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What do healthcare providers think of patients who use the Internet?: An exploratory study

Matt Willis

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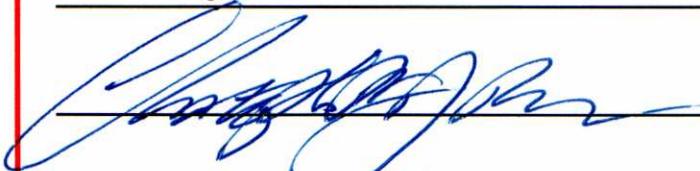
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**WHAT DO HEALTHCARE PROVIDERS THINK OF
PATIENTS WHO USE THE INTERNET?:
AN EXPLORATORY STUDY**

BY

MATT WILLIS

BACHELOR OF ARTS

THESIS

Submitted in Partial Fulfillment of the
Requirements for the Degree of

**Master of Arts
Communication**

The University of New Mexico
Albuquerque, New Mexico

December, 2009

DEDICATION

Carol Willis,
Howard Willis,
Jennifer McMahon,
& Nancy Wilson

Thank you for your support and encouragement.
Without it this research would not be possible.

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ABSTRACT

The Internet is a technology that is influencing multiple human factors (i.e. cognitive and social). Adults who seek information on the Internet about their health conditions are becoming more common. Providers have been wary of patient information searches, fearing that, at worst, conflicting information may provoke confrontation and doubt and, at best, the information is trivial or already well known to the provider. For this exploratory study a survey was conducted that investigates trends in healthcare provider information technology use and information seeking opinions. This survey was followed by a highly structured interview of n=21 providers. The researcher shows two provider strategies by which patient's information seeking can be used to strengthen the professional clinical relationship.

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Introduction

In this study the researcher shows that independent, web-based information seeking by patients need not stress the patient-provider relationship. Described are two observed strategies by which providers may use this patient behavior to improve both satisfaction and outcomes.

Providers have been wary of patient information searches, fearing that, at worst, conflicting information may provoke confrontation and doubt and, at best, the information is trivial or already well known to the provider. The researcher shows two provider strategies by which patient's information seeking can be used to strengthen the professional clinical relationship.

This research is presented in the following format: a brief background is supplied, conveying to the reader the importance of understanding relationships with the addition of democratized information access via the Internet. Then, relevant literature is reviewed concerning prior work. Finally, the pilot study research design is described and the findings are analyzed. Possible directions are explored as this study informs the design of future research into leveraging the Internet as a cooperative tool in the patient-provider relationship.

On Information

Imagine yourself in 1946, standing in front of an imposing 80 foot long, 30 ton, black technologic monolith composed of 17,000 vacuum tubes. Meet the Electronic Numerical Integrator and Computer (ENIAC), the first general purpose electronic computer. Commissioned by the United States Army during World War II

ENIAC was designed to solve most general computing problems, and one specific task was to calculate artillery firing tables for ballistic research (Eckert, 1980).

The creation of ENIAC along with other first generation computers being developed all over the world: Zuse Z3 in Germany around 1941, Colossus from the United Kingdom in 1944, and the CSIRAC from Australia in 1949 set humanity down a path that to this day cannot be reversed. It has now been approximately 62 years since the inception of digital computational development, and researchers are beginning to look at how this technology has changed social relationships, working environments, and even the way individuals think (Friedman, 2005; Small & Vorgan, 2008). To further illustrate this concept, the next section explores some simple technologies that have had profound cognitive, interpersonal, and individual impacts.

Technological Transformations: Buttons & Books

Historical epochs are typically marked, among other things, by the technological achievements of a society. To clearly illustrate the profound shaping that can occur from a new technology introduced into a social system, Johnson (2004) recounts two stories concerning warmth and how the two related technologies changed interpersonal relations and even social structure. The background of the story is described by White (1978) in detail:

“Lord and lady increasingly ate, lived, and slept in withdrawing rooms. As affluence increased, noble residences were redesigned so that rank after rank of the social structure could enjoy the new sense of individuation in its lifestyle. [The chimney] ... may like-wise have fostered the individualism of the later Middle Ages more than all the humanists. Yet a high social price was paid for the new ideal of the idiosyncratic person. As communication between classes decreased, class consciousness and snobbery grew... The

chimney is as important as any other single factor in the shift from medieval to Occidental attitudes, and not all of this process was good (p 271-272).”

The above excerpt is a look at early fireplace technology and use, as fireplaces were only located in the great halls of castles or manors, forcing all social strata to sleep in the same large area in order to take advantage of the heat source (Johnson, 1998).

As White describes: the use of individual fireplaces with chimneys created segregated living quarters: lords, ladies, servants, and serfs communicated less, thus reinforcing a strict hierarchical class structure. Prior to the installation of individual chimneys this social structure was disrupted when all social classes shared one, large heated area. Even if curtains were drawn for a small degree of privacy the shared space was enough to ease or equalize social tensions during the long, cold winter months. As White (1978) concludes, this invention plays a heavy role in the rise of European individualistic attitudes.

Furthermore, the discovery of new knitting techniques and the invention of the button contributed to an increased life expectancy, the tighter clothing decreased the chance of disease and the likelihood that babies would die from the cold weather. This increase in life expectancy is believed to be associated with parents and siblings gaining a stronger affection for children, as it became less likely that babies would expire at a young age (White, 1978).

These two examples of unlikely technologies and their profound effects help create a vivid picture of the complex ramifications that can occur from simple ideas and actions. Widespread access to medical knowledge will have equally significant effects in the healthcare industry and on the interpersonal patient-provider

relationship. As White notes, not all of the process may be a good thing; unintended consequences may come from the simplest of actions.

The following example takes these concepts and applies them to an informational context. One of the most significant technological advancements in history, books, changed how information is disseminated, processed, and accessed. Books brought information to a wide audience, allowing information to be shared and spread much more quickly than by word of mouth. Books also keep content consistent so identical information can be replicated to many people. As with all technologies, new skills needed to be acquired by the user in order to gain benefits from the technology. In the case of books, reading is the required skill to access information. The act of reading is a miracle in itself, it is not an inherent ability unlike speech, reading is a skill that humans have had to cognitively develop over thousands of years (Wolf, 2007).

Since the dissemination of literacy the transfer of information has become a new commodity. The value of information continues to accelerate as the world finds itself in an increasingly information based economy (Bell, 1976; Machlup, 1973). In fact, the statement can now be made that information, like electronics, has simultaneously become cheaper and more valuable.

One last parable vividly illustrates the profound societal effects of books and information democratization. This seemingly new idea of patients accessing information online is nothing new at all; this type of relationship between individuals and knowledge has reoccurred throughout history, starting with the Gutenberg Bible. The advent of movable type allowed, for the first time in history,

the mass of society to own a personal copy of the Bible. Prior to movable type, people received information from the Bible by attending church. In this sense clergy were gatekeepers of the word of God. Once Gutenberg's Bible was produced people begin to think about god in different ways and interpret the Bible on their own (Keep & McLaughlin, 2000). Although the layman was not as knowledgeable in the scriptures as a trained priest, the exposure to new information that was previously "privileged" became a force for change. This research is established on the idea that patient-provider Internet access relationships are nothing new, and that the patient-provider relationship is on the cusp of a similar level of change that occurred with the introduction of the Gutenberg Bible and the printing press that made it possible. The printing press as a method for information conveyance is one of the strongest change agents the world has ever known (Eisenstein, 1980). The Internet has become a modern metaphor for Gutenberg's press (Dewar, 1998).

Computing and Internet connectivity have greatly accelerated the diffusion of and access to information, more so than any technological predecessor. For example a Google search on "technology" brings up 1,290,000,000 (and growing) results of articles, websites, and information sources. While this is a broad category to search in, search keywords can be refined. However, results would still return hundreds or millions of sources, far too many to realistically read, and this number grows on an hourly basis. Massive Google search results illustrate one way in which information overload begins to seep into daily life, increasing the possibility of misinformation exposure (Graham, 1999). This quantity of information can be detrimental when users begin to perform searches on personal health related topics, especially when

considering the massive volume of health related websites found on the Internet (Cullen, 2006). Information found by patients can be misleading, increasing the likelihood that providers will not be familiar with the same information or even know what the patient is talking about. Being on the “same page” is an important factor in the patient-provider relationship.

Rationale for Research: Improving Healthcare Relationships, Understanding the Role of Information

The permeation of Information Communication Technology (ICT) through all aspects of modern life highlights the importance of studying ICT and human relationships. This research focuses not on mundane relationships with ICT but the professional relationship between patients and providers where ICT is involved and indeed has an influence in the relationship. One of the main points from this synthesis of research is that it has fundamentally changed the way information is used, handled, and interacted with in all areas of social life, especially concerning the healthcare industry. Operating from the premise that information is at the heart of every institution logically determines that the social institution most reliant on information is the healthcare industry. Rice & Katz (2001) chronicle ICT history in the healthcare industry:

“Before the Internet existed, there were private prototype systems that incorporated all the elements of what we commonly think of as characteristics of the Internet; some of these even included elements that are beyond those that are currently available on the Internet. Depending on the system, these would include news and wire service feeds, video-on-demand, streaming conference presentations, virtual auditoriums, electronic mail, electronic

reference books, text-to-voice applications, proto-Internet telephony, remote server access, online TV broadcasts, audio books, stereo music, and full-motion, high-fidelity videoconferencing (p. 1)".

It is made clear that ICT is not a new innovation for use in healthcare; the interesting note is that ICT has been integrated into the healthcare field since before the Internet's occurrence. Not only do healthcare organizations generate information but they deal in the specific types of information validation. Healthcare providers serve as information professionals. This represents a clear desire to use ICT in order to increase efficacy of care, efficiency in the institution, and even aid the knowledge base of caregivers. These outcomes and innovations of technology in healthcare are supportive of using technology to promote and enhance human wellbeing.

The Need for Interdisciplinary Research

Literature related to this subject of research is found in journals from areas in medicine, information science, communication, and numerous other fields and disciplines. Because of the nature of this decentralized research and the contributions from each field along with future benefits, each discipline may see the importance to acknowledge the interdisciplinary nature of research of this scope. Additionally, an interdisciplinary focus on a comprehensive phenomenon such as patient-provider relationships and the use of ICT is best because the question itself involves the phenomena, theories, and methods of more than one discipline (Szostak, 2007). Healthcare in America reflects the interdisciplinary model, drawing research, theory, methodology, and application from many fields: art, biology,

chemistry, neurology, nutrition, health science, and cognitive science, to name a few. Also, the rise of evidence based medicine and medical decision making (Elstein, 2004) were born from research in computer science, engineering, and use of the scientific method to inform medical practice.

Goal of Research

To reflect the importance of interdisciplinary research, a review of literature has been conducted across multiple disciplines that show the common threads of research concerning the patient-provider relationship and ICT use, specifically the Internet as a technology. Literature from various disciplinary journals is useful in constructing accurate and useful models, research hypotheses, and research questions that describe phenomena important to more than one discipline.

The aim of this research is to describe healthcare provider use and opinions regarding health information, both accessed on the Internet by patients and brought by patients into the face-to-face consultation. Providers' use of ICT and thought, opinions, and behaviors toward patients who use health information found on the Internet is an important dynamic occurring in modern healthcare consultations. Another essential task for this research is to add to the existing body of research, as it calls for further research in this direction, and continued work in patient-provider communication and the Internet can overcome dialectical tensions in the relationship (Imes, Bylund, Sabee, Routsong, & Sanford, 2008).

Physicians are knowledge workers in the business of information generation, explanation, and application. The procurement, use, and seeking of information in

the patient-provider relationship has a high price placed on its successful use where it can improve the quality of care, lower costs, improve productivity and efficiency.

The stakes are, literally, life and death.

Review of Literature: Patients, Providers, & the Internet

The literature synthesized for this review is an interdisciplinary collection of relevant research from health science, medical informatics, social informatics, information science, and communication journals. The literature review is designed to progress from looking at the healthcare institution as a whole and the involvement with technology to then focusing on patient-provider relationships. This organizational scheme was selected as a way to build an informative body of literature that covers providers' own relationships with and prior assumptions about technology before expanding to include patient-provider communication and addressing ICT factors relevant to this relationship. The topics are organized in the following manner:

- * Aspects of the use of information communication technology in healthcare institutions showcasing its benefits and risks.
- * Aspects of the development of electronic medical records and some implications for patients and providers.
- * Aspects of Internet use among patients.

Use of Information Communication Technology in Healthcare

What research has shown in patients' use of technology and the Internet is that technology can empower its users, such as physicians (Adams, Blandford, & Lunt, 2005). Physicians' proficiency in utilizing technologies such as email and Internet information is of interest in the changing healthcare landscape (Purtkin, 2001). Also, physicians' use of information technology may reveal further information (such as correlations) concerning how a physician's use of information technology relates to that physician's relationship with an Internet informed patient.

One important issue concerning ICT use in clinical settings is adoption. What characteristics (if any) does ICT have that lead to higher adoption rates by physicians? When designing an ICT infrastructure what factors must be considered for the system to be successful? Are information use and seeking behaviors incorporated into the design model? One study states that "information technology systems are not widely accepted by health care professionals (Moore, 1996, p. 57)." Several reasons exist for low ICT adoption rates among physicians. One reason is that technologies may be perceived as immature, offering no great advantage over the current system (Moore, 1996). Other contributing factors are: the system or systems are designed from the perspective of an engineer or programmer rather than the physician. Usability tests can check for ease of use and function but are still not designed with the physician as an active tester. Typically, systems of this nature are designed for office applications and redesigned for medical applications (Karat, et al., 1998). Some systems may inevitably fail from inception if they are

underfunded and over ambitious (Collins, 2006). Finally, another risk in preventing adoption of ICT is that no human factors were integrated into the design of the system, ranging from inadequate training to no support staff devoted to system maintenance and upkeep (Gosbee, 1999).

The biggest factor in preventing adoption of healthcare ITC systems is not technologically related. The barriers to the use of ICT in health institutions are primarily sociological, cultural, and organizational (Moore, 1996). Similar to the roadblocks that HIPAA may introduce to the design of a new private health record access model, health organizations provide difficulties in the adoption and implementation of information technology systems. This is why further studies, models, and designs of ICT must consider how information is used in the institution. One study, recognizing the need for understanding the human network as opposed to the device network, performed interviews with medical staff over a period of three years investigating the institution's IT system. It was concluded that individuals do not simply organize around an ICT system. However, IT systems do reshape social relations between professional groups (Bont & Bal, 2008).

Digital libraries are becoming more common and necessary in large academic hospitals and other health institutions because of the requirement to remain current on the large body of consistently growing medical literature. This sheds light on the information needs of physicians, in addition to charting and other paper based forms of information that medical professionals are forced to use; there is an extravagant amount of digital information. This also lends to the idea that physicians are gatekeepers of information. These health institution libraries are

accessible to healthcare staff and even written in a style that make the texts comprehensible primarily to healthcare professionals. Conceptually, this specialization of information and its gatekeepers is reminiscent of the safeguarding of religious material prior to Gutenberg's press.

A mixed methods assessment of healthcare institution digital libraries found that successful information centers had services for patrons to quickly identify, understand, and access relevant materials. This also required that the library have "a team of experts to obtain, assess, catalogue, and annotate information for the users (Ismond & Shiri, 2007, p. 744)". This conveys a key idea: support and access are as important as the information itself. Information support (information professionals' help) and access are an important difference to highlight when looking at contrasts in access between patients and providers. Traditionally, physicians have access and support for information while patients typically do not.

When discussing ICT systems in healthcare institutions it is important to consider the expected and unexpected consequences of ICT. Even the most robust, well designed, well funded and researched computer information system can have initially unforeseen problems. Problems may include system failure; Wachter (2006) describes an account where the information was not properly handled by the system:

"Information system often fails to accurately chronicle patients' history of pneumococcal vaccination. In the past, this uncertainty gave clinicians pause before vaccinating inpatients, because physicians wanted to avoid unnecessary vaccinations. Now, unless the physician is certain that the patient has received the vaccine in the past, it is usually administered.

Consequently, many patients inappropriately receive multiple doses. (p. 2780)".

Furthermore, ICT systems that fully automate dosage, diagnosis, measurement of quality, and level of care often lack human logic and understanding of multi-organ system diseases. In one scenario Wachter (2006) recalls a famous example of a hypothetical 79-year-old woman with 5 common diseases:

"hypertension, osteoporosis, osteoarthritis, type 2 diabetes mellitus, and chronic obstructive pulmonary disease. Had this patient received guideline concordant therapy, she would have been administered 13 medicines, costing more than \$5000 per year, and with more than 20 potential drug-disease, drug-drug, and drug-diet interactions. The health care practitioner prescribing this poly-pharmacy would receive a high ranking on quality measurement metrics, even if the adherence to clinical guidelines would have harmed or bankrupted this patient (p. 2781)."

These two situations show the grave danger that can arise from solely relying on a computer automated system to analyze and measure care. These blunders in technology within the healthcare organization speak loudly to the many problems patients accessing health information online run into such as information accuracy. It is through these examples and in this problem that Borgmann's statement that technology can create an "endless and aimless course of problem solving" comes to life (Borgmann, 1987). This echoes the reoccurring notion that it is not technology that is the problem; many institutions can buy software off the shelf to increase productivity (Wachter, 2006). The associated problems are information support and sociological problems. At the end of the communication chain of

events patients and providers are left to deal with these dialectical tensions.

This section has looked at the use and attitudes of ICT among healthcare professionals within a healthcare institution. Technology used as information support tools are embraced by the healthcare industry for the ability to streamline processes and provide access to information that healthcare institutions value. However, this is not to say that technology is error proof, as this research has shown technology can miss errors and even create new ones. The use of ICT is only as useful as the staff's experience and knowledge of the data an ICT system manages. After reviewing technology use in the healthcare organization this review moves to information flowing out of the organization and into patients, before finally looking at the patient-provider relationship.

Electronic medical (health) records

Electronic medical records (EMR), also called electronic health records (EHR) have come about as part of HIPAA regulations enacted by congress in 1996 ("HIPAA - Frequently Asked Questions," 2008). This act is clearly a response to the need for standardization and regulation in healthcare information management. HIPAA is also an acknowledgement of how beneficial proper ICT systems can be for improving quality and cost of care. It is yet another application of technology built to handle the massive amounts of information that the healthcare industry generates.

EMR's would eliminate clutter from paper medical records, and possible fragmentation of paper based files across multiple health providers, physicians, caregivers and specialists. A comprehensive EMR would allow not only multiple instances for healthcare providers to examine and contribute, but provide a secure dossier of a patient's entire medical history. In 2004, President Bush enacted executive order no. 13335, calling for national adoption of an electronic health records network within 10 years (Bush, 2004). Although serious concerns about privacy and confidentiality have been expressed concerning this action (Rothstein & Talbott, 2006), this mandate further supports the growth of information technology in all aspects of healthcare.

Of course, as is typical with positions on technological values, ideals, and policy, the technological distrust that Rothstein displays by presenting a case against the potential problems that technology may bring is met with equal verve from Agrawal (2007) in claiming that ICT has the potential to fix and improve healthcare and ignite an information technology revolution (Agrawal, Grandison, Johnson, & Kiernan, 2007). Both arguments are perceptions of the possibilities that may go wrong or right if certain criteria are met. This debate, in a Borgmann-esque perspective of the argument, is fruitless. It is not a question of technology or ICT capability; it is a question of information and sociocultural networks. It is not unusual for questions about the use of technology to spawn research supportive of the polarizing opinions on either side of this argument. This is not likely to go away anytime soon but it does suggest that studying how people use the technology is just as important – if not more important – than judging technology on its own.

Because patients now have access to health information like never before, a demand has risen to access even more health information online: patients' private health records. Personally controlled health records reflect the information seeking and sharing environment created by the model of web 2.0 meaning collaboration and information exchange. This movement of individual access and gatekeeping of personal health information would allow the user to choose who has access to their personal health information. The demand for information access is sure to further alter the patient-provider relationship, for better or worse. Many studies have focused on security and policy factors (Rostad & Nytro, 2008) for developing security models to facilitate access control. New access rights to private health records will have an impact on, and need to comply with, HIPAA standards. The kind of information use consumers want may demand that HIPAA standards change. Many HIPAA regulations still cause security flaws, problems, and inefficiencies (Mercuri, 2004).

Internet search behemoth Google fundamentally changed the way every person using the Internet searches for and receives information. Most recently Google is partnering with Microsoft under the shared vision is to increase health record access (Lohr, 2007). The long-term goal of the duo (with more organizations joining the effort) is to make patients the gatekeepers of their own personal health records. If this goal is reached an individual could disclose what information they choose and to whom they choose. Everything would be accessed digitally from anywhere and would include other tools and resources for patients in addition to medical history. The aim of this project is to create a thorough personal tome of

knowledge regarding one's medical history. While this scenario clearly carries with it other legal, privacy, and ethical issues regarding health, it is first and foremost an act of information advocacy and increased access on behalf of patients.

The internet as a form of ICT networking outside of the clinical hospital is changing relationships of both patients and providers. The influence on law, policy, ethics, and medical school training from the Internet as a medium for information is remarkable (Purtkin, 2001). If the Internet as a substrate for information has altered areas of health, then it is clearly important to study the substrates of information that exist in the hospital in order to understand what functions differently inside the clinical hospital, than outside (with the use of the Internet).

With companies like Google and Microsoft leading the charge for easier access to personal health information, new security and privacy issues will lead to new questions and concerns in the healthcare industry. Medically informed patients – whether good or bad for patient provider interactions – have put an additional pressure on the clinical health information infrastructure. Now health institutions must keep up with information use and encourage the use of ICT that has become so standardized and widely used in the rest of society. The state of the Internet and technology on patient-provider relations has spawned a new field in healthcare: e-health, electronic health, cyber medicine, or telemedicine. Concepts like asynchronous healthcare add further evidence that patients do indeed desire online communication with their health providers (Wilson, 2007) and control over who can see their personal health records, as they have when granting access to profiles on a social networking site. What these trends in patient information access and

increased health information seeking on the Internet do represent is opportunity for health institutions to attract new patients, show sensitivity to patient preferences, and allow physicians to budget their time efficiently (Ferguson, 1998). Wilson (2007) argues that the patients demand for online health information will eventually change technology and healthcare as we know it. While ICT can increase quality of care and efficiency but it requires responsibility (Dewey, 1990).

This has been a brief look at the electronic healthcare records movement and how it will further alter healthcare in the United States. Empowering patients to take control of their own healthcare records gives patients more information to manage and research, possibly even encouraging further acquisition of information from sources on the web. The final section explores patients who use the Internet to inform themselves about personal health concerns and what that means for the patient-provider relationship.

Internet Use & the Patient Provider Relationship

More than half of Americans have broadband or Internet access in the home, and this number grew exponentially over the course of the 2007-2008 year (Horrigan, 2008). The most frequented sites on the internet are social networks, recently surpassing pornography (Tacer, 2007). Not only are people seeking more social interaction via the Internet, they are seeking health information in record numbers that have been steadily increasing since 2000 (Buente & Robbin, 2008). This deluge of American Internet users seeking health information has not only raised issues about health information privacy and validity, but this behavior has

had a profound impact on the clinical healthcare institution, specifically in the patient-provider relationship.

Between 75-80% of home Internet users have researched personal health issues online. Specifically, patients with a disease or disability are found to increase internet usage (Fox, 2008). Information seeking online has been proven beneficial for mental health care patients (Doherty, 2008) in decreasing stigma and increasing engagement and satisfaction of care. The number of Internet users seeking online health information has more than doubled since 2002 and online pharmaceutical seeking has tripled (MacManus, 2008).

Now patients *act* as highly informed consumers, both exposing themselves to more data, and viewing the doctor as a tool to validate information instead of as a care giver or diagnostician (Hogg, Laing, & Winkelman, 2003). The influx of newly informed patients has created a pressure on healthcare professionals. Interviews from Hogg et al describe health professionals as perceiving patients to be playing doctor, and patients begin to feel resentment from having health information obtained from the Internet. Hogg (2003) states that one reason for new found patient provider tensions could be consumers studying one condition relevant to them, while doctors have to study an entire field and also have medical training and understanding of many subjects. This has shown that patients can become more informed or up-to-date than their health provider. Hogg notes a scenario during which a patient desires a procedure from a new experimental clinical study that the doctor had not read. However, patients may also be misinformed or, unable to

critically assess information. Accessing information is one thing; interpreting it correctly is another.

While the tension over differing information causes friction between some patient-providers, online health information seeking has many benefits. Hogg's interviewing also found many doctors that appreciate the involvement of patients seeking health information and becoming more involved in the care process. Often times, this allows patients to ask detailed questions. One researcher finds that patients are now "acting as scientists" by using the internet to test out theories regarding their health (Sillence, Briggs, Harris, & Fishwick, 2006). In addition, Sillence et al found that patients use health information to search for support, alternative answers, or reassurance in a decision.

One study found that patients who received validation from the provider for their efforts about seeking Internet health information (whether the information was correct or incorrect) was associated with greater ratings of satisfaction for that visit and disagreement was associated with lower ratings (Bylund, 2007). This may also signal the importance of strong patient-provider communication that includes the use of Internet information seeking by patients. In support of this notion another study found that patient satisfaction was not associated with any technical quality of care but with quality of communication in the relationship (Chang, et al., 2006). These trends indicate an importance of understanding the role of Internet information and the provider's communication with patients concerning this factor. Continued research finds that provider competence with computers is also often

associated with greater patient satisfaction (Garrison, Bernard, & Rasmussen, 2002).

Method and Research Design

This study employs a qualitative and quantitative data collection approach to study the perceptions and actions of the physician to ascertain data about the patient-provider relationship when online health information is involved (Broom, 2005). The researcher recruited general and specialized healthcare physicians (n=21) for this study. Healthcare providers were recruited by self-selection from emails that were sent out on a list serve belonging to a large southwestern university hospital and surrounding area. Snowball sampling was also utilized: self-selected participants were asked to recruit any providers in their interpersonal network to participate in this study as well.

Data collection occurred in two phases. First, all healthcare providers were administered an online survey hosted by the site surveymoney.com. The survey (appendix B) consisted of 26 questions that addressed aspects of the healthcare providers' perceptions of information technology, experiences using information technology, and the healthcare providers' perceived behavior and opinions toward patients that researched health information online for the consultation. Second, after the survey was administered, 13 of the 21 providers were again self-selected for an in-depth structured phone interview containing 11 questions during which providers were asked to recall their experiences and interactions with patients whom they identified as having gone online to research health information. The

researcher received IRB approval for interviews and survey administration prior to the conduct of the study; healthcare providers received no reward for participation.

Research Questions

The research questions were crafted from a review of literature developed to address deficiencies of information about the doctor patient relationship, specifically the physicians' opinions and reactions to patients who research health information online (Broom, 2005; Diaz, et al., 2002; Elwyn, Edwards, & Britten, 2003; Gerber & Eiser, 2001; Hay-Rollins, et al., 2008; Smith, 1996). The research questions are then used to guide the development of survey and interview questions. The four research questions are:

RQ1: What is the provider's reaction to Internet information provided by patients?

RQ2: How are providers using the information that patients acquire?

RQ3: How does the provider's perceived familiarity and use of technology affect their behavior in a consultation with an Internet informed patient?

RQ4: How can providers use the Internet in face-to-face consultations to improve care?

Research question one probes at what is known about healthcare providers' communication strategies, with the hope that more information will be provided about developing theories for the patient-provider relationship concerning online health information seeking. Similarly, research question two examines the providers' use of what (if any) resources the patient has found online. Because the catalyst for change in this aspect of

patient-provider professional relationship is online information (Pemberton & Goldblatt, 1998), it is logical to look at the life of this information once it is communicated to the healthcare provider. In an attempt to inform the creation of theory it is important to look for possible predictive or corollary relationships found in the patient-provider relationships, as asked in research question three. Finally, research question four emphasizes the general goal of this study: how can Internet connectivity be utilized to improve care? The word “care” for this research is being defined as: the satisfaction of patients in their relationship with the provider and the beneficial outcomes of the patient-provider relationship.

Results

Survey analysis

Survey data of n=21 healthcare providers were analyzed by frequency distribution, cross-tabulation, and chi-square. Presented first are frequency distributions for each survey item. Survey items are grouped into relationships of: demographics, provider information technology (I.T.) perceptions, provider I.T. experience, and the main relationship examined in this study: provider attitudes and opinions toward patients who seek health information online for a consultation. The results of table 1 (Appendix A) demonstrate that the male/female ratio of participants is close to equal with 11 male and 10 female healthcare providers. Age of participants ranged from 29-69+ with more than half of the participants in the range of 44-58 years old. Ages were clustered into three age groups of young (29-

43), middle (44-58), and older (59-69+) age ranges. In order to better understand the working background of the participant population and how long participants have been involved in providing healthcare, the survey was also used to collect data with regard to the amount of years providers have been practicing in their specific field of medicine (either general or their specialization) and how many years they have been working at the current hospital, clinic, or facility. Data on table 1 shows that this sampled population has on average been working at the location and practicing medicine between 6-11 years. A small sample size continues to boast a good distribution of providers, both early in their careers (6-11) and later in their careers (18-23, 24-29).

To further investigate the relationship between providers' use and expectations of online health information and how this effects face-to-face encounters with online information seeking patients, the survey contains a series of items that represent healthcare providers perceived constructs of I.T. This is looked at by asking questions whose answers describe how comfortable participants feel with computer hardware and software. Table 2 (Appendix A) shows that sampled providers feel more confident in their ability to use and understand I.T. software than using and troubleshooting I.T. hardware; there is a 14.2% difference in the combined scores of "competent" and "very competent" between software and hardware perceptions. Providers' experience with technology also relates to their perceptions of and ability to use technology. Questions targeting experience with I.T. included ownership of I.T., hourly use of the web at home, times accessing the web per day, and experience (if any) with receiving training over the web. The provider

I.T. experience portion of table 2 reveals almost half of the sampled population owns some type of mobile device, a large percentage own either a desktop or laptop computer. This self selected group shows a high penetration of computers and a regular use of web access and use. Providers are accessing the web multiple times per day and not during single short sessions with over half of sampled providers spending 1-2 hours a day online. Over half of the sample population has received some form of professional training or degree over the web. Whether the training was medical related or not was unspecified. However the use of online training contributes to the understanding that providers are engaged in using the web, and that a large percentage have a level or trust in the ability to learn and train over the web. To better understand how providers feel about using I.T., the experience they have had using I.T., and any kind of relation between I.T. use and effects on patient consultations, the survey also contained a matrix of questions used to calculate a score of self-reported comfort level when performing a variety of common tasks on the web. The tasks consisted of: email, finances (bills, managing stocks and other finances), talking on an instant messenger client, using voice to voice chat, using video to video chat, shopping, searching for health information, and taking online courses. Each task was a 5 point Likert scale ranging from “never comfortable” to “always comfortable”. Combined questions allow for a maximum score of 40. Table 3 (Appendix A) shows the total scores for each provider of the sampled population with a mean score of 26.

Table 4 (Appendix A) complements the follow up provider interviews, the featured questions focus on the providers’ attitudes towards patients who seek

medical information online for the face-to-face consultation. Overall, providers view the internet as a useful tool in general for patients to use, the “lowest” Likert rating providers felt neutral on the question. However most of the results indicate that providers think online health information is “useful” or “very useful”. Providers are already using email with patients concerning medical conditions, and only 23.8% of surveyed providers framed the reason they do not as a security concern, stating that they do not but would if they felt that email were more secure. On the other hand more than half of participants stated they did not or would not use the Internet to give out medical advice (via open forums, comments, blogs, or “general public” means of communication), giving the impression that the web is a tool for personal connection with a patient the provider is working with, and not a tool for reaching a large audience of potential patients or other patients around the nation seeking medical information online.

Consistent with the observation of provider web use, medical professionals have also used the web to refer patients to specific online information and assisted patients with making decisions about what online information patients have independently found is useful. Thus far results show that the web has become a method of conversation and a tool in framing dialogue in the face-to-face visit between patient and provider. This is supported by the overwhelming response that 71.4% of providers prefer that their patients use the Internet to look for medical information. This result may be responsible for the 61.9% of providers state patients have even asked the provider for medical resources on the web. With regard to providers being willing to provide consultation to patients specifically

searching for medical information online, all providers were either neutral on the idea (assuming it would be specific for each patient's situation) or likely and very likely to counsel a patient. No providers sampled said they were unlikely to spend time on this activity with a patient. Sampled providers were asked a hypothetical question regarding whether they would be willing to acquire additional technical competency skills that would specifically address issues concerning patient needs and questions about online health information. Even with the average provider's busy schedule and numerous demands made of them, a surprising 71.4% said they would be willing to participate in this kind of training as long as it was within reason (time and content requirements). Finally, participants appear to be comfortable with encouraging patients to discuss online information during the consultation as the majority (38.1%) of providers say they "always encourage" patients to discuss the information they found online, assuming the provider feels the patient acquired information online before the consultation.

Beyond distribution frequencies, the data were also analyzed with Pearson Chi-Square tests using SPSS. This revealed two trends: the first trend identified is the frequency between age and ownership of a mobile device: $\chi^2(2, N = 21) = 5.49$, $p = .06$.

The second trend is the number of years the provider has been at their current hospital and mobile device ownership: $\chi^2(5, N = 21) = 9.64$, $p = .08$. This trend corresponds with the previous trend in that most providers who have been at their current hospital from 6-23 years did not own a mobile device.

Another test looked at age and amount of web access per day: $\chi^2(10, N = 21) = 19.02, p = .04$. This shows that the age range of 44-58 year old providers spend less time online than both their younger and older peers. The final significant finding is between the frequency of gender and the likelihood that providers would counsel a patient in searching for health information online: $\chi^2(3, N = 21) = 8.75, p = .03$. This finding reveals that surveyed female providers are more likely to counsel a patient concerning online health information searching than would be male providers.

Interview analysis

Interviews of $n=13$ healthcare providers were conducted over the phone and recorded digitally (see appendix C for questions). Participants were selected from the total population ($N=21$) by self-selection, based on the time and availability the provider had to participate in the interview. Interviewees represented a variety of healthcare facilities including: V.A. Hospital, a university hospital, a college student body clinic, a pediatric hospital, and an ambulatory care center. These healthcare organizations were also representative of the larger ($N=21$) surveyed population. Interviews were then transcribed and Glaser's constant comparison method (Glaser, 1978) was used to code interviews creating a codebook of key issues, recurrent events, and activities that became categories of focus that the healthcare providers experienced during recalled consultations with patients who seek health information online. The complete codebook is located in appendix D. The interviews were highly structured, as the same questions were systematically

asked of each provider with follow-ups and other probing questions asked when necessary. The nature of the interview questions focused on the healthcare providers' responses to and perceptions of patients who use the Internet to research medical information. Once the codebook was established the codes were then analyzed for frequency response rate, emerging themes and trends in the data. Intercoder reliability was not seen as an important factor for this research for two reasons. First, the interviews were highly structured; provider answers reached code saturation quickly. Second, the researcher had a familiarity and intimacy with the data that could not be trained to other coders. There is potential for intercoder reliability in further studies to replicate this pilot study.

Providers were asked to give an estimation of how many patients they saw over the span of one week; $M=26.1$ patients a week with some providers seeing as few as 12 patients a week or as many as 40 a week. Providers were then asked to recall, out of the group of patients they saw over the course of a week, how many patients had used the internet to research online health information. Providers had $M=1$ internet informed patient with a low of zero and a high of three, however this does not serve as an average of Internet informed patients that providers are likely to encounter per week. This is anecdotally related to the large number of American adults who are accessing information online while relatively few are willing to share that information with their provider (Fox, 2008). The term "anecdotally" is used because without having a larger of population of physicians in this sample it is difficult to make an accurate comparison. This method was deemed appropriate for this pilot study because the researcher is not interested in proportion but in

interactions between patients and providers in the context of Internet information. The goal was not to statistically support a rise in patient Internet information access but to show that it is an important occurrence to practicing health providers. This method also ensured the generation of enough data to carry on the study by targeting providers that have interactions with internet informed patients.

A total of 56 codes were created from the 13 interviews. For the purpose of analysis codes were categorized to identify emerging phenomena. From this analytical process, four themes emerged showing the relationships of the code types, they were: showing support *for* patients using the internet (for healthcare research prior to the consultation), showing support *against* patients using the internet (for healthcare research prior to the consultation), patient-provider relationship, and information seeking and information behavior. Table 5 (Appendix A) shows the code groupings and frequencies of code occurrences across all interviews; code definitions may be seen in Appendix D. The frequency of each code used was counted multiple times, meaning a provider may have responded in such a way that the code was used multiple times during the course of the same interview.

Contrary to other studies (Ahmad, Hudak, Bercovitz, Hollenberg, & Levinson, 2006), table 5 shows support among healthcare providers favoring the Internet, demonstrating that it has benefited many consultations with patients. Patients have found good information, that certain types of information are actually better to research on the Internet, and that in general they have had more good experiences with patients who use the Internet than bad. While other studies have reported that Internet information benefits patients more often than harming them, they also

state more problems than benefits for the provider (Potts & Wyatt, 2002). This may represent the beginning of a new model emerging in patient-provider communication, including a change from the dominant model of providers being the gatekeeper and dominant figure in the relationship (Dickerson & Brennan, 2002). Although this is a pilot study, it supports the need for further research and challenges the previously reported conceptualization that providers have negative opinions of engaging in and maintaining relationships with Internet informed patients (Akerkar & Bichile, 2004; Imes, et al., 2008) and the rise of a cooperative consumerist model in the patient-provider relationship (Wald, Dube, & Anthony, 2007). A contributing factor to this shift may be the proportion of relatively high I.T. involved providers in this study, suggesting that as patients and providers become more technically literate in using I.T. and searching the web, the Internet becomes a platform for patients and providers to build their relationship through a channel for information exposure. This shift in technical literacy may be due to changing times as technical literacy permeates the medical community.

Information exposure appears to play a pivotal role in the patient-provider relationship, especially when information seeking online becomes a factor. Donohew's research into information exposure (Donohew, 1980) provides a useful framework for understanding this phenomenon in a health communication context. The activation theory of information exposure (ATIE) postulates that individuals will seek out information with the express purpose of filling their cognitive needs. ATIE is useful in that it helps explain clearly that patients who decide to go online for information research do so in order to quench a thirst for further information.

What is interesting about ATIE is the specification of “cognitive need” for information. This need not necessarily be valid information but it is information that supports the patient’s psychological need for considering the knowledge. This means that if the patient has a great need to know about herbal remedies for health use they will seek them out regardless of the information being accepted by that patients’ healthcare provider. Understanding ATIE helps account for variance in provider relationships. As previously discussed in this research, healthcare providers have greater access to information support such as digital libraries, also meaning that providers are exposed to a very different quality and quantity of information than patients are.

Health information is a topic of great importance to most people. It has the likely ability to produce high arousal in the information seeker over other unimportant information. This notion of people seeking out information to fulfill what they want or need is supported by the data in table 5, supporting incredible variance in the relationships that providers have had with patients seeking their own online information. Two of the most frequent codes, including double blind trial (providers who have had experience with patients who research health information online that has ended either helpful and harmful to their care) and patient dependent (providers saying that the quality of information and the usefulness of information is highly dependent on what type of person the patient is) codes support the idea that people are going to find information based on their discrepancy of the information, importance of the information to the individual, arousal needs, and individual affects (such as personality) caused by exposure to the

information (Donohew, 1980). Additionally, ATIE explains the results from table 5 that show an overwhelming majority of the providers did not need to research additional information when patients brought in new information. This shows that providers clearly had a low arousal rate to the information and did not require new (or any) information. In other words, providers were knowledgeable about the topics being discussed with patients and the interviewed providers felt they could work with patients regardless of the information they found. While this represents a traditional gate keeping relationship between patient-provider, the ability for patients to research information on their own and be selective about their exposure appears to have an effect on motivation and participation in the patient-provider relationship, and even presents a rare opportunity for providers to learn from patients, as observed in the “getting schooled” and “informed patient” codes.

Gate keeping has emerged in new areas of the patient-provider relationship, including consultation about accessing health information online and website referrals. Reinforcement theory, primarily articulated by B.F. Skinner, is useful in both explaining and possibly predicting provider opinions about the websites where patients are seeking health information online, and the providers’ role in this process. Codes of importance concerning reinforcement that emerged from the interviews are: info consultation, no info consultation, co-visit, no co-visit, good co-visit, and info refer. All of these codes indicate the provider communicating with the patient about the specific web resources that the patient has read. The notion of an info consultation came up six times in the interview. Providers said that they had a discussion with the patient about researching information online and what was

good and bad to look at. Similarly, seven codes (info refer) arose from providers that referred patients to websites they preferred or gave the patient additional web resources. These codes appeared much more frequently than the contrasting codes of no referral needed and no info consultation. What is occurring during this part of the patient-provider relationship is reinforcement from the provider as a boon of medical knowledge to the patient acting as a medical research assistant. If the patient has found good information that is considered valid by the physician, the provider generally acknowledges it and even goes to the same resource the patient provided. When providers have a discussion with patients about researching information online, it is possible that a form of shaping occurs. Patients receive reinforcement for finding information online that was useful in the relationship, or negative reinforcement for finding the information that the provider did not consider useful (Skinner, 1969). Even if the provider does not find the information particularly useful they may still reinforce the information seeking behaviors of the patient, as many providers valued this behavior as useful, noting that patients were generally more motivated towards their care when they would retrieve information online. The idea of information reinforcement may be a central concept for investigating the patient-provider relationship and using the Internet as a tool for healthcare quality.

Providers were also asked to present their top three favorite websites for acquiring health information. All providers were able to list their top three websites, the results and provided in table 6 (Appendix A). The results have been parsed into a top eight list with the frequency next to it. The remaining two “other” columns are

the rest of the results where the frequency for each website is one. The gathered data of 24 websites providers are currently using is important because it contributes to a larger picture of what healthcare providers consider credible and useful online. It also allows providers to communicate what they consider to be valuable to patients who prefer to seek information online. Perhaps most important about this list is that the majority of websites are available to anyone, patients and providers alike. With the exception of uptodate.com and various national healthcare specialization organizations, all of the websites require no subscriptions or fees. While some of the listed websites may be more technical than others, these data show that providers are harnessing a variety of websites and are not limited to private provider only websites, but other sites patients are likely to encounter in their own information seeking.

Patients and providers who share similar experiences when accessing health information online develop an important bond. Relational Dialectics Theory (RDT) is useful in understanding this new patient-provider relationship. Traditionally RDT, as the name suggests, focuses on the dialectics – or contradictions and opposing forces – of interpersonal relationships. Factors like connectedness and separateness, certainty and uncertainty, openness and closeness (Baxter, 1988) are some of the standard dialectics used in the theory to analyze discursive speech in a relationship. RDT becomes particularly important in patient-provider relationships when placed in the context of online information seeking. The provider's opinion – as a person who can reinforce positively or negatively the patient's information behavior – is based in a discourse of the biomedical model of healthcare (Jones,

1994). A patient may have varying degrees of knowledge about the biomedical model; they may not be familiar with the model or even have different societal and/or cultural models of health and health care (biopsychosocial). This difference in understanding what health care is presumably alters the search for information which the patient would choose to perform. Both patient and provider have different expectations and requirements for the consultation; this is the main relational dialectic between patients and providers: the understanding of health and health care goals. The benefit of using an interpretive theory like RDT is that the theory helps researchers understand that conversation in the patient-provider consultation is grounded in different views of healthcare and that seeking online information will create further tensions, misunderstandings, or opportunities to connect and strengthen the relationship.

While RDT states that the closer individuals come together the more conflict will arise to pull them apart, the professional patient-provider relationship is seeing a change of roles and the rise of the consumer model of health care (Chang, et al., 2006) where RDT plays a greater role in the tensions that will arise between patient-providers. This is why the websites in table 6 serve as a common ground for patients and providers to discuss online health information. The accessibility for both sides of the relationship to access the same content allows the provider to positively reinforce the patient's information seeking behaviors while simultaneously allowing the patient to satisfy their need for information exposure.

Findings grouped across research questions

The findings provide adequate amounts of data for the proposed research questions. Starting with research question one:

RQ1: What is the provider's reaction to Internet information provided by patients?

The previous analysis demonstrates that providers who participated in this research are primarily of an older more computer savvy population. The interview categories concerning support for Internet use, dynamics between the patient-provider relationship, and survey questions focusing on provider attitudes toward patient online information seeking characterize surveyed participants as receptive of their patients using the Internet as an information source and indeed often encourage and support this behavior through offering other online resources, taking time to discuss health on the Internet, and using the web as a tool to motivate patients and develop a connected relationship focused on care. Providers' reactions appear to treat information from the Internet as simply another communication point, with most providers not needing to research additional information. One stimulus that helps explain provider reaction about online health information seems not to be the information itself but how the patient is using the information. This is exemplified in the following quote from a provider:

"Patients I think hardly want information, you know when you get right down to it they don't really want information as knowledge. They want information as something to help them in the fight against the dark side, you know the evil, the desperate scary reality of whatever the health problem is. And those are different uses and therefore the attitude toward the information is going to be different, and also the what do you call it the need for or not need for validity is going to be different."

While the patients' need for information exposure and other personal factors appear to be an important variable in the providers' reactions during the consultation, research question two focuses more on the information itself:

RQ2: How are providers using the information that patients seek?

The majority of surveyed providers are not surprised by the content and often approach the use of Internet information research as validating the scientific information provided by patients. They also view information seeking as patient education, which providers either need to "correct" and take the opportunity to re-explain perceived "wrong" information, or save time in the consultation because the patient "did their homework". Relatively few codes manifested about using information, regardless of its perceived validity to the provider, as an informative tool about the social/psychological/cultural beliefs of the patient to inform their care. This suggests an emerging communicative tool for providers to utilize when Internet information is seen as a motivational participatory activity.

The provider's knowledge of medicine is clearly related to the ability to validate health information. Because technology has become an important artifact in patient-provider communication, a provider's knowledge of technology needed for online health researching could prove a valuable skill in this relationship.

RQ3: How does the provider's perceived familiarity and use of technology affect their behavior in a consultation with an Internet informed patient?

Results appear to be consistent between the surprisingly high comfort levels of Internet task use found in table 3, relatively high levels of spending time using and technology, and owning/access to computer devices with the providers

receptiveness to patients performing research tasks using this technology. While this correlation between computer use and receptiveness to Internet informed patients is not causation, it does provide support for an overall “technologically literate” provider. Whereas, contrary to this data, more providers may have opted out of providing health websites, and have been far more uncomfortable in consulting and having discussions with patients about Internet information assuming patients had spent less time using computer devices and spending time on the internet.

One of the goals of this study, as is true with all healthcare research, is to provide insight into improving the quality of care and patient satisfaction. Thus, the fourth research question addresses this goal:

RQ4: How can providers use the Internet in face-to-face consultations to improve care?

The data gathered by survey and interview for this study, upon analysis, has revealed two exhibited relationship types by providers in how they treat patients who seek health information online. These observed behaviors could presumably be utilized to inform quality of care and increase connectedness or closeness – as RDT notes – in the professional relationship. In brief, the two behaviors that emerged from analysis are: 1) providers using the Internet as an educational tool to help patients study their own health situation, and 2) providers using the patients’ information seeking *behavior* as a diagnostic tool for the provider to gain background information about patients’ beliefs and motivations. These relationship types are now referred to as relationship types one and two or first and second in

the rest of this research. In further discussing relationship two, some important questions were: 1) Why did the patient choose to look for the information that they did? 2) What do they hope to get out of treatment? 3) What kind of treatments are they looking at? 4) Are they using the information to reinforce beliefs they already have? And 5) Are they using information to ask more intelligent questions? One provider is quoted as saying:

“To tell you the truth and beyond I mean certainly with specific patient but historically when I think back on it I can’t think of a time literally where I’ve had a patient because of an Internet search contribute negatively. That’s a really really unusual circumstance for me. Because I think you really have to work to put a negative spin on someone going on the Internet to investigate a medical condition”

This quote, in addition to others, embodies a new mindset of embracing technology and leveraging it to the benefit of the providers’ medical practices. The word “diagnostic” suffices as a description for information seeking in explaining the second behavior. “Diagnostic” means “a routine that helps to identify errors or problems”. In this context the Internet becomes a diagnostic tool providers have used to observe patient information seeking behavior. Some of the interviewed providers have, in talking with providers about what they read online and how they researched the information, used that event to help inform themselves about the patient.

One relationship concerned providers who see the Internet as a learning tool for patients to educate themselves about their health situation. Patients “study up” on what information is most important to them – the information that fulfills their cognitive need, as ATIE postulates – returning to the provider for the next

consultation where, in discussion, patients either have the right or wrong answer. The right or wrong answer means providers – as a reinforcing authority on medical knowledge – either agree and deem the information valid, agreeing with the providers’ established biomedical model of knowledge or disagree and consider the information poor, even completely wrong or harmful and treat the discussion as though the patient has the “wrong answers”. At this point, surveyed providers have often used time in the consultation to re-educate or correct the patient regarding information most appropriate to the relationship. This finding of patients using the Internet as a tool for increasing understanding of health and empowerment in the consultation is an experience that is echoed in similar studies by both patients and providers (Sommerhalder, Abraham, Zufferey, Barth, & Abel, 2009).

The most meaningful difference between relationship one and two is that in relationship two the answers are not particularly important to the relationship. Providers in relationship two view the process of information searching, gathering, and discussion as an act that communicates something else about the patient that, perhaps prior to the Internet informed patient, was inaccessible to the provider. This is not to say that one type of relationship is better or more successful than the other, or that they are even mutually exclusive. But it does provide a critical new direction for future research in looking at the outcomes, benefits, and consequences, of each relational type and how those relationships might be grown to best benefit the patient and provider.

One similarity both relationships share is the belief that, in general, the Internet is a tool that helps motivate the patient to be more involved and engaged in their

care. Motivation and engagement was a relational quality that every provider appreciated and, in some situations, hoped for in their relationship with patients.

The two observed relationship types are behaviors that providers can adopt, or roles that patients can take up to decrease dialectical tension between patients and providers. These behaviors could be employed by health providers using each relational style with patients and observing what style each patient prefers. This area also introduces future research possibilities. A short survey could be developed, designed to uncover the patients' preferred relational styles thus giving the provider an advantage in increasing patient satisfaction.

Summary of results

This study found that surveyed providers' are more likely to own a desktop and laptop than they are a mobile device. Also, providers are using the Internet for an average of 1-2 hours per day at home. When rated on a comfort scale looking at Internet use for various tasks, providers' averaged a score of 25 and higher out of 40. Surveyed providers recognize the Internet as a useful tool for patient use. Two trends were revealed from a chi-square analysis: 1) providers classified as younger own mobile devices and 2) providers working at a clinic for 1-11 years are more likely to own a mobile device than providers working at a clinic for 12-35 years. Chi-square analysis also found statistical significance in two survey items: 1) providers classified as older and middle aged are accessing the Internet at a greater frequency than younger classified providers and 2) female providers were more likely to counsel patients on seeking health information online.

From N=13 highly structured interviews 56 codes emerged. Analysis of the codes revealed two distinct provider types. Provider type one uses the Internet as an educational tool that has a correct or incorrect answer. Provider type two uses the Internet and the patients' information seeking behavior as a diagnostic tool to gain background information about the patients' beliefs and motivations. Activation theory of information exposure, Reinforcement theory, and Relational dialectics theory were used to interpret the results and address four research questions.

Discussion

This study begins to explore the patient provider relationship when Internet information is involved by exclusively looking at the providers' perceptions, behavior, and opinions toward an Internet informed patient. These findings suggest that providers are receptive to using I.T and most importantly, forming relationships with patients who use I.T. There have been other studies that echo these findings of the ability of the Internet to enhance the consultation productivity (Aspden, Katz, & Bemis, 2001). Replicated studies surveying Norwegian doctors (Hjortdahl, Nylenna, & Aasland, 1999) found similar results of the Internet having a positive and unobtrusive impact in the patient-provider relationship.

The three theories used to help analyze the findings include: Activation theory of information exposure (Donohew, 1980), Reinforcement theory (Skinner, 1969), and Relational dialectics (Baxter, 1988) have proved useful in explaining parts of the patient-provider relationship when Internet information seeking plays a role. The two observed interactions that providers utilize when engaged with an

Internet informed patient are: one of self-education, getting the answer right, correctness over exploring information is encouraged, a biomedical model is the typical dialectic, and providers play a more active role in reinforcing good and bad information seeking behavior. In this first interaction saving time is usually discussed as a benefit. The second observed interaction is about acknowledging information seeking and exploration that may lead to knowledge that is not reflective of the biomedical model. The correct answer is not always necessary; validity is not reinforced but the act of information seeking and using it as a way to know more about the patient is. In this interaction style time was not mentioned.

From the previously mentioned studies, these two observed “styles” regarding how providers communicate with Internet informed patients support previous work in patient-provider communication. Prior work suggests useful research will be conducted and patient-provider communication can benefit by looking at a spectrum between the two provider types discussed. Type one is more representative of biomedical realism (biomedical model) while type two is more representative of social constructionism (biopsychosocial). The area between these opposites has been described as the mangle of practice (Lambert, et al., 1997), and it is presented as more representationally adequate between patients and providers of different dialectics. This research is supportive of the mangle of practice by observing a trend in dialectic tension between patients and providers expressly when Internet access plays a role. As Lambert (1997) suggests, the real test will be if these strategies lead to “productive research that increases our knowledge and improves our ability to keep ourselves and other people healthy (p. 41)”.

Four research questions were designed to elucidate provider communication strategies and opinions toward patients using the Internet to seek specific, personal healthcare information. The findings of each research question will be discussed first in general then each question in more detail.

In general, the research questions found that providers do not have to research additional information or fact check the information that patients bring them. Two observed types of interaction emerged from providers use of the patients internet information seeking (as briefly mentioned previously): relational type one holds the belief that the Internet is a research tool with an absolute right and wrong answer; in relational type two the provider uses information about the patients information seeking behavior as a diagnostic aid supplying background information and cognitive needs of the patient. Also, surveyed providers were familiar and confident in using technology while they were not rated as a self perceived “technophobes” they were also not extremely technical. Lastly, this study found that by understanding the two information styles patients and providers can work on decreasing dialectical tension and using the Internet as a healthcare motivator. Researchers should keep in mind that “there are many different problems related to patient diversity that affect quality healthcare and provider-patient communication (Wright, Sparks, & O’Hair, 2008)” information seeking on the Internet is only a strand of the web of interaction.

One finding from the survey suggests that female providers are more willing to counsel patients on Internet health information than male providers. This finding could highlight one of the differences between male and female providers in the

patient provider relationship as a reproduction of gender bias and stereotypes in the research. It is possible that patients perceive traditional gender role characteristics of female providers, enabling or facilitating certain aspects of the consultation. Female providers may also have been socialized differently than male providers to encourage more communication in the relationship. Regardless of the cause it is important to acknowledge that the finding indicating a gender difference may be tied to the social construction of gender in an effort to avoid assumptions that creates an alpha or beta bias in this research (Hare-Mustin & Marecek, 1988).

In relation to research question one; prior to conducting this research it is assumed that providers would mostly have negative responses that were critical of the information provided by patients who used the Internet to access health information. When analyzing research question one quite the opposite was found. While some providers were critical, many treated the occurrence as an “inevitability” or just another “sign of the times”. The implications of research question one suggest that the healthcare community as a whole would benefit by reaching an agreement about how to react to internet informed patients, and if indeed online health access should be a standardized topic that providers include in their training.

Research question two is interesting because of the research that points to patients occasionally bringing valuable information of which the provider was previously unaware. What did occur across the board was vetting of information as providers are in the position to verify such things. Relating to research question

three, the more comfortable providers were with their own information seeking abilities the more comfortable providers were with patient information seeking. Logically, a provider who finds no value in using information technology and considers any information online to be invalid would view printed research as the pinnacle of information knowledge. This type of provider is rare in the study; perhaps the rarity speaks to the necessity of the Internet in health care.

Finally, research question four culminates the study as the researcher wanted to provide a model or theory that can be put into praxis and then test. This pilot study produced new insights into two (and possibly more) ways of understanding how the sampled providers are currently approaching this emerging phenomenon. The three theories used to analyze each of the four research questions provided a logical framework for understanding the two observed provider types.

Overall, this research lends support to similar studies that have found the dangers and criticisms of Internet research to be exaggerated and that this emerging model can infuse new tools, techniques, and communication strategies into patient-provider healthcare (Potts & Wyatt, 2002). This research also elucidates the rapid availability of information in society. The early metaphor of the Internet is that it is an information superhighway, connecting the human network to different information resources at a speed of which was previously unavailable. Perhaps a more accurate metaphor for the current generation is the information river, where it is impossible to experience all of the information flow; the user may only dip their hand in and sample the stream.

Limitations and future research

Because this research is a pilot study, it has associated limitations while pointing to opportunities for future research. The first limitation of this research is the small sample size. Providers' busy schedules, sizeable workload, and limited availability contribute to making health providers a difficult population to study in mass. However the small sample size does provide intimate, genuine data about at least a small percentage of providers' possible perceptions, beliefs, and behaviors with Internet informed patients. Future research will prove useful in replicating or contradicting this study with a larger population to compare results.

Another limitation is in the survey. The survey items can only provide face validity and were not previously tested for verification and validity. Furthermore, recruitment methods for both the survey and interview utilized self-selection and snowball sample techniques, neither of which are random population sample methods. Self-selection and snowball sample methods may have skewed the sample toward a technically savvy and technically comfortable population. However, self-selection was necessary to overcome low provider recruitment and low participation. Because recruitment was done through an email list service the call for recruitment may have also attracted more technically competent providers who are subscribed to an email list. Most providers' at large hospitals and university hospitals usually join one (or multiple) email list services. Therefore, the researcher would consider using list services for future recruitment of larger studies.

Researchers should bear in mind that list services automatically select for web –

savvy providers. Low tech methods such as letters, phone calls, and personal visits to clinical sites may provide data characteristic of a larger population. One of the purposes of this study is to test the study design and suggest strategies for further research looking at patient-provider relations.

The research here does introduce several pathways for fruitful future research. The body of research concerning patients, providers, and the Internet is still small. Other researchers (Cullen, 2006) (Murero & Rice, 2006) (Thompson, Dorsey, Miller, & Parrott, 2003) also echo the call for continued research and data gathering in this area. It can be assumed that any research performed in this field will bring researchers closer to developing needed theory, exploring opportunities, avoid possible consequences, and improving healthcare.

Future research should continue to investigate and further describe the two relational types observed in this research, as well as detect other provider models and continue to explore the benefits, consequences, and implications for healthcare. Further research with a larger sample size may reveal more than the two observed provider information use roles, the findings of which could contribute to theory and a deeper understanding of patient-provider communication in the information age. Future studies and larger population sizes may also allow for comparative healthcare communication efficacy scoring based on satisfaction of the patient-provider relationship and outcome of care. Effectiveness of provider communication styles one and two can be measured against a healthcare communication efficacy score which may provide correlative statistics concerning the Internet's role in augmenting this score and using information to increase health outcomes. As noted,

future research should focus on relationship outcomes between the patient and provider, along with outcomes on healthcare quality and patient satisfaction.

Patient satisfaction is a promising benchmark to look at since previous studies have already found that appointment satisfaction was higher when Internet information was discussed (Hay-Rollins, et al., 2008). The same study from Hay-Rollins also reports that 62.5% of patients' researched information online, yet only 20% discussed this with the provider. Another study found that 80% of adults seek information online yet only 28-41% of those patients will discuss it with providers, for fear of challenging the physician (Bylund, 2007). However, only a minority of physicians feel challenged by these patients (Murray, et al., 2003). This study reflected the low number of patients discussing Internet information with their provider on a smaller scale; other studies have also found that physicians often underestimate the proportion of patients who use the Internet for health information (Schwartz, et al., 2006). Given these facts, future research should also look at ways to encourage patients to discuss their Internet information seeking efforts.

Conclusion

The Internet and I.T. has profoundly changed all aspects of modern life and society. Both beneficial and detrimental effects can occur when introducing Internet health information into the patient-provider consultation. This research has

provided insight into how patients and providers can use Information seeking to benefit the patient-provider Internet empowered relationship.

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Appendix A: Tables

Table 1		Study Sample %
Demographic Variables		
<i>Gender</i>		
	Male	52.4
	Female	47.6
<i>Ethnicity</i>		
	Anglo	76.2
	Hispanic	9.5
	Asian	9.5
	Other	4.8
<i>Age</i>		
	29-43	19
	44-58	57.1
	59-69+	23.8
<i>Years practicing medical specialization</i>		
	1-5	4.8
	6-11	28.6
	12-17	9.5
	18-23	19
	24-29	23.8
	30-35	9.5
	36-41	4.8
<i>Years at current hospital/clinic/facility</i>		
	1-5	28.6
	6-11	38.1
	12-17	9.5
	18-23	14.3
	24-29	4.8
	30-35	4.8

Table 2		Study Sample %
Provider I.T. perceptions		
<i>Hardware Competence</i>		
	Not very competent	33.3
	Competent	42.9
	Somewhat competent	19
	Very competent	4.8
<i>Software Competence</i>		
	Not competent at all	4.8
	Not very competent	9.5
	Competent	52.4
	Somewhat competent	23.8
	Very competent	9.5
Provider I.T. experience		
<i>Mobile Internet Device Ownership</i>		
	Owns a mobile device	47.6
	Does not own a mobile device	52.4
<i>Desktop ownership</i>		
	Owns a desktop	85.7
	Does not own a desktop	14.3
<i>Laptop ownership</i>		
	Owns a laptop	90.5
	Does not own a laptop	9.5
<i>Web access (times per day)</i>		
	1-5	33.3
	6-10	33.3
	11-15	9.5
	16-20	9.5
	21-25	9.5
	26+	4.8
<i>Received training over the web?</i>		
	Yes	66.7
	No	33.3
<i>Web use at home (hours per day)</i>		
	< 1 hour	33.3
	1-2	57.1
	3-4	9.5

Table 3

Score	# of Providers with Score	Valid Percent	Cumulative Percent
18	1	4.8	4.8
19	1	4.8	9.5
20	2	9.5	19.0
21	2	9.5	28.6
22	1	4.8	33.3
25	4	19.0	52.4
26	2	9.5	61.9
27	1	4.8	66.7
28	1	4.8	71.4
29	2	9.5	81.0
32	1	4.8	85.7
33	1	4.8	90.5
35	1	4.8	95.2
40	1	4.8	100.0
Total	21	100.0	

Table 4**Provider attitudes toward patient online information seeking**

	Study Sample %
<i>Internet useful for patient's medical use?</i>	
Neutral	28.6
Useful	38.1
Very useful	28.6
No answer	4.8
<i>Use email with patients concerning medical conditions?</i>	
I never have and never would	9.5
I never have but would be open to the idea if the system was secure	23.8
I currently do	57.1
I have before but not in the last 1-2 years	4.8
No answer	4.8
<i>Used web to give out medical advice?</i>	
Yes	33.3
No	61.9
<i>Referred patient to online medical information?</i>	
Yes	66.7
No	28.6

Table 4 continued

Assisted patients in deciding where to search online?

Yes	61.9
No	33.3

Prefer patients do or do not use the internet to find medical information?

Prefer	71.4
Do NOT prefer	23.8
No answer	4.8

Have patient's asked you for medical resources online?

Yes	61.9
No	33.3
No answer	4.8

How likely are you to council patients on searching for online medical information

Neutral	42.9
Likely	23.8
Very likely	28.6
No answer	4.8

If requested, would you be willing to train additional technical competency skills to address patient needs and questions about online information?

Yes	71.4
No	23.8
No answer	4.8

How frequently do you encourage patients to talk about online health information during a consultation?

Sometimes	9.5
Neutral	33.3
Usually	14.3
Always	38.1
No answer	4.8

Table 5

Support for Internet Use	Support Against Internet Use	Patient-Provider Relationship	Information Seeking
Benefit 10	Negative Influence Information 4	Double Blind Trial 8	No Researching 10
Positive Good Information 9	Poor Information 3	No mood Change 7	Study Up Patient 9
Enjoy Online Support Internet 8	Bad Info 2	Info-Refer Info Consultation Patient 6	Provoked Low Use Population 4
Good>Bad 4	No Benefit 1	Dependent 6	Digital Divide 4
Prep Information Specialization Second Opinion 3		Motivation 5	Pharma Concern No Website Provided 3
		No Co-Visit 4	Info Literacy 3
		Co-Visit 4	Seek Provider Provoked 3
		Excitement 3	Research Info Reinforcement Website Provided 2
		Good Co-Visit Information Persuasion 2	Print Out Informed Patient High Use Population 1
		No Referral Needed 2	Web Prescription Media Influence 1
		Nervous No Info-Consultation 1	Time Shift Treatment Overload 1
		Covert Getting Schooled 1	Case Building 1
		Info Reveal 1	
		Silent majority 1	
		Shorter 1	

Table 6

<u>Top 8</u>	<u>Other</u>	<u>Other</u>
Up to date (12)	Google Scholar Search	Hopkins Infectious Disease Database
Pubmed (9)	Search of Journals	Google Search
WebMD (4)	Emedicine.com	Familydoctor.com
CDC (4)	New England Journal of Medicine	American Academy of Neurology
MedConsult (3)	American Academy of Nurse Practitioners	Various News Sites
Micromedex (3)	American Diabetes Association	American Academy of Family Practitioners
American Academy of Pediatrics (3)	Natural Medicines Database	Medline
Epocrates (2)	Medscape	Children's Oncology Group

Appendix B: Online survey

Introduction

Matt Willis & Gill Woodall from the Department of Communication and Journalism are conducting a research study. The purpose of this study is to better understand physician internet information usage when interacting with patients. You are being asked to participate in this study because you have been identified as a medical doctor, physician, or healthcare provider.

The survey should take about 15 minutes to complete. Your involvement in the study is voluntary, and you may choose not to participate. There are no names or identifying information associated with this survey. No identifying technical information (IP addresses, computer names, locations) are collected from this survey. There are no known risks in this study, but some individuals may experience discomfort when answering questions.

The findings from this project will provide information on patient and doctor interactions influenced by online medical information. If published, results will be presented in summary form only and it would be impossible to individually identify any participant in the study.

If you have questions regarding your legal rights as a research subject, you may call the UNM Human Research Protections at (505) 277-0067.

By clicking past this page and advancing to the survey you establish consent that you have been informed and are aware of your participation in this study.

Thank you kindly for your participation.

Next

1. What is your gender?

Female

Male

2. What is your age?

28 24-28 29-33 34-38 39-43 44-48 49-53 54-58 59-63 64-68 69+

Additional Comments (Optional)

8. Approximately how many times do you access the Web in a typical day?

- 1-5 6-10 11-15 16-20 21-25 26+

Additional Comments (Optional)

9. In general, how technically competent with computer hardware would you rate yourself?

- 1 (Not competent at all) 2 3 4 5 (Very Competent)

Additional Comments (Optional)

10. In general, how competent with computer software would you rate yourself?

- 1 (Not competent at all) 2 3 4 5 (Very competent)

Additional Comments (Optional)

11. From this list of typical Internet uses, how comfortable are you with each action:

	Never comfortable	Usually not comfortable	Comfortable	Usually comfortable	Always comfortable
Email	<input type="checkbox"/> Never comfortable	<input type="checkbox"/> Usually not comfortable	<input type="checkbox"/> Comfortable	<input type="checkbox"/> Usually comfortable	<input type="checkbox"/> Always comfortable
Finances (paying bills, managing stocks or other finances)	<input type="checkbox"/> Never comfortable	<input type="checkbox"/> Usually not comfortable	<input type="checkbox"/> Comfortable	<input type="checkbox"/> Usually comfortable	<input type="checkbox"/> Always comfortable
Talking on an Instant Messenger Client	<input type="checkbox"/> Never comfortable	<input type="checkbox"/> Usually not comfortable	<input type="checkbox"/> Comfortable	<input type="checkbox"/> Usually comfortable	<input type="checkbox"/> Always comfortable

	Never comfortable	Usually not comfortable	Comfortable	Usually comfortable	Always comfortable
Using Voice to Voice Chat	<input type="checkbox"/> Never comfortable	<input type="checkbox"/> Usually not comfortable	<input type="checkbox"/> Comfortable	<input type="checkbox"/> Usually comfortable	<input type="checkbox"/> Always comfortable
Using Video to Video Chat	<input type="checkbox"/> Never comfortable	<input type="checkbox"/> Usually not comfortable	<input type="checkbox"/> Comfortable	<input type="checkbox"/> Usually comfortable	<input type="checkbox"/> Always comfortable
Shopping	<input type="checkbox"/> Never comfortable	<input type="checkbox"/> Usually not comfortable	<input type="checkbox"/> Comfortable	<input type="checkbox"/> Usually comfortable	<input type="checkbox"/> Always comfortable
Searching for Health Information	<input type="checkbox"/> Never comfortable	<input type="checkbox"/> Usually not comfortable	<input type="checkbox"/> Comfortable	<input type="checkbox"/> Usually comfortable	<input type="checkbox"/> Always comfortable
Taking Online Courses	<input type="checkbox"/> Never comfortable	<input type="checkbox"/> Usually not comfortable	<input type="checkbox"/> Comfortable	<input type="checkbox"/> Usually comfortable	<input type="checkbox"/> Always comfortable

Additional Comments

(Optional)

12. Have you ever received training (online degree, fixing things, etc.) through the web?

Yes

No

Additional Comments (Optional)

13. Please enter your top three favorite/most used medical/health websites:

One

Two

Three

14. How many hours a day do you use the internet from home in an average day? (in hours)

- <1 hour 1-2 3-4 5-6 7-8 9-10 >11

Additional Comments (Optional)

Prev

Next

15. On a scale of 1-5, 1 being not useful at all and 5 being very useful, do you perceive the Internet as a useful tool for patients to research health information?

- 1 (Not Useful at All) 2 3 4 5 (Very Useful)

Additional Comments (Optional)

16. Have you ever or would you use email with a patient (or related family) concerning the patient's medical condition?

- I never have and never would
- I never have but would be open to the idea if the system was secure
- I currently do
- I have before but not in the last 1-2 years
- I have before but not in the last 3+ years

Additional Comments (Optional)

17. Have you ever given out medical advice/information on the internet, through forums, community sites, association sites, sites for doctors to answer patient questions, Etc.?

- Yes
- No

Additional Comments (Optional)

18. Have you ever referred a patient to online medical information resources before? If so, where?

Yes

No

Additional Comments (Optional)

19. Have you assisted patients in deciding where to go for online medical information?

Yes

No

Additional Comments (Optional)

20. In your experience, do you prefer that patients prepare for an office visit by seeking medical information online that is relevant to their needs, or would you rather they not use the internet to prepare for a consultation?

I prefer my patients use the internet to read up on their medical situation

I prefer my patients DO NOT use the internet to read up on their medical situation

Additional Comments (Optional)

21. Have you had a patient express to you that they would like to read about relevant medical information online, and asked you for advice on where to start? If so, how did you respond?

Yes

No

Additional Comments (Optional)

22. If a patient did ask for your advice on searching for health information online, how likely would you be to counsel them in this matter? (on a scale of 1-5, one being not likely at all and five being very likely).

- 1 (Not likely at all) 2 3 4 5 (Very likely)

Additional Comments (Optional)

23. When you are reading health and medical information online, what are some of the criteria you personally have to judge whether the information is valid or not?



24. If requested, would you be willing to train additional computer competency skills to address patients' needs and questions concerning online information?

- Yes
 No

Additional Comments (Optional)

25. On a scale of 1-5, one being never and five being always, how frequently do you encourage a patient to talk about online health information if you have reason to believe that patient has researched information online?

- 1 (Never)
 2
 3
 4
 5 (Always)

Additional Comments (Optional)

26. Do you have any other comments concerning your interaction with patients who seek health information online? (Optional)

Appendix C: Interview questions

Weekly Physician Survey Interview Questions

1. How many patients did you see for this weekly period?
2. Of the total patients you saw for the week, how many used the internet to research health information?
3. (referring to each patient) In this visit, did you ask the patient where they found the information they were discussing?
4. Concerning the patient who researched medical information online, did you need to research and look up other information? If so what did you do and where did you look for it? (book, journal, internet, ect.)
5. What is your opinion of the medical information the patient found on the internet? (Quality, validity, ect.)
6. Do you think the consultation benefited from the patient seeking medical information online and discussing it during the visit? (I.E. do you feel the patient was able to effectively communicate their concerns, feelings, or opinions?)
7. Did you at any point go to the resource the patient mentioned to look at it?
8. At any point did you help them make a decision about seeking information? Direct them to another site, reinforce the idea that they found good or bad information?
9. What do you think the patient's reason for looking up information online was?
10. Do you feel the patient looking up medical information contributed positively or negatively to the consultation?
11. What do you think the patient's reaction was when they discussed online information with you? Did they seem surprised about talking about it with you? Nervous? Excited?, etc. Did you notice anything special during this part of the conversation?
12. Do you have any other final comments or questions?

Appendix D: Transcription codebook

<u>Code</u>	<u>Description</u>
Patient Provoked	The patient or family member of the patient brought up information they found online completely on their own without the doctor asking them if they had searched online.
Provider Provoked	The provider asked the patient if they looked up health information online, without the patient saying they went online first.
No researching	The provider did not need to research additional information in response to the information the patient brought them.
Research	The provider went to a preferred website of their own in response to the patient looking up health information online.
No Benefit	Provider saw no benefit for the consultation by the patient researching health information
Benefit	Provider thinks the consultation benefited by the patient going online for information
info reinforcement	Provider believes the patient already had an opinion and the patient went online to reinforce their opinions and ideas.
Website Provided	The patient told the provider the name of the exact website they went to.
No website provided	The provider did not go to the same web resources the patient used because no direct address was provided.
No referral needed	The provider felt it un-necessary to refer the patient to any additional web resources.

Info Refer	Provider referred the patient to another website they preferred or gave the patient some additional web resources
Treatment	Provider sees one of the reasons a patient research health info online is because they want to know more about treatment for a condition or they want to find new treatments or alternative treatments.
Study Up	Provider believes the patients' reason for going online to look up information was to gain general knowledge about their condition, and be able to ask more informed and intelligent questions.
Pharma Concern	The provider expressed the reason they think the patient looked up online information was because of a concern about their prescribed medication/drug treatment
Negative	Provider felt the patient looking up information was negative for the discussion
Positive	Provider felt the patient looking up information was positive for the discussion
Excitement	Provider perceived the patient to be excited when the patient first talked about the online information they found or the patient was excited they had used the internet to research health information
Covert	Provider felt the patient's mood was covert about bringing up health information they researched online, almost as if the patient did not want the provider to know they had been looking at health info online.
Nervous	Provider felt that the patient was nervous when the patient first brought up the fact that they had looked at information on the internet
Bad info	Provider has found bad information online that concerned them.
Poor Information	Provider thought the quality of information was poor that patients provided

Good information	Provider thought the quality of the information was good that patients provided
Shorter	Provider mentioned that the consultation was shorter as a direct result of the patient researching information online
Preventative Medicine	During the consultation when the provider would discuss what to expect or information about their condition, the patient would mention "yes I know" or show signs that what they were being told was not surprising since they already learned about the information online ahead of time.
Double blind trial	The provider has had experience with patients researching medical information online that has ended both positively or helpful, and negatively or harmful to their care.
Negative influence information	The provider believes when the patient researched information online they found the negative things about their condition and latched onto that
No Co-Visit	The provider did not visit any of the web resources the patient went to.
Getting Schooled	The provider found credible and valid information that was new to the physician, and the provider learned something new from the patients research online
Co-Visit	The provider goes to the same web resource the patient discussed, regardless of what the provider thinks about the quality of information there
Good Co-visit	The provider went and looked at the same web resource the patient discussed at some point after the consultation. Even before the provider went to the resource they had a favorable opinion of the content.
Enjoy online	Provider likes it in general when the patient goes online to research information.

No Info Consultation	The provider did not help the patient make a decision about health information online or reinforce the idea they found good or bad information.
Info consultation	Provider had a discussion with the patient about researching information online, what's good and what's bad to look at.
Prep	Provider is familiar with technology and uses internet search enough to become familiar with sites patients are using. They see this as a benefit of their practice
Motivation	Provider feels that the patient researching health information online motivates the patient to be more involved in their care.
Second Opinion	Provider feels one of the only places to get information about the patients particular health concern is online.
Information Specialization	Provider believes that the internet is better for some kinds of health information than it is others
No mood change	The provider felt that there was no mood change in the patient when discussing online health information
High Use Population	Provider identified that their patient population is high use in technology or has access to the internet easily; this is a provider that it is fairly common for patients to bring in health information or talk about it.
Low Use Population	Provider identified that their patient population is very low use on technology, and patients brining in health information from the internet is extremely rare.
Digital Divide	Provider talks about the patient population they see and references access to technology or other technological problems they are familiar with

Web Prescription	Provider suggested the patient look for health information online, but gave them no specific web resources other than to research it.
Seek	Provider supports patient searching for information on their own, encourages it.
Info Literacy	Provider prefers the internet for health information literacy purposes
Support Internet	Provider sees the internet as a tool that can help healthcare and quality of care, overall these providers are very supportive of the internet
Patient Dependent	Provider feels that having a good or bad consultation because of health information researched online is dependent on the kind of patient and how they use the information.
Print Out	Patient printed out and brought in health information found online.
Media Influence	The provider identified the patients reason for looking up health information online as a result of seeing an advertisement in another form of media
Good>Bad	Provider has had, in general, more good or positive experiences with patients and the internet than bad ones
Time Shift	Provider thinks one of the reasons the patient went online was because there was not enough time during the consultation and they wanted to ask more questions or find more information
Information Persuasion	Provider stated that patients use information to persuade themselves for a certain situation or case, and come into the consultation with information supporting their beliefs.

Info Reveal	The provider uses the type of information and the reason a patient searched for health information online as a way to know more about the patient and their beliefs. The kind of information a patient is bringing in reveals something about them.
Case Building	Provider viewed the patient's reason for going online as building a case for themselves (the patient) to lobby for a particular treatment or form of care.
Informed Patient	Provider knew that the patient had used the internet for health information because the patient seemed informed, using medical terminology, or was able to ask very specific questions
Overload	Patients who have too much information, there is so much information out there it is impossible to look at it all
Silent Majority	Providers feel that more of their patients are researching online health information but very few of them actually talk to their doctor about it