (such as pre-printed brochures arranged in a "take one" type display within the office or in the clinical exam room, and popular print magazines lying on waiting room tables or hanging in waiting room magazine racks.

The majority of the information styles hanging on the physician office walls of a consumer health information nature had a direct educational aim or advertisement to call or look at a website for further information. For example, information about bronchitis symptoms, bronchial anatomy illustrations, and information about staying well and receiving a flu shot were common, as the environmental scans and interviews were conducted during the winter season when this information was probably most useful for patients and family members sitting in waiting rooms. Most waiting rooms displayed poster-format information regarding the dangers of smoking and information on smoking cessation. Information about diabetes was typically targeted to the elderly and overweight populations while several of the family practice waiting rooms included posters highlighting children's anatomy, wellness calendars and mental health issues of which one should be aware. Of particular interest in one of the family practice waiting

rooms was a range of health information targeted to the lesbian, gay, bisexual and transgendered populations. As a rule, most of the information on display ranged from simple pictorial information to easy-to-read and easy-to-understand generalized information that was aimed at grabbing viewers' attention.

On the other end of the easy-to-read and easy-to-understand generalized health information spectrum were the topical handouts geared for viewers who would have a more concentrated interest in selecting a specific brochure about a specific topic. While a reading-level test was not administered to determine the consumer-friendliness or accuracy of the handouts in the physicians' waiting rooms, the target providers of the information ranged from UPMC-branded consumer health information to government-sponsored health brochures to third-party brand brochures (including the brand Health Advice™)⁶³ that typically target a second to fifth grade reading level. Also included amongst the patient handouts were drug information brochures written and manufactured by pharmaceutical companies.

Print magazines that likely contained some type of consumer health information ranged from popular news media periodicals like *U.S. News & World Report* and *AARP Magazine* to the print versions of *WebMD* and *MedlinePlus*.

One physician did report that he personally had developed some patient handouts, and two other physicians noted that they often kept a paper file of review articles and files of patient education pertaining to self-care, orthopedics, low back pain, and common ailments that could be distributed to patients or family members if the topic was pertinent.

Table 4.6: Sources observed throughout patient waiting areas and exam rooms in random

order

Wall Hangings	Topical Handouts	Print Magazines
<ul style="list-style-type: none"> • Bronchitis info • Child’s anatomy poster • Community psychiatric centers • Free diabetes monitors (800#) • Child seat safety check • Health & Wellness calendar • Pre-teen conflict • Persad poster • New Mothers poster • Stop smoking poster • Medicare Rx poster • Flu shot poster • Diabetes Type II poster • UPMC for Life poster • Healthy Minds, Health Bodies • American Medical ID poster 	<ul style="list-style-type: none"> • Smoking cessation • Nutrition • Imaging • Ligaments • Weight loss • UPMC and Magee Women’s Hospital brands • Flu information • Cold and Flu information • Persad • Mammogram Q & A • Don’t endure cancer alone • Discount drug cards; Medicare • Human Rights Campaign • “Coming Out” resource guide • UPMC health care brochures • Levitra® • Home Helpers • Medicare Plan, Part D • National Stroke Assn TIA • Topamax® • Chantix® • Exelon® patch • Citrucel® • Programs to save you money • Medvantx free generic/OTC meds • Health Advice (10-brochure frame) • Tennis elbow • Rehab brochure • ImmunoCAP® allergy blood test 	<ul style="list-style-type: none"> • WebMD® the magazine • Pregnancy & Newborn • Remedy MD • Community Newsletters • AARP magazine • US News & World Report • MedlinePlus® magazine

4.2.2 Time and frequency habits of physician information behavior

The information reported here discusses the events and habits by which a physician encounters an opportunity to learn information. It also examines how the physician finds him or herself in the habit of receiving information.

The following excerpts from the interviewed physicians capture the essence of their information-seeking, retrieving, and using for self-educational purposes. What follows is a compilation of physicians' own phrases highlighting terms and text that, when extracted, represents a time continuum of typical information gathered, ranging from a daily basis to a weekly basis to an ad hoc basis. The highlighted terms are these physicians' own words describing their time and frequency habits.

Table 4.7: DAILY information habits

"I read on a *daily basis* because I have ready access to everything; I also teach medical students *every day . . .* I read *daily . . .* I get e-mail updates *just about daily . . .* I try to scan UpToDate[®] *daily . . .* I read literature and talk to colleagues *daily*. I listen to news *every morning* to hear what the general population is hearing . . . I read the newspapers *daily . . .* I usually read The New York Times online *daily during lunch . . .* I read health headlines from Excite news *two times each day . . .* I read and I listen to National Public Radio (NPR) *every morning during the drive to work."*

Table 4.8: WEEKLY information habits

“EBM InfoPOEMs are e-mailed directly to me *weekly* . . . I do a lot of case-based readings *weekly* . . . I mostly read the board journals and family practice resources *weekly* . . . I attend our geriatrics conference *weekly* within our own practice . . . I get Physician’s First Watch[®] and WebMD updates *weekly* on a regular basis . . . I look at the consumer information that comes through the professional products *weekly*.”

Table 4.9: AD HOC information habits

“I read on the fly, on the computer, by using tools such as UTD[®] . . . I scan journals, I read news articles *occasionally* . . . I attend conferences *two or three times per year* . . . I like to attend grand rounds and continuing medical education (CME) sessions *whenever they are held* . . . I look at journals, electronic resources, attend conferences *when I can* . . . I like Medscape[®] e-mail alerts *occasionally*.”

4.3 STUDY QUESTION II: HOW ARE THESE PHYSICIANS RESPONDING TO HEALTH INFORMATION REQUESTS FROM THEIR PATIENTS AND PATIENTS' CAREGIVERS?

One way that this group of physicians responds to their patients and caregivers' requests for information is by using teaching materials presented in commercial products such as MDConsult[®] and UpToDate[®]. Another set of resources the physicians use to provide consumer health information are a variety of websites such as the AAFP website and WebMD[®], as well as other websites mentioned in the previous section. The physicians also talk to their patients about the information that the patients or caregivers bring with them, in hand, into the office on their own.

Based on the information that the physicians give to their patients and caregivers, the physicians are clearly emphasizing the point that ready access to good information is always an issue in the time constraints of a clinical practice visit.

4.3.1 How physicians value information sources: TIMELY ACCESS

It is apparent from the data collected that access to information resources during the patient visit is vital in terms of quickness (time) and availability (access). Information regarding the importance of access is graphically and collectively seen in physicians' responses to the interview question in Section II of the survey that asks, "What makes one source more important than another source?"

Table 4.10: Physicians' own words

“Depends on how much *time* you have - in clinical care, getting something *quick is preferred*. . . Dynamic Medical has bulleted resources, it is easy to see and read. If I need info for a lecture, I might go to AFP website or search UTD® . . . *Ease of use*, get to info *quickly*, *concise format*, something *portable* . . . PubMed® and Ovid® have more *authority*; Google™ usually *gets me where I want to go* . . . If a topic is in the New York Times, it usually relates to *current* medical articles . . . Needs to be *practical*; always answer questions and be *easy to navigate* . . . I prefer to have side effects of medications *right at hand*.” (referring to ePocrates®) . . . If it seems *current*, has readily apparent *updates*, it is usually better than texts online . . . Something like UTD®. *Something with no fat* . . . Needs to have an *easy-to-use* interface.”

A scan of the phrases leaves no doubt that speed at which information can be retrieved, combined with its portability, ease of access and use, practicality and currency, contribute to a crucial formula that this group of physicians requires before they would “bother” with any information resources. This group expressed distress with the technological barrier of having little access to a computer in the exam room while the patient and caregiver were present.

4.3.2 How physicians value information sources: CREDIBILITY

In the same vein that information access must be quick and easy-to-use, the information that a physician is willing to provide to a patient or family member must meet a certain standard of accuracy and authenticity. The information must also be in a format that is formulated to the patients' needs and be easily available to them and their caregivers.

While online resources were deemed important, the credibility of the information found and distributed online was most critical to the physician. This group of physicians felt comfortable using online consumer health resources provided by MDConsult[®], UpToDate[®], and MedlinePlus[®]. The resources were cited as credible tools that bore complete and in-depth information for both the physician as a health care provider and the physician as a health care information provider.

Another level of information credibility was how difficult it was for the physician to keep up with the proliferation of consumer health information, both in text and on the web. When asked what the most difficult problem they experienced in looking for credible information and how they kept current with CHI, the physicians responded with phrases such as those represented in Table 4.11.

Table 4.11: Physicians' phrases in response to older patients and CHI

“Older patients are much more receptive to taking advice directly from me (their physician) – they take it at face value... They expect their information to come directly from me, not a computer web page . . . oftentimes, the caregiver drives the conversation, though, so you have to give them something . . . But it’s TIME!, it’s all about TIME! Deciding what to use, what are the trusted resources, there’s not enough time to know about this aspect (consumer level) of the information out there.”

A physician’s response about which consumer health websites he trusts:

“There are none. They are all suspect!”

While pharmaceutical pamphlets were found in less than twenty per cent of the physicians’ waiting rooms, nearly all of the physicians stated that they did not deliberately distribute pharmaceutical pamphlets, labeling them as “quite biased.”

One UPMC physician commented that he “really liked the concierge service,” a growing personalized health care information service sponsored by the University of Pittsburgh Medical Center Health Plan. This physician went on to state that “it has excellent follow-up with a patient after they leave me – the service gets in touch with me and we move forward with health care and health information” for the patient. More information about the UPMC Health Plan Health Care Concierge System for Medicare

patients is located at the following URL:

<http://www.upmchealthplan.com/plan/medicare/concierge.html>

4.3.3 How physicians value information sources: PATIENT USABILITY

The technology barrier within the clinical exam room presented another concern for these doctors. Given the age of their patients and the patients' access to the World Wide Web and computers in general, the doctors had to consider the degree with which electronic information (i.e. website addresses or resource names) was suggested toward their patients. These physicians with their older patients were left with a feeling that there was much more to consider than the simple mention of a website or the directive "to google" a concept on their own.

In the instances where a caregiver or loved one was present in the room with the patient, the physicians reflected on the consideration of how much information the caregiver might be willing to negotiate. Physicians commented on their need to do an evaluation of the caregivers' levels of interest as to how much information they could usefully handle.

The "patient usability" of consumer health information in this section correlates to the physicians' assessment of their patient's cognitive readiness to ask for and receive information. The comments generated in this section reflect the concepts of the two minutes "allowed" for mental health issues during a typical primary care visit, explains Tai-Seal, et al⁶⁴ and Reynolds, et al.⁶⁵ For instance, how likely is a PCP "to provide quality depression care given the multiple competing demands made on their time to patient-centric, evidence-based, preventive, acute and chronic illness care – and

given the ecology of primary care and the typical 15-minute visit?”⁶⁵ PCP’s use various measures to garner the mental health status of a patient. It is likely that during this two-minute mental health allotment in the primary care visit the physician also gauges how much information the elderly patient is likely to give as well as receive.

The following comments provide a basic idea as to how this group of physicians assessed their patients’ information usability.

One physician spoke of the patient’s verbal and nonverbal interaction, stating that, “I give the patient information based on how engaged they are; often they want simple, black & white answers, not explanations.”

Other physicians tried to determine whether the patient has insight into their illness. These physicians stated that they got “cues of literacy or education levels” from the patients’ appearances or how they communicated with the doctor, and the doctor, in turn, tried to speak with them at an appropriate level. The physicians also looked at cognition, mental status and conversation levels. One doctor stated, “If the patient is conversing with me, it is OK; I can usually tell where they are; I’ll watch them, too. And, if I don’t know them very well, to assess literacy, I might enlist a caregiver to get information.” Another indication of patient cognition noted by this group is if the patient self-completes the handouts before an exam, and obviously, if education level is listed, communication might be easier.

If a patient was seriously demented, or not conversing, the doctor directed a lot of the conversation toward the caregiver. A physician stated, “I assess the caregiver but not as rigorously; I ask if they want written information and I’ll often provide it.”

As for providing electronic information, some of the physicians might write down website addresses and give them to the patients. One particular physician found information on the computer in an adjacent office, printed it and handed it to the patient. Another physician highlighted his interactions in terms of cognition: “I always look for dementia and weigh my previous experience with the patient; I consider how old they are, if they have access to the Internet. If the patient is not paying attention, if they are tired, looking elsewhere or not answering, I might assume they do not understand. The caregiver might take over and make you direct things to them.” Another physician stated, “I make a judgment (about the patient’s cognitive level of understanding), and I can be wrong sometimes or have a preconception of what they understand.”

When asked if the physicians ever recommend particular websites to their patients, the answers varied. Some physicians said they referred patients to MedlinePlus[®], if the patient seemed to be computer savvy. Other websites mentioned were: WebMD[®], the CDC, the NHLBI (National Heart, Lung, and Blood Institute), PDQ[®] (cancer information), HIV websites, and the CDC travelers’ website. One physician directly answered, “I tell patients to ‘google™ this’ or ‘google™ CDC’ – it is easier for them to remember it put that way, but again, only if patient is savvy enough.”

The physicians reiterated that there were many issues to consider when treating and providing information for the elderly. Motivation, cognitive impairments, and internet “savviness” are one set of issues, while visual impairments and acuity along with macular degeneration are others. The physicians agreed that “most websites are not suited for seniors,” stating, “the majority of them can't navigate a mouse.”

4.3.4 Physicians' use of consumer health “megasites” or consumer health information.

When asked if they recommend specific “megasites” for health information to their patients or to their caregivers, the physicians' responses varied including the popular WebMD[®] and CDC websites. When probed further with specific names and functions of credible and popular consumer health megasites such as MedlinePlus[®], WebMD[®], NOAH[®] (New York Online Access to Health), Intellihealth[®], healthfinder.gov[®], CDC website, or a university health library system's consumer health information web pages, the physicians were able to name and even add a few more websites they had not previously considered to be consumer health information “megasites.”

4.3.5 How physicians follow through with consumer health information recommendations

After the patient examination, if information was still expected by the patient, the group felt that sometimes they could have the patient make a follow-up appointment with a nurse practitioner or a social worker who was a part of the office team, for an in-depth discussion on their condition and what it means for the patient and the caregiver. It was not the norm; however, to have this follow-up and not all the physicians had regular access to these colleagues.

4.3.6 Self-evaluative confidence scale

A confidence scale was administered to the physicians so that they could self-report their comfort levels in providing consumer health information (CHI) resources to patients and caregivers. Understanding the physicians' information-sharing styles with patients regarding the value of consumer health information may be indicative of the physicians' willingness to improve the value they place on part of the patient encounter.

The yellow bars in Figure 4.2 represent the physicians' confidence levels when dealing with the ten corresponding differentials of the scale. Almost 63% of the answers given in the ten point scale administered to the twenty physicians indicated that the physicians were "Confident, but believed they needed to improve." There were only a few statements about which the physicians were not confident or did not feel that they needed to improve.

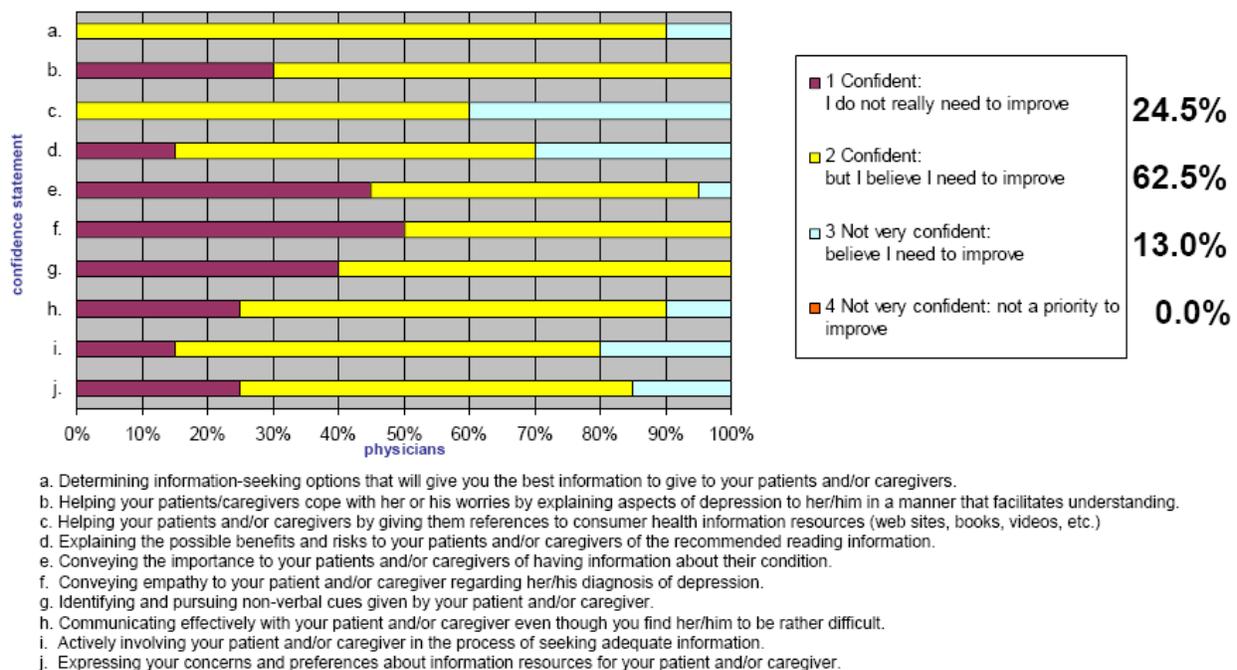


Figure 4.2: Consumer Health Information Confidence Levels of Physicians

4.4 STUDY QUESTION III: CAN A CONSUMER HEALTH INFORMATION-SEEKING MODEL THAT IS SIGNIFICANT FOR THE MEDICAL, LIS AND INFORMATICS PROFESSIONS BE CONSTRUCTED?

The role of a physicians in this group, as they think about sharing information, varies and can be categorized in the following flow-chart (Figure 4.3) which highlights the blending of the preliminary model with analyses incorporated for varying patient/caregiver circumstances. The precursory model evolves into a final model displayed in Chapter 5.0.

A Prior to the Patient Visit	The physician observes and reads consumer health information on his or her own.	
B During the Patient Visit	1 No specific information is asked by the patient and no specific consumer health information is given to the patient.	
	2 The physician gives the patient information.	<ul style="list-style-type: none"> • General information or physician knowledge is provided to patient. • Specific consumer health information or an outside or web resource.
	3 The physician gives information to the caregiver.	<ul style="list-style-type: none"> • General information or physician knowledge is provided to caregiver. • Specific consumer health information or an outside or web resource given to caregiver.
C After the Patient Visit	1 The physician sends the patient out on his or her own to look for information	<ul style="list-style-type: none"> • Patient can do it on his or her own. • Patient is referred to a third party for extra information help.

Figure 4.3: Precursor to model

5.0 DISCUSSION, CONCLUSIONS, AND FURTHER DIRECTIONS

This chapter presents findings of the study as they were interpreted and recorded by means of a constant comparative method.

5.1 GROUNDED THEORY AND QUALITATIVE RESEARCH

Grounded theory is a process of observing and recording and repeating. As Glaser reminds researchers in his 2004 article, *Remodeling Grounded Theory*, “GT (Grounded Theory) procedures and ideas are used to legitimate and buttress routine (Qualitative Data Analysis) QDA methodology.”⁶⁶ As not to leap ahead of the original intent of grounded theory, Glaser emphasized to researchers in 1978 that the “goal of grounded theory is to generate a conceptual theory that accounts for a pattern of behavior which is relevant and problematic for those involved. The goal is not voluminous description, nor clever verification.”⁶⁷

As the encounters with participant physicians in this study proceeded, the investigator began to notice emerging themes that suggested a potential model. Specifically, following the first three conversations, it became noticeable that physicians looked at consumer health information during three different time frames. First, prior to a patient visit, physicians talked about reading or scanning websites, newspapers or

journal articles, or listening to radio programs and taking note of the health topics, whether they appeared in news items or public interest stories. Second, physicians noted that they were sometimes given health stories or articles by their patients during meetings with patients and caregivers. Physicians also noted that if it was requested, or if they felt it was appropriate, this was when they provided direct consumer health information to the patient. Third, the physician might refer the patient or caregiver to websites or other resources to use after the patient leaves the office or the physician might recommend that the patient receive further information counseling by a nurse practitioner or other office staff member as a follow-up to the examination.

Following the sixth and seventh interviews, the investigator became aware that during the second phase, as physicians met directly with the patient and family member or caregiver, they regularly noted instances of a routine examination technique that helped them discern the patient's cognitive ability to receive information. These instances became the basis for the physicians' consumer health information-seeking behavior model.

5.1.1 How many interviews are enough?

In her highly cited 1995 editorial from *Qualitative Health Research*, Janice Morse wrote,

“In qualitative research, there are no published guidelines or tests of adequacy for estimating the sample size required to reach saturation equivalent to those formulas used in quantitative research.”⁶⁸

Moreover, in the health sciences, qualitative research is likely to require theoretical saturation to determine purposive sample sizes.⁶⁹

Morse continues to justify that qualitative data, “although initially appearing diverse and disconnected, in the process of saturation, form patterns or themes and begin to make sense.”⁶⁸

In the planning stages of this study, it was estimated that conducting interviews with twenty-five physicians would create a useful representation of those physicians who treat the elderly depressed and their caregivers. After meeting with twelve physicians, a theme began to emerge that the information being collected and patterns of information behavior were not varying significantly from one physician to the next. Morse points out further along in the same editorial that the “tighter and more restrictive” the population and the “narrower and more clearly delineated the domain,” the more obvious and quick saturation will occur.⁶⁸

Wanting to sample a few more physicians in various locations throughout the Pittsburgh region, the investigator interviewed a total of twenty subjects, including a physician from a more community-based office practice who treats a similar patient base. This effort provided the beginning of some outlying patterns, as the information resources, based on the nature of funding for this physician’s practice, were markedly different than those of the culturally cohesive sample from the larger, more well-funded academic institutions.

Following the measured reasoning of Morse’s “Principles of Saturation in Qualitative Research”⁶⁸ the investigator felt confident that saturation had been reached after twenty physician interviews. Resources used by the physicians were seemingly similar, if not identical; the types of patients they saw fell primarily within the same age range; consumer health information-seeking behavior took place along the continuum of

the three phases prior, during and after the patient exam; and nearly all physicians noted a method of determining a patient's cognizance or ability to receive information.

A theme had emerged and a model was the next logical step.

Table 5.1: Morse's Principles of Saturation in Qualitative Research⁶⁸

1. Select a cohesive sample. The greater the cohesiveness of the sample, the faster saturation will be obtained, but the less generalizability of the project. This includes using a culturally cohesive sample and a sample that shares (with least variation) the characteristics that address the research topic.
2. Saturation will be achieved most quickly if theoretical sampling is used. Snowball, or a convenience sample, will result in saturation being achieved more slowly. With a random sample, saturation may never be achieved because the sample may be theoretically inappropriate, or poor informants, whose stories replicate rather than provide new information, may be randomly selected.
3. Sample all variations appearing within the data until each "negative case" perspective is saturated. When constructing a theory, locate every possible "hypothetical" negative case, and give these data equal attention as the mainstream storyline.
4. Saturated data are rich, full, and complete. The resulting theory makes sense and does not have gaps.
5. The more complete the saturation, the easier it is to develop a comprehensive theoretical model.

In 2007, Guest, Bunce and Johnson introduced a comparative analysis of the literature which highlighted theories on saturation in qualitative research.⁶⁹ While they outlined the suggestions and expertise of several qualitative researchers, including Morse, the one that proved most useful in this physicians' information-seeking behavior study was authored by Kuzel. His recommendations evolve from the heterogeneity and research objectives of the interviewees and recommended using "twelve to twenty data sources 'when looking for disconfirming evidence or trying to achieve maximum variation.'"^{69, 70}

Based on the theories of achieving saturation provided by Morse, Guest et al, and Kuzel, the investigator ceased data collection at twenty physicians and

concentrated on the two emerging themes: (1) the physicians' timeline for the various stages of information-seeking, and (2) the cognitive assessment of the patient that appeared to be a turning point somewhere in the middle section of the timeline.

5.2 CODING

"The essential relationship between data and theory is a conceptual code."⁶⁶

Glaser states that coding helps the investigator "fracture" the data by grouping it into codes. The codes become the theory behind the data.⁶⁶ The open coding process initially used in this study produced an extensive list of terms for habits, information products, behaviors, names of time periods, and incidents that occur within a certain time period. With ninety-six original codes, the process of reaching uniform themes was challenged by the long list of individual topics. The investigator applied codes to the data sets which were loaded in Atlas.ti[™] as twenty primary documents containing notes from each of the twenty physician interviews. After an initial look at all of the coded data, it was apparent that codes could be grouped and used as descriptors for general qualities as opposed to individual and specific names or processes.

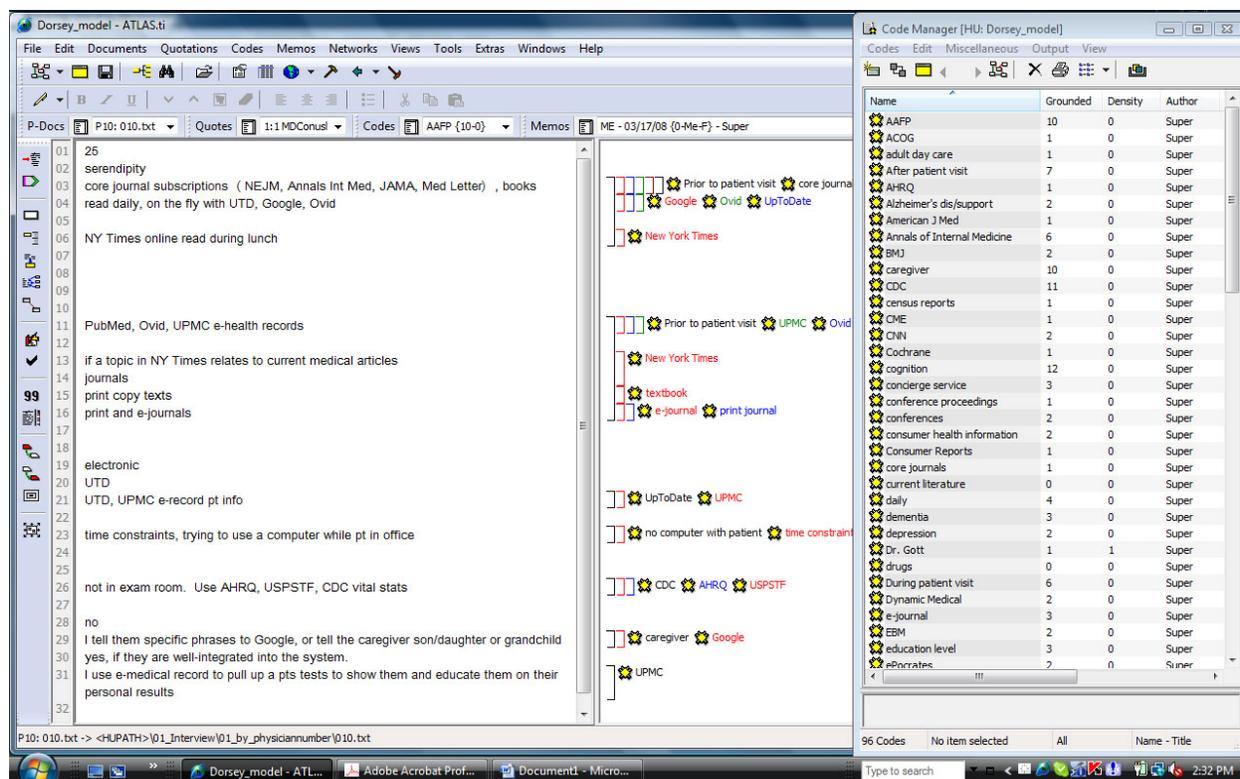


Figure 5.1: Screenshot from Atlas.ti™ showing initial coding

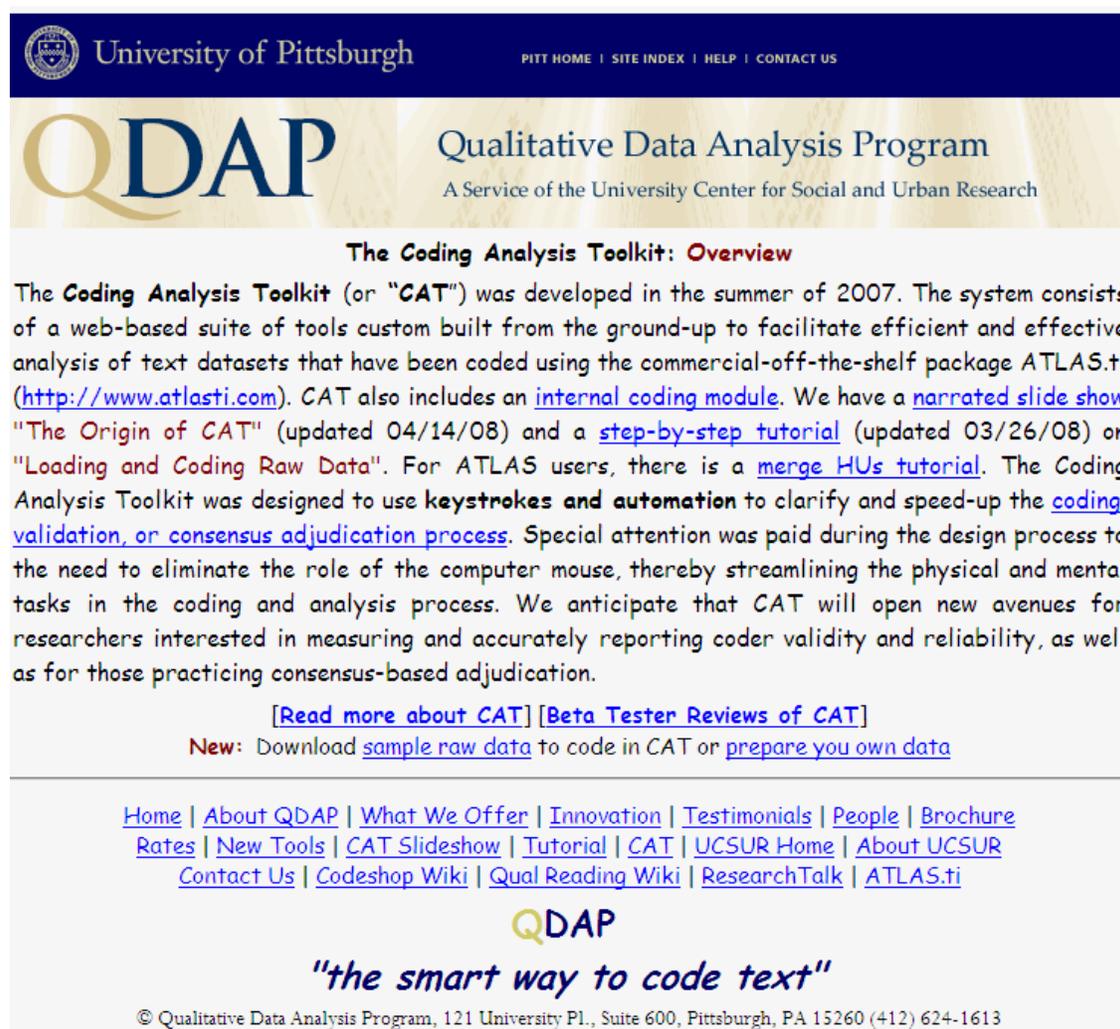
5.2.1 QDAP and Coding Analysis Toolkit

It also became apparent that a team-based approach to coding would provide not only two new objective sets of eyes to apply codes to the data but it would also be a novel test and application of the Coding Analysis Toolkit (CAT) at the University of Pittsburgh.

The Qualitative Data Analysis Program (QDAP) at the University Center for Social and Urban Research (UCSUR) provides valuable and effective means of qualitative data analysis to all disciplines within the research community. QDAP offers researchers useful methods for analyzing and coding text data. QDAP launched a new web-based utility called the Coding Analysis Toolkit (CAT) V1.0, in the fall 2007. CAT is

a custom-built tool that can be used to analyze text that has been coded using the commercial product Atlas.ti™ or by offering an internal coding module through which a project manager can upload raw text datasets from which team members can then code the data by using the CAT interface.

Functions within CAT allow for validation and adjudication of coded data by the primary user and the system keeps track of valid coding and coder reliability so that over time, a dataset exists with only valid observations.



The screenshot displays the QDAP (Qualitative Data Analysis Program) website. At the top, the University of Pittsburgh logo and name are visible, along with navigation links: PITT HOME | SITE INDEX | HELP | CONTACT US. The main header features the QDAP logo and the text "Qualitative Data Analysis Program" and "A Service of the University Center for Social and Urban Research". The central content area is titled "The Coding Analysis Toolkit: Overview" and contains a detailed paragraph describing the toolkit's development in 2007, its web-based nature, and its use of ATLAS.ti. It lists various resources like "The Origin of CAT", "step-by-step tutorial", and "merge HUs tutorial". Below the text are links for "[Read more about CAT]" and "[Beta Tester Reviews of CAT]". A "New:" section highlights "Download sample raw data" and "prepare you own data". A footer navigation bar includes links for Home, About QDAP, What We Offer, Innovation, Testimonials, People, Brochure Rates, New Tools, CAT Slideshow, Tutorial, CAT, UCSUR Home, About UCSUR, Contact Us, Codeshop Wiki, Qual Reading Wiki, ResearchTalk, and ATLAS.ti. The QDAP logo and slogan "the smart way to code text" are centered at the bottom, with a copyright notice for the Qualitative Data Analysis Program at the University of Pittsburgh.

Figure 5.2: QDAP's Coding Analysis Toolkit overview

5.2.1.1 Codebook Development

Before effective work and collaboration amongst coders on a project can begin, a codebook must be written which will serve as the “frame for the dynamic analysis of textual data.”⁷¹ That is, all codes will have precise definitions which will help coders maintain consistent meaning of what things are and of what they are not throughout the coding process.

In their work with the Centers for Disease Control and Prevention, MacQueen, McLellan, Kay and Milstein published, “Codebook Development for Team-Based Qualitative Analysis.”⁷¹ Over time and the course of different research projects, they developed a codebook format. The basic structure of the codebook included six components including the code itself, a brief definition, a full definition, guidelines for when the code is to be used, guidelines for when the code is not to be used, and examples of each. The codebook is designed to always reflect “the analyst’s implicit of explicit research questions.”⁷¹ MacQueen and colleagues emphasize that the “adequacy of answers to research questions can then be assessed in terms of the sensitivity and specificity of the codes, the richness of the text, and the validity and reliability of the links established among them.”⁷¹

Excluding the first free-coding attempt in Atlas.ti™, this project went through two iterations of the codebook. The final version of the codebook (shown in Table 5.2) outlines eighteen definitive codes for this project plus one code which was used for text that had no applicability to the definition of the project.

Table 5.2: Codebook, final version

Electronic Portal	Refers to electronic clinical database; can include UpToDate (UTD), MDConsult (MDC), PubMed, Medline, Ovid, InfoRetriever, Dynamic Medical, ePocrates, Journal Watch, Medscape, STAT!Ref, InfoPOEMS, Cochrane, e-medicine.
Journal	Code if term is used; Refers to print or electronic journal, e-journal, core journal; may include name or acronym of association; can include NEJM, AAFP, JAMA, Annals, JAGS, BMJ, Am J Med. Apply the Electronic or Print code if the format is specified.
Textbook	Code if term is used; Refers to hard copy or electronic copy of texts, can include Cecil's, Harrison's. Apply the Electronic or Print code if the format is specified.
Website	Code if term is used; use code also for reference to megasites, Refers to web resources; can include MedlinePlus, CDC, WebMD, Wikipedia, NIMH, NHLBI, AHRQ, ACOG, USPSTF, university website.
Search Engine	Any reference to WWW search engine includes Google, Yahoo!, MSN, Excite. Includes general web searching.
News	Code if term is used; Refers to print or electronic news; can include print newspaper, news website, news feeds, radio (NPR), local newspaper, national news, Dr. Gott, emails received by physicians. Apply this code with the Consumer Health Information code unless an organizational newsletter is specified. Apply the Electronic or Print code if the format is specified.
Colleague interaction	Talk to colleagues, attend conferences, read conference papers, census reports, continuing medical education (CME), procedures
Popular magazine	Refers to newsstand magazines, can include People, New Yorker, Consumer Reports. Apply this code with the Consumer Health Information code.
PDA	Code if term is used; Refers to personal digital assistant or handheld, or handheld device; can include software for electronic resources such as UpToDate, ePocrates and Micromedex, however, handheld or PDA must be used to describe software
Prior	Refers to resources viewed during time before patient visit; can include electronic portals, journals and websites. Unless the physician mentions using resources during or after patient visits, apply this code to all references to using resources.
After	Refers to time after patient visit; can include references to consumer health information provided to patient by doctor, nurse practitioner, office assistant, secretary, concierge
Patient assessment	Code if term is used; Refers to time <u>during</u> patient visit; can include cognition, literacy levels, education levels, dementia, depression, vision status, interest, terms related to computer or internet skills, verbal or nonverbal cues
Caregiver	Code if term is used; Refers to family member, loved one, child, grandchild, friend, one who accompanies patient to office visit
Time	Can refer to generalization of time spent on activity, time restraints, periods of time
Hardware	Anything related to computer technology, equipment; can refer to use with patient in exam room. Includes laptops, printers, PDAs, etc.
Consumer Health Information	References to consumer health information, information read by patient or caregiver, medical information written for layperson, megasites like MedlinePlus and WebMD and CDC, Wikipedia, university websites, written materials like pamphlets, drug information, directions written on prescription pad; Can be topic specific like smoking cessation, depression, adult day care, Alzheimer's care/support, UPMC materials, print-out or hard copy. Includes references to resources that physicians recommend to patients. Includes references to "patient education materials".
Electronic	General references to electronic resources or the web. Use in conjunction with the Journal, Textbook and News codes if electronic format is specified.
Print	Use in conjunction with the Journal, Textbook and News codes if electronic format is not specified.
Not Relevant	Comments where none of the other codes apply.

5.2.1.2 CAT Internal Coding Module

Because the development of the second codebook applied neatly to the project and was understood and agreed upon by the team's three coders, it was decided to use the Coding Analysis Toolkit's internal coding module. The 19 individual code options

were made available on each screen for which a paragraph of text was to be coded. (See Figure 5.3).

Using the easy-to-navigate Toolkit, each of the coders were prepared to proceed and apply codes to small portions (or paragraphs) of text at a time.

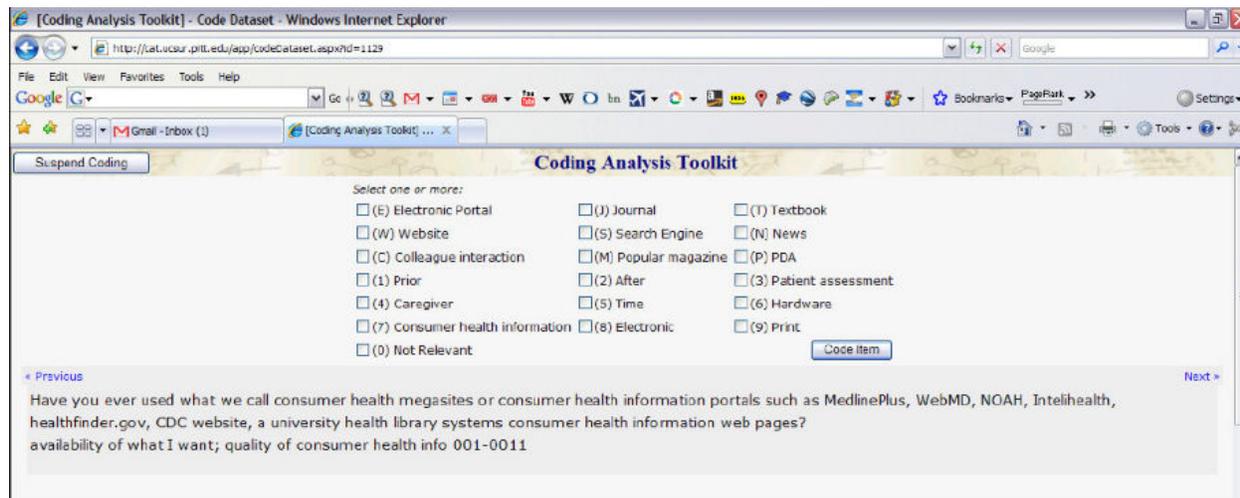


Figure 5.3: CAT's Internal Coding Module

5.2.1.3 CAT Validation/Adjudication Module

In order to proceed toward an acceptable level of intercoder agreement, the first attempt at coding the text of this project was considered a pretest. The text from two individual interviews was entered along with the first iteration of the codebook and the coders applied codes to the two sets of data (which consisted of 19 paragraphs of text).

After all three coders had completed the coding tasks for the pretest, the project manager collected the results from the validation/adjudication module of CAT and reported a kappa value. The Fleiss' Kappa is a standard "statistical measure used for assessing the reliability of agreement between a fixed number of raters (usually more

than two) when assigning categorical ratings to a number of items or classifying items.”⁷²

Table 5.3 shows the Kappa value for the pretest coding period.

Table 5.3: Pretest Kappa

Code	kevans	maryjod	michaelw	Exact Match	Partial Match	Overlap	Kappa	Kappa (inc. Overlap)
After	0	0	1	0	0	0	0.33	0.33
Caregiver	6	1	0	0	0	0	0.33	0.33
Colleague interaction	1	4	2	1	1	0	0.50	0.50
Consumer health information	4	8	2	2	2	0	0.50	0.50
Electronic Portal	7	9	13	6	4	0	0.64	0.64
Hardware	1	0	0	0	0	0	0.33	0.33
Journal	6	8	6	4	2	0	0.60	0.60
News	0	1	1	0	1	0	0.33	0.33
Patient assessment	3	5	2	0	4	0	0.33	0.33
PDA	1	1	1	1	0	0	1.00	1.00
Popular magazine	2	1	1	0	2	0	0.33	0.33
Prior	0	12	0	0	0	0	0.33	0.33
Search Engine	1	4	0	0	1	0	0.33	0.33
Textbook	1	3	1	1	0	0	0.56	0.56
Time	3	3	2	2	0	0	0.67	0.67
Website	3	11	6	3	2	0	0.50	0.50
Totals	39	71	38	20	19	0	0.48	0.48

Following the pretest, the team gathered once more to discuss experiences using the codebook and the applicability of the codes to the text. Following some rework of the codes and definitions, three new codes were added to the codebook to provide further depth of analysis. Two of the newly added codes, “electronic” and “print” added a polarizing effect to resources about which the physicians spoke during the interviews and gave the coders a more generalized method of labeling the resources used. The

third newly added code, “not relevant” was added because there were some lines of text that did not apply to any of the codes and were not officially a part of the overall meaning of the study. Because the text had already been added to the database, the code “not relevant” was applied instead of attempting to force the use of a pre-existing code in the codebook even if it did not apply to the text and because CAT does not permit skipping over any part of the text without it first being coded.

Table 5.4 shows the statistics of code use and kappa value at the completion of Round 1 coding.

Table 5.4: Round 1 Kappa value

Code	kevans	maryjod	michaelw	Exact Match	Partial Match	Overlap	Kappa	Kappa (inc. Overlap)
After	6	6	6	4	2	0	0.67	0.67
Caregiver	14	14	17	13	1	0	0.81	0.81
Colleague interaction	12	12	12	10	2	0	0.81	0.81
Consumer health information	87	49	43	22	38	0	0.48	0.48
Electronic	22	83	82	19	51	0	0.46	0.46
Electronic Portal	55	49	55	46	8	0	0.85	0.85
Hardware	18	15	10	8	9	0	0.63	0.63
Journal	41	40	39	36	5	0	0.89	0.89
News	28	25	27	23	2	0	0.81	0.81
Not Relevant	23	22	32	18	7	0	0.69	0.69
Patient assessment	64	58	59	46	14	0	0.74	0.74
PDA	1	1	1	1	0	0	1.00	1.00
Popular magazine	1	4	0	0	1	0	0.33	0.33
Print	55	31	55	22	32	0	0.56	0.56
Prior	107	85	99	79	21	0	0.80	0.80
Search Engine	13	11	13	10	3	0	0.81	0.81
Textbook	11	13	8	6	6	0	0.62	0.62
Time	23	26	19	16	5	0	0.68	0.68
Website	41	43	47	34	10	0	0.76	0.76
Totals	622	587	624	413	217	0	0.71	0.71

5.2.2 Interpreting Kappa

Fleiss' Kappa is used as a validation function when adjudicating differences between more than two coders. In his 1980 edition of *Content Analysis: An Introduction to its Methodology*, Klaus Krippendorff estimated the following:⁷³

	K value	Intercoder Reliability
Krippendorff	$K \geq 0.8$	definite conclusion
	$0.67 < K < 0.8$	tentative conclusion

$K \geq 0.8$ indicates definite conclusion amongst raters (and was among the highest level of inter-rater reliability that humans could achieve)

In their publication titled, *Statistical Techniques for the study of language and language behavior*, Rietveld and van Hout published their own interpretation of Kappa as follows:⁷⁴

	K Value	Intercoder Reliability
Rietveld and van Hout	$0.81 < K < 1.0$	almost perfect
	$0.61 < K < 0.80$	substantial agreement
	$0.41 < K < 0.60$	moderate agreement
	$0.21 < K < 0.40$	fair
	$0.0 < K < 0.20$	slight

Ultimately, twenty-four years later, Krippendorff stated in 2004 that “reliability must correlate with the conditions under which one is willing to rely on imperfect data.”⁷⁵ Similarly, Craggs and Wood stated in 2005, “because of the diversity of both the phenomena being coded and the applications of the results, it is impossible to prescribe a scale against which all coding schemes can be judged.”⁷⁶ These are two independent

statements that point toward Kappa analysis as an adjudication tool that can validate and bridge the gaps between human coding differences.

5.3 ANALYSIS OF RESEARCH QUESTIONS

This section provides a summary of conclusions drawn based on the data collected from the interviews and the behavioral themes associated with this group of physicians.

5.3.1 Comments on physician demographics

The average age, 48.4 years is significant because it indicates that a majority of the physicians are of a computer user group that is in the range of the average baby boomer. While the average baby boomer is currently between the years of 44 years and 63 years old, only one physician from this group was slightly older than this average at age 65 years.

The baby boomer group⁷⁷ has become increasingly identified with the population of Americans who have been raised with modern electronic devices such as the television and communications media including modern music, widely broadcast national and international news and events, and most recently, the introduction of the personal computer and sophisticated means of social networking, communications and interaction. Baby Boomers are the first members of the digital generation known as *Digital Immigrants*.⁷⁸ Digital Immigrants have generally reached their adulthood without the means and modes of modern digital technologies and may have adopted them as a

means of staying current in the workplace. The Silent Generation,⁷⁹ on the other hand, are those identified as being born between 1925 and 1945, and who have virtually no digital experience, nor do they tend to embrace digital technology at all. Coined *Digital Aliens*,⁷⁸ the Silent Generation is the ideal example of the targeted age group of this study, the aged, or 65 years and older.

As the demographics shown in Table 4.1 reveal, it is almost an ideal demonstration of one socially-defined generation caring for the previous socially-defined generation. With this in mind, the plain slate of this investigation fortunately has little gray area when referring to one generation or the other. The physicians typically fell into the baby boomer category or Digital Immigrants generation, while the senior population for whom they provide care is generally identified as Digital Aliens.

Another important aspect about the demographics of this group of physicians is that, ironically, none experienced a digital environment while in medical school. Modern medical school curricula, which includes problem-based learning (PBL) environments and courseware packages tailored for the student to use as a part of a group or at a remote location, had simply not been in this group of physicians' medical school experiences. It is worth noting that while the youngest member of the physician group, age 33 years, is within the United States standard range of experience for PBL and digital courseware; this particular physician did not attend medical school in the United States and was therefore subject to the same technical disadvantages of the slightly older study participants.

If this group of physicians is seen as their own culture, these twenty physicians interviewed would be considered aggressive information seekers. The majority of the

physicians interviewed (95%) work and live in culturally-rich, resource-rich environments. When it comes to information-seeking and retrieval, “electronic immediacy” is the expected course of action. Each of the twenty physicians came from a medical school environment where the traditional norms for searching the medical literature included using the paper version of *Index Medicus*. The physicians in this particular group have an appreciation for the proliferation of information that the past five to thirty-five years of technology has brought to not only their profession, but to their personal lives, to their children’s lives and to their patients’ and their patients’ caregivers lives. Information technology has demonstrated the ease of access to practically any type of information imaginable. This group of physicians works and interacts within a large urban, academically diverse, environment and has developed a professional expectation of clinical, medical, scientific and social information immediacy. It is reasonable and accurate to state that each of these physicians has shifted his/her information-seeking habits from paper pushing to phone-calling and modems to today’s ubiquitous World Wide Web infusion.

Each of the twenty physicians, not surprisingly, reported having a computer at home. Half of the physicians say they can observe either a younger or an older generation at home using a computer. The home observation, while not specifically proven here, may be a natural setting under which physicians become informally aware of another generation’s information-seeking habits. They tend to learn how their children use technology for entertainment or for information-gathering, including health-related topics. On the same note, this generation of physicians tends to be involved with their own parents or senior family members information use and expectations, so

they automatically take note of how other generations may seek information. In this regard, physicians with whom younger and older family members reside may have a unique advantage of becoming and remaining aware of how their own family members seek health information. With their knowledge and awareness of how their family members seek health information, they may be more aware of how their patients are using the web or other electronic resources such as television and radio, to acquire consumer health information.

5.3.2 Question I: How are these physicians searching for consumer health information?

The majority of physicians reported reading clinical literature daily in order to stay current with relevant topics in primary care or family care medicine. They used electronic portals such as UpToDate[®], MEDLINE[®] (either through Ovid[®] or PubMed[®]), the Cochrane evidence-based medicine databases and other similar web-based products. The physicians read professional and peer-reviewed journals in both electronic and print formats. To some degree, they referred to textbooks in electronic format, but they used print format text books even less. It appeared that one of the only ways some of the physicians became acquainted with consumer or patient-level information resources at all was through the channels introduced to them by electronic professional clinical resources such as UpToDate[®] and MDConsult[®] or their own institution's investment in tools that reach out to health care consumers. The highly effective professionally sold resources have added consumer health information

components directly adjacent to their clinical and evidence-based medicine electronic portals and often provide print-ready patient education information that clinicians can provide to their patients and attending caregivers. While all of the technology and infrastructure existed within the interviewed facilities, this group of primary care and family physicians would not be as easily able to take full advantage of the electronic portals. The disconnect of available resources within the facilities via the exam room setting was not because the physicians did not show an interest in the service, but was because in a majority of exam rooms this group did not have simple access to a computer during the time the patient was in the exam room. In the few cases when the physicians did have access to a computer in the examination room environment, the intense time limitations with their primary care patients prevented them from using it while the patient was present.

Approximately half of this group did, however, keep copies of the JAMA[®] (*Journal of the American Medical Association*) “Patient Pages” on hand and reported photocopying this and other similar print information sources to give to patients who showed an interest in having a piece of paper “to take with them” to read when they left the doctor’s office.

In terms of educating themselves on consumer health-level information, the physicians were most inclined to use professionally associated websites, such as WebMD[®], the American Academy of Family Physicians’ consumer health website, familydoctor.org[®]; the Centers for Disease Control and Prevention’s Travelers Health page, and to a lesser degree, the National Library of Medicine’s MedlinePlus[®]. All of the physicians admitted that they used an internet search engine (specifically Google[™],

Yahoo!™, MSN™ or Excite™) to perform random searches for consumer level health information. A small, yet significant percentage, 20% of the physicians, saw Wikipedia as an excellent source of quick information. (See Note 2 in Notes Section)

Not all consumer health information that the physicians regularly encountered and embraced was electronic. A large portion of this population found that they were able to determine which health stories their patients reported or asked about came from news and media sources. *The New York Times* was regularly cited for its health section as was a local newspaper, the *Pittsburgh Post-Gazette*, the nationally syndicated *Parade* magazine, as well as the companion news websites or television spots such as CNN or MSNBC were cited as well. National Public Radio (NPR) was cited as a favorite way to hear health stories while preparing for work in the morning or while driving in the car. Popular magazines such as *The New Yorker*, *People*, *Consumer Reports* and *Oprah* were cited as good ways to be in touch with those popular health stories or news items that patients might be reading. Several physicians noted that these are the types of resources from which their patients and caregivers often bring in neatly clipped articles or dog-eared copies from these newspapers and magazines.

In observing all of the different types of consumer health information that was available to patients and family members or caregivers during their wait in the doctors' offices, it was apparent that many appropriate wall hangings, posters, brochures and pamphlets were stocked in the waiting areas. This indicates a degree of familiarity with the physicians' habit that placing health information in offices and waiting rooms as the correct thing to do. An average of five to ten posters or eight to ten different brochures were chosen and arranged in a waiting room with the expectation that one of their

hundreds of primary care patients might have an interest in this poster or that brochure. There appears to be a shift toward providing electronic access to health information in the physicians' waiting rooms. Products such as Healthy Advice™ is promoting and selling monitors and wide ranges of topics for waiting patients and family members to observe while they wait to see their doctors. While the provision of electronic information in the doctor's waiting room still may not be an appropriate solution to patients' health information needs, it may seem even further out of reach when the physicians consider the cost of providing such a service in their waiting rooms.

Ultimately, however, the idea of providing consumer health information has been accepted. Physicians know that their patients want and need health information, on the whole, in order to take care of themselves. While this urban group of physicians is connecting the dots and pulling their waiting room environments into the twenty-first century, it is not clear from this study how the less academically-related institutions are evolving.

5.3.2.1 Resources used by the physicians

This section is divided into three categories: (1) subscription-based or professional medical resources on the web; (2) Consumer Health Information websites; (3) Consumer Health Information News sites on the web. Screen-shots of the resources in the following section are located in Appendix E.

Professional medical resources

Professional medical resources are those materials developed specifically for health professionals to use with their patients and family caregivers. The most popular tools identified by the respondents were:

Health Sciences Library System at The University of Pittsburgh |

<http://www.hsls.pitt.edu/>

Most popular resources are immediately available on the front page. Consumer health resources are one click away under the More Resources tab.

MDConsult® | <http://www.mdconsult.com/>

MDConsult,® a frequently consulted electronic resource. The screen shot shows the consolidated information sources of books, journals, drug information and medical headlines. An experimental “squint test”⁸⁰ on this page leads a user’s eyes first directly to the search box in the center of the screen, followed by the blue bar across the top containing a menu of resources, and lastly and equally to the boxes that contain “What your Colleagues are Reading” and “News & Updates”

UpToDate® | <http://www.uptodate.com/home/index.html>

Many physicians polled in this study reported using UpToDate® as a primary electronic resource from which synthesized evidence-based literature as well as patient information is retrieved quickly and easily. The screenshot depicts UpToDate’s® simple and streamlined user interface.

PubMed® | <http://www.ncbi.nlm.nih.gov/sites/entrez/>

PubMed® is the National Library of Medicine and National Institutes of Health's free access to MEDLINE,® a database of 16 million bibliographic citations to the basic biomedical and clinical literature.

ePocrates® | <http://www.epocrates.com/>

ePocrates® – software for handheld devices was also a favorite of family medicine physicians in this study because of its easy-to-use interface and portability. The drug information was particularly popular.

Consumer Health Information Websites

WebMD® | <http://www.webmd.com/>

WebMD® was one of the more popular consumer health websites mentioned by physicians who took part in this study. Physicians draw the conclusion that WebMD® is popular because it is highly publicized and specifically marketed as a website that both physicians and patients turn to for health information.

MedlinePlus® | <http://medlineplus.gov/>

Despite its favorable reputation among medical and consumer health librarians, MedlinePlus® was not among the most used or recommended consumer health websites in this physician group. MedlinePlus® is sponsored by the National Library of

Medicine and the National Institutes of Health and has the somewhat erroneous reputation as the health consumer's version of MEDLINE®.

JAMA® Patient Page | http://jama.ama-assn.org/cgi/collection/patient_page

JAMA® Patient Page is an exceptional example of a major clinical journal adding patient content to its pages (both in print and online) targeting both physicians and consumers as a trusted source of health information.

Commercial Health News Websites

CNN Health™ | <http://www.cnn.com/HEALTH/>

CNN Health™ is a popular example of up-to-the-minute health news coverage. Physicians who used CNN as a daily news source on the web tended to recognize CNN Health as a contemporary health news source for both patients and physicians. It was noted that Dr. Sanjay Gupta, chief medical correspondent, has assisted CNN™ Health image to become a leading face of consumer health news on the World Wide Web.

New York Times™ | <http://www.nytimes.com/pages/health/>

The New York Times™ Health Section has become a premier online outlet for the latest medical and health news stories.

Google™ | <http://www.google.com/>

Google™ is a general Internet search engine that is quickly developing into a multi-disciplinary (and reliable, and favorite) search tool across the globe. Physicians seem to like the quickness and accuracy of the top hits returned by this tool.

Google Scholar™ Beta | <http://scholar.google.com/>

Google Scholar™ Beta is a part of the Google internet search engine that searches broadly for scholarly literature. Google Scholar sorts and ranks information in a way more attuned to researchers and scholars, but it is used by physicians.

Google Health™ Beta | <https://www.google.com/health>

Google Health™ Beta is a development site that allows users to look up and store personal health information in a private account.

5.3.3 Question II: How are physicians responding to health information requests from their patients or caregivers?

The answer to this question is multi-layered and is addressed in the three stages of physician-patient/caregiver encounter which is graphically represented in Section 5.3.3.1, the Physicians' CHI-seeking model.

It is important to note the thought processes of the physician before an information transaction takes place. As the CHI-seeking model describes three phases of information-seeking behavior on the part of the physician, it is within each of these stages that we find the physician responding to health information requests from their patients and caregivers.

Prior to a patient/caregiver visit, the physician is naturally engaged in self-initiated continuing medical education processes in order to keep up to date with clinical literature. On a parallel yet less formal track, the physicians from this group talked about their experimentation with off-shoots of professional products (UTD[®] and MDConsult[®]) which provide "pre-packaged" consumer level health information ready to give to patients and caregivers. Next, the physicians spoke of reading patient pages in professional journals, including *JAMA*[®], in preparation for having a source of information to give to their patients and caregivers to read. From the more professional commercially-available products, the physicians described their interactions with commercial health news resources in print and on the World Wide Web such as CNN Health[™], *The New York Times* and WebMD[®] and to a lesser degree, organized health "megasites" such as MedlinePlus[®], the CDC Travelers' Health website, and professional association websites that provide consumer health information such as the American

Academy of Family Physicians' site familydoctor.org[®], the Alzheimer's Association website and even the university health system's consumer health information website links. The physicians also mentioned their personal comfort levels in "Googling" or using Wikipedia to find easy-to-understand reading materials for their patients and caregivers.

This group of physicians was observed responding in a more casual or "surfer" style of searching the web when locating *consumer health information*. This "surfer" style varies from the structured style they display when they use library-based resources to find information for evidence based medicine or when pursuing continuing medical education.

During the patient/caregiver visit, the physicians' responses to requests for consumer health information take a less direct route. The physician has a cache of consumer health information resources in his/her personal knowledge repertoire; while the physician has the patient/caregiver in the exam room, the physician must make a quick mental assessment of the level of information, if any, the patient should receive.

Ultimately, not every physician-patient encounter is going to lead to a request from the patient or caregiver for further information. In cases of a routine check-up or a follow-up visit, no new information may be requested by the patient or a caregiver or offered by the physician. At other times, the physician may choose to initiate an attempt to provide information.

The physicians noted the importance of assessing the patient's ability to receive information during the patient visit before dispensing information (reading or website or otherwise) directly to the patient. At this time, issues such as the patient's cognition,

literacy, education level, attention span, and visual acuity were considered. If the patient had requested information, the physician would take into consideration the patient's ability to receive information and pass it along accordingly or perhaps include the caregiver in the process. If the senior patient was there alone, that in and of itself, was an indicator that the patient's cognitive and physical abilities were not detrimental factors in his or her ability to receive information.

Types of information passed to the patient and/or caregiver at this stage included computer print-outs to which the physician may have ready access, a preprinted brochure, or more commonly, a reference (a website address, the title of a book, a phone number, etc.) for further information written on the physician's prescription pad and handed to the patient and/or caregiver.

A sure sign of the times was the instance when a physician told the investigator that he occasionally suggested that a patient to have a computer-literate grandchild "google™" something for them if they wanted to know what it was, because the younger family member would certainly know how to find it.

In some cases, if a patient required more time and attention than the physician could currently give, the physician would make a referral to a third party for information follow-up. In cases of the Late Life Mood Disorders group of affiliated physicians, the practices had available a range of follow-up professionals such as nurse practitioners, counselors or therapists who could meet with the patient and their caregiver to provide more individualized feedback on their condition in terms that they could more easily understand. Another source of information after the physician visit was the office nurse manager, another office staff assistant or a secretary who was directed by the physician

to print or photocopy information for the patient or caregiver or provide pre-printed office handouts that were available for the patient to take home.

5.3.4 Question III: Can a model of physicians' consumer health information-seeking behaviors that is significant for the medical, LIS and informatics professions be constructed?

A consumer health information-seeking behavior model of primary care and family physicians that treat older depressed patients has been constructed (see Figure 5.3.3.1). The significance and influence the model may have with the medical, LIS and informatics professions is described here.

5.3.4.1 Physicians' CHI-Seeking Model

The physician's consumer health information-seeking behavior model is essentially derived from the three stages of time during which the physician has the potential to encounter CHI. As noted in the preliminary model, the first phase is prior to the patient visit. During this time period, the physician reads clinical information for continuing education purposes, but also stays abreast of consumer health information by listening to or reading popular news such as CNN, National Public Radio (NPR) or *The New York Times* or scanning favorite entertainment sources like *The New Yorker*, *Parade*

magazine or by following *Oprah* magazine, surfing consumer health websites such as MedlinePlus®, CDC Travelers' Health or WebMD®, or by receiving e-mail alerts from health news sources.

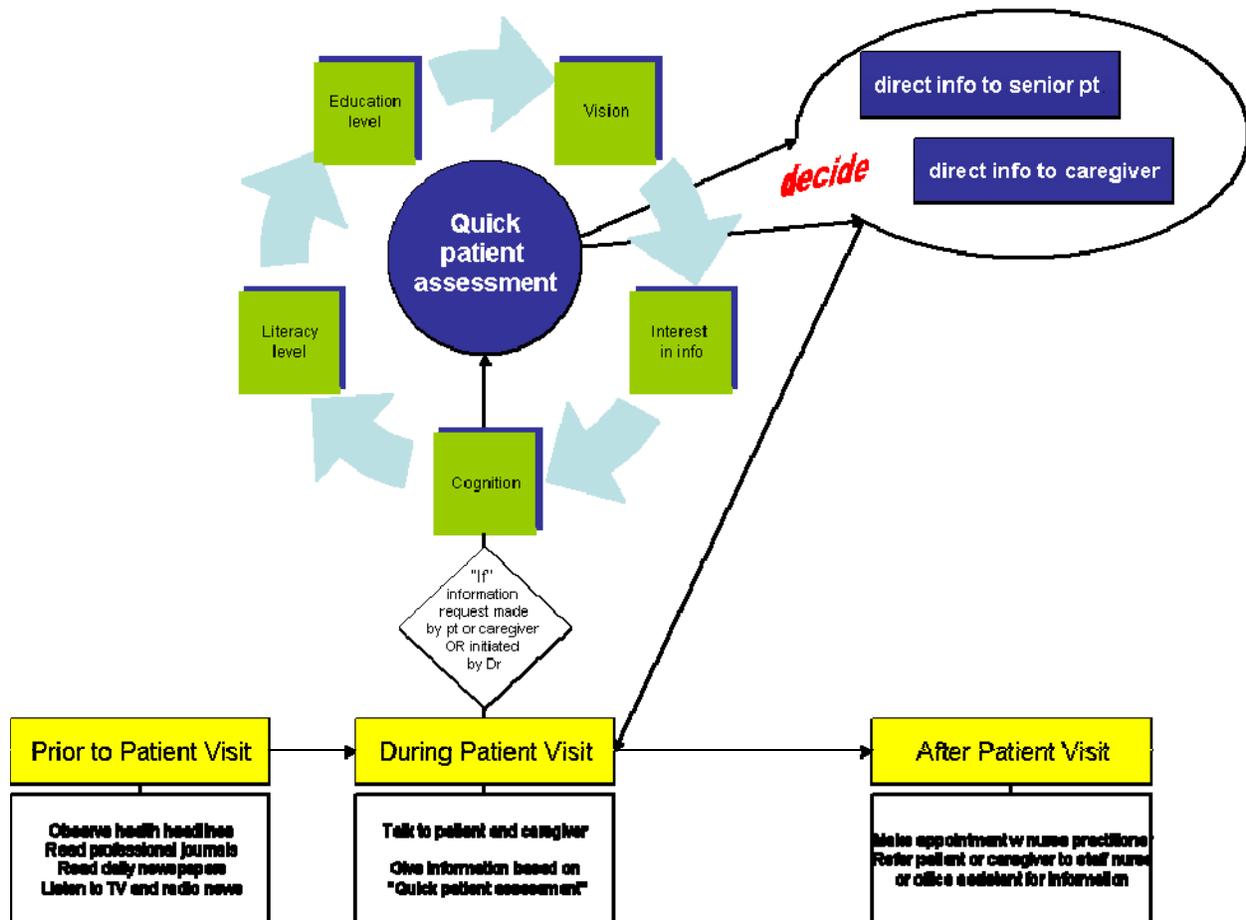


Figure 5.4: Consumer Health Information-Seeking Behavior Model

During the second stage of the patient visit, the physician was in the exam room with the patient and possibly an accompanying caregiver. It was during this phase, if an information request was made by the patient or caregiver or otherwise initiated by the physician, that the model took a momentary detour and entered the “cognitive assessment” phase. During this phase, the clinician quickly inventoried the patient’s

history including education level, literacy level, vision acuity, cognition level and basic interest level to receive information. At this point, the physician made a decision based on the combination of cognitive and physical abilities of the patient whether to direct the information directly to the senior patient or to the patient's attending caregiver and what kind of information should be shared.

Medical profession

Awareness of trends of information habits can lead to awareness of one's own information needs and pursuits. Medical school educators instruct physicians in training. Along with medical students' need to enhance their clinical information-seeking skills and the apparent directive to understand and practice medicine in an evidence-based manner, there exists just as definitive a command of the awareness and solicitation of consumer-based information resources for patients. While it may be true that geriatric depressed patients may be currently stereotyped as disengaged or uninformed because the majority of them have not used the Internet for health information or have proactively sought-out reading materials regarding their health conditions, the upcoming generation of seniors is now being populated by the first baby-boomers who increasingly have had more exposure to the Internet than their predecessors. Assuming that health information will continue in the future to be one of the most-searched subjects on the Internet, the upcoming 65+ group of seniors will be entering old age with completely new information expectations. As the American population lives longer than it ever has before, physicians can expect to be faced with

more challenges of relatively healthy seniors wanting and expecting information that they cannot locate themselves. These patients will need confirmation that the information they are reading and hearing is of value and will want to know more about how the information may relate directly to their own conditions.

Before an appreciation of the patients' information needs can be addressed, physicians must be aware of the primary authentic and credible consumer health information resources available to their patients. They must have a method of staying tuned to clinically relevant health information and personal health stories that their patients are hearing or reading about in the news. And finally, but not least importantly, the physician must be able to assess the mental, physical and cognitive capacities of each individual patient and be willing to appropriately meet their health information requests.

Library and Information Sciences and Informatics professions

LIS faculties educate graduate library and information science students who, as medical librarians, actively contribute to the teaching of evidence based literature searching to medical students, residents, fellows and medical faculty. Library instruction is becoming a more integrated part of traditional medical school curriculum. The physician consumer health information-seeking behavior model, while highlighting some rather obvious physician-patient interaction, can be used also to illuminate the importance of understandable information to both the patient and the caregiver. The patient who expects more than anecdotal information as described by a physician can be prescribed

mentally, physically and cognitively appropriate information that has been previewed and approved by the LIS community. The LIS professional becomes a link in the chain of information accountability leading through the physician and out to patient. A synthesized behavior model can enhance this educational process.

As stated in the literature review chapter of this dissertation, the informatics professions have long used models as a blackboard drawing interpretation for possible information retrieval systems. With the physicians' consumer health information-seeking behavior model, it is the investigator's intention that a more technically streamlined approach to bringing the information cycle during the physician-patient visit will be discussed and considered. While each office setting is unique, and information technology is not readily on hand in the exam room, perhaps thoughtful discussions among informatics professionals, LIS professionals and clinicians can bring light to a solution to the information gap that still exists in this setting.

5.4 LIMITATIONS

This study has limitations that relate to the reliability of physicians with busy schedules to be able to take an adequate amount of time out of their day to have a conversation about how they find information. While it is evident that some physicians like to contribute to scientific research, the demands of primary care and family medicine prohibit many physicians from accepting invitations for a 30-minute to one-hour or longer interview. With the lack of extra time, an ideal opportunity for a relaxed

conversation is not likely. Therefore, the meat of an interview needs to be obtained ideally in a time period lasting less than 30-minutes.

A second notable limitation to the study was discovered after use of the semi-structured interview scale with the physicians had already taken place. Questions 3, 4, and 5 in Section I, *Practice Interests* along with question 6 in Section II, *Characteristics of Information Use* each use the phrase “up-to-date” to ask the physicians how they stay current with particular types of information. After the survey was conducted, the dissertation committee decided that use of this phrase might have introduced unintended reference to the commercial product UpToDate®.

In addition, the nature of the interview, being primarily self-reporting behavior through question and conversation does not guarantee full accuracy of what the physician behavior actually is.

Finally, this study was limited primarily to one geographic region. While it was advantageous to observe a small homogenous group for this type of study, opening up the parameters, expanding urban and rural boundaries, seeking different populations and making comparisons among the populations could lead to a more general ISB model that could encompass other medical disciplines.

5.5 FURTHER INVESTIGATION

As a result of this investigation and dissertation, I envision further study which involves the information-seeking behaviors of two groups or more, a comparative study, which will survey the differences of technological and information resources between clinical settings. The study will incorporate, similar to this dissertation, the related information-seeking behaviors of a particular patient population common to physician groups.

Studies that appear evident as a follow-up to this current study are:

1. An investigation of the information-seeking behaviors specifically of physicians who practice in a large urban setting versus physicians who practice primarily in rural or remote locations;
2. An investigation of the information-seeking behaviors and characteristics of academically-positioned faculty physicians versus non-academically-positioned faculty physicians;
3. An investigation of the information-seeking behaviors of physicians with transparent electronic and technical skills of Generation X (born approximately 1975-1986) and the Millennial generation, often known as Generation Y (those born immediately after Generation X from 1986 to the early 2000's), whose age is currently typically twenty-two years or older, versus physicians of the Baby Boomer generation (1945-1965), or

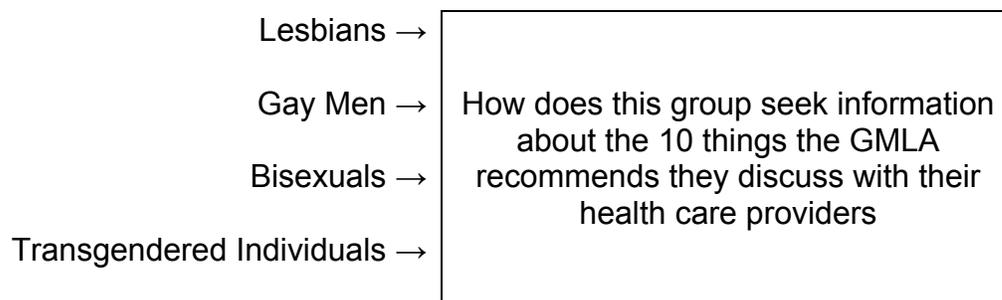
currently between the ages of fifty-two and sixty-two, who have had to integrate technology into their work and information behaviors.

I envision using the same types of questions presented and used in this dissertation in comparative studies in order to stratify consumer health information-seeking behaviors among groups of physicians as a whole.

I would like to replicate this study (to a degree) with different patient populations. Sexual minorities are an understudied group, as a whole, that deserve more attention with regard to their health and information-seeking behaviors. I would like to identify the consumer health information-seeking behaviors of lesbians, gay men, bisexuals and transgendered individuals with regard to the top ten recommend topics the Gay and Lesbian Medical Association

<http://www.glma.org/index.cfm?fuseaction=Page.viewPage&pageId=586&parentID=53>

3) recommends they discuss with their clinicians.



I am eager to work with other clinicians, including physicians, nurses, public health experts, behavioral clinicians and those involved in respective informatics fields to use a similar methodology and coding practice as demonstrated by using the

Qualitative Data Analysis Program's Coding Analysis Toolkit to learn if similar coding structures will evolve in these studies as the populations vary.

APPENDIX A

HEALTH INFORMATION WEBSITES DESIGNED FOR SENIORS⁸¹

GENERAL WEB SITES

NIH Senior Health

<http://nihseniorhealth.gov/>

<http://nihseniorhealth.gov/listoftopics.html>

<http://www.niapublications.org/shopdisplayproducts.asp?id=45&cat=All+Age+Pages>

<http://www.niapublications.org/engagepages/healthinfo.asp>

Companion site of MedlinePlus.gov. Extensively tested with adults aged 60-88. Intended for over 60 populations.

MedlinePlus[®]

<http://www.nlm.nih.gov/medlineplus/seniorshealthissues.html>

USAGov

<http://www.usa.gov/Topics/Seniors/Health.shtml>

AARP Health

<http://www.aarp.org/health/>

AARP Health Guide

<http://www.aarp.org/health/healthguide/>

<http://www.aarp.org/health/brain/>

Members can join at age 50; reliable, easy-to-use information about conditions and treatments; medications; medical tests; self-help groups; Medicare rights, benefits and options at the federal and state level; the importance of quality in healthcare, etc.

Stanford University

http://healthlibrary.stanford.edu/resources/internet/bodysystems/senior_intro.html

Harvard University's IntelliHealth

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

University of Iowa's Hardin MD

<http://www.lib.uiowa.edu/hardin/md/ger.html>

SPECIALIZED WEB SITES

For older women

<http://www.4woman.gov/ow/>

For older African Americans

<http://www.nlm.nih.gov/medlineplus/africanamericanhealth.html>

For those who speak Spanish

<http://noah-health.org/es/healthy/aging/index.html>

For older people of Asian ancestry

<http://asianamericanhealth.nlm.nih.gov/>

<http://asianamericanhealth.nlm.nih.gov/behissues.html>

Sites designed to increase public awareness of the health concerns of these diverse minority groups

<http://ethnomed.org/>

http://ethnomed.org/ethnomed/patient_ed/index.html#mental_health

Information about cultural beliefs, medical issues and other related issues pertinent to the health care of recent immigrants to the US, many of whom are refugees fleeing war-torn parts of the world developed in Seattle, with a primary focus on Asian, African, and Latino refugee populations who have settled along the Pacific coast

For Native Americans

<http://americanindianhealth.nlm.nih.gov/>

<http://americanindianhealth.nlm.nih.gov/health06.html>

For those with low literacy skills

http://www.nlm.nih.gov/medlineplus/easytoread/easytoread_a.html

<http://www.nlm.nih.gov/medlineplus/tutorial.html>

NLM's websites with simple language and audio-visual presentations on 100-plus consumer health topics

For older people with cancer

<http://www.ons.org/patientEd/Supportive/Support/emotional.shtml>

For persons with rare disorders

<http://www.rarediseases.org/search/rdblist.html>

For Caregivers

Oregon Health & Science University. *The prepared caregiver: care giving support in Oregon.*

<http://www.ohsu.edu/healthyaging/caregiving/>

http://www.ohsu.edu/healthyaging/caregiving/about_this_site/how_to_use_this_site.html

For the Bereaved

The Good Grief Center (Pittsburgh)

http://www.goodgriefcenter.com/help/twenty_tips.php

Compassionate Friends

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

American Hospice Foundation

<http://www.americanhospice.org/griefzone/articles/grievingparent.htm>

National Cancer Institute/PDQ®

<http://www.cancer.gov/cancertopics/pdq/supportivecare/bereavement/Patient/page2>

Special mental health websites that can be recommended for older people

AAGP / Geriatric Mental Health Foundation

<http://www.gmhfonline.org/gmhf/consumer/index.html>

American Geriatrics Society

<http://www.healthinaging.org/agingintheknow/>

American Psychiatric Association

<http://healthyminds.org/mentalhealthofelderly.cfm>

American Psychological Association

<http://www.apa.org/topics/topicaging.html>

<http://www.apa.org/pi/aging/olderadults.pdf>

National Sleep Foundation

[http://www.sleepfoundation.org/site/c.huIXKjM0lxF/b.2417433/k.6DFE/Older Adults and Sleep.htm](http://www.sleepfoundation.org/site/c.huIXKjM0lxF/b.2417433/k.6DFE/Older_Adults_and_Sleep.htm)

National Strategy for Suicide Prevention

www.mentalhealth.org/suicideprevention/elderly.asp

Depression and Bipolar Support Alliance

http://www.dbsalliance.org/site/PageServer?pagename=about_depression_lifespan

Making your website senior friendly

National Library of Medicine & National Institute on Aging.

<http://www.nlm.nih.gov/pubs/staffpubs/od/ocpl/agingchecklist.html>

APPENDIX B

IRB APPROVAL LETTER



University of Pittsburgh *Institutional Review Board*

3500 Fifth Avenue
Ground Level
Pittsburgh, PA 15213
(412) 383-1480
(412) 383-1508 (fax)
<http://www.irb.pitt.edu>

Memorandum

TO: [MARY JO DORSEY](#)
FROM: [SUE BEERS](#) PHD, Vice Chair
DATE: 8/7/2007
IRB#: PRO07070060
SUBJECT: Modeling the consumer health information-seeking behaviors of primary care physicians who treat elderly depressed patients and their caregivers

The above-referenced project has been reviewed by the Institutional Review Board. Based on the information provided, this project meets all the necessary criteria for an exemption, and is hereby designated as "exempt" under section 45 CFR 46.101(b)(2).

Please note the following information:

- If any modifications are made to this project, please contact the IRB Office to ensure it continues to meet the exempt category.
- Upon completion of your project, be sure to finalize the project by submitting a termination request.

Please be advised that your research study may be audited periodically by the University of Pittsburgh Research Conduct and Compliance Office.

APPENDIX C

INFORMED CONSENT DOCUMENT



University of Pittsburgh
School of Information Sciences
Library and Information Science Program



I, _____ (name optional), Study Participant No. _____, do hereby consent to partake in the research project, *Modeling the consumer health information-seeking behaviors of primary care physicians who treat elderly depressed patients and their caregivers*. I understand that participation in this research study is considered to be minimal risk and means that the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life (i.e., of the general population) or during the performance of routine physical examinations or tests.

Signature: _____

Or

Verbal consent granted: Yes No

Page 1 of 1

Participant's Initials _____



University Of Pittsburgh
Institutional Review Board

Approval Date: 08/07/2007
Renewal Date: «Renewal Date»

IRB #: PRO07070060

APPENDIX D

APPROVAL LETTER FOR MODIFICATION OF PHYSICIAN CONFIDENCE SCALE

 Mary Jo Dorsey, MLS, AHIP
PhD Candidate
6391 Stanton Ave
Pittsburgh, PA 15206
mjd21@pitt.edu | (412) 607-1647 
SCHOOL OF INFORMATION SCIENCES
UNIVERSITY OF PITTSBURGH
University of Pittsburgh · School of Information Sciences · Library and Information Science Program

March 17, 2008

Fredrick D. Ashbury
PICEPS Consultants, Inc.
700 Finley Avenue, Unit 5
Ajax, ON L1S 3Z2
Phone: 416-882-6293

Dear Dr. Ashbury,

I am conducting a research project for my dissertation titled, "Modeling the consumer health information-seeking behaviors of primary care physicians who treat elderly depressed patients and their caregivers."

In order to gauge the confidence levels of the physicians in various tasks they perform while they are seeing elderly patients, I have adapted a scale developed by you and your colleagues found in Table 1 (page 9) of the following publication:

Ashbury, FD, Iverson, DC, Kralj, B, *Physician communication skills: Results of a survey of general/family practitioners in Newfoundland*, Med Educ Online, 2001.6: 1.
<http://cojprints.org/2420/1/res00014.pdf>

I would like your permission to use an adapted version of your confidence scale in my dissertation. I have attached a copy of the survey which includes my modifications and adaptations.

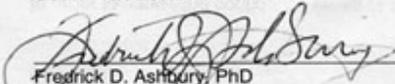
The requested permission extends to any future revisions and editions of my dissertation, including non-exclusive world rights in all languages, to the electronic publication of my dissertation by the University of Pittsburgh, and to the prospective publication of my dissertation by Bell and Howell. Bell and Howell may supply copies of my dissertation on demand. These rights will in no way restrict republication of the material in any other form by you or by others authorized by you. Your signing of this letter will also confirm that you own [or your company owns] the copyright to the above-described material.

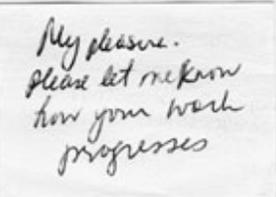
If these arrangements meet with your approval, please sign this letter where indicated below and return it to me in the enclosed return envelope. Thank you very much.

Sincerely,

Mary Jo Dorsey

PERMISSION GRANTED FOR THE
USE REQUESTED ABOVE:


Fredrick D. Ashbury, PhD
Date: April 1, 2008



APPENDIX E

SCREEN SHOTS OF COMMON WEB RESOURCES USED BY PHYSICIANS

Health Sciences Library System
Serving the University of Pittsburgh and UPMC

About HSLs - Contact Us - Remote Access

Journals & Articles ▪ Books ▪ More Resources ▪ Library Services ▪ How Do I?

search.HSLs [About search.HSLs](#)

Pitt Resources | PubMed Articles | E-Book Full Text

Pitt Resources Quick Search
Find e-journals, books, videos, etc. in all Pitt libraries.

Alternatives: • [Search PITTCat directly](#)

Most Popular
PubMed
Ovid
MD Consult
MICROMEDEX
ACP PIER
ISI Web of Knowledge
Molecular Biology

[Ask A Librarian](#)

News & Announcements » HSLs Classes » News Archive » HSLs Update Newsletter

Lunch With A Librarian
Google Scholar vs. MEDLINE for Health Sciences Literature Searching [More »»](#)

NIH Public Access Policy
Information about the [NIH Public Access Policy](#) and instructions for submitting manuscripts.

This Week at HSLs
[HSLs classes](#) for the week of March 17–March 21, 2008.

PubMed Search Tips
"18 Ways to Improve your PubMed Searches" by Carrie Iwema, PhD, MLS, HSLs Molecular Biology Information Specialist, on the Internet blog *Bitesize Bio: the molecular and cell biologist's companion*, March 5, 2008.

HSLs Molecular Biology Service in the News
The HSLs Molecular Biology Service is featured in the *University Times* article [Pitt scientist-librarians guide researchers](#).

The Health Sciences Library System supports the [Health Sciences](#) at the [University of Pittsburgh](#) and the [UPMC | University of Pittsburgh Medical Center](#).

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Figure 5.5: (Appendix E 1) University of Pittsburgh Health Sciences Library System website

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Figure 5.6 (Appendix E 2): MDConsult® web portal

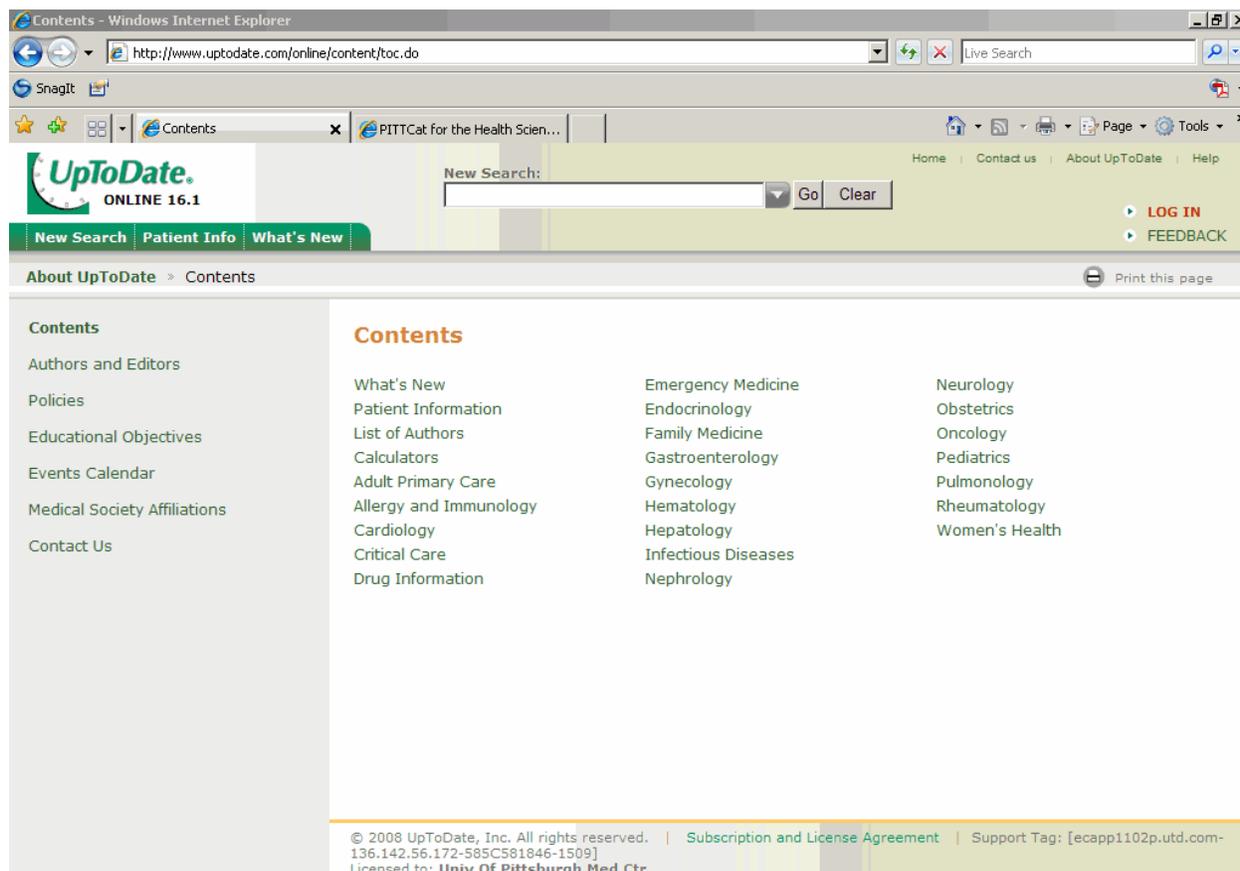


Figure 5.7 (Appendix E 3): UpToDate® Web Portal Table of Contents



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Figure 5.8 (Appendix E 4): ePocrates® software advertisement website

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Figure 5.9 (Appendix E 5): PubMed,[®] NLM's MEDLINE[®] portal

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Figure 5.10 (Appendix E 6): WebMD® Consumer Health website

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Figure 5.11 (Appendix E 7): MedlinePlus[®] Consumer Health website

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Janet M. Torpy; Cassio Lynn; Richard M. Glass
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JAMA 2008; 299: 1288. [[Extract](#)] [[Full text](#)] [[PDF](#)]

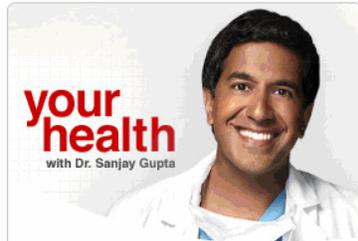
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Figure 5.12 (Appendix E 8): JAMA[®] Patient Page

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Figure 5.13 (Appendix E 9): CNN™ Health website

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Figure 5.14 (Appendix E 10): New York Times™ Health Section website



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Figure 5.15 (Appendix E 11): Google™ Search Engine, main page

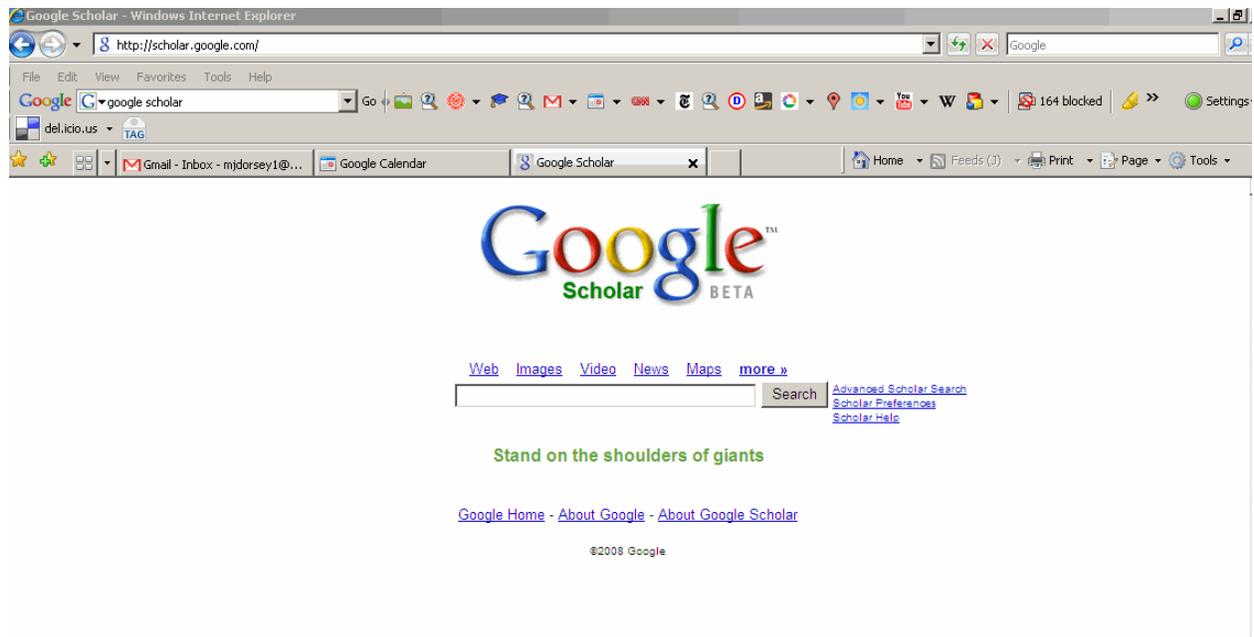


Figure 5.16 (Appendix E 12): Google Scholar™

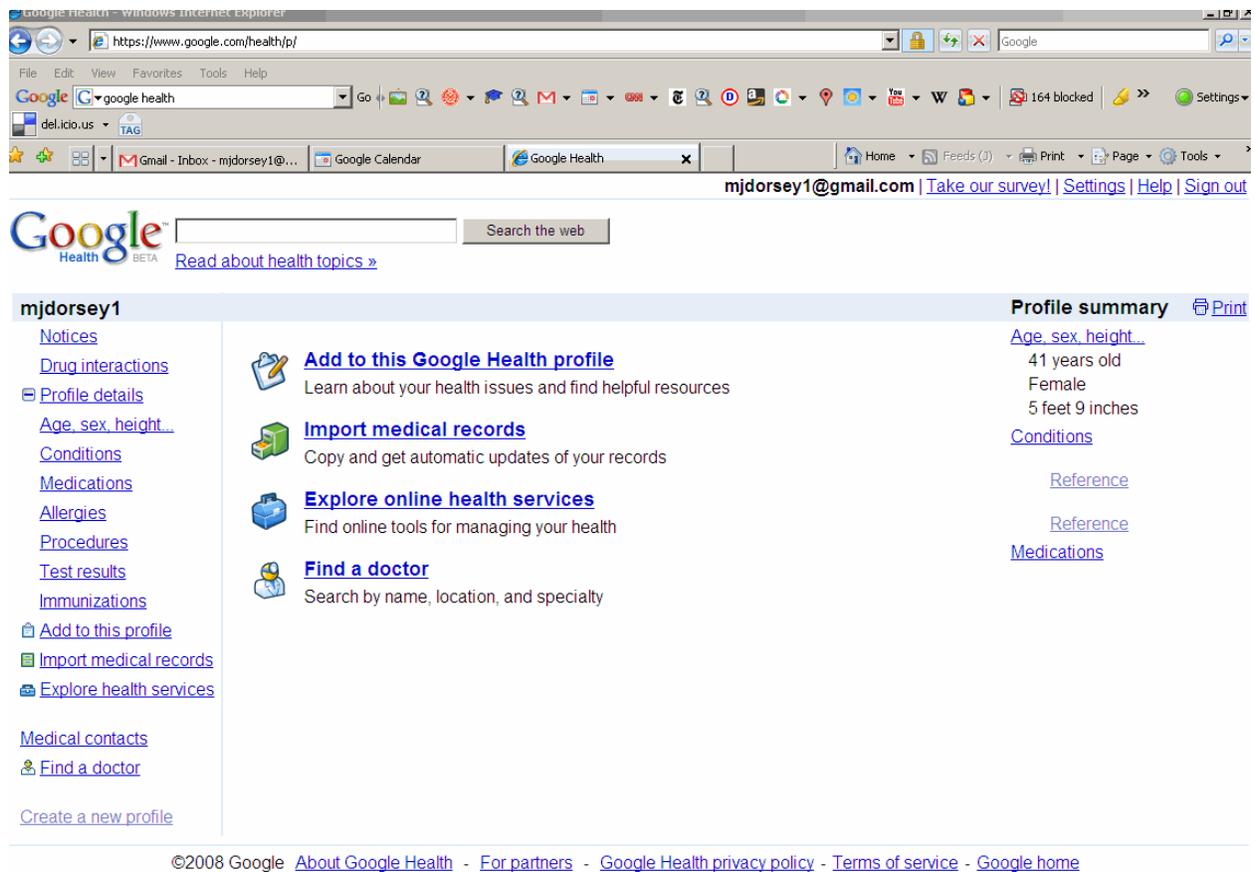


Figure 5.17 (Appendix E 13): Google Health™

NOTES

Note 1

For further information about the Qualitative Data Analysis Program (QDAP) at the University of Pittsburgh, contact the Director at the following information:

Dr. Stuart W. Shulman
Associate Professor
University of Pittsburgh
University Center for Social and Urban Research
121 University Place, Suite 600
Pittsburgh, PA 15260
Phone: 412-624-3776 | Fax: 412-624-4810
E-mail: Shulman@pitt.edu
(<http://shulman.ucsur.pitt.edu/>)

Note 2

As a side, but relevant note, Wikipedia is receiving new academic attention in the information science field as a source of credible information. Fallis boldly comments in the *Journal of the American Society of Information Science and Technology* that, “the reliability of Wikipedia compares favorably to the reliability of traditional encyclopedias. Furthermore, the reliability of Wikipedia compares even more favorably to the reliability of those information sources that people would be likely to use if Wikipedia did not exist.”⁸²

BIBLIOGRAPHY

1. Fox S. *Online Health Search 2006*. Princeton: Pew Internet & American Life Project; October 29, 2006 2006.
2. Simon D, Loh A, Wills CE, Harter M. Depressed patients' perceptions of depression treatment decision-making. *Health Expect*. Mar 2007;10(1):62-74.
3. Patrick K, Koss S, Deering MJ, Harris L. Consumer Health Information: A Federal Perspective on a Important Aspect of the National Information Infrastructure. Paper presented at: Community Networking, 1995. 'Integrated Multimedia Services to the Home'. 20-22 June 1995, 1995.
4. Gallo JJ, Bogner HR, Morales KH, Post EP, Lin JY, Bruce ML. The effect of a primary care practice-based depression intervention on mortality in older adults: a randomized trial. *Ann Intern Med*. May 15 2007;146(10):689-698.
5. JCAHO. *Comprehensive accreditation manual for hospitals: the official handbook: CAMH / Joint Commission on Accreditation of Healthcare Organizations*. Oakbrook Terrace, Ill.: Joint Commission on Accreditation of Healthcare Organizations; 2007.
6. Reynolds CF, 3rd, Kupfer DJ. Depression and aging: a look to the future. *Psychiatr Serv*. Sep 1999;50(9):1167-1172.
7. Coulehan JL, Block, M.R. *The medical interview: mastering skills for clinical practice, 5th ed*. Philadelphia: F.A. Davis Co.; 2006.
8. NIA. *Working with Your Older Patient A Clinician's Handbook*. Bethesda: National Institute on Aging; 2004.
9. Ybarra M, Suman M. Reasons, assessments and actions taken: sex and age differences in uses of Internet health information. *Health Educ Res*. Jul 31 2006.
10. Dickerson S, Reinhart AM, Feeley TH, et al. Patient Internet use for health information at three urban primary care clinics. *J Am Med Inform Assoc*. Nov-Dec 2004;11(6):499-504.
11. Rideout VA. *E-Health and the Elderly: How Seniors Use the Internet for Health Information*. web page; report]. January 2005; <http://www.kff.org/entmedia/7223.cfm>. Accessed December 11, 2006.
12. Covell DG, Uman GC, Manning PR. Information needs in office practice: are they being met? *Ann Intern Med*. Oct 1985;103(4):596-599.
13. Lambert SD, Loiselle CG. Health information seeking behavior. *Qual Health Res*. Oct 2007;17(8):1006-1019.
14. Case D. *Looking for information: a survey of research on information seeking, needs, and behavior*. 1 ed. Amsterdam; New York: Academic Press; 2002.

15. Foster A. A Nonlinear Model of Information-Seeking Behavior. *J Am Soc Info Sci & Tech.* 2004 2004;55(3):228-237.
16. Freimuth V, Stein, JA, Kean, TJ. *Searching for health information: the Cancer Information Service model.* Philadelphia: University of Pennsylvania Press; 1989.
17. Leckie GJ, Pettigrew KE, Sylvain C. Modeling the information seeking of professionals: a general model derived from research on engineers, health care professionals, and lawyers. *Library Quarterly.* 1996;66(2):161-193.
18. NCBI. MeSH Database; 2008.
19. Merriam-Webster Online Dictionary. <http://www.merriam-webster.com/>. Accessed May 7, 2007.
20. *Information science and knowledge management.* Vol 8: Dordrecht: Springer; 2006.
21. USC. *The Digital Future Report, Surveying the Digital Future, Year Four.* Los Angeles: University of Southern California; 2004.
22. Flynn KE, Smith MA, Freese J. When do older adults turn to the internet for health information? Findings from the Wisconsin Longitudinal Study. *J Gen Intern Med.* Dec 2006;21(12):1295-1301.
23. Meischke H, Eisenberg M, Rowe S, Cagle A. Do older adults use the Internet for information on heart attacks? Results from a survey of seniors in King County, Washington. *Heart Lung.* Jan-Feb 2005;34(1):3-12.
24. Robb C, Haley, W.E., Becher, M.A., Polivka, L.A., Chwa, H. Attitudes towards mental health care in younger and older adults: similarities and differences. *Aging & Mental Health.* March 2003 2003;7(2):142-152.
25. Wicks DA. Older Adults and Their Information Seeking. *Behav Soc Sci Librar.* 2004;22(2):1-26.
26. Williams P, Nicholas D, Huntington P. Non use of health information kiosks examined in an information needs context. *Health Info Libr J.* Jun 2003;20(2):95-103.
27. Lorence D, Park H. Study of education disparities and health information seeking behavior. *Cyberpsychol Behav.* Feb 2007;10(1):149-151.
28. Feltwell AK, Rees CE. The information-seeking behaviours of partners of men with prostate cancer: a qualitative pilot study. *Patient Educ Couns.* Aug 2004;54(2):179-185.
29. West DM, Miller EA. The digital divide in public e-health: barriers to accessibility and privacy in state health department websites. *J Health Care Poor Underserved.* Aug 2006;17(3):652-667.
30. Miller EA, West DM. Characteristics associated with use of public and private web sites as sources of health care information: results from a national survey. *Medical Care.* 2007;45(3):245-251.
31. Andrews JE, Pearce KA, Ireson C, Love MM. Information-seeking behaviors of practitioners in a primary care practice-based research network (PBRN). *J Med Libr Assoc.* Apr 2005;93(2):206-212.
32. Bennett NL, Casebeer LL, Kristofco R, Collins BC. Family physicians' information seeking behaviors: a survey comparison with other specialties. *BMC Med Inform Decis Mak.* 2005;5(1):9.

33. Bennett NL, Casebeer LL, Kristofco RE, Strasser SM. Physicians' Internet information-seeking behaviors. *J Contin Educ Health Prof.* Winter 2004;24(1):31-38.
34. Bennett NL, Casebeer LL, Zheng S, Kristofco R. Information-seeking behaviors and reflective practice. *J Contin Educ Health Prof.* Spring 2006;26(2):120-127.
35. Boissin F. Information-seeking behaviour and use of the Internet by French general practitioners: a qualitative study. *Health Information & Libraries Journal.* 2005;22(3):173-181.
36. Casebeer L, Bennett N, Kristofco R, Carillo A, Centor R. Physician Internet medical information seeking and on-line continuing education use patterns. *J Contin Educ Health Prof.* Winter 2002;22(1):33-42.
37. Coumou HC, Meijman FJ. How do primary care physicians seek answers to clinical questions? A literature review. *J Med Libr Assoc.* Jan 2006;94(1):55-60.
38. D'Alessandro DM, Kreiter CD, Peterson MW. An evaluation of information-seeking behaviors of general pediatricians. *Pediatrics.* Jan 2004;113(1 Pt 1):64-69.
39. Dawes M, Sampson U. Knowledge management in clinical practice: a systematic review of information seeking behavior in physicians. *International Journal of Medical Informatics.* Vol 71; 2003:9.
40. Dee C, Blazek R. Information needs of the rural physician: a descriptive study. *Bull Med Libr Assoc.* Jul 1993;81(3):259-264.
41. Dorsey M, Detlefsen E. Investigating information-seeking behaviors of primary care physicians who care for older depressed patients and their family caregivers: a pilot study. *Journal of the Canadian Health Libraries Association (JCHLA).* 2005;26(4):111-116.
42. Gorman PN, Yao P, Seshadri V. Finding the answers in primary care: information seeking by rural and nonrural clinicians. *Medinfo.* 2004;11(Pt 2):1133-1137.
43. Magrabi F, Coiera EW, Westbrook JI, Gosling AS, Vickland V. General practitioners' use of online evidence during consultations. *Int J Med Inform.* Jan 2005;74(1):1-12.
44. McKnight M, Peet M. Health care providers' information seeking: recent research. *Med Ref Serv Q.* Summer 2000;19(2):27-50.
45. Nylenna M. Primary care physicians and their information-seeking behaviour. *Scandinavian Journal of Primary Health Care.* 2000;18:9-13.
46. Owen DJ, Fang ML. Information-seeking behavior in complementary and alternative medicine (CAM): an online survey of faculty at a health sciences campus. *J Med Libr Assoc.* Jul 2003;91(3):311-321.
47. Thompson ML. Characteristics of information resources preferred by primary care physicians. *Bull Med Libr Assoc.* Apr 1997;85(2):187-192.
48. Detlefsen EG. The information behaviors of life and health scientists and health care providers: characteristics of the research literature. *Bull Med Libr Assoc.* Jul 1998;86(3):385-390.
49. Ellis D. Modeling the information-seeking patterns of academic researchers: A grounded theory approach. *Library Quarterly.* 1993;63(4):469-486.
50. Ellis D. A Behavioral Model for Information Retrieval System Design. *J Information Science.* 1989;15(4/5):237-247.

51. Ellis D. Modeling the information seeking patterns of engineers and research scientists in an industrial environment. *J Documentation*. 1997;53(4):384-403.
52. Ellis D, Cox D, Hall K. A comparison of the information seeking patterns of researchers in the physical and social sciences. *J Documentation*. 1993;49(4):p356-369.
53. Cogdill KW. Information needs and information seeking in primary care: a study of nurse practitioners. *J Med Libr Assoc*. Apr 2003;91(2):203-215.
54. Kuhlthau CC. Inside the Search Process: Information Seeking from the User's Perspective. *J Am Soc Inform Sci*. 1991;42(5):361-371.
55. Glaser B, Strauss A. *The discovery of grounded theory; strategies for qualitative research*. Chicago: Aldine Pub. Co.; 1967.
56. Wilson T. Models in information behaviour research. *Journal of Documentation*. 1999;55(3):249-270.
57. Wilson TD. On user studies and information needs. *J Documentation*. 1981;37(1):3-15.
58. Gorman GE, Clayton P. *Qualitative research for the information professional; A practical handbook*. 2nd ed. London: Facet Publishing; 2005.
59. Roberts N. Social considerations towards a definition of information science. *J Documentation*. 1976;32(4):249-257.
60. Quinn MP. *Qualitative evaluation methods*. Beverly Hills: Sage Publications; 1980.
61. Ashbury F, Iverson D, Kralj B. Physician communication skills: Results of a survey of general/family practitioners in Newfoundland. *Med Educ Online*. April 19, 2007 2001;6:1.
62. Dorsey MJ. Your participation in my doctoral research study. E-mail correspondence ed. Pittsburgh; 2007:1.
63. Healthy_Advice. Miscellaneous brochures.; 2008.
64. Tai-Seale M, McGuire T, Colenda C, Rosen D, Cook MA. Two-minute mental health care for elderly patients: inside primary care visits. *J Am Geriatr Soc*. Dec 2007;55(12):1903-1911.
65. Reynolds CF, 3rd, Cruz M, Teh CF, Rollman BL. Improving evidence-based management of depression for older Americans in primary care: if not now, when? *J Am Geriatr Soc*. Dec 2007;55(12):2083-2085.
66. Glaser BG. Remodeling Grounded Theory. *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research [On-line Journal]*. Vol 5. March 2004 ed; 2004.
67. Glaser BG. *Theoretical sensitivity*. Mill Valley, CA.: Sociology Press; 1978.
68. Morse JM. The significance of saturation. *Qualitative Health Research*, 1995: 147.
69. Guest G, Bunce A, Johnson L. How Many Interviews Are Enough? An Experiment with Data Saturation and Variability. *Field Methods*. 2006;18(1):59-82.
70. Kuzel A. Sampling in qualitative inquiry. In: Crabtree B, ed. *Doing qualitative research*. Newbury Park, CA: Sage; 1992:31-44.
71. MacQueen KM, McLellan E, Kay K, Milstein B. Codebook development for team-based qualitative analysis. *Field Methods*. 1998;10(2):31-36.

72. Wikipedia_Contributors. Fleiss' kappa.
http://en.wikipedia.org/w/index.php?title=Special:Cite&page=Fleiss%27_kappa&id=209017339. Accessed 3 May 2008.
73. Krippendorff K. *Content Analysis: An Introduction to its Methodology*. Beverly Hills: Sage; 1980.
74. Rietveld T, van Hout R. *Statistical techniques for the study of language and language behaviour*. Berlin: Mouton de Gruyter; 1993.
75. Krippendorff K. Reliability in content analysis: Some common misconceptions and recommendations. *Human Communication Research*. 2004;30(3):411-437.
76. Craggs R, Wood M. Evaluating Discourse and Dialogue Coding Scheme. *Computational Linguistics*. 2005;31(3):289-296.
77. Wikipedia_Contributors. Baby Boomer.
http://en.wikipedia.org/wiki/Baby_boomer. Accessed July 7, 2008.
78. Wikipedia_Contributors. Generation Y.
http://en.wikipedia.org/wiki/Generation_Y. Accessed July 7, 2008.
79. Wikipedia_Contributors. List of Generations.
http://en.wikipedia.org/wiki/List_of_generations. Accessed July 2008, 2008.
80. Usability First. *Usability Glossary*. Foraker Design; 2005.
81. Detlefsen EG, Dorsey MJ, Reynolds CF, 3rd. [Poster] Measuring the 'Senior Friendliness' of Geriatric Mental Health Websites. *Osaka Silver Congress, International Psychogeriatric Association*. Osaka, Japan; 2007.
82. Fallis D. Toward an epistemology of Wikipedia. *Journal of the American Society for Information Science and Technology*. 2008;59(10):1662-1674.