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Exam Room Computers and Patient-Clinician Communication: A Wicked Problem

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EXAM ROOM COMPUTERS AND PATIENT–CLINICIAN COMMUNICATION:

A *WICKED* PROBLEM

by

Leora J. Elli

A Dissertation

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Dedication

I dedicate this dissertation to my husband, John Elli. His patience and understanding throughout the years of my doctoral program has provided invaluable support. His sometimes not-so-gentle urging to avoid distractions during the writing phase kept me on track and made it possible to finally finish the document.

Acknowledgments

I would first like to thank my doctoral committee – Dr. Walter Kirkpatrick, Dr. Amanda Young, Dr Suzanne Lease and Dr. Katherine Grace Hendrix for their guidance in directing and developing both my plan of study and this dissertation. I am most grateful to my committee chairperson and major advisor, Dr. Katherine Grace Hendrix, for her patience and consistent support over the many years it has taken me to complete this program. I have learned many valuable lessons during our association and she will always be my role model of the quintessential academic scholar.

This study was possible due to the help of key individuals at the West Clinic:

I am grateful to Ms. Melissa Spears, who secured approval for me to do the study at the West Clinic and made the initial contact with the physicians and nurse practitioners willing to participate in the study.

I would also like to thank Dr. Lee Schwartzberg, medical director, for his support in allowing access to the clinical staff, and his administrative assistant, Ms. Beth Coulter who helped coordinate the schedules of the physicians to attend the focus group.

I am forever indebted to the clinicians of the West Clinic for allowing time in their busy schedules to talk with me, as well as their administrative assistants who arranged the appointments for me.

The West Clinic fully met my expectations of a patient-centered clinical practice and I hope the descriptions and conclusions offered here of the clinicians' efforts to adapt to the introduction of an exam-room computer are interpreted by the staff as an accurate reflection of the culture of this unique medical community.

Abstract

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The present study is a primarily qualitative case study examining the patient–

clinician relationship. Clinicians practicing within an oncology practice with a reputation

for patient-centered care responded to questions regarding how the introduction of an

electronic medical record (EMR) and an exam room computer had affected their day-to-

day clinical practice. Framed as a *wicked* problem (a problem that could not be solved

using a linear methodology), I believed clues to understanding a method for incorporating

use of an exam room computer into a clinical visit while maintaining empathic

communication with the patient could be found by exploring the experience of clinicians

who had faced the dilemma. Only three of the nine clinicians interviewed reported

routinely using the computer to document the visit while the patient was in the exam

room.

The exam room computer was perceived by the clinicians as a third interaction in

addition to the patient-clinician relationship and had changed the dynamics of the clinical

visit. Identified disadvantages to using an exam room computer included physical

environmental factors and relational problems created by system failures or slowness

where the clinician felt obligated to explain unwelcome interruptions of the clinical visit

by acknowledging to the patient the interference of the "damn computer." Environmental

factors interfered with empathic communication by limiting nonverbal communication,

particularly eye contact. Similarly, relational factors made empathic communication more

difficult by interrupting the natural flow of conversation or pulling the clinician's

attention away from the patient. The clinicians who used the exam room computer in the presence of the patient were unable to verbalize a specific technique they had discovered to unable them to maintain an empathic connection with their patients. However, in explaining how they had adapted their practice after the introduction of the exam room computer they demonstrated a strong commitment to their patients through mindfulness and reflexivity. The empathic connection between these clinicians and their patients was maintained through an awareness of how their words and behavior might be perceived by the patient, and a conscious effort to keep the patient at the center of the interaction despite distractions introduced by the computer.

Preface

This dissertation arose out of my frustration with technological changes in my clinical practice and my relative lack of control over my day-to-day work. In my professional life as a physician assistant (PA), I have tried to negotiate the middle ground between the art and the science of medicine as the clinical situation demanded. I understood early in my career that I would never reach a point where I "knew everything" about my work. Clinical medicine is not a static discipline – our understanding of disease pathways and appropriate treatment are always changing and it is necessary to constantly read and maintain one's knowledge base through continuing medical education activities. However, I did not expect I would have to modify how I interacted with my patients in order to incorporate new technology in the exam room. The introduction of an exam room computer radically changed my ability to interact with my patients, forcing me to re-examine my core beliefs about the patient-clinician relationship.

Although based on the medical model, the goal of PA education differs significantly from physician training. A common maxim heard frequently by students during their medical training provides an illustration of the difference. Clinical preceptors frequently use the phrase, "When you hear hoof beats, think of horses, not zebras," as a means to remind the student to think of the more common causes of illness first, rather than an esoteric disease, when developing a list of possible causes to explain a patient's symptoms. My clinical training as a PA concentrated on teaching the most common causes of conditions frequently evaluated in a primary care practice with less emphasis on relatively rare syndromes, making my core diagnostic skill set the ability to easily

recognize *horses*. My responsibility as a PA was to be able to recognize the difference

between normal and abnormal well enough to first sort the horses from the zebras. On the

rare occasion when I might encounter a *zebra*, rather than make the diagnosis, my role as

a physician assistant was to be able to accurately present the patient's signs and

symptoms to my supervising physician so he or she could either make the diagnosis

based on my description or advise me what specific additional information was needed to

be able to make a reasonable diagnosis. This expectation required that I be able to

efficiently gather diagnostic clues by listening closely to the patient's medical history and

performing a careful physical examination. Developing effective patient interviewing

skills was a critical part of my training. I diligently practiced the techniques, both verbal

and non-verbal, that would allow the patient to feel *heard* in a medical interview. This

approach socialized me to be profoundly patient-centered in my practice orientation. I

listened to my patients and gladly assumed the responsibility for explaining what the

physician did not have time to explain. As I moved between different practice settings

over the course of my career, my patient-centered focus remained my core clinical skill.

Sustaining this attitude and approach to the patient was more difficult in some clinical

environments, and became particularly important when I accepted a position in outpatient

primary care at a Veterans Affairs (VA) medical center in 1991. In this clinical setting

my assigned examination room included, not only an exam table and the familiar wall-

mounted tools, but also a video-display terminal and keyboard. The terminal and

keyboard were my connection to the electronic medical record (EMR), and dominated the

desk by occupying most of the available space.

The introduction of the EMR in my VA practice was initially positive, reducing the frustration of providing competent care to patients without the benefit of accurate medical records. The computer record was easy to access and clinical notes were readable. Lab results, x-ray reports, and medication lists were immediately available with a click of the mouse. Being a touch typist, the keyboard posed less of a problem for me than for the clinicians who could not type. As the EMR expanded into more areas of the clinical care of the patient, clinicians were not only to provide medical care for the patient, but also to collect quality of care data during each patient visit. Gradually, the computer began to compete with the patient for my attention during each clinical encounter. My ability to type a note quickly and enter ancillary data during each appointment began to interfere with my ability to connect with the patient. These experiences and casual conversations with other clinicians made me wonder whether introducing computers into the medical environment was truly a move toward better care for the patient. I knew my practice had changed, and if balancing attention between the computer and the patient was a problem for me – what did that mean for clinicians who were less inclined to a patient-centered practice?

Returning to an academic environment was not easy. I frequently found myself reverting to clinical thought processes rather than building new ways of cataloging knowledge that were more consistent with a scholarly approach to the subject. I also found myself at odds with some conclusions in the Health Communication research literature that appeared to not fully understand or appreciate the conflicting forces operating on the average clinician and why a clinician might adapt certain behaviors that gave the patient less control in a clinical interaction. At the same time, I tried to apply

communication theory to my day-to-day work with patients in order to better facilitate the patient's involvement in their interactions with me. Frequently, administrative/managerial issues outside my control blocked me from actively incorporating this new understanding of the patient-clinician relationship because there was not enough time allowed in my clinic schedule. As my frustration continued to grow, the dissertation became more than an exploration of what was happening in the computerized exam room. Not only did I want to understand the nature of the changes introduced by the exam room computer, I also wanted to compose a statement to send to the attention of the powerful forces that control the medical environment in the United States today. After 30 years on the front lines as a clinician, I wanted my description and interpretation of what was happening in exam rooms across the country to reach the health policy gurus who sit in their offices and dream up the crazy programs that later have a direct impact on how I can do my work at the level of the individual patient.

Initially I wanted to give my dissertation the unscholarly title, *Exam Room Computers: A Medical Ménage à Trois*, to reflect the degree to which the computer has intruded upon the interpersonal relationship between the clinician and patient. This dissertation is my humble attempt to give a voice to clinicians who value patient-centered care based on empathic communication with their patients. Although not traditionally considered a disenfranchised group, changes in the 21st century medical landscape have presented major challenges to clinicians who are committed to learning how to use the available technology efficiently without abandoning the critical empathic underpinnings of the clinical interaction. It is not an easy task.

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Chapter 1

Introduction

The tension between the science of medicine (technology) and the art of

medicine (relationships) has become critically acute as diverse stakeholders debate the

best means to improve health care delivery in the United States. In 1999 the Institute

of Medicine (IOM) published the report, *To Err is Human, Building a Safer*

Healthcare System (Kohn, Corrigan, & Donaldson, 1999), detailing the impact of

medical errors on the health of American patients. The report claimed preventable

medical errors were responsible for excessive patient deaths and strongly

recommended the increased use of health information technology (HIT), particularly

the introduction of an electronic medical record (EMR) and computerized physician

order entry (CPOE), as the best solution to assure quality of care and improve patient

safety. At the same time the Surgeon General's Healthy People 2010 report listed

improved communication between patients and clinicians as a means to improve

quality of care among its recommended national health communication priorities [1].

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[1] The Surgeon General's Healthy People 2010 has several goals for increasing health communication within the United States. Goal 11-6 is to "Increase the proportion of persons who report that their health care providers have satisfactory communication skills." Specifically, "Clear, candid, accurate, culturally and linguistically competent provider-patient communication is essential for the prevention, diagnosis, treatment, and management of health concerns" (Healthy People 2010, 1999).

The interpersonal relationship between the patient and the clinician is unique among the types of interpersonal relationships human beings seek [2]. Sociologists have studied the relationship through quantitative methods such as process analysis, pioneered by Barbara Korsch in pediatric settings (Korsch, Gozzi, & Francis, 1968) and conversation analysis, a social interaction investigational process that allowed a more complete analysis from the viewpoint of both the patient and the clinician (Maynard & Heritage, 2005). Other scholars preferred a qualitative description of the interaction, focusing on the patient's illness narrative as a means to develop an empathic response to the patient (Charon, 1993). Although Spiro (1993) wrote of the distrust of empathy in the world of modern medical care, claiming "the power of technology and science has reduced the role of personal virtue or character in medical practice" (p. 2), empathic communication was viewed as a critical skill to enhance the clinician's ability to communicate successfully with a patient during a clinical encounter based on observations that the patient-clinician relationship could be health-promoting in itself, regardless of the specific treatment offered the patient, when the physician demonstrated behaviors perceived as "caring" by the patient (Adler, 2002). Such observations led J. G. Scott, R. G. Scott, Miller, Strange and Crabtree (2009) to propose a philosophy of medicine based on a "healing relationship" between patients

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[2] Physicians are not the only clinicians who develop communicative health care relationships with patients. In today's healthcare marketplace the more generic term health care provider has been substituted for physician as the term physician may describe a medical doctor (MD), a doctor of osteopathy (DO), or a doctor of chiropractic (DC). The term provider also recognizes non-physicians professions, including physician assistants, nurse practitioners, psychologists, and other clinical specialists, who also provide direct patient care in a variety of settings. In this dissertation both terms are used. When referring to the literature, the term cited by the referenced study is used. The term clinician is used when summarizing multiple studies in order to be inclusive of both physician and non-physicians clinicians who provide direct patient care. Participants in this study included both physicians and nurse practitioners, requiring the use of the more inclusive term.

and clinicians to replace the dominant view of medicine as a system of Cartesian reductionism that saw the body as a machine and medical professionals as technicians tasked with repairing that machine. Thus, the move toward increased computerization of medical care re-ignited the eternal, smoldering conflict between medicine as an art and medicine as a science, prompting some communication research scholars to question if a more extensive use of technology is compatible with an individualized, patient-centered practice (Frankel et al., 2006; Weiner & Biondich, 2006).

This dissertation reflects insights gained through the application of communication theory to the complex world of the clinician and patient, and attempts to address the challenges and unanticipated consequences of introducing technology in the form of an exam-room computer into the interaction. Clues to understanding the conflict between HIT and a patient-centered practice of medicine have been published in the literature of several different disciplines investigating diverse areas of study including, but not limited to, research regarding (a) optimum patient clinician interaction, including the role of empathic communication; (b) patient safety and quality improvement methodologies; (c) medical informatics; (d) organizational studies, including theories of organizational culture and change; and (e) sociotechnical theory, particularly the nature of wicked and tame problems initially defined by Rittel and Webber (1973). This multi-disciplinary literature is reviewed in Chapter 2, including an overview of the limited research regarding exam room computers published in both the medical and communication literature. Chapter 3 describes the research methods employed to conduct this primarily qualitative case study of The West Clinic, an oncology practice based in Memphis, Tennessee, with a reputation for

patient-centered care in order to describe how an exemplary group of clinicians adapted to the challenge of incorporating an exam room computer into their day-to-day oncology practice. The Jefferson Scale of Physician Empathy is also described in Chapter 3 along with its role in the study as a quantitative measure of empathic tendencies among the participating clinicians, and why it was included in the study design. Chapter 4 presents an analysis of the data collected from both individual and group interviews of the West Clinic clinicians who volunteered to participate in the present study, followed by a discussion answering the research questions regarding the effects the introduction of an exam room computer posed to the patient–clinician relationship. Finally, Chapter 5 presents a summary of key points raised in Chapters 1 through 4 with implications for additional research to better understand the impact caused by introducing such technology into the interpersonal relationship between the patient and clinician, and how to develop strategies to minimize the barriers to effective empathic communication.

Chapter 2

Literature Review

The literature review that follows provides an overview of the multi-disciplinary literature that addresses the myriad factors associated with patient–clinician communication as a background to understanding the potential consequences of introducing an exam room computer into this complex relationship.[1] Starting with a discussion of the specific characteristics both the patient and the clinician bring to the table, the impact of the clinician's use of communication tools such as empathy and nonverbal communication on the outcome of a clinical visit are reviewed. The manner in which a clinician utilizes different communication behaviors during the visit contributes to whether the interaction is considered patient-centered, a practice philosophy consistent with a biopsychosocial approach to the clinical visit. Different models that reflect a biopsychosocial perspective are presented, including models from the medical and health communication literature. The biopsychosocial model provides a stark contrast to the biomedical model, a view that concentrates more on the science of medicine and has led many clinicians to claim the biospychosocial model is incompatible with the demands of day-to-day medical care. On the other hand, there has also been clinician resistance to the introduction of health information technology as a means to promote patient safety by reducing medical errors, an approach that would appear to be more consistent with the biomedical model. Finally, sociotechnical theory and the concept of a non-linear or "wicked problem" is presented as a potential

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[1] This review is not meant to be an exhaustive survey of the literature regarding the clinician-patient relationship. Rather, it presents representative research articles I believe most informs the present study.

method to address the dilemma associated with these competing demands and the desire for the clinical visit to be both patient-centered and safe.

Studies of the Patient-Clinician Interaction

The patient-clinician interaction has been of great interest to communication scholars, leading to multiple studies that produced recommendations for improving interpersonal communication between physician and patient (see review in Duggan, 2006). The advise offered by communication scholars sought to contribute to efforts to prevent the undesirable outcome where poor communication during a medical encounter could both endanger the patient's health (Wilson et al., 2007), or place the clinician at professional risk of malpractice (Levinson, Roter, Mullooly, Dull, & Frankel, 1997). Despite evidence linking patient-clinician communication that empowered the patient to fully participate in his or her care through shared decision-making to both higher levels of patient satisfaction and improved clinical outcomes (Trummer, Mueller, Nowak, Stidl, & Pelikan, 2006), Levinson, Gorawara-Bhat and Lamb (2000) noted clinicians frequently failed to recognize patient cues during clinical encounters, causing them to miss opportunities to express understanding and empathy.

Epstein (2006) observed that health communication researchers have an opportunity to view the process of care through multiple perspectives, informing their research by reflecting on their personal experiences as a patient. From the patient's perspective, the time spent with the clinician in the exam room is only a small portion of the healthcare experience. Discussions with family and friends about a particular health problem or concern may initially frame an individual's decision to see a

clinician, developing expectations for the clinical visit. Interactions with elements of the healthcare system in the process of making the appointment begin to shape the patient's perception of the clinician before they actually meet in the examination room. Multiple factors, from the friendliness of the office staff to the clinician's communication style when discussing the specific problem at hand, ultimately influence how the patient experiences the interaction as a whole and contribute to the acceptance or rejection of the diagnosis and treatment plan offered as a solution to the patient's health problem.

One means of assessing the effects on the health of patients potentially related to the patient-clinician interaction has been through close observation of an individual clinician's communication behaviors during a typical clinical visit. In studies reviewed by Van Dulmen and Bensing (2002) physician communication behaviors were coded by observers using quantitiative instruments such as the Rotor Interactive Analysis System (RAIS). The RAIS is a quantitative coding scale based on social exchange theories related to interpersonal influence and problem solving and designed to assess key communication behaviors and derive a patient-centered measure that could be then be compared to the patient's subjective report of the interaction (Roter & Larson, 2001). Studies utilizing this type of assessment view the clinician's behavior as the primary target for improved communication. More recent studies have also looked at patient characteristics that affect how the clinician interacts with the patient during the visit.

Patient Characteristics that Affect Communication with Clinicians

Specific characteristics of the patient may affect the patient-clinician relationship as shown by research describing differing clinician responses to the individual patient (Roter & Hall, 2006). Patient attributes including the degree of participation during the visit (represented by the number of questions asked), socio-demographic factors such as gender, race/ethnicity, educational level, and socioeconomic class, as well the patient's expression of trust or distrust in the clinician's competency may affect the quality of communication between patients and clinicians during a clinical visit.

Clinicians respond to triggering behaviors of the patient through a process termed reciprocity. As an example, patients who were active participants in the clinical interaction were more likely to stimulate the physician to provide more information (Cegala & Post, 2009), while patients who asked few questions were less likely to engage the physician in information sharing (Cegala, Street, & Clinch, 2007). This behavior follows the prediction of the Medical Communication Alignment Theory (MCAT) "which proposes that patient's messages during a medical interview signal what topics are personally important and, following the rules of everyday interpersonal society, prompts physicians to address these topics in greater detail than they might otherwise" (Cegala & Post, 2009, p. 203).

Although belief in the clinician's commitment to universalism (i.e., the responsibility of clinicians to treat all patients equally regardless of specific attributes or traits underlies the ability of patients to develop trust in the patient-clinician interaction, clinician behavior may be negatively affected by patient stereotypes (Roter

& Hall, 2006). Socio-demographic identifiers such as age, gender, or ethnicity (including social class or culture) may modify the interaction between clinicians and patients (Smedley, Stith, & Nelson, 2003). Low income, White, functionally literate adults were generally more dissatisfied with their healthcare provider's communication skills than White, functionally literate patients of a higher socioeconomic status (Jensen, King, Guntzviller, & Davis, 2010). Similarly, Siminoff, Graham, and Gordon (2006) investigated the ability of physicians to provide effective cancer care in six different categories. These specific areas of cancer communication included (a) counseling the patient on biomedical issues such as potential treatments or possible side effects, (b) counseling the patient on psychosocial issues such as the potential impact of therapy on the patient's daily routine, (c) asking the patient questions to determine their understanding or opinion of information discussed, (d) efforts to build a relationship with the patient through personal or social talk, (e) initiating conversations of fear and/or anxiety, and (f) gathering data relevant to the patient's illness. In each category, communication with members of racial or ethnic minorities as well as less affluent, older, or less educated White patients was less efficient, causing the researchers to conclude these patients were at risk of having less opportunity to participate in an adequate decision making process during a medical interaction, than non-elderly, well-educated, affluent, white patients.

While trust in the clinician generally predicts a successful clinical relationship, the question of physician trustworthiness involved more complex issues for African-American patients. The past mistreatment of Black patients, as represented in particular by the Tuskegee Syphilis study, was identified as a factor contributing to the

inclination of an African American patient to trust or distrust care offered by most clinicians. Jacobs, Rolle, Ferrans, Whitaker, and Warnecke (2006) designed a qualitative study to explore issues of trust and found that African American focus group participants reported **both** trust and distrust influenced their decision to seek medical care. Similar to studies investigating the effects of racial concordance on the interaction between the patient and the clinician (Cooper et al., 2003; Street, O'Malley, Cooper, & Haidet, 2008), the patient's trust in the physician was based on belief in the physician's competence, both technical and interpersonal. Although the clinician's ability to show compassion, communicate successfully, and put the patient's best interest first were positive factors contributing to the success of the patient-clinician relationship, issues of distrust lowered the probability the clinical interaction would be viewed as successful by the patient. Jacobs et al. (2006) reported African American focus group participants admitted avoidance of clinical interactions due to anticipation of racial discrimination. The individual Black patient's personal understanding (or misunderstanding) of historic events such as the Tuskegee Syphilis study contributed to the presence of a strong suspicion they would be experimented upon in the course of routine medical care. Study respondents were more likely to interpret negative outcomes, usually viewed by White patients as clinician incompetence or a medical mistake, as evidence of experimentation. Issues of distrust also were cited as a reason to decline care (refusing surgery or other recommended treatments), to change physicians, or to withdraw completely from care (Jacobs et al., 2006).

Clinician Characteristics that Affect Communication with Patients

A clinician's interpersonal skills along with other personal characteristics, including the clinician's ethnicity, professionalism, and attitudes toward care have been shown to affect patient-clinician communication (Roter & Hall, 2006). From the standpoint of professionalism and attitude, a patient-centered, interpersonal style including shared decision-making (Napoles, Gregorich, Santoyo-Olsson, O'Brien, & Stewart, 2009), compassionate and respectful care (Saha, Arbelaez, & Cooper, 2003), and taking the time to elicit and respond to patient concerns along with patient-centered decision making (Ashton et al., 2003; Beach et al., 2005) were identified as clinician characteristics associated with positive outcomes. The patient's perception of the clinician's respect for them was an important factor contributing to patient satisfaction (Ellingson & Buzzanell, 1999). Furthermore, patients were able to accurately assess the degree of respect the physician had toward them in over one-third of clinical encounters as determined by comparison of the patient's and clinician's assessments of the visit dynamics in post-visit interviews (Beach, Roter, Wang, Duggan, & Cooper, 2006). DiMatteo, Robinson, Heritage, Tabbarah and Fox (2003) found a high correlation between the patient's assessment of physician affect and the visit experience. These authors investigated the accuracy of a patient's perception of their physician's attitude toward them during a clinical encounter by either video or audio-taping clinical encounters, then coding the patient-centeredness of the recorded interaction utilizing the RIAS. After coding, the patient's self-assessment was compared with a trained observer's assessment of the recorded clinical visit. Patient descriptions of satisfying clinical encounters with clinicians indicated, in

most cases, the clinician's interpersonal skills were more important to the patient than the clinician's technical skills (Chang et al., 2006).

Ethnicity effects are more complex and have been investigated through studies of race and gender concordance between clinician and patient. Street et al. (2008) looked at concordance effects in promoting patient trust in the physician through enhancing the patient's perception of a shared identity with the clinician. These authors sought to determine the effects of personal and ethnic similarities between clinicians and patients by comparing the patient's perception of a clinical visit (in terms of satisfaction with care and intent to follow treatment recommendations) with a trained third party observer's assessment of an audiotape of the same visit (rating both the physician's communication effectiveness as well as the patient's level of participation). Comparisons showed patients in a racially concordant encounter reported a greater perception of personal and ethnic similarity to their doctors than patients in racially discordant interactions. However, after controlling for demographic attributes, the effects of racial concordance between patient and physician were less predictive of a successful interaction when compared to patient perceptions of the physician's communication style and the degree of patient-centeredness, suggesting factors other than race or ethnicity contributed to the patient's perception of personal similarity to the physician. The results of this study were in sharp contrast to an earlier study by Cooper et al. (2003) that found audio-taped interactions of racially concordant visits later coded by third party observers were longer and perceived by patients as more positive, an effect that could not be explained by physician use of patient centered communication.

Halbert, Armstrong, Gandy, and Shaker (2006) assessed patient trust in the context of previous healthcare experiences and reported African American patients were more likely to report low trust in health care providers compared to White patients, and that the factors related to low trust were different for each group. For African American patients, receiving most of their healthcare services from facilities other than a physician's office (e.g., hospital clinics or emergency departments) was the only significant structural characteristic of health care found to be associated with low trust. For White patients, low trust in healthcare providers was significantly associated with health insurance status and a low number of annual healthcare visits. The study found no relationship between trust and racial concordance with the clinician, suggesting that access to healthcare settings where there is a greater opportunity to develop an interpersonal relationship with the clinician, regardless of the clinician's racial or ethnic background, might improve the level of trust an African American patient has in his or her healthcare provider.

Training clinicians in "culturally competent" communication. In order to reduce disparities in health care, particularly among minority populations served by white clinicians, programs have been constructed with the goal of improving the cultural competence of clinicians. Efforts to improve cultural competence within clinical visits included academic-based training programs for medical students (Wilkerson, Cha-Chi, May, & Elliot, 2010) in addition to community-based interventions such as the Houston, TX workshops entitled "How to Talk With your Doctor (and Get Your Doctor to Talk With You!)" to teach patients better communication skills (Ashton et al., 2003). Other educational initiatives included the

establishment of a Health Disparities Task Force by professional organizations such as the Society of General Internal Medicine to develop guidelines for curricula focusing on health disparities including learning objectives, methods for teaching, and useful resources for teaching clinicians culturally competent communication skills. Although developed primarily for teaching medical students, residents, and practicing primary care providers, the guidelines were presented as suitable for learners in any specialty and disseminated through publication of a position paper in the journal, *Annals of Internal Medicine* (Smith et al., 2007). In addition to these educational presentations, the Robert Wood Johnson Foundation, a major source of funding for health research grants, launched a 2005 enterprise titled *Finding Answers: Disparities Research for Change* to identify a research agenda designed to encourage, evaluate, and disseminate new interventions to reduce disparities in health care (Chin, Walters, Cook, & Huang, 2007).

Since talk is the basis of the patient-clinician interaction, competent communication between clinician and patient requires developing congruence between the patient's need to tell the story reflecting his or her understanding of the illness that brings the patient to the clinician, and the clinician's need to listen, diagnose, and develop a treatment plan appropriate to the illness and acceptable to the patient (Perloff, Bonder, Ray, Ray, & Siminoff, 2006). Based on the premise that successful training improves patient satisfaction, cultural competency programs generally included seven core elements; understanding disparities in healthcare, including the role of self-bias; differing responses among ethnic groups to diseases and pharmacologic treatments; stereotyping; exploration of cultures and an individual's

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response to illness; cultural perceptions of disease, both from the patient and clinician perspective; effective communication, including both verbal and non-verbal language and how to best utilize an interpreter when necessary; and gender issues, including differing family dynamics in different cultures (Genao, Bussey-Jones, St George, & Corbie-Smith, 2009). Defining cultural competence as the ability to establish effective interpersonal relationships that go beyond cultural differences" (Cooper & Roter, 2003), Paez, Allen, Beach, Carson, and Cooper (2008) found that a clinician's ability to facilitate a patient's cultural autonomy was associated with the patient reporting that their clinician more actively encouraged involvement in their care process. Patients of physicians who practiced a high degree of cultural competence were more satisfied with their care and more willing to both seek and share information with their physician.

Culturally competent patient-clinician communication builds upon basic clinician attributes and communication skills that should be present in every patient encounter. In order to communicate proficiently in a healthcare setting, a clinician needs to have a repertoire of communication tools he or she can use to provide competent care to patients from diverse communities. However, the most critical, communication skill a clinician requires is empathy (Kim, Kaplowitz, & Johnston, 2004; Laidlaw et al., 2007; Quirk et al., 2008; Van Dulmen & Bensing, 2002).

Empathy and the patient-clinician relationship. The word empathy is the English translation of the German term *einfühlung* (after the Greek *emátheia*) coined by Theodor Lipps in the late 19th century in his discussions of the aesthetic experience (Lavasseur & Vance, 1993). Empathy is of critical importance for medical

practitioners (Silvester, Patterson, Koczwara, & Ferguson, 2007). Carl Rogers (1957) in describing his "theory of therapy, personality, and interpersonal relationships, as developed in a client-centered framework" (p. 95) defined the condition of therapist empathy:

> To sense the client's private world as if it were your own, but without ever losing the 'as if' quality – this is empathy, and this seems essential to therapy. To sense the client's anger, fear, or confusion as if it were your own, yet without your own anger, fear, or confusion getting bound up in it, is the condition we are endeavoring to describe. (p. 99)

More (1996) advocated a more precise definition that recognized the degree of clinician self-awareness required for an empathic response to the patient. She suggested empathy was best understood as a form of reflexive, interpersonal knowledge.

> Empathy is sometimes described as the ability to imagine the other's inner world. But this is only the beginning. To the extent that we can establish a coherent sense of another's interior world, we must turn imagination back on itself, reflexively seeking the sources of our reconstruction of the patient's world in our own past experiences. This hermeneutic process of reflexive interpretation involves a constant oscillation back and forth between observation of the patient, and of ourselves, allying imagination, emotion, memory, and cognition in the service of informed understanding. (p. 245)

Although empathy is widely accepted as important for patient-clinician communication, Pederson (2008) determined many descriptions of empathy in the

literature to be inadequate and deceptive, and agreeing with More (1996), utilized

insights from philosophical hermeneutics to characterize empathy as "an appropriate

understanding of another human being," noting "to achieve appropriate empathic

understanding the subject and object have to participate in a dialogue and reflect on

their understanding and experiences; and the intersubjective truths gained are never

complete but rather revisable results from an ongoing process" (Pedersen, 2008, p.

334).

Given the many definitions of empathy available in the literature, Irving and

Dickson (2004) returned to Roger's 1957 definition of empathy as the basis for a

conceptual model based on cognitive (understanding), affective (feeling), and

behavioral components (the ability to communicate that understanding and feeling).

Continuing to build on this work, Hojat (2007) proposed an operational definition of

empathy: "Empathy is a predominately *cognitive* (rather than an emotional) attribute

that involves an *understanding* (rather than feeling) of experiences, concerns, and

perspectives of the patient, combined with a capacity to *communicate* that

understanding" (p. 80). This definition provides the basis for a psychometric

instrument, The Jefferson Scale of Physician Empathy (JSPE), developed by Hojat and

colleagues at the Jefferson College of Medicine as a self-assessment tool for clinicians

to test one's empathic level using items within each domain (Hojat et al., 2002). A

recent review evaluating 50 published instruments designed to test empathy in

medicine recognized the JSPE as an effective tool for investigating empathy in both

clinical care and medical training (Hemmerdinger, Stoddart, & Lilford, 2007).

Thus, the clinician utilizes several sources of information including patient cues, both verbal and non-verbal, to reflexively appreciate the affective life of the patient and develop a cognitive interpretation of the patient's experience. Citing research that non-verbal attunement by the clinician to a patient's cues facilitates the patient to more fully disclose emotionally-laden topics (Suchman, Markakis, Beckman, & Frankel, 1997), Halpern (2001) stressed the importance of empathy as a "way of discerning when and what is salient in another's emotional communication" (p. 93) in order to develop an emotional attunement or resonance with the patient and more effectively diagnose and treat previously unrecognized medical problems the patient may find difficult to discuss.

Nonverbal Communication in the Clinical Visit

Although the clinical interaction utilizes both verbal and nonverbal behaviors, studies of the effects of nonverbal communication are far fewer in number than studies of verbal communication effects. Most nonverbal communication research has focused on the clinician side of the interaction, concluding that positive nonverbal communication by clinicians improves patient satisfaction, while close attention to patient nonverbal clues allows clinicians to collect additional data to better diagnose the problem clinical problem at hand (Mast, 2007). For the clinical interaction between the patient and clinician, nonverbal communication is a powerful means of establishing within the dyad either trust or distrust, dominance or symmetry, as well as expressing emotions such as fear, hope, or sadness (Finset, 2007). Roter, Frankel, Hall, and Sluyter (2006) defined nonverbal communication as communicative behaviors without linguistic content, including but not limited to facial expressivity,

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smiling; eye contact; head nodding; hand gestures; postural positions termed as either open or closed; paralinguistic characteristics of speech such as speech rate, loudness, pitch, pauses, and speech dysfluencies; and dialogic behaviors such as interruptions. Roter et al. (2006) also observed most people can accurately judge the emotions of others based on small amounts of behavior, developing a degree of nonverbal sensitivity that is relevant in the context of the medical visit. Women tend to have greater nonverbal sensitivity increasing the probability female clinicians are better at reading and expressing nonverbal emotion. The patients of physicians with greater nonverbal sensitivity tend to be more satisfied with their clinical relationship than patients whose clinician are less fluent in nonverbal communication. Earlier reports by Robinson (1998) noted that doctors and patients

(a) use gaze and body orientation to communicate levels of engagement with and disengagement from courses of action and therefore with each other;

(b) arrange segments of their body to have divergent orientations to communicate multiple frames of engagement, and therefore simultaneously engagement with multiple courses of action; and

(c) use lower-body segments to more strongly communicate the frame of space wherein their long term, dominant actions are located. (p. 114)

Eye Contact and Nonverbal Communication

Gaze is an important measure of engagement. Neurophysiological and functional neurocognitve studies have demonstrated infants as young as four months prefer to gaze at human faces rather than abstract figures (Senju & Johnson, 2009), and an individual's perception of eye contact with another person initiates strong

triggers of human cognition and attention. In addition, vision research studies indicate

human observers are able to identify and select a specific facial image out of a large

sample of human facial images more quickly when the target image exhibits a direct

gaze as opposed to an averted gaze (George & Conty, 2008). Awareness of the

direction of another person's facial gaze provides critical information that allows the

observer to not only determine the direction of the other's attention, it is also helpful

in allowing the observer to infer the intentions and desires of another person (George

& Conty, 2008). These cognitive responses illustrate the primary role gaze processing

plays in the development of social cognition. These and similar studies have shown

that direct gaze between two people (represented for the purpose of discussion as

Person 1,"the looker," and Person 2, the object of the looker's gaze, or the person who

first perceives the gaze of another) stimulates a series of cognitive, face-related actions

of identification in both the person initiating gaze toward the other (Person 1), as well

as stimulating a different set of cognitive responses in Person 2, after the perception

the direct gaze of Person 1 is acknowledged. The cognitive response of Person 2 is an

example of the eye contact effect. From a developmental neuroscience perspective, the

"eye contact effect" is "the phenomenon that perceived eye contact with another

human face modulates certain aspects of the concurrent and/or immediately following

cognitive processing" (Senju & Johnson, 2009, p. 127).

Assessing Nonverbal Communication in Clinical Interactions

The importance of eye contact in nonverbal communication is demonstrated by

the inclusion of eye contact as one of the five kinesic attributes of clinicians identified

in the development of a tool to assess nonverbal communication during clinical visits.

Given that "approximately 80% of essential communication between individuals occurs nonverbally, involuntarily, and outside conscious awareness, and only 20% is verbal and voluntary" (Gorawara-Bhat, Cook, & Sachs, 2007, p. 223) Gorawara-Bhat and her colleagues sought to develop a framework describing the evolution of nonverbal communication during in a clinician's interaction with patients. The research team chose to work with elderly patients, believing (due in part to functional impairments such as decreased vision and hearing) this group of patients to be more attuned to the affective climate of the clinical environment, causing them to rely more on nonverbal communication during the clinical encounter. The tool developed through this research, **N**onverbal communication in **D**octor-**E**lderly **P**atient **T**ransactions (NDEPT), was organized into three parts. Based on a conceptualization of nonverbal communication within the context of both the physical setting of the exam room and the clinician's use of body language, the researchers defined the physical setting of the exam room as having both *static* elements of spatial configuration (including furniture, medical equipment, and the layout of the exam room) and *dynamic* dimensions that could be modified by the clinician during the context of a clinical interaction. Dynamic dimensions included elements such as the interactive distance, vertical height difference, or angle of interaction, as well as any physical barriers between the clinician and patient. The clinician then contributed additional, modifiable, kinesic dimensions, including stance, eye contact, facial expression, gesture, and touch to the three part scale of the NDEPT. Through careful observation, the research team was able to identify the spatial configuration that best facilitated the clinician's affective expressions such as eye contact and touch, leaving

the clinician free to utilize any additional dynamic and kinesic factors of their choice to further optimize their nonverbal communication with the patient (Gorawara-Bhat et al., 2007). Gorawara-Bhat and Cook (2011) in a later study found eye contact to be highly associated with clinician patient-centered communication, finding patients to prefer "looking" while "listening" to their physician. This discovery led to a modification of the NDEPT to more heavily weight the degree of eye contact between clinician and patient as a facilitating nonverbal behavior.

Just as the physical space of the exam room affects the interpersonal dimensions of the clinical encounter, the organizational environment of the clinical setting also influences the interpersonal relationship between clinician and patient. The manner in which clinicians provide care and patients perceive the need for care is influenced by social, educational, political and philosophical attitudes toward how medical care should be structured. The scientific biomedical model of illness was unable to explain all forms of illness, leading some medical researchers to a search for a more inclusive model that could better explain not only the cause of the illness, but also the patient's perception and experience of what it feels like to be ill (Wade & Halligan, 2004).

Biomedical or Biopsychosocial: Models of Patient-Clinician Communication[2]

Engel (1977) called for expanding the biomedical model to include the

psychological and social aspects of illness as a more holistic representation of illness.

Criticized by practicing physicians at the time as incompatible with the time

constraints of the everyday practice of medicine, the biopsychosocial model was not

generally embraced by mainstream medicine. However, limitations of the biomedical

model, particularly those aspects that caused patient dissatisfaction, prompted a re-

examination of its utility. The editors of the journal Families, Systems, and Health

published a special issue devoted to the current status of the biopsychosocial model in

late 2005, reprinting the 1989 response of Dr. Joseph Herman to Engel's proposed

model (Herman, 2005) in addition to several papers outlining current views of the

usability of a biopsychosocial perspective in daily clinical practice (Biderman,

Yeheskel, & Herman, 2005; Epstein & Borrell-Carrio, 2005; Frankel & Quill, 2005;

Hepworth & Cushman, 2005; Lurie, 2005; Mauksch, 2005; Scherger, 2005; Stein,

2005; Suchman, 2005; Weston, 2005). Weston (2005) notes the biopsychosocial

model's failure to provide guidance for clinicians in how to practice day-to-day

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[2] The literature advocating medical practice based on the biopsychosocial rather than the biomedical model has not yet identified a single term to describe this philosophy of practice. Patient-centered care is another term frequently used to describe this practice philosophy. Working in 1992 to develop a values foundation for the health professions, the Pew-Fetzer Task Force on Advancing Psychological Health Education examined the evidence base of patient-centered care, normative care, and various patient and clinician preferences for clinical interaction. This analysis prompted the proposal of the term relationship-centered care (RCC) to best describe the philosophy that put relationships at the center of medical practice. Relationship-centered care proposes an ecological approach to medical practice considering not only the patient-clinician relationship, but also the multiple relationships between the physician and the patient's family, the patient and their family or support system, relationships between the physician and medical colleagues, and relationships between both the physician and the patient with large medical organizations including hospitals and regulating agencies. Several RCC proponents have proposed a "healing relationship" as a more descriptive name for the model. (Scott et al., 2009).

clinical medicine; and offers the patient-centered model developed at the University of Western Ontario as a "realistic" clinical method that corrects this deficiency. The patient-centered model encompasses four key areas to understanding a patient's illness: "patient's particular idea of about what is wrong with them; their feelings about being ill, especially their fears; their expectations of their physicians; and the effects of the illness on their day-to-day functioning" (Weston, 2005, p. 388). Providing a different perspective, Epstein and Borrell-Carrio (2005) believed practicing clinicians had problems adapting the biopsychosocial model into their day-to-day clinical practice due to confusion as to what the model represented. Rather than an empirical theory or philosophy of practice with an internally consistent logic, the biopsychosocial model represented an intent to practice in a manner that allowed the clinician to have two types of vision when examining the patient's problem – "first a direct vision of the problem unencumbered by categories, and second, a peripheral vision that can fix on relevant data at the edges of the principal focus" (p. 429).

Relationship-Centered Care

Pondering the impact of the biomedical model on the patient-physician relationship, Frankel and Quill (2005) proposed a philosophy of relationship-centered care (RCC), revitalizing the ideas originally espoused by Engel. Other research groups have also endorsed RCC as a method for delivering patient care that is both relationship-centered and compatible with the demands of today's medical standards of care (Adler, 2007; Beach & Inui, 2006; Epstein & Borrell-Carrio, 2005; Safran, Miller, & Beckman, 2006; Scherger, 2005)

Miller and Crabtree (1999a) proposed a conceptual model to represent the various relationships that impact the patient-clinician interaction and the context within which the relationships occur. Four separate processes (e.g., exploring, understanding, finding common ground, and self-reflection) occurred not sequentially, but in a non-linear process that could iterate several times within any clinical encounter. This understanding of the dynamics of RCC predicts the development of a shared understanding of the patient's illness by patient and clinician occurs in much the same fashion. Suchman (2006) characterized RCC as more an ideology than a theory because it failed to explain the nature of the relationships upon which it depended. Instead, he proposed complexity theory as the theoretical foundation to justify the principles of RCC. Complexity theory views these iterative reciprocal interactions as an example of self-organizing patterns of meaning and relating arising out of human interaction. Using the example of a conversation between two colleagues discussing a new insight, Suchman (2006) explains how iterative reciprocal interactions produce new patterns of meaning.

> As the idea 'ping-pongs' between you. It grows to become a whole new pattern of meaning – an idea for a major project or a new theory. No one knew at the outset where the conversation would lead; no one held the intention of creating something new or directed the conversation toward its ultimate outcome. It just happened – hence, a self-organizing novel pattern of meaning. (p. S41)

RCC and/or patient-centered care are perhaps the most familiar models of the patient-clinician relationship proposed in the past ten years; however, other models

based on the biopsychosocial perspective have also been proposed. Some representative examples are described below.

Window – Mirror Model

Buetow and Elwyn (2008) advocated a Window-Mirror model, using the metaphor of a window and mirror to represent a patient-clinician relationship of mutual caring with a balanced focus on both self and other, making it possible to see both parties at the same time as well as alternate focus when necessary.

> If we sit in a lit room and attempt to look out through a window into the dark, the window acts as a mirror. In contrast, a person outside, in the dark, can look through the window to view the illuminated interior. However, if the light on both sides of the panes has the same intensity, the glass acts as a window and as a mirror. One sees oneself looking out and the other person looking in. The same principles apply to the physician-patient relationship. There is a tendency to think of patients as the subjects, alone in a lit room, while physicians remain outsiders in the shadows. As a result, physicians view the patient rather than themselves, and patients are helped to see themselves but not the physician. The window mirror model emphasizes the need to put the light on so that both can see the other as well as themselves (p. E20)

This model, with its emphasis on mutual caring between the patient and physician, was offered as a more egalitarian process that, when implemented, required both physician and patient to facilitate mutual learning toward the co-provision of care.

The Four Habits Model of Communication

      Krupat, Frankel, Stein, and Irish (2006a) proposed a model for teaching communication skills based on the sequence of a medical interview as well as the principles of relationship-centered care. Elements of the medical interview were identified by four specific tasks/habits: "Invest in the Beginning, Elicit the Patient's Perspective, Demonstrate Empathy; and Invest in the End" (p. 38). The model was then used as the basis for a psychometric instrument that could be utilized to both teach and assess communication effectiveness. After a pilot program introducing the Four Habits model into a Norwegian medical center in 2006 (Gulbrandsen et al., 2008), authors from the same medical center proposed a similar model based on an economic metaphor that defined the clinical visit as part of a value chain. Finset and Mjaaland (2009) proposed a neurobehavioral approach to regulating emotion within the interaction between patient and clinician, viewing the outcome of the consultation in economic terms as a value chain comprised of four elements of communication behaviors. The metaphor of a value chain with emphasis on goal orientation suggested that each of the four communication behaviors "(1) establishing rapport, (2) patient disclosure of emotional cues and concerns, (3) the doctor's expression of empathy, and (4) positive reappraisal of concerns" (Finset & Mjaaland, 2009, p. 323) was a value-added step toward a positive outcome from the consultation. Despite the similarity between models, Finset and Mjaaland's journal article did not include a reference to the Four Habits model or the pilot program that introduced it to their Norwegian medical center.

Ecological Model of Patient-Clinician Communication

Street (2003) proposed an ecological model of communication recognizing the interpersonal interaction between patient and clinician "as situated within and affected by a variety of social contexts" (p. 63). The health care provider and patient each brought into the interaction pre-disposing influences including communication style, self-concepts (e.g., attitudes, beliefs, personality) and linguistic resources, as well as cognitive-affective influences such as goals, perception of partner, perception of relationship, communication strategies, and emotional states. The patient and healthcare provider interacted through the use of verbal and nonverbal communication affected by these internal factors. At the same time external factors including organizational context (managed care, available services, standards of care), political-legal context (malpractice litigation, patient bill of rights, Medicaid/Medicare/other insurance coverage), cultural context (race/ethnicity, socioeconomic status, religion), and media context (internet, telemedicine, mass media) exerted additional effects upon the interaction between healthcare provider and the patient. Recent work by Moore, Wright, and Bernard (2009) utilized structural equation modeling and found partial support for the model, particularly the influence of the clinician's nonverbal communication on the patient's perceptions of satisfaction with the physician, the physician's competence, and ultimately satisfaction with the healthcare system

Epstein and Street (2007) extended this model of communication to the special case of the patient-clinician interaction in cancer care. Drawing, upon the same interrelationships between patient, clinician, and the health care system as defined in the ecological model, the result of improved communication was an improved health

outcome for the patient. Six core functions of patient-clinician communication including managing uncertainty, responding to emotion, exchanging information, making decisions, fostering healing relationships, and enabling patient self-management overlapped and interacted with each other in order to produce successful patient outcomes. Clinician communication behaviors that strengthened the clinician-patient relationship, reinforced existing social networks, directed the patient to formal support groups, and actively attenuated negative social influences provided social support for the patient. These supportive activities, in turn reduced the patient's psychological arousal, provided help and advocacy, and enhanced self-care; ultimately contributing to improved patient survival rates and health-related quality of life. Finally, the six core functions and key clinician communication behaviors would interact to produce proximal, intermediate, and primary health outcomes for the patient over the six phases of the cancer care continuum, defined as prevention, screening, diagnosis, treatment, survivorship, and end of life. Specific clinician behaviors would change and produce different outcomes relative to the patient's location on the cancer care continuum, with the goal of improved health-related quality of life for the cancer patient.

Culturally Competent Communication (CCC) as a Communication Model

Returning to the discussion of culturally competent communication, Teal and Street (2009) proposed a model of culturally competent communication (CCC) based on four critical elements. A culturally competent clinician should have a communication repertoire of specific communication skills, possess situational and self-awareness in order to maximize skills of perception, and adaptability in order to

accommodate different cultural groups through adapting a communication style that is compatible with the socio-cultural health beliefs of the patient even when those beliefs are different from the health beliefs of the clinician. Finally, the culturally competent clinician should be able to demonstrate knowledge about core cultural issues, without inadvertently promoting stereotypes. Rather than focusing on the cultural group to which the patient belongs, clinician efforts should be devoted to addressing core cultural issues for each individual patient, particularly those "situations, interactions, and behaviors that have potential for cross cultural misunderstanding" (Teal & Street, 2009, p. 536).

Health Communication Models

Health communication models of patient clinician communication consistent with a biopsychosocial as well as a culturally competent perspective have also been published, but are frequently overlooked in the medical literature. The rhetorical model of collaborative interpretation (CI) proposed by Young and Flowers (Young & Flower, 2002) places the patient in the position of a problem-solver and decision-maker of equal status with the clinician. CI utilizes the rhetoric of agency to support the patient's ability to create "their own narrative about their health and their lives and then in making decisions and plans to play those narratives out in reality" (p. 73). Through an empathic exchange between patient and clinician, CI promotes a conversational structure that allows each participant to identify their treatment goals and expectations, discuss both perceived obstacles and available options, and then *collaboratively* reach a treatment consensus unique to the individual patient.

Similarly, a model of "shared decision-making" encourages clinicians to actively include patients as partners in medical decisions (Chewning et al., 2011). Politi and Street (2011) described the attributes of a "quality" medical decision to be as follows (a) the decision is based on the best clinical evidence, (b) the decision incorporates the patient's values and preferences, (c) the patient is involved in the decision-making process to the extent he or she wants or needs to be, and (d) the decision is feasible to implement. This model addresses the issue of *medical uncertainty* and its effect on the patient and the clinician, as well as the relationship.[3]

Both the patient and the clinician bring specific characteristics into the interaction that can affect the success of communication between the two parties and the development of a successful relationship. All of the models described above promote improved communication between patient and clinician, a goal supported by the IOM (Roter & Hall, 2006). However, at the same time the IOM was advocating enhanced patient-clinician communication, the IOM was also promoting a technological change in the practice of medicine capable of introducing barriers to effective patient-clinician communication not anticipated by the models described above.

Computerization as a Means to Improve Patient Safety

The seminal IOM report, *To Err is Human: Building a Safer Healthcare System* (Kohn et al., 1999), detailed the role of medical errors in causing unnecessary

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[3] Medical uncertainty is a complex issue, and a detailed description is beyond the scope of the present review. The interested reader can find an overview of the subject in Politi and Street's chapter in the recently published second edition of the Handbook of Health Communication cited here (2011) as well as articles by Whitney et al. (2008) and LeBlanc, Kenny, O'Connor, and Légaré (2009).

deaths , and called for the introduction of an electronic medical record (EMR) [4] as a

safeguard against such errors. Quality experts and policy makers advocated the use of

computerized systems to eliminate human error, and the adoption of a process

mirroring the example of the aviation industry's methodology to lower accident rates.

Efforts to computerize medical practice in order to eliminate medical errors has been a

major project for hospitals, physician's offices, and government health systems such

as the Department of Veterans Affairs and the Department of Defense. Major efforts

have been started, stopped, and introduced again since the publication of *To Err is

Human* in 1999. However, the development of computerized systems to replace the

traditional tools of medical practice has, in many instances, introduced new and

different types of medical errors that were not anticipated. Unintended adverse

consequences related to computerized physician order entry (CPOE) fall into nine

major categories, listed here from most to less frequent: "more/new work for

clinicians; unfavorable workflow issues; never ending system demands; problems

related to paper persistence; untoward changes in communication patterns and

practices; negative emotions; generation of new kinds of errors; unexpected changes in

the power structure; and overdependence on technology" (Campbell, Sittig, Ash,

Guappone, & Dykstra, 2006, p. 547).

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[4] Electronic medical records systems may have several components. Computerized physician order entry (CPOE) is frequently the first clinical element added in a new installation after administration functions such as scheduling and billing. CPOE removed the possibility of miscommunication if a second person was required to interpret the original physician order before it could be executed. With CPOE the physician originated the order by direct entry into the system, rather than through a verbal order or a written order in a paper chart that then had to be entered by an intermediary, such as a nurse or a clerk. Although the error prevention theory behind the introduction of CPOE was sound, many clinicians objected to its introduction complaining direct entry of orders reduced the physician to a clerk/typist.

Despite the best intentions to improve the quality of medical care, the appearance of these unintended consequences has led some researchers to question whether increased computerization will make medical care safer for patients or introduce *e-iatrogenesis*[5] as a new type of complication (Weiner, Kfuri, Chan, & Fowles, 2007). One unexpected consequence of CPOE was the effect of changing physician-nurse discussions about a patient's medication from synchronous to asynchronous, and thereby modifying the physician-nurse cooperative effort in an inpatient setting. By changing the synchronicity of physician-nurse discussions of medication orders, a critical feed-back process was eliminated causing physicians and nurses to be less aware of each other's work processes, leading to uncertainty about task completion (Pirnejad, Niazkhani, van der Sijs, Berg, & Bal, 2008).

Clinician Acceptance of the Electronic Medical Record (EMR)

The introduction of electronic medical records systems has been slower in the United States in comparison to other countries. Executive Order 13335 by President George W. Bush set the goal of having an integrated national electronic medical record system by 2014 (Bush, 2004); however, it is doubtful that goal will be reached. The cost associated with complex systems has been a cited as a major barrier for hospitals, while lack of trained support personnel has been a primary reason for slow adoption of EMRs in outpatient practices. This low utilization rate may well change in the near future as a result of the Obama Administration's focus on implementing HIT as a cornerstone of healthcare reform along with the allocation of $19 billion as an

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[5] Iatrogenesis, based on the Greek iatros (healer), is the term used for an unintended event, usually adverse, caused by the actions of a clinician or a medical treatment against the patient. Using the common nomenclature for the corresponding electronic form of a process (e.g. e-mail), e-iatrogenesis is specific to an inadvertent effect resulting from computerization of the care process.

initial investment in promoting the use of electronic medical records (Adler-Milstein & Bates, 2010).

Ford, Menachemi, and Phillips (2006) utilized a predictive equation based on Roger's Diffusion of Innovations theory (E. M. Rogers, 2003) to determine the most likely level of adoption rates achievable by 2014 given published estimates of medical practices with EMRs in 2001-2003 (5 to 25%) and the effects of external (innovation) and internal (social contagion) factors influencing adoption by additional medical practices over time. Calculating the coefficient for the external and internal factors allowed the determination of the point at which the diffusion model becomes self-sustaining, or the *tipping point*. Their most optimistic model predicted a tipping point in 2009 with 71.61% adoption rates by 2014 and 95% by 2024, while the more conservative model predicted a tipping point in 2012 with only 56.2% adoption rates by 2014 and 87% by 2024. The authors recommended targeting small physician practice groups of ten or fewer physicians for EMR adoption in order to reach maximum levels of adoption. Revisiting their calculations in 2009, Ford and colleagues found incorporating additional data on EMR adoption from 2005-2007 shifted the estimates for the tipping point forward by an additional three years compared to the previous estimates (Ford, Menachemi, Peterson, & Huerta, 2009). The shift was believed to be secondary to increased physician resistance to EMR adoption due to rising uncertainty in three domains associated with EMR implementation – cost, shifting standards, and potential policy interventions. The governmental policy interventions were perceived as threats to the professional autonomy of physicians, and represented a major barrier to EMR adoption.

The Technological Acceptance Model (TAM) developed by Davis is widely accepted to explain the acceptance of information technology. The model is based on two factors, perceived usefulness defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" and perceived ease of use or "the degree to which a person believes that using a particular system would be free of effort" (F. D. Davis, 1989, p. 320). Chau and Hu (2002) explored applications of TAM to various professionals and found physicians tended to value perceived usefulness over ease of use and were reluctant to adopt an information technology system that interfered with their established work routines. Walter and Lopez (2008) explored this further, defining a new construct of *perceived threat to professional autonomy* as "the degree to which a person believes that using a particular system would decrease his or her control over the conditions, processes, procedures, or content of his or her work" (p. 209). This construct was shown to have a negative effect on perceived usefulness and modulated the adoption of information technology such as an EMR by physicians. Perhaps this explains why implementation strategies for information and communication technology systems have not met with the same level of success in the health care sector as in other types of organizations. In fact, rather than simplify tasks as in other industries, introduction of information technology in heath care tends to lead to increased complexity resulting in a frequent project failures (Westbrook et al., 2009).

Organizational factors also play a role in acceptance of new technologies by individual clinicians within a group practice. Paré, Sicotte, Poba-Nzaou, and Balouzakis (2011) found clinicans' perception of an organization's readiness for

change was dependent on several variables, including vision clarity, change

appropriateness, change efficacy, organizational flexibility, along with the presence of

an effective champion and a sense of collective self-efficacy among the staff members.

These findings lead the researchers to recommend assessing an organization's

readiness for change as a first step in addition to an interactive, sociotechnical analysis

(discussed below) before and during implementation of new technologies in order to

avoid unintended consequences (Harrison, Koppel, & Bar-Lev, 2007) and promote a

successful introduction of the planned technology.

Exam Room Computers and the Patient–Clinician Interaction

Relatively few studies have addressed the impact of exam room computers on

patient-clinician communication in the United States (Hsieh et al., 2004; Rouf,

Whittle, Lu, & Schwartz, 2007), leading most authors to call for further study of the

phenomenon. Others have cautioned the impact of computers in the exam room may

be deleterious to both patient and physician (Weiner & Biondich, 2006). These studies

raise the concern whether physician behaviors that supported successful

communication in the past will remain adequate after the introduction of an exam

room computer and an electronic medical record. Frankel (2006) noted in a

longitudinal study from the perspective of maximizing RCC, that the presence of an

exam room computer tended to amplify, either positively or negatively, a clinician's

communication skills. Exam room computers affected patient-clinician

communication in four domains: (a) visit organization, (b) verbal and non-verbal

behaviors, (c) computer navigation and mastery, and (d) the spatial organization of the

exam room. This observational study also identified ways in which use of the

computer tended to shift the clinician's attention away from the patient, causing some clinicians to adopt compensatory behaviors, such as moving furniture to allow them to change their position relative to the patient to facilitate eye contact, in order to maintain effective communication with the patient.

McGrath, Arar, and Pugh (2007) also observed the effect of exam room computer use on patient-clinician communication. Nonverbal communication appeared to be most affected by an exam room computer, leading to recommendations to minimize the interference. Ventres et al. (2007) utilized participant observation, individual, and group interviews to create an ethnographic analysis of the effects of an EMR on patient-clinician encounters. Spatial, relational, educational, and structural factors (similar to the dynamic and static physical factors (Gorawara-Bhat et al., 2007) discussed above that affected nonverbal communication) were identified as thematic domains affecting the interaction. Rather than an updated version of a paper chart, the authors concluded from this study, the EMR functioned as a third party in the conversation – "the EMR has its own separate identity in the encounter, and both physicians and patients project their perceptions onto this identity. They pattern their behaviors accordingly as they go about the shared work of medical care" (Ventres et al., 2007, p. 130).

The use of EMRs is more widespread in Europe and Israel compared to ambulatory care practices in the United States. Given estimates indicating nearly 60% of all practicing physicians in Israel are connected to an integrative computer system linking HMOs and hospitals. Margalit, Roter, Dunevant, Larson and Reis (2006) entered this ideal environment for a quantitative study designed to utilize the Rotor

Interactive Analysis System (RIAS) to code videotaped interactions of patients and primary care physicians practicing in clinics where an EMR had been in use for over five years. The RIAS coding data recorded the amount of time the clinician spent interacting directly with the patient asking psychosocial questions, as well as the time spent primarily interacting with the exam room computer either through keyboard activities or gazing at the computer screen rather than the patient. The degree of patient-centeredness of the visit was then determined by an analysis of the data describing the clinician's activities during the visit. The data indicated a statistically significant inverse relationship existed between psychosocial questioning by the physician and the amount of time the physician gazed at the computer screen, as well as an statistically significant inverse relationship between total time spent by the physician in active keyboarding and screen gazing and the patient-centeredness of the clinical visit. In other words, the more time the clinician spent interacting with the exam room computer, the less time was spent interacting with the patient. Margalit and colleagues (2006) found the negative association between use of an EMR and patient-centered communication particularly disturbing given the clinical environment of the observed clinicians did not reflect a transitional period of adjustment where an EMR had recently been introduced, but instead, was an environment where the EMR had been in use for several years. The research team interpreted this as evidence of "the institutionalization of an intruding third party in the medical dialogue" (p. 140). While acknowledging the need for further research to fully understand the complexity of the interaction between clinician computer use and effective patient-clinician communication, the authors recommend developing a specialized communication

training program teaching clinicians how to maximize the potential for "collaborative reading" of the EMR as a means to assist clinicians to effectively include an exam room computer in the clinical visit without jeopardizing the interpersonal connection to the patient. Although the authors recommend the development of communication skills programs designed to help clinicians maintain effective communication while using an exam room computer, they make no references to any current training programs that are adaptable to this purpose, or cite any groups who are currently developing programs that would meet this critical need.

A review of the literature describing the role of communication in cancer care is one means of determining the feasibility of finding existing communication skills training programs that meet the objectives outlined by Margalit et al. (2006). Thorne, Bultz, and Baile (2005) reported the unfortunate circumstance that poor communication between patients and physicians was more prevalent than expected and represented a significant burden on both patients and their families, as well as the clinicians. Cancer care requires empathic communication with the patient, perhaps more than other medical specialties. Clinicians who treat cancer patients must know how to best deliver bad news or how to redirect the patient's goal for treatment to less than a total cure when necessary (Evans, Tulsky, Back, & Arnold, 2006). A study of communication between oncologists and their patients, The SCOPE (Studying Communication in Oncologist Patient Encounters) Trial, designed as an educational intervention for oncologists in the form of an interactive computer-based CD-ROM. Neither the preliminary article describing the development of the interactive program (Koropchak et al., 2006), or the follow-up article reporting the results of using the

program as an intervention with 24 participating oncologists address inclusion of specialized training for using an exam room computer (Skinner et al., 2009). This is particularly disappointing since the research was completed at the Veterans Affairs Medical Center in Durham, NC, and virtually all VA clinics have access to an electronic medical record, although local use across the national VA system is known to be variable. The National Cancer Institute recently published a monograph, Patient-Centered Communication in Cancer Care: Promoting Healing and Reducing Suffering (Epstein & Street, 2007), stressing the relationship of communication with successful patient care outcomes. Despite the comprehensive nature of the monograph, there are few references to specific communication effects secondary to the introduction of HIT. The authors do consider the potential effects of health care systems in fostering or impeding patient/family-clinician communication, and caution that changes in clinic administration should be considered without not specifically mention exam room computers as one of these possible effects.

In contrast to the experience in Israel, Pearce et al. (2009) published more positive observations from the Australian experience with exam room computers. In Australia a combination of government initiatives and physician computer prescribing behaviors had increased the number of family practice physicians using a desktop computer from 60% of the practices five years ago to 93% in 2009. Using principles of hermeneutics and the phenomenological tradition of Goffman, the authors observed 141 patient encounters over time and without interviewing the clinicians or patients, observed the behavior of both the clinician and the patient, in addition to describing the role the computer played in the interaction. Pearce et al. described clinicians as

unipolar or bipolar. A unipolar clinician maintained a lower body position facing the

computer and, when addressing the patient, turned only his or her upper body toward

the patient, maintaining the orientation of the lower body toward the computer.

Bipolar clinicians, on the other hand, turned both their upper and lower body away

from the computer when addressing the patient. Clinicians could use these behaviors

to either engage or disengage from the Patient. Patients exhibited one of three types of

behavior termed dyadic or triadic. Dyadic behavior ignored the computer (screen

ignoring) and concentrated only on the clinician. In triadic behavior, behavior that

included the computer as a participant in the interaction, patients either watched the

screen or controlled the screen but pointing at images on the screen bringing the

computer display into conversation. Although an inanimate object, the computer could

play one of three roles, informational, distracting, or prompting. The computer was

also involved in another clinician behavior – on occasion the observed clinician would

appear to stare at the computer screen for no obvious reason. This behavior could be a

brief glance or last for a prolonged period of time. The authors called this behavior

cogitation, assuming the clinician had taken time from the patient interaction to think.

Sociotechnical Theory, Wicked Problems, and Exam-Room Computers

The unexpected consequences described above that occur after the introduction

of a new technology are consistent with a sociotechnical view of the interaction

between complex technical systems and the social arrangement of human

organizations. Coiera (2007) explained this interaction occurred due to the fact

"technical systems have social consequences, and social systems have technical

consequences" (p. S99). Viewed through the lens of sociotechnical theory, Westbrook

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et al. (2007) saw similarities between the problems created by the introduction of

information and communication technology into health care systems and the concept

of a "wicked problem" as developed to explain the complexity of social problems

faced by urban planners. Rittel and Webber (1973) asserted social problems were ill-

defined and resisted resolution through classical problem-solving methods of science

and engineering (See Appendix A). Rittel and Weber (1973) further stressed the

concept of problem resolution, explaining, "Not 'solution'. Social problems are never

solved. At best they are only re-solved – over and over again" (p. 160). Social

problems were therefore wicked problems.

> We are calling them 'wicked' not because these properties are themselves
>
> ethically deplorable. We use the term 'wicked' in a meaning akin to that of
>
> 'malignant' (in contrast to benign) or 'vicious' (like a circle) or 'tricky' (like a
>
> leprechaun) or 'aggressive' (like a lion, in contrast to the docility of a lamb).
>
> We do not mean to personify these properties of social systems by implying
>
> malicious intent. But then, you may agree that it becomes morally
>
> objectionable for the planner to treat a wicked problem as though it were a
>
> tame one, or to tame a wicked problem prematurely, or to refuse to recognize
>
> the inherent wickedness of social problems. (p. 161)

Wicked problems have no definitive formulation – one's understanding of the

problem is dependent upon one's idea of solving it. Westbrook et al. (2007) suggested

sociotechnical theory and the wicked problem paradigm appeared to be an ideal

theoretical basis for analyzing and measuring the response of a healthcare

organization's social and technical systems with the introduction of HIT. Westbrook et

al. (2007) supported this recommendation primarily on the observation "a central tenet

of sociotechnical theory is that context will influence individual's behaviors within an

organization, and that technology is one of the strongest elements of context that

affects behavior" (p. 747).

The business and organizational communication literature considered the

nature of wicked problems resulting from the introduction of new technologies and

proposed methods for addressing possible solutions in the 1990's. Herndon (1997)

recommended work systems be designed based on a sociotechnical systems approach

utilizing "double-loop learning" where the process is questioned through self-reflexive

thinking that questions the assumptions behind design decisions in order for

organizations to create structures and practices that take advantage of both people and

technology. Pacanowsky (1995) described work teams trained in skills that promoted a

sense of inquiry and utilized reflexive processes in order to move from a problem

solving mind-set to one of problem framing and solution design as the best method to

approach wicked problems. These recommendations for solving a wicked problem are

similar to both the reflexive nature of clinician empathy described by More (1996) and

Pederson (2008) and the iterative reciprocal interactions of RCC as explained by

Suchman (2006) and Miller and Crabtree (2003). Frankel et al. (2006) documented the

observation that some clinicians (presumably those with superior communication

skills) adopted compensatory behaviors in order to maintain a connection with their

patient despite having to work with an exam room computer.

Is it possible that some clinicians, utilizing methods such as empathic

communication and RCC, had acquired the necessary skills advocated by Herndon

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(1997) and Pacanowsky (1995) to approach and offer possible solutions to this wicked problem? Believing the possible impact the use of exam room computers has had on the patient-clinician relationship can best be assessed by asking clinicians who value relationship-centered medical care if they have modified their approach to the patient in order to work successfully with an exam room computer, I designed and completed a qualitative study of an exemplary group of clinicians who had experienced the effect of an EMR on their patient relationships and adapted their behavior accordingly. In order to describe the impact of introducing new HIT at the level of the patient-clinician interface, the following research questions guided my study:

RQ1: What effect, if any, does an exam room computer have on clinicians' empathic behavior toward their patients?

RQ 2: What are the perceived barriers, if any, to empathic communication between clinician and patient when an exam room computer is used to document the visit?

Chapter 3

Methods

The following discussion presents an overview of the elements of qualitative methodology used in the present study, as well as a brief discussion of mixed method research. Qualitative research methods are uniquely situated to describe the process of organizational change, in this case the introduction of new technology in the form of an electronic medial record and an exam room computer. Encouraging respondents to examine organizational activities allows the underlying logic governing organizational behavior to be assessed and discussed, and may lead to early identification of a changing environment and internal organizational conditions (Kreps & Herndon, 2001). My research is primarily a qualitative case study, utilizing both individual and group interviews, but also includes a quantitative instrument for triangulation purposes, making it a mixed methods study.

Brief Overview of Qualitative Research Methodology

Miles and Huberman (1994) described the difference between qualitative and quantitative data as a means to understand a process. In the second edition of their classic textbook *Qualitative Data Analysis: An Expanded Sourcebook*, they noted:

Qualitative data are sexy. They are a source of well-grounded, rich descriptions and explanations of processes in identifiable local contexts. With qualitative data one can preserve chronological flow, see precisely which events led to what consequences, and derive fruitful explanations. Then, too, good, qualitative data are more likely to lead to serendipitous findings and to new integrations; they help researchers to get beyond initial conceptions and to generate or revise conceptual

frameworks. Finally, the findings from qualitative studies have a quality of "undeniability." Words, especially, organized into incidents or stories, have a concrete, vivid, meaningful flavor that often proves far more convincing to a reader – another researcher, a policymaker, a practitioner – than pages of summarized numbers. (p. 1)

Published in 1994, the *Sourcebook* remains a primary guide for both students learning qualitative methods as well as experienced, applied, qualitative scholars. The comprehensive discussion of how to design and complete a qualitative research project reflects the knowledge gained through the 15 year collaboration between Matthew Miles and Michael Huberman, pioneers in the field of qualitative research, who, working in the 1980's and 1990's, saw the number of qualitative researchers grow dramatically in size as the debate on the reliability and validity of qualitative data continued to rage across the scholarly landscape. Counter to the description above, Miles also wrote of the dark side of the methodology.

The most serious and central difficulty in the use of qualitative data is the methods of analysis are not well formulated. For quantitative data, there are clear conventions the researcher can use. But the analyst faced with a bank of qualitative data has very few guidelines for protection against self-delusion, let alone the presentation of unreliable or invalid conclusions to scientific or policy-making audiences. How can we be sure that an "earthy", "undeniable", "serendipitous" finding is not, in fact, *wrong?* (as cited in Miles & Huberman, 1994, p. 2)

Thus, the power of qualitative research must be balanced with an awareness of the pitfalls and possible bias when the researcher is not only an observer, but also a critical participant in the collection and analysis of the data.

Qualitative Methodology in Health Care Research.

Qualitative interpretive research is well suited for understanding clinical situations, evaluating changes in health care services or practice from the viewpoint of patients, clinicians, and managers. Qualitative inquiry allows an understanding of social phenomena as reflected through the experiences and opinions of the participants (Pope & Mays, 2006). Miller and Crabtree (1999a) chose the term constructivist inquiry to describe the study of human interaction based on a social construction of reality.

> In this sense, constructivism means that humans beings do not find or discover knowledge so much as construct or make it. We invent concepts, models, and schemes to make sense of experience, and we continually test and modify these constructions in the light of new experiences. Furthermore, there is an inevitable historical and sociocultural dimension to this construction. We do not construct our interpretations in isolation but against a backdrop of shared understandings, practices, language and so forth (p. 30).

Case Study Design

A case study research design is well suited to answer research questions that ask how and why, and in circumstances where the investigator has limited control over behavioral events, in order to study a contemporary issue in a real-life setting (Yin, 2003). The case study explores a "bounded system" collecting in-depth information from multiple sources, including observations, interviews, and documents, producing data rich

in context . Stake (2003) defined three types of case studies: intrinsic, instrumental, and collective. The intrinsic case study examines a particular case in order to understand the specifics of that case while the instrumental case study seeks to better understand a phenomenon within the selected case, making the case itself secondary to the study. A collective case study is a comparison of several instrumental case studies and is further removed from the individual cases of reference. Intrinsic case study designs "develop what is perceived to be the case's own issues, contexts, and interpretations, its *thick description,*" (Stake, 2003, p. 140) while the instrumental case is more representative of the researcher's concerns. The intrinsic case study design is highly suitable for evaluating a process. Understanding how something occurs is the goal rather than obtaining results or reporting an outcome. The investigating researcher chooses a case best representing the process to be evaluated in order to "chronicle events, depict occurrences, offer instruction, and contextually illuminate the phenomenon of interest" (Arneson & Query, 2001, p. 154). The present study is an intrinsic case study

Qualitative Interview Methodology

Interviews are a common qualitative method for gathering information. Qualitative interviews seek to elicit rich descriptions of a phenomenon of research interest from respondents for later analysis and interpretation by the interviewing investigator in order to conceptualize the meaning the life experience holds for the interviewees (DiCicco-Bloom & Crabtree, 2006). Interviews may be conducted through use of a structured questionnaire, semi-structured using open-ended questions, or in-depth interviews exploring only one or two topics in great detail with questions guided by the

responses of the participant. Semi-structured interviews may be used as a data collection method for both individuals and groups.

Individual interviews. Many qualitative investigators prefer in-depth interviews as a data collection method when the researcher wishes to collect narratives from individual respondents that focus on specific research questions. The in-depth interview "concentrates on the figure at the expense of the ground – it focuses on facilitating a co-construction of the interviewer's and an informant's experience and understanding of the topic of interest and not necessarily on the context of that understanding" (Miller & Crabtree, 1999c, p. 93). Thus, the success of an interview investigation is highly dependent upon the person of the researcher because the "interviewer him or herself is the main instrument for obtaining knowledge" (Kvale, 1996, p. 117). Although frequently used in healthcare research, the qualitative research interview is not conducted in the same manner as a clinical interview (Britten, 2006). The distinctive difference between the qualitative research interview and a diagnostic interview can pose problems for the neophyte investigator, particularly the investigator with prior clinical experience.

Designing an in-depth interview study begins with a sampling strategy. Purposeful sampling, as opposed to a random sample, attempts to assure the selected respondents are the best source of rich data to answer the research question. An interview guide provides an organizational format for the interview. Miller and Crabtree (1999c) recommend beginning the interview with direct, short answer, yet rapport-building, biographical questions. These questions set the tone of the interview in order to facilitate communication and disclosure in a trustworthy environment. The biographical questions are then followed by "grand tour" questions that are "open, easily understood, descriptive

questions that seek to elicit understandings, feelings, key terms, and major features or attributes about people, acts, time, goals, expectations, motivations, and experiences" (p. 97). Grand tour questions are derived from the literature review that established the importance of the research questions, designed to relate the informant's narrative to a theoretical foundation and at the same time generate new understanding of the phenomenon of interest.

Group interviews. Focus groups, or group interviews, have evolved from a means to collect data from survey questionnaires in the 1920's through market research to understand the wants and needs of a target audience in the 1970's to an important qualitative research method for collecting data on a wide range of social issues. Robert Merton and Paul Lazerfeld pioneered use of the method in the social sciences in the 1940's when they employed focused group interviews to evaluate the reactions of a participant group to wartime radio programs at the Columbia University Office for Radio Research (Madriz, 2000). Focus groups have been used to study a variety of issues in health care in the last decade including both patient perspectives as well as the perspectives of healthcare professionals toward different issues (Brown, 1999). A primary idea behind the use of focus groups as a qualitative method is to help participants explore and clarify their view of an issue through a dynamic group process that does not occur within individual interviews. Focus groups are best suited to address a series of open-ended questions, allowing the participants to explore and develop issues, ask their own follow-up questions, and set priorities. At its best, the group dynamics of a focus group allows the participants to act as co-researchers, and may take the research into new and unexpected areas (Kitzinger, 2006).

An advantage of focus groups over individual interviews is the increased interactions among the participants and the concurrent decreased interaction with the researcher acting as moderator. This method gives more weight to the participant's opinions and decreases the researcher's control of the interview (Madriz, 2000). Groups of six to eight participants are considered to be an optimum composition of a focus group. Groups of less than five members yield limited interaction, while large groups of more than ten do not allow sufficient time for each participant to have an opportunity to speak. Focus groups should last one to two hours in order to have sufficient time to collect data and avoid fatigue and disinterest among participants (Brown, 1999).

Combining individual and group interviews in research design. Individual interviews may be combined with focus group interviews to better understand the process of interest. Focus groups may be conducted first to find a starting point for individual interviews when investigating an unfamiliar topic or group of respondents. Similarly, individual interviews may be used to provide rich topics for a focus group. After hearing individual accounts, the researcher can form questions to ask the group in order to promote sharing of the informants' experience in detail within the group. When interviews are used as a follow up method to a (Morgan, 1997) focus group – the individual interviews are ideal for expounding on the details of a topic that was broadly discussed in the group. In the reverse order, individual interviews followed by focus group interviews allows the researcher to explore issues that arose from the analysis of the individual interviews. In this study, individual interviews were conducted first, with data analysis beginning with the first interview and continuing as an ongoing process. As interviews progressed, analysis continued. Major themes emerged from the data and

provided the basis for the questions brought to the focus group for further discussion. In

this manner the focus group serves as a means to perform member checks on the

accuracy of the interview data, as well as an opportunity for the group to discuss and

further refine the themes of the interview data.

Ethical concerns in interview methodology. Kvale (1996) noted ethical

concerns the researcher must consider at each stage of an interview study in order to

protect the study participants. After review and approval of a study by the responsible

Institutional Research Board (IRB), informed consent must be obtained from each

informant prior to participation. Informed consent involves full disclosure of the study's

goals to the participants along with an assurance of confidentiality to the greatest extent

possible. The researcher also has an ethical responsibility to accurately transcribe the

interview's audio recording, followed by careful analysis and verification of the

interpretations prior to publishing the data in a manner that maintains the confidentiality

of the informants. Guillemin and Gilliam (2010) described ethics in qualitative research

to have at least two dimensions: procedural ethics (such as IRB approval) and "ethics in

practice", or the issues that arise in the day-to-day conduct of research. Borrowing a term

from clinical medical ethics originally proposed by Komesaroff (1995, cited in Patterson

et al., 2010), these authors proposed *microethics* to address the complex interaction that

occurs between researcher and participants in the collection of data.

Guillemin and Gilliam (2010) argue that reflexivity by the investigator is a bridge

between procedural ethics and microethics.

"Research is primarily an enterprise of knowledge construction. The researcher

(and coresearchers), with his or her participants, is engaged in producing

knowledge. This is an active process that requires scrutiny, reflection, and

interrogation of the data, the researcher, the participants, and the context that they

inhabit. …Reflexivity in research is not a single or universal entity but a process –

an active, ongoing process that saturates every stage of the research" (p. 274).

The reflexive investigator applies critical reflection to both the kind of knowledge

produced from their research as well as how that knowledge was generated. In this

manner he or she acknowledges the microethical dimensions of research practice and

remains alert and prepared to deal with ethical tensions that may arise.

Data Analysis Through Grounded Hermeneutic Editing

Kvale (1996) stated an interview "is an inter-subjective enterprise of two persons

talking about common themes of interest" (p. 183). Viewing the interviews as co-

authored between the respondent and the researcher rather than simply collected

statements of the respondents, the researcher can avoid allowing the original face-to-face

interaction of the interview becoming a fixated written transcription devoid of the co-

created meaning and interaction of the original conversation. In this manner, the analysis

of the interview data becomes a continued dialogue with the text as the narrative told to

the interviewer by the interviewee is transformed to a narrative told by the researcher to

an audience reading the analysis.

Miller and Crabtree (2003) cite three styles of organizing data for analysis:

crystallization/immersion, editing, and templates. Each organizational style then works

through the interactive steps of data analysis composed of data reduction, data display,

and conclusion drawing/verification. Data reduction starts almost immediately, and

continues after fieldwork is completed through to the final written report. Data display

may be an extended text, matrices, graphs, or charts. Data displays help the analyst view the data in a compact form in order to make conclusions. Finally, conclusions are drawn and verified in order to build a logical chain of evidence. This study utilized the editing approach as an organizational strategy and is described in more detail below.

Mixed Method Research

Creswell and Tashakkori (2007) site four perspectives on mixed method research: method, methodological, paradigm, and practice. The method perspective includes those researchers who collect, analyze and interpret both qualitative and quantitative data to answer research questions that may call for both types of data. This perspective is described by the classic definition of mixed method design, being studies "that include at least one quantitative method (designed to collect numbers) and one qualitative method (designed to collect words)" (Green, Carcelli, and Graham as cited in Creswell & Tashakkori, 2007, p. 303). Published reports from this perspective may make implicit recognition of worldviews or paradigms, but the discussion is usually limited. Researchers working from this perspective do not see the need for linking qualitative or quantitative methods with a particular paradigm of inquiry, leading critics to label this view as "quasi-mixed."

The methodological perspective, however, explicitly or implicitly ties research method to philosophy. In this perspective one cannot separate methodology from philosophical assumptions – the worldview of the researcher permeates the process from asking the question, through data collection, analysis, and the interpretation of findings. Researchers who adopt this perspective argue that methods follows research purposes and research questions are based upon the value system, both cultural and philosophical, of

the researchers and participants. Critics of the methodology perspective claim mixed methods are not possible as the paradigms of qualitative and quantitative research are not only distinct, but also incompatible with each other.

Researchers writing from the paradigm perspective contend the investigator's philosophical assumptions overshadow the discussion of methods or the process of research. In this perspective mixed methods research is understood within the context of historical and sociopolitical views of knowledge – what warrants attention and how it is learned. Pragmatism has been recommended as a favored philosophical basis for mixed methods research (Morgan, 2007), while others have advocated alternative paradigms such as a transformative perspective with social justice ends (Mertens, 2007).

The fourth perspective is characterized as a "bottom-up" approach. In the practice perspective the need to use a mixed method strategy may arise during the conduct of the research or be planned from the beginning, suggesting researchers are using both qualitative and quantitative approaches in traditional research designs. Creswell and Tashakkori (2007) speculate that "this practice perspective seems to be a pragmatic position in which we look to how mixed methods research is actually being used" (p. 306). Admitting they had practiced within all four perspectives at one time or another over the years, Creswell and Tashakkori suggested these perspectives may become less distinct as mixed method research matures and differing views and opinions of mixed method research should be encouraged rather than rigidly adhering to one perspective over another. The present study falls under the practice paradigm.

Case Study: Clinicians Adapting to an Exam Room Computer

A first step in understanding the process required to adapt an empathic method of practice to the introduction of an exam room computer would be to ask a group of clinicians who had faced the dilemma of incorporating an EMR into their workspace to describe their experience. These individuals may be able to provide information that would answer the research questions[1] of the present study.

RQ1: What effect, if any, does an exam room computer have on clinicians' empathic behavior toward their patients?

RQ 2: What are the perceived barriers, if any, to empathic communication between clinician and patient when an exam room computer is used to document the visit?

Development of the Semi-Structured Interview Questions

A semi-structured interview was developed to explicate the personal beliefs and clinical experiences of the clinician participants of using an exam room computer in order to answer the research questions. Four interview questions addressed the respondent's views on empathy (particularly empathic communication during clinical visits), nonverbal communication, and the communicative task of delivering bad news. An additional four questions asked each respondent to describe a personal experience using an exam room computer as well as their views of the advantages and disadvantages of using an exam room computer during a clinical visit, including a question that asked the

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[1] In all of the research questions, the phrase exam room computer is used to represent a portal to the EMR. It is assumed there is a centralized record system that must be accessed in order to document the visit or access historical information such as lab tests or previous visits. Interactions between clinicians and patients where the EMR is accessed without the patient present would not be expected to have the same potential effect on the interaction as those situations where the EMR is accessed while the patient is present.

respondent to describe the exam room computer with a word or phrase. This eighth

question was included in order to solicit a metaphor to describe the individual's attitude

toward the introduction of the exam room computer. A final question asked for any

additional information the clinician wanted to add. The rationale for each question is

discussed below.

Empathy

In order to determine if use of an exam room computer had affected a clinician's

empathic behavior, I asked each respondent to provide a personal definition of empathy

based on their approach to the patient–clinician relationship, before I presented the

definition of empathy employed in the present study in order to explore how the study

definition complemented or conflicted with the respondent's personal view of empathy.

These questions were designed to establish the baseline empathic behavior of each

participant necessary to determine if the use of an exam room computer had caused the

clinician to modify their interaction with their patients (RQ1).

Question 1: There are several different definitions of empathy in the literature.

When thinking of clinical interactions with patients, how would you define

empathy?

Question 2: In this study, I am using this definition of empathy: Empathy is a

predominantly *cognitive* (rather than an emotional) attribute that involves an

understanding (rather than feeling) of experiences, concerns and perspectives of

the patient, combined with a capacity to *communicate* this understanding. Is this

definition an acceptable definition in your opinion? How does it fit with your

view of empathy in the patient-provider interaction?

Body Language, Including Eye Contact

Several authors have described nonverbal behaviors, including eye contact, which communicate clinician empathy to the patient (See the discussion regarding nonverbal communication in clinical visits, page 18 above). McGrath, Arar, and Pugh, in one of the earliest studies of the effect of an exam room computer on the patient-provider interaction, found that nonverbal communication was most affected by the introduction of the exam room computer. The third question was designed as in question one to draw out the personal beliefs of the respondent and determine if the respondent reported nonverbal behaviors compatible with the literature (Hojat, 2007; Laidlaw et al., 2007). Responses to this question would provide additional information to answer RQ1.

Question 3: What role, if any, does body language, either yours or the patient's, play in your clinical encounters? What about eye contact?

Delivering "Bad News"

Many studies have examined how effectively clinicians' deliver bad news to patients, and there are communication skills training programs designed specifically for this communication task (Back et al., 2007; Sparks, Villagran, Parker-Raley, & Cunningham, 2007) This specific communication behavior is required in all medical specialties but is especially critical in an oncology practice. The second half of the question would answer both RQ1 and RQ 2 if the respondent reported they had changed their method of delivering bad news after introduction of an exam room computer.

Question 4: How do you deliver "bad news" to patients? Can you tell me about a time you had to tell a patient "bad news" that you particularly remember? Has the exam room computer changed your method of delivering "bad news"?

Personal Experiences Using an Exam Room Computer

I asked each clinician to share their views of the advantages and disadvantages in using an exam room computer. In order to invite each respondent to elaborate on their personal experience using an exam room computer and provide more data to answer RQ2, I also requested that each clinician to relate an example, either positive or negative, of a memorable interaction with a patient, along with a personal metaphor to describe the experience of working with an exam room computer. These answers should provide information to answer both RQ1 and RQ2.

> Question 5: What are some of the advantages you have experienced using an
>
> exam room computer in your interactions with your patients?
>
> Question 6: What are some of the disadvantages you have experienced using an
>
> exam room computer in your interactions with your patients?
>
> Question 7: Is there a particular incident that you remember when the computer
>
> played a distinctive role in the care of a patient?
>
> Question 8: If you had to choose one word or phrase to describe the exam room
>
> computer, what would it be? Would you care to elaborate?

A final question allowed the informant to offer any additional information they deemed important to the project

> Question 9: Is there anything else you would like tell me about your experiences
>
> working with an exam room computer?

In order to address these questions it was critical to first identify a group of clinicians that considered an empathic patient–clinician relationship a core value. Rather than search for individual clinicians, I chose to identify a group practice with a

community reputation for patient-centered, empathic medical care that also valued incorporating technology into day-to-day clinical practice.

Research Site – The West Clinic

I chose The West Clinic for its reputation as espousing an organizational philosophy that is strongly relationship-centered. Historically, the clinic arose from a humble beginning. Dr. William West, a nationally respected oncologist and former lead cancer research specialist at the National Institute of Health, opened a small two-room, three physician office in Memphis, TN in 1979 with the goal of providing local residents the same cancer care usually available only at large, academic medical centers in major cities. With his passion for cancer research at the center of the clinic's mission Dr. West later founded Response Oncology, Inc., a public company that developed unique cancer treatment protocols for use by a network of cancer specialists throughout the country. In 1988 the practice was renamed The West Clinic and has continued at the forefront of innovative cancer care. Together with the Accelerated Community Oncology Research Network and leading pharmaceutical companies, The West Clinic has played a major national role in the clinical research behind the introduction of twelve cancer therapies now accepted as standards in oncology care. While chemotherapy is a major procedure provided by the clinic, the web page message from the CEO clearly states, "…The West Clinic is not just "a chemo place." We care for lots of patients – ONE at a time." Currently there are six offices in the Mid-South with four offices located in the greater Memphis area. The following is taken from the clinic's web page illustrating the patient focus the organization promulgates to its staff and patients:

The physicians and staff of The West Clinic worked together to create a blessing

for the work that we do. We wanted to state our intention and express it to those

we care for. The blessing is displayed in the Clinic as it serves as a visual

reminder of the heartfelt blessing that resulted from our collective prayers.

May you know that you are in a place of compassionate healing.
May you feel cared for by loving hands and open hearts.
May you always feel seen and heard in this place.
May you find even greater strength because our prayers are linked with yours.
May we always see in every face a mother, spouse, or loved one…someone no
different than us and those we love.
May we always see each patient as an individual person with wants and needs far
beyond cancer.
May we always be worthy of the gift of trust from those who seek our care.
May we seek excellence in all aspects of care, trusting in a higher wisdom.
("The West Clinic: West Clinic Blessing,")

The web page provides information on the clinical staff of the West Clinic. A

biographical sketch outlining each physician's training and accomplishments, along with

the physician's picture and a personal quote regarding patient care is available for review.

Additional web pages publish pictures of the nursing and administrative staff. The staff

photographs and biographies offer the cancer patient visiting the web site an introduction

to the clinic that is more informative than a physical visit to one of the clinic's offices.

The site is easy to navigate, and the combination of photographs of staff and different

clinic environments in warm, soft colors gave me an impression of both personal

commitment and technical expertise. For the newly diagnosed cancer patient seeking an

oncology practice, The West Clinic's web site offers a view of the clinic that is both

welcoming and reassuring.

The West Clinic has been at the forefront of technology development in cancer

patient care. A quality improvement project introduced in May 1998 to improve pain

control (Fortner et al., 2003) eventually led to the development of patient symptom data collection through tablet computers and validation of The Cancer Care Monitor, a psychometric scale designed to assess symptoms and quality of life among treated cancer patients (Fortner, Baldwin, Schwartzberg, & Houts, 2006; Fortner, Okon, Schwartzberg, Tauer, & Houts, 2003). The tablet computer system is currently used at each visit for both data collection and patient education (Mark, Fortner, & Johnson, 2007). (See Appendix B)

The West Clinic introduced an electronic medical record package, Impac, gradually in 2006. The scheduling module was implemented in March, followed by the billing module in May. The clinic management decided a total electronic medical record was preferable to a mixed system of historical records on paper and current records in digital format, so from July 2006 through January 2007 all the stored medical records were converted from a paper chart to an electronic record. During this period, physicians began to use computers in the exam room in place of the paper medical chart to document current clinical visits. The data collected from patients at each visit through the tablet computers are wirelessly transferred to the patient's electronic record for review by the treating clinician during the visit. Some physicians used the computerized record to a greater extent than others, but all physicians had to use the computer to access prior treatment records. The physicians who were not comfortable using the computer were paired with more computer-literate nursing and support staff who could perform the computer data entry for them as they gradually learned more about the system.

Access, Participant Recruitment, and Data Collection

I contacted the person designated on the web site as Director, Electronic Medical Record, who agreed to speak with me about the project. In turn, she spoke with the clinic's CEO who agreed to allow me to come on site and approach the medical staff about participation in the study. I planned to recruit a purposeful sample of six to eight volunteer clinicians, preferably those who used the computerized record most extensively, as participants from the medical oncologists and oncology nurse practitioners practicing at three of the clinic's locations in the greater Memphis area. After an initial contact by the West Clinic's Director of Electronic Medical Records (DirEMR) to solicit and encourage participation, I was able to recruit nine clinicians, six physicians and three nurse practitioners. Each clinician received a written description of the study and estimated time commitments prior to agreeing to participate. Participants were recruited in phases over a twelve-month period. I met individually with each participating clinician once, obtaining consent and conducting a semi-structured interview during the encounter. One interview was conducted over the phone. I recorded field notes in the form of memos during data collection. Respondent interviews were recorded using a Roland Edirol R-09 digital recorder. I transcribed each interview using the computer program Transana, a software package designed to assist in the qualitative analysis of video and audio data. (See Appendix E.) After the interview, I asked each participant to complete a web-based version of the survey instrument, the Jefferson Physician's Scale of Empathy.

Participant demographics and other descriptive characteristics. The semi-structured interview also included demographic questions (Questions 10-19, see

Appendix C). While I assured the study clinicians confidential reporting of their

responses through use of pseudonyms, I could not assure total anonymity due to the small

number of participants. Collecting gender data potentially had implications for the

analysis of the JSPE results of the participants, since gender was one of the JSPE data

descriptors; however, the JSPE did not collect ethnicity information for respondents,

leaving the implications of the ethnicity data I collected for the study participants on the

JSPE data analysis unknown, since there was no corresponding data analysis in Hojat's

data discussing the JSPE. Prior to selection, the potential pool of participants included

three males and six females and only two African Americans, both female. Subject to the

same concerns, the other demographic questions I asked provided information that I

thought might be helpful in describing each respondent based on professional attributes

(training, length of time in practice, oncology experience), past communication skills

training, as well as the respondent's degree of computer literacy and comfort level;

however, there was little corresponding data available in the literature to discuss the role

of these attributes other than as individual descriptive data. (With one exception – Rouf et

al. (2007) found variance in the reported level of patient satisfaction with clinical visits

that included an exam room computer when physicians had varying levels of experience

using an exam room computer. Patients expressed increased satisfaction when the

clinician had more experience with the computer and software used during the visit.) The

respondent's views toward the organizational attributes of the West Clinic was included

in the interview in order to determine if the pre-study assumptions of the patient-centered

philosophy of the practice matched the clinician's perceptions of the practice

environment. Responses to this question also provided an ability to compare the

organizational environment of the West Clinic to attributes of organizations shown in the literature to be best suited for successful introduction of new technologies (Callen, Braithwaite, & Westbrook, 2007; S. K. Munir & S. Kay, 2003).

Jefferson Scale of Physician Empathy (JSPE). The use of quantitative surveys in conjunction with qualitative research methods is common in health care research (O'Cathain & Thomas, 2006) and has been shown to provide a richer analysis of in-depth interview data (Adamson, Gooberman-Hill, Woolhead, & Donovan, 2004). For this project the use of the JSPE was a means to validate the qualitative data by assuring the participant physicians embody the practice criteria, i.e. empathic communication, under evaluation. Hojat (2007) developed, refined, and validated the JSPE over a period of several years while director of The Jefferson Longitudinal Study of Medical Education at the Jefferson Medical College in Philadelphia, PA. A psychologist by training, Hojat expanded the data sets of the 10-year-old study to include psychosocial aspects of academic success when he assumed directorship. The JSPE was developed specifically to study empathy in the context of patient care and has been shown to be psychometrically sound through validity (including face, content, construct, criterion-related, convergent, and discriminate) and reliability testing (coefficient alpha supporting both internal consistency and test-retest score stability). Measurement properties suggest the two versions of the instrument can serve as an operational measure of empathy for both medical students (JSPE-S), and for health care practitioners (JSPE-HP).

Research groups both in the United States and abroad have expressed significant interest in the JSPE, prompting the development of a JSPE data bank for meta-analytic studies. To facilitate this research, the Center for Research in Medical Education and

Health Care at the Jefferson Medical College has developed scan-able forms of the instrument for use by other researchers. These forms may be submitted to the Center for scoring and other statistical analysis, as well as inclusion in the empathy project data bank. Recently a web-version of the instrument was made available for research studies (Jefferson Scale of Physician Empathy (JSPE), 2007). In this format, the study participant may access the instrument through the Center's web site and complete the instrument for later scoring by the Center. Researchers receive a standard report including an empathy score for each respondent, descriptive statistics (mean, standard deviation, range, mode and percentiles) and Excel spreadsheet of raw data and individual scores. Additional statistical analyses are also available upon request, including gender/specialty comparisons, group comparisons by total JSPE scores, comparisons by custom coded groups, and pretest-posttest comparisons. (See Appendix D.)

Chapter 4

Results and Analysis

This chapter first presents a description of the nine clinicians who volunteered to participate in the present study, followed by portrayal of the clinical environment of the West Clinic, based on the qualitative descriptions of the participant clinicians. The administrative and clinical environment is further delineated by an empathic profile of the clinical staff represented by the JSPE scores of a group of 21 West Clinic staff members, including the clinicians participating in the study. After establishing this background, I review the data distilled from the individual clinician interviews and the focus group. The discussion of the clinicians' responses to the questions posed in the individual interviews includes a display of key statements in tabular form for easy readability. An in-depth analysis of one interview is presented to illustrate how the physician interviews were coded for empathy and reflexivity. The focus group is described as a conversation that evolved from the initial questions based on the content of the individual interview data. The final sections of the chapter compare the present study's data to the literature reviewed in chapter two and answers the research questions in light of the insights gained from the interview data. A discussion of the limitations of the study concludes the chapter.

The Study Clinicians and the West Clinic Practice Environment

I interviewed nine West Clinic clinicians, six physicians and three nurse practitioners, between April and December 2008, obtaining consent prior to each individual interview. One interview was conducted by phone. The focus group was held on February 9, 2009 with three of the participating physicians attending. Table 1 includes

Table 1

Demographic Description of the Participating Clinicians

Clinician	Gender	Age Range (years)	Race/Ethnicity	Occupation	JSPE Score Possible Range: 20-140	Years Experience in Oncology	Years at West Clinic	Self-Assessment of Computer Skills*
Dr. Adams	Male	46-55	White	Physician	118/102**	19	3.5	Expert
Dr. Baker	Male	36-45	Asian	Physician	101	5	< 1	Intermediate
Dr. Cook	Female	36-45	White	Physician	123	4	4	Intermediate
Dr. Dale	Male	56-65	White	Physician	132	21	21	Intermediate
Dr. Evans	Male	36-45	White	Physician	127	6	6	Expert
Dr. Ford	Male	56-65	White	Physician	Not available***	23	21	Expert
NP Gale	Female	36-45	African-American	Nurse Practitioner	113	5	4	Intermediate
NP Hall	Female	46-55	White	Nurse Practitioner	122	23	5	Intermediate
NP Irwin	Female	46-55	African-American	Nurse Practitioner	115	4	4	Intermediate

*Computer skills were rated as very basic, intermediate, or expert. Three participants thought their skills were more advanced than intermediate and closer to an expert level on the Impac system in particular, not computers in general. They are reported as expert in this study.
**One participant accessed the online version of the JSPE on two occasions resulting in two scores.
***One participant did not access the JSPE during the time it was available and no score could be reported.

demographic descriptors of the participant clinicians along with their individual JSPE

scores. Each clinician is identified by a pseudonym with the physicians designated by

names beginning with the letters A through F and the nurse practitioners letters G through

I. The age range of the participating clinicians was between 36 and 65. They reported

practicing in Oncology between 4 to greater than 20 years with a bimodal distribution

between 5-10 years or greater than 20 years being the most frequently cited. Most of the

clinicians had been associated with the West Clinic for four or more years, with the

exception of one clinician who had joined the clinic staff within the last nine months.

Each clinician was asked to rate his or her computer skills along a continuum

from very basic to expert. Six of the participants described themselves in the intermediate

range, with the remaining three seeing themselves as having more advanced computer

skills in an area between an intermediate and expert level specifically for the Impac

system used by the West Clinic. Not all of the participant clinicians used an exam room

computer during clinic visits with their patients. Three of the physicians used the exam

room computer on a limited basis when the patient was in the exam room, primarily to

discuss laboratory results or view images. None of these physicians used the computer to

write a clinical note in the presence of the patient (Dr. Baker, Dr. Cook, and Dr. Dale).

The remaining three physicians (Dr. Adams, Dr. Evans, and Dr. Ford) had incorporated

the exam room computer into their clinical day-to-day work, using the computer for

multiple tasks including writing a clinical note while the patient was in the exam room.

The nurse practitioners had different clinical responsibilities. NP Hall staffed a satellite

clinic in Mississippi and NP Gale worked in one of the clinics in Memphis. Both

followed patients in conjunction with different physicians, but neither chose to document

clinic visits using the computer in the presence of the patient. NP Irwin worked primarily in the chemotherapy suite administering chemotherapy infusions and charted her notes on a computer located outside the treatment area.

A total of 21 West Clinic clinical staff members completed the web-based JSPE. The group of individuals who completed the JSPE included the participating study clinicians in addition to other West Clinic staff members. These staff members were not interviewed individually but volunteered to complete the JSPE as part of the study thereby allowing me to expand the sample and better assess the empathic qualities of the clinical staff as a whole. The JSPE was offered to the entire clinical staff, including physicians and nurses. The nurses in the larger JSPE sample included both clinic staff nurses as well as the responding study nurse practitioners. The JSPE was available to these volunteers via an internet web portal, thus race/ethnicity and occupation descriptors were not collected for those taking the JSPE alone, leaving only the developer-defined descriptive statistics of gender and age available to report. Tables 2 and 3 summarize the demographics for the sample of 21 individuals completing the JSPE, including eight study clinicians along with thirteen additional West Clinic staff. (One participating clinician took the JSPE twice and one clinician did not complete the instrument.) Tables 4 and 5 present the range of JSPE scores as well as the descriptive statistics for the representative West Clinic staff.

Table 2

Age Range for Sample of West Clinic Staff Completing the JSPE

Age Range	Number	Percent
21-30	3	14.28
31-40	4	19.04
41-50	4	19.04
51-60	9	42.86
>70	1	4.76

Table 3

Gender Distribution of Sample of West Clinic Staff Completing the JSPE

Gender	Number	Percent
Female	13	61.90
Male	8	38.10

Table 4

Empathy Score Distribution for Sample of West Clinic Staff Completing the JSPE

Score Range	Number	Percent
100-104	3*	13.64
105-109	0	0.0
110-114	2	9.10
115-119	5*	22.73
120-124	6	27.28
125-129	4	18.18
130-134	1	4.55
135-140	1	4.55

One clinician had a score in two different score ranges.

Table 5

Descriptive Statistics for Sample of West Clinic Staff Completing the JSPE

Possible Range	20-140
Sample Range	101-137
Mean	119
Mode	122
Standard Deviation	9.2

The sample of 13 females (61.9%) and 8 males (38.1%), including eight of the participants, ranged in age from 21 to greater than 70 years of age, with the 51-60 years age range representing 45.45% of the sample. The JSPE had a possible range of scores

from 20 to140, with a higher score predicting an increased empathic tendency for the individual clinician. The West Clinic staff sample produced a JSPE score ranging from 101 to 137 with a mean of 119, a mode of 122, a 50% median of 121, and a standard deviation of 9.2. The West Clinic staff's score distribution was similar to that of a group of 704 physicians from diverse medical specialties that volunteered to take the JSPE during its final development. Hojat (2007) offered this randomly selected group of physicians practicing in various medical specialties as representative of the wide range of empathic tendencies among physicians as an occupational group producing a range of scores from 50 to 140, a sample mean of 120, and a standard deviation of 12. The JSPE score distribution of the 21 West Clinic staff members is shown in Figure 1 in comparison to the distribution of JSPE scores for this group of 704 physicians (Hojat, 2007, p. 183). Although the West Clinic staff comprised a much smaller group, the distribution of scores was quite similar to that of the larger group of physicians.
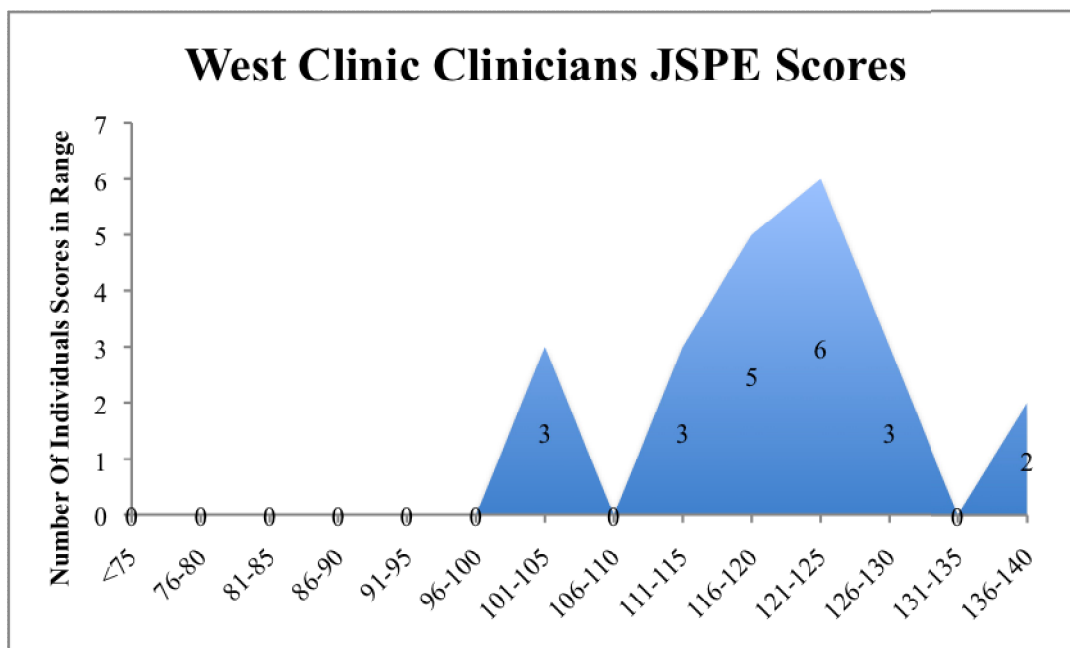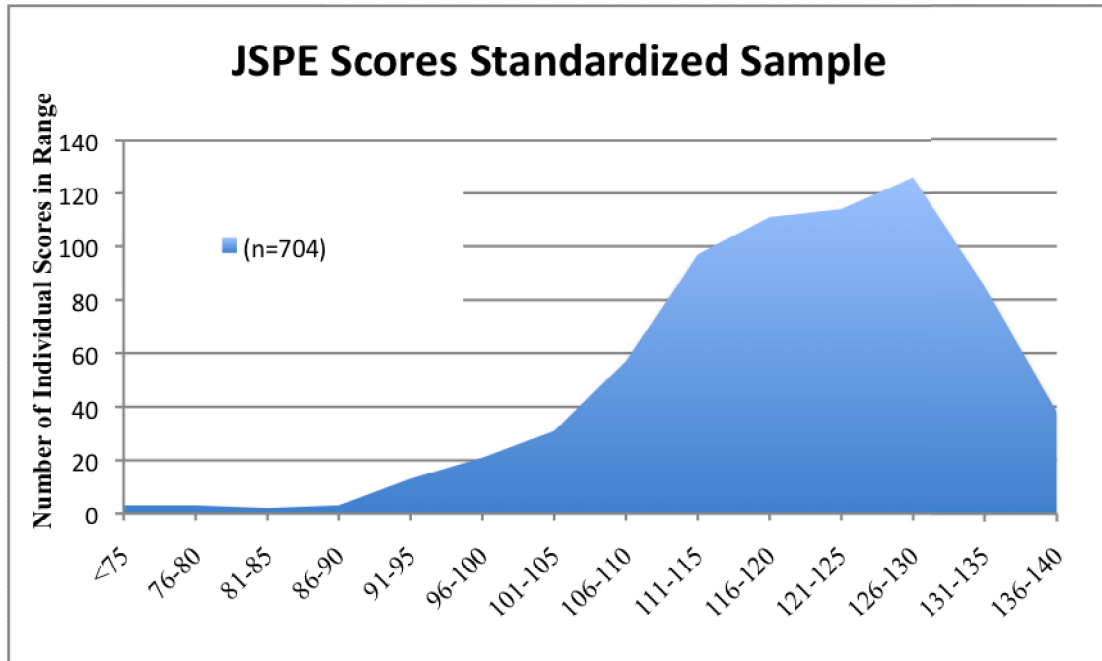
Figure 1. JSPE Score distribution for the 22 West Clinic clinicians compared to the JSPE Score distribution for a randomized sample of 704 physicians (Hojat, 2007, p. 183). The score distribution of the West Clinic clinicians appears similar to the larger sample implying the empathic tendencies of West Clinic clinicians are compatible with JSPE scores of clinicians from various clinical specialties.

Although not directly related to the research questions, I asked the participating clinicians to describe the practice environment of the West Clinic. The collective responses indicated the West Clinic was a warm, family-like environment for patients and staff alike. Although statements by some of the participants implied regret for the rapid growth of the Clinic and its current size, there was also a sincere sense that sufficient flexibility remained to adapt clinic procedures to individual patients when necessary. Table 6 provides representative comments from three clinicians about the clinical environment of the West Clinic.

Table 6

Clinical Environment of the West Clinic

Clinician	Clinician Descriptions of the Environment of the West Clinic
Dr. Adams	"It's very big. It's aware of the problem big causes, so it tries hard to overcome them. It's easy to be big and impersonal. It tries hard to be big but still personable. Um, its had growing pains, because, really because it's so good. There's just a huge number of patients, so it tries very hard to, um, to be special for every patient…Our job is to make having cancer as little trouble as possible for the patient."
Dr. Baker	"And they really integrate every aspect of patient care, uh, appropriately and in a very effective way. And I feel I can get more things done here compared with my previous group…some physicians in my field differ they feel you come to a large place compared to some smaller place you feel you might get lost. Actually here there's more services available. And even so the traffic, uh the volume might be significantly larger, bigger than some clinics, but patients here, they do get very personalized care…when patients, they don't have a, a good insurance support. And lot of care just cannot be conducted, cannot be delivered…We just, uh just do it free of charge. I think that's that's very impressive, actually surprised me. That is general, that doesn't happen in other clinics."
Dr. Cook	"I do think it's patient-centered…I think that we are also aware of some of our, uh, downfalls, and that we are big. Whenever you get big, especially when you've grown fast. There's some growing pains…but I think for the most part we, our focus is the patient. We want to make sure that we do the right thing for the right patient at the right time. . . part of the reason to do the EMR was that we knew that in the long run its probably going to be better for the patient because we are not going to lose charts."

Clinician Interview Responses and Discussion

The semi-structured individual interviews, as previously described, included nine questions developed to assess each clinician's approach to patient care and whether the introduction of the exam room computer had required the clinician to change aspects of their interaction with their patients. Tables 7 to 14 summarize key responses by the participant clinicians to questions posed during the individual interviews. Comments offered in response to question 9 were added to the previously established sections

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addressed by the additional information. A brief discussion of each question and the related themes precedes each table.

Definition of Empathy

Each clinician was asked to first provide a personal definition of empathy, followed by a request to state their view of the operative definition of empathy used as the basis for both the JSPE and the present study, specifically, "Empathy is a predominantly cognitive (rather than an emotional) attribute that involves an understanding (rather than feeling) of experiences, concerns and perspectives of the patient, combined with a capacity to communicate this understanding" (Hojat, 2007, p. 80). The personal definitions touched on the need for objectivity by the clinician to address the emotional content of the patient-clinician interaction. On the other hand, the response to the study definition was mixed, with a few clinicians disagreeing with the definition because it appeared to place a decreased emphasis on feelings associated with empathy. NP Irwin was one of the clinicians who agreed with the operative definition, explaining that she had worked in Oncology as an inpatient hospital staff nurse early in her nursing career but had to leave the field because she had confused empathy and sympathy leading her to become emotionally overwhelmed. On her return to Oncology as a nurse practitioner she reported she was much more careful about becoming overly involved in the lives of her patients. She described herself as empathic, but still objective.

Table 7

Personal Definitions of Empathy

Clinician	Empathy is:
Dr. Dale	"understanding the patient's situation and trying to relate to it not so much on the emotional basis, but to understand it as they're understanding it and to offer support to them, appropriate support informed by my professional opinion."
Dr. Ford	"trying to appreciate what the patient is going through as a person but yet trying to maintain some, um, objectivity that I don't get so emotionally involved so that I can no longer make rational decisions for the patient's well-being but at the same time appreciating the stresses that the patient has and being aware of the fact that there's a huge emotional overlay to the disease itself."
NP Irwin	"And in fact I think I, uh, my first, uh, experience with oncology I was younger and I really wasn't and I think- that's where I really got burned out because I was too sympathetic. I didn't understand, you know, didn't understand the differences between the empathy and sympathy. I would really get in there and then feel as those some of those people were my own relatives and you know family members or whatever so and its getting that degree of kind of and cutting the ropes between uh you know that they need to, to have you have to have some sympathy there but I think that empathy kinda puts its a cut, it takes you away from uh, I don't know how I don't know how to put it in words but it's, it's, you know, it's just, it's totally different. It really is. You should understand the person, what they are going through, but still, It's uh, not really getting in there and, and taking over and thinking that this person, you can do something about everything that happens with them.…that's, that's exactly what I'm trying to say too, you know, understand what they are going through but you don't take it on personally.""

Table 8

Clinician's Response to the Study's Operative Definition

Clinician	Response to the Study's Operative Definition Empathy:
Dr. Baker	"I think understanding is more important, just feel more emotional. I try to detach myself on patient, let the patient know I, I care, I worry about their health, I want to help them out, but I, I always try detach myself. I think to keep your sanity, very important I know so to make an objective decision, probably correct decision, you have to be dissociated with self from patient. I think. They always ask 'if you were in my shoes,' I tell them my shoe size is different than yours. So I tell them it's hard, because it, it's almost impossible to make an appropriate decision if you are too attached."
Dr. Ford	"Sure, it's a little sterile, but yeh"
NP Gale	"I agree with it, the definition on the part of, you know, understanding the patient but I also think that feeling has something to do with it."
NP Irwin	"That's, that's exactly what I'm trying to say too, you know, understand what they are going through but you don't take it on personally."

Body Language, Including Eye Contact

Most clinicians learn the best use of nonverbal communication through body language early in their careers (Novack, Epstein, & Paulsen 1999), and many will consciously work to improve these skills throughout their clinical practice (Epstein, 1999). The clinicians' answers about the importance of body language reflected this critical method of communicating with their patients and fell into two major categories: awareness of the impact of their own body language on the interaction (self-aware) and their response to the patient's nonverbal communication (patient-aware). Tables 9 and 10 present representative answers of individual clinicians identified by whether their response to nonverbal communication during the clinical visit was self aware or patient aware.

Table 9

The Role of Body Language and Eye Contact, Part 1

Type of Statement	Clinician	Clinician Response
Self Aware	Dr. Baker	"I try to not sort of leave any barriers between me and the patient I try to sit very close to them."
Patient Aware	Dr. Cook	"I think a lot. □Um, you know when I walk into the room and I see somebody, you know, really tense, and you know, their arms folded, □Then I know they're angry, and I can tell when somebody's upset about something. So I tend to ask about those things before I even start any visit because if they're angry because they've had to wait or for some other reason, I need to defuse that before I start my clinical visit, otherwise they won't remember anything other than they were mad"
Patient Aware	Dr. Dale	"I think it's, it's key and I think as you get more experience as a clinician you tie, you tend to internalize that so it's something, that's just part of the Gestalt, of knowing how the patient's reacting to you. And I think experienced clinicians can very quickly pick up, uh, both by verbal cues and by body cues how a patient is feeling. And particularly how they're reacting to the conversation and to any news that I'm giving about their disease status, which is, of course, one of the most important things that that they want to hear. So I think it is definitely an important component."
Patient Aware statement followed by Self Aware statement	Dr. Evans	"I think it plays a lot. Um, Well, you can walk in the room and see what the patient is feeling a lot of times, you can walk in the room and you can see how the patient's feeling or if they've got some kind of ailment. A lot of times, the first minute is the most important, in your decision process. You can see how kinda sick they look, and all that is body language.
		By the same token on the other, going the other way, I think that they read you a lot of times when they see you, um, when they see that you're, you're coming in not looking all that happy, they know that something's up, and um, and by the same token you know, when you share in their joy, I think that they respond in kind and are, you know, and are appreciative of that."

NP Gale and Dr. Ford related examples of how they modulate their body language

for a specific purpose when working with patients. NP Gale would consciously slow

down her speed of walking and talking, despite knowing she had patients waiting for her, so her patients would not think she was too busy to answer their questions. Dr. Ford used eye contact and touch to let the patient know he had heard the patient despite being involved in other activities during the visit.

Table 10

The Role of Body Language and Eye Contact, Part 2

Type of Statement	Clinician	Clinician Response
Self Aware	Dr. Ford	"So I always make sure before the interview is over that I turn around, speak them, look them in the eyes, touch them, I think it's critical…and then we have a summary visit, summary of the visit. Because we're on the EMR and we're dictating, and we're typing and doing all kinds of stuff, and I want them to know that I have heard them, and I want them to hear what I have heard back from them, so I always give them, I turn around, before they leave, this is what we said today, this is what we're gonna do, eye contact, I usually just do like this - reach over and touch their leg, and look at them right in the eyes. So, I think it's critically important. If you don't sit down and talk to the patient, they don't think you have been in the room."
Self Aware	NP Gale	"If I see that I'm running behind…and if I see I have four patients waiting, you know I'm going to move quickly, to come in the room, but as soon as I get in here I try to be…I don't speak fast, because we have some patients who are older, we also have some patients they have what we call the chemo brain, they tend to forget and um, so I try to tone it down and speak slowly to them. Because, if I don't …I've found where I've spoken quickly, and they go What did you say? So I slow it down. I think body language is very important whether it be the patient's or the provider's body language, cause it can send out a negative signal."

Effective use of body language in nonverbal communication has been a crucial part of the patient–clinician interaction since the founding of the clinic by Dr. West as related in the statement by Dr. Dale reported in Table 11. Each clinician agreed body language and eye contact were useful for connecting with the patient, to determine if the patient was doing well, or doing poorly, understanding explanations or overwhelmed. The clinicians purposefully incorporated body language to augment verbal communication during visits realizing they needed to use body language effectively as well as be aware of any possible negative interpretations by the patient. NP Irwin expressed efforts to control her personal tendency to be too expressive, allowing patients to easily read her through eye contact. In another example, Dr. Adams spoke of an incident where his nonverbal communication while using an exam room computer to show a patient her most recent images resulted in a less than desirable interaction between him and the patient.

Dr. Adams did not elaborate on the particular behavior he expressed at the time he was "shocked and floored" by his patient's scans in the above incident, but he implied when informing me of the interaction it was a combination of facial expression, body language, and silence that indicated to the patient he didn't know what to do clinically in response to the increased size of the patient's tumor. I perceived a sense of sadness and regret through his nonverbal communication with me when he related the story. Although not presented in Table 11, other clinicians stressed they routinely reviewed images and lab results prior to seeing the patient in order to avoid the possibility of a similar patient reaction as Dr. Adams experienced.

Table 11

The Role of Body Language and Eye Contact, Part 3

Type of Statement	Clinician	Clinician Response
Self Aware	Dr. Adams	"I tend to think on my feet…but sometimes, you know, I'm as surprised by it as they are…Like I had a young woman who had just a devastating breast cancer that blew through 3 or 4 lines of treatment in a row and then her next scan - it had just doubled and I was just shocked and floored by her scans and she saw that I was shocked and floored by her scans and I literally did not know what to do next. And that terrified her…so she ended up seeing another doctor - who also had no clue what to do next. But that was, I don't know, if I had done things differently she'd have taken it better I guess."
Self Aware	Dr. Dale	"One of the things that I learned early on is that you should sit down with the patient and not, and even if you only spend a few minutes with the patient, something that we learned early on particularly in this practice from my senior partner Bill West, when you go into the room, or go into the exam room and even if you're in there for three minutes, three minutes spent sitting across from the patient, making eye contact, uh, is the most important thing. And I've really validated that over my years in that it's not the quantity of the time that you spend with the patient but the quality of time. And if the patient believes that they're the most important thing in the world right then, that the amount of time doesn't matter, it's the fact that they're getting the attention they need."
Self Aware	NP Irwin	"I have to, sometimes with me - my eyes tell everything and I have to really, have to be cognizant of that about, about when I come in the room or if I, particularly if I have sad, bad news, or something of that nature. They can almost tell - sense it in my eyes…Well, I have to really kind of get to myself particularly in reports or whatever, I think about them. I play it in my head, what, how I'm going, and how I'm going to tell the person and just being truthful about it and still I have to, I don't, I try not to show gloom and doom. But sometimes it's very difficult, you know, again, I'm, just part of my make-up. I, And I think that I am a very good communicator, and most patients do appreciate me because I do have direct eye contact with them."

How Do You Deliver Bad News?

The story related by Dr. Adams illustrates the increased frequency clinicians who care for cancer patients are required to share bad news with their patients during the course of a clinical visit. Methods of delivering bad news are included in some communication skills courses. Each clinician was asked to describe their method of delivering bad news and whether the exam room computer had changed their approach to the patient under these specific circumstances. Each clinician described the importance of being truthful without depriving the patient of hope, while at the same time remaining focused on the patient and being available to answer their questions. Sparks, Villagran, Parker-Raley, and Cunningham (2007) investigated the experience of hearing bad news from the patient side, defining bad news as "any information you received from your health care provider about yourself or a loved one that you perceived as negative" (p. 183). Patient responses described four primary styles of delivering bad news: indirect, direct, comforting, and empowering. The *indirect* way of delivering bad news includes little or no disclosure, relying instead upon implied meanings. A clinician who delivers bad news indirectly creates an emotionally distance between themselves and the patient. The *direct* strategy, on the other hand, is a straightforward approach; however, the direct approach must be tempered to prevent the clinician from appearing unemotional and cold. A *comforting* strategy involves use of verbal and non-verbal communication, including touch, to moderate the potential emotional stress associated with the message. This strategy is most successful when used face-to-face. The clinician must also assure his or her non-verbal communication matches the message delivered verbally. The *empowering* style is based in a psychological dimension similar to self-efficacy and

rooted in social dimensions. As with the indirect style, the empowerment style can be used incorrectly, particularly when advising the patient, "I have good and bad news, which do you want to hear first?" The participating clinicians in this study reported a primarily direct or comforting style of delivering bad news.

Table 12 includes representative statements to illustrate the methods employed to meet the challenge of this difficult situation. All of the clinicians insisted the presence of an exam room computer had not changed their procedure for communicating bad news to their patients, despite the possibility it may have introduced changes in the other aspects of the clinical visit. When asked if they could recall an occasion where the exam room computer played a distinctive role in any part of a particular patient's care, the clinicians could not recall specific cases.

Table 12

Delivering Bad News

Type of Statement	Clinician	Clinician Response
Direct	Dr. Cook	"Well, it depends, if I know I need to examine the patient I will go in and examine the patient first and then have them sit down next to their loved one and, and, so I can sit down with them and talk to them. If I don't, if it's a situation where I just need to get them this information, an exam is not necessarily part of that visit that day. I'll just sit down and start talking to them…I always examine people first and then give them the CT report so that there's no deviations with good news or bad news."
Comforting	Dr. Evans	"If it's really bad news I don't even use the computer in there. Like I'll do it afterward."
Direct and Comforting	Dr. Ford	"I to try to do it without depriving them of all their hope. . .I emphasize to them I'm gonna talk about what I can do, not what I can't do. When you know you have cancer, you know what can happen if the cancer doesn't get better. Um, and I, every time they have good news I say this is great news today but we don't know what will be next time. I always, um, have a disclaimer in a sense so they don't get any false hope. However, if they are doing well, I make a big deal of that. . . I think that's the easiest way to give bad news. It's a hard thing to do though. It's always, I always look at them when I give the bad news, I'm always usually touching them, or, um, I'm never, I'm never doing anything else when I deliver the bad news. I'm totally focused on them."
Direct	NP Hall	"When I enter the exam room, for example, if they've just had a scan to see how they are responding to treatment. I always pull my stool right up to them and look them in the face and say, I know you want me to give you the scan report, up front, cause if I don't give it them up front they may read into that. I've had somebody tell me they can tell whether it is good new or bad news by the way the provider looks when they walk into the room…So I try to sit down with them, each one, on every visit, so it's not out of the normal…"

I found it interesting that Dr. Cook, one of the clinicians most adamant about not using the computer to write a clinical note while the patient was in the room, offered one of the best examples of a direct strategy. She reported recruiting the exam room computer as a means to better educate her patients about the extent of their disease by reviewing their scans and other images on the computer with the patient.

Dr. Cook: Well, no. I take that back. I think, um, the answer to that is yes, in that I've pulled up films before and showed people the tumor. I mean sometimes a picture is worth a thousand words. So if you can show people where their tumor is - especially with somebody who has, has maybe widely metastatic disease but still feels ok. You have to show them. Yeh, you've got it in your lung, your liver, and your bone. Here are all the places and sometimes that helps - not to be mean- but to, but sometimes, um, part of our job is to help, um, balance the, the line between denial and needing to know reality to make decisions.

Advantages and Disadvantages of the Exam Room Computer

The clinicians were asked to describe advantages and disadvantages surrounding the use of exam room computers. The responses for advantages fell into two categories – general advantages like improved efficiency, more accurate coding for Medicare billing, and looking up medical information on the Internet. The ability to use images to educate the patient about their disease was a more specific type of advantage. Having the computer available to pull up images while seeing the patient helped the clinicians better explain improvement (tumor shrinkage) or progression (tumor growth or spread). As described by Dr. Cook above, it was considered easier for the patient to understand their disease and their therapy when they could visualize their tumor. The following exchange

with Dr. Ford represents one way the images can be used as reassurance, even when the prognosis is not necessarily a good one.

> Dr. Ford: But a picture is worth a thousand words. How much worse is it? Well, and then you say 10%. What does 10% mean? Ok, here's what it was before, here's what it is now.
>
> Leora: And that helps the patient understand?
>
> Dr. Ford: It's very powerful. I had a young woman yesterday with breast cancer, She has disease in her liver, very minimal disease, but her disease was a lot worse because she had three or four new spots. We don't like words like 'a lot worse' or anything, I just said 'the scan is not as good.' Well, how much worse is it, well there are new spots. Well, what does new spots mean? But she was envisioning that her whole liver was taken over with cancer, I was able to show her, her scan and say 'Yes, you have three new little spots.' So that's worse, is much worse in my mind because they're new spots, but you still see you have lots of normal liver so it can be very reaffirming now.
>
> Leora: So for a lay person, she could see she still had a normal liver.
>
> Dr. Ford: Right.

Disadvantages, on the other hand, could be classified into environmental or relational disadvantages. Environmental disadvantages included poor ergonomics or physical barriers that were hard to overcome due to the room's dimensions (e.g., monitors mounted on the wall in some branch clinics). Relational disadvantages included both those the clinician had been able to overcome through coping strategies as well as relational disadvantages the clinician had not been able to successfully incorporate into

the clinical interaction. The successful adaptation to the minor disadvantages presented by the exam room computer by the three clinicians who routinely used the exam room computer during their clinical visits may be a result of their increased experience with the clinic's EMR compared to the study clinicians who had a more limited view of the usefulness of the exam room computer. This explanation would be similar to the group of clinician's described by Rouf et al. (2007) where patients were more likely to express a higher satisfaction with a clinic visit that included an exam room computer when interacting with more experienced clinicians. The following quote from Dr. Evans explains how he uses humor to defuse situations when the system was slow to respond.

> Dr. Evans: When technology doesn't work well, cause it crashes you know, that's frustrating. It is, but every time they do like an upgrade you get like some crashes and stuff like that. It's definitely crashing less. It's also, it can be frustrating when the computer moves slow slower than you think. And it does that often. I'm looking something up and it takes like you know, 10 seconds to pull up the screen, it's awkward, and so, I end up cracking a joke again, saying Oh, these damn computers, and then they relate to that, because they also have damn computers at their own office…Yeh, so it's like you're, you know, you're on, you're with them, you know, and you're not, you know, it's not, you're humanizing the situation instead of, you know, computerizing the situation, because you can blame the computer which I can do.

> However, these more experienced clinicians also realized the computer had changed the interaction with the patient and expressed a regret for that undefined quality that had been lost, as expressed by Dr. Ford in the following exchange.

Dr. Ford: It is intellectually exciting to be able to um, conquer the system because there, the computer is, um, a computer engineer's attempt to try to do what I do clinically. And the uh, the meshing of those gears is very awkward. And so to be able to overcome all those cumbersome kind of, uh, hurdles they've put in our way, is intellectually exciting. So, and it is also very gratifying to know that, um all my staging is correct now, all my numbers are correct now, all my charts are up to date, all that is very satisfying and the computer has allowed me to do that. Um, the computer's allowed me to answer questions for patients much more effectively. When somebody calls in and I have a lot of patients, I can't remember all their names, the computer gives me that access instantly. And so, those are some of the great things it does. The thing that it does, and it's a different way of saying what we've said, it has kept me from being a physician and its made me a data keeper. So now I'm no longer above the fray, pontificating, I'm in the fray. And I'm just another data keeper…I'd like to have all the benefits, but have the kind of interaction I had before.

Leora: How close would you say you are to that? As far as the kind of interaction you had before?

Dr. Ford: Probably 70%.

What Would You Call the Exam Room Computer?

I asked each clinician to characterize their view of the exam room computer by offering a description in a single word or phrase. The clinicians offered the creative and descriptive names shown in Table 13. These terms and their potential meaning were

90

discussed in the Focus Group, and will be addressed in more detail under the Focus

Group discussion section.

Table 13

Words or Phrases to Describe the Exam Room Computer[1]

I would describe the Exam Room computer as:		
[a] Frustrating improvement	Bitter-sweet	[a] Double-edged sword
[a] Pain-in-the-ass	Frustrating	Helpful, more positive than negative
Pros and cons, but the pros outweigh the cons	I think it can be a great tool.	Annoying, sometimes an inconvenience

Further Analysis: Coding the Interviews for Empathy and Reflexivity

An early theme that emerged from the analysis of the individual interviews was

the role of clinician reflexivity and mindfulness. The individual clinician's comments

demonstrated an awareness of how they wanted to relate to their patients and the degree

to which the exam room computer challenged that desire. They were also aware of their

patient's expectations as shown in the observations discussed under body language when

they voiced the realization that they needed to modulate their behavior and the words

they used in communicating with their patients, in order to avoid additional stress for

their patient. This conscious reflexivity is consistent with the overall assumption that

empathic providers would find a means of continuing to relate to their patients in a

similar manner regardless of barriers introduced by technology. It is also one of the

prerequisites necessary for individuals interested in solving wicked problems.

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[1] I am going to depart from identifying the specific clinician making the comment in this section. When these terms were discussed in the focus group, the clinicians speculated about which clinician might be responsible for which term. I preferred to allow the clinicians to maintain their anonymity regarding who was negative or positive about the introduction of the exam room computer.

Physician empathy and reflexivity. In order to confirm this initial impression, I carefully reviewed each of the physician interviews. I chose to further analyze only the physician interviews because the three nurse practitioners as a group did not use the exam room computer routinely. One nurse practitioner practiced solely in chemotherapy administration and her clinical documentation did not require her to use elements of the software package used by the other clinicians. I believed considering only the six physician interviews for further analysis would avoid confounding factors arising solely from differences in professional practice (physician or nurse practitioner).

I identified conversational units expressing empathy, reflexivity, or a combination of both throughout the individual conversations. A reflexive statement acknowledged how the patient would potentially react to words or actions preformed by the clinician. An empathic statement, on the other hand, expressed an understanding of what the patient may think or feel in response to words or actions performed by the clinician. I labeled statements that included properties of both reflexivity and empathy intertwined as dual in nature. I counted statements within one conversational turn based on the statement's subject. When a conversational turn included multiple reflexive or empathic statements that addressed different activities or attributes, I counted each new topic as a separate statement.

I did not find a relationship between the number of empathic or reflexive statements and the individual clinician's JSPE score. This may have been a function of the variable length of the interviews. The interview with the clinician who had the highest JSPE score was one of the shortest due to time constraints the day of the interview. Similarly, clinicians who routinely used the exam room computer to document the

clinical visit while the patient was in the room did not make a significantly different

number of empathic and reflexive statements compared to the clinicians who used the

exam room computer in a more limited fashion. All of the clinicians made several

empathic and reflexive statements during the individual interviews, supporting the

observation of the importance of clinician reflexivity to patient care for this group of

physicians. Table 14 presents a summary of the findings.

Analysis of Dr. Evan's interview. The three physicians who used the computer

to write clinical notes during patient visits made similar statements expressing a degree of

regret concerning the change in their relationship to the patient produced by their

decision to incorporate the exam room computer into their day-to-day clinical practice.

Dr. Evans, who had the second highest JSPE score of 127, spoke to this regret as well as

the quality improvement associated with using an EMR most eloquently, leading me to

offer the analysis of his interview in greater detail below[2].

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[2] Statements coded as empathic are represented by bold type inside parentheses, (**empathic**), while those coded as consistent with self-reflection or reflexivity are shown as italic type inside brackets, [*reflexivity*]. Statements coded as dual, representing both empathy and reflexivity, are represented by small caps inside curly braces, {DUAL}.

Table 14

JSPE Score Related to Exam Room Computer Use and Conversational Units Coded for Empathy, Reflexivity, or Both

JSPE Score Possible Range: 20-140*	Exam Room Computer Use	Word or Phrase to Describe the Exam Room Computer	Number of Empathy Conversational Units	Number of Reflexivity Conversational Units	Number of Dual Conversational Units
Not Available	Extensive, writes clinical notes during the visit	Bittersweet	11	15	6
101	Limited, uses for lab/images, not notes	Helpful, more positive than negative	5	10	0
118	Extensive, writes clinical notes during the visit	[a] Frustrating Improvement	10	9	4
123	Limited, uses for lab/images, not notes	[a] Pain-in-the-ass	9	9	4
127	Extensive, writes clinical notes during the visit	Pros and cons, but the pros outweigh the cons	8	15	4
132	Limited, uses for lab/images, not notes	Double-edged sword	5	7	3

* The highest of the two scores was reported for the clinician who took the JSPE twice.

Dr. Evans agreed with the study definition of empathy after first offering his own definition that empathy is "feeling like you can put yourself in that same situation and treat the patient in a way you would want to be treated if you were in that kind of situation." He easily moved between empathic statements and self-reflection as shown in the following response to the question about the importance of body language:

I think it plays a lot. Um, Well, (**you can walk in the room and see what the patient is feeling a lot of times, you can walk in the room and you can see how the patient's feeling or if they've got some kind of ailment. A lot of times, the first minute is the most important, in your decision process. You can see how kinda sick they look, and all that is body language.**) By the same token on the other, going the other way [*I think that they read you a lot of times when they see you um, when they see that you're, you're coming in not looking all that happy, they know that something's up*], and um, and by the same token you know, (**when you share in their joy, I think that they respond in kind and are, you know, and are appreciative of that.**)

Similarly, when asked how he delivered bad news, his empathy and reflexivity were intertwined:

How do I deliver bad news? Um, [*I try to be up front, you, I try to anticipate ahead of time what I'm going to say and come with a solution to the bad news.*] If, so that you can kind of, you know, (**It's not like getting hit by a truck**.) [*that's one thing, um the other think, I mean obviously you have to,*] I kind of, (**I don't kind of let it fester for a long time before delivering it. I don't kind of, like I think the patient kind of, by coming in, is anticipating something or another,**

think it's, I think it's better just to get to that point because they want it now, That's what they're looking for, that's why they're there, um to get the news.)

[*If you kind of like go off on, on other issues, then you are missing what they want to, what they're looking for in that meeting.*] So, um, but the, you know (**for the most part it's just a matter of you know, feeling for them, and, and uh, and uh you know, tell them straight out what's going on and I think that there is a lot of variability in the extent that you go in your delivery depending on what the patient, you feel the patient can handle. What they can, and what they will do with that information**.) {A LOT OF TIMES IT KIND OF AFFECTS, YOU KNOW, WHAT YOU, HOW YOU SAY, AND WHAT YOU DO. SO, IF IT'S, YOU KNOW, DO PEOPLE WANT TO KNOW THEY HAVE 3 MONTHS OR 4 MONTHS TO LIVE, OR WHATEVER IT IS. SO I THINK THAT IT'S VARIABLE, ITS SOME PEOPLE REALLY DON'T. SO IT'S VERY IMPORTANT, I THINK TO FEEL WHAT THE PATIENT IS TRYING TO, WHAT INFORMATION THE PATIENT WANTS TO KNOW, OR THE FAMILY WANTS TO KNOW, IN ORDER TO GIVE THEM WHAT THEY WANT, CAUSE THERE IS A LOT OF OTHER INFORMATION THAT CAN BE DELIVERED, THE QUESTION IS WHAT PART IS THE MOST IMPORTANT THING FOR THE PATIENT.}

Dr. Evans was acutely aware of the difficulties associated with using the exam room computer to document the clinical visit while the patient was in the room. He realized that he had less eye contact with the patient while using the computer and reported he had made physical changes to the room to make the interaction "more natural." At the same time he felt he was "working behind an airline counter" when he used the computer in the exam room.

… [*try to make it as natural as possible*] and so before I didn't like the position of where the screen and the computer was and you know, you're looking this way and the patient's over there. Does not, it's not natural you know. It's better where, you know, [*you have the computer and the patient's over there where you kind of have it in your vision,*] and we changed around the configuration of the room and stuff like that a little bit. Um, but uh, um, for the most part, [*I will sit there updating you feel sometimes uh, like you're you know, behind an airline counter. … You know, kind of you know typing in information like you're giving someone their tickets.*] And that's frustrating. That is a frustration …

Dr. Evans used humor to ease the discomfort or "awkward silence" that could occur during a clinical visit as a means of "humanizing instead of computerizing" the interaction.

I'm looking something up and it takes like you know, 10 seconds to pull up the screen, [*it's awkward, and so, I end up cracking a joke again, saying Oh, these damn computers, and then they relate to that, because they also have damn computers at their own office.*] … Yeh so it's like you're, you know, you're on, [*you're with them, you know and you're not, you know it's not, you're humanizing the situation instead of, you know, computerizing the situation.*] Because you can blame the computer which I can do.

When asked to list advantages associated with exam room computers, Dr. Evans recognized the quality improvements associated with using an EMR. The clinical notes were more accurate for billing purposes, an advantage for the clinic. In addition, the EMR allowed the staff to assess how closely their daily practice matched standard

therapies. Due to the toxicity of many chemotherapeutic agents, specific administration

instructions and follow-up procedures are recommended to protect the patient. Dr. Evans

was involved in analyzing how the EMR could automate order entry and allow the clinic

physicians to more closely follow both the recommended methods for administering a

specific drug to the patient as well as follow-up procedures, such as interval

electrocardiograms or laboratory testing, for the chemotherapeutic drugs used routinely in

the clinic. In this aspect of the patient's care, the EMR was invaluable. But there was a

counter-weight to this advantage.

> Right, right, {HERE'S CLEAR CHALLENGES FOR THE PATIENT IN TERMS OF THE
>
> PATIENT INTERACTION THAT CAN BE AFFECTED BUT THE POSITIVES OUTWEIGH THE
>
> NEGATIVES UM AND I THINK THAT IT IS JUST IMPORTANT, I HOPE THAT AS MEDICAL
>
> SCHOOLS GO ON THAT THEY TEACH HOW YOU WORK WITH AN EMR AND STILL BE
>
> AN EMPATHETIC DOCTOR. YOU KNOW, THAT'S AN IMPORTANT THING AND IT IS A
>
> NEW, NEW WORLD SO TO SPEAK, UM BUT I THINK THAT MOST PEOPLE THAT GO INTO
>
> THIS, I HOPE NATURALLY HAVE THAT KIND OF ABILITY. …YEH, AND LIKE SO
>
> THERE'S TECHNOLOGY AND YOU UTILIZE THE TECHNOLOGY BUT IT DOESN'T CHANGE
>
> THE NATURE OF, YOU KNOW, WHAT TO DO WITH THE PATIENT. I JUST WISH THAT
>
> THERE WAS MORE TIME IN THE DAY TO SEE THEM,} you know.

Dr. Evans impressed me with his conscientious efforts to balance the quality

advantages of the EMR with the difficulties of maintaining an empathic connection with

the patient. He was able to elaborate further on his approach during the focus group when

he explained how he used the computer in his clinical visits to his colleagues who did not

use the computer to the same extent in their clinical interactions with their patients.

Focus Group: Challenges of Using an Exam Room Computer

Although only three physicians attended the focus group, the physicians who participated represented the spectrum of exam room computer use by all of the participants as well as each of three methods available for writing a clinical note at the West Clinic. Dr. Dale used the computer in the room with the patient primarily to look up data on past treatment and to check lab work or scans, then dictated his note after the visit based on handwritten notes taken during the patient visit. Dr. Cook rarely used the computer in the exam room unless she wanted to share scans with the patient, took no notes during the visit, and then typed her clinical note outside the exam room using E-scribe, a template based software product that allows the writer to modify a previously written note to reflect the current status of the patient. Dr. Evans used the exam room computer extensively during the patient visit, writing his clinical note in the presence of the patient using Fastnote, a free text notation system built into the clinic's software package.

I prepared six questions to ask the focus group attendees based on the content of the individual interviews:

Question 1: Please comment on the following descriptors provided by the clinicians who participated in the individual interviews. (See Table 13.)

Question 2: For those who use the computer during a visit – how do you create your template?

Question 3: For those of you who don't use the computer during the visit – would you be more likely to use it if you had an opportunity to discuss/observe the physicians who do?

Question 4: All of you told me you use images and other data you can look up in the computer to help educate the patient about the status of their disease. As a group, have you ever discussed optimum ways of accessing data with each other?

Question 5: How are you dealing with the ergonomic problem? Are any of you experiencing any physical symptoms from having to type or work in the exam rooms?

Question 6: Do you see the exam room computer as a third interaction or as a neutral tool?

Despite the prepared questions, the 25 minute session felt more to me like a free-flowing conversation between professional colleagues leading me to not present the questions to the group in the above order. After the first question I asked the planned questions at points in the conversation where each appeared most consistent with topic under consideration by the group. I believe this approach allowed the conversation to progress more naturally with additional questions/topics emerging as the dialogue continued.

Focus Group: The Conversation

The request for a response to the list of descriptors generated by the nine study participants to characterize the exam room computer (See Table 13) produced some light-hearted banter about the more negative designators, with the physicians eventually agreeing the list depicted the exam room computer as a mixed blessing. Dr. Dale observed and Dr. Cook and Dr. Evans agreed, "Comments might be personality-driven to a certain extent, but I think it reflects our frustration at the challenge of putting technology between the physician and the patient."

Given this response I chose to pose Question 6 next. I asked if they saw the computer as a "third interaction, that is, you and the computer, you and the patient, or do you see the exam room computer as a neutral tool?" Dr. Cook saw the computer as a neutral tool after first clarifying "but I don't use it, the computer in the exam room. I just don't do that unless I am showing someone their film or showing somebody their lab on the computer, so I'm not on the computer in the room, so you can see, to me, it's like any, you know, it's like any other piece of equipment inside that room." Dr. Dale responded that he did find the computer to be an third interaction, "and if the patient sits in the wrong place, it's awkward, or if you are looking at something, you know, you have to remember not to get engrossed in the computer and that the patient sitting there and the family." Dr. Evans, after first commenting that he felt he used computer in the room to a greater extent that either Dr. Cook or Dr. Dale, offered his interpretation of how the exam room computer appeared as a third interaction in his clinical routine, and difficulties arising from this.

Dr. Evans: I use it the most in the room I think of all and, and it is another interaction, and it is awkward depending on where they are sitting and I do try to, like, have it, like, you know, like where I have this, always have face-to-face with the patient but at the same time have the computer here. But I use it not only to look up stuff, which I think is actually helpful for the patient, because you know they're, that actually, you don't have to run out and like go and find stuff and all that. You can say, one second and let me pull it up, your last admission from Baptist East, and it's actually like a tool, that's used well in the room. The part where it's not used well in the room is where you're doing your noting in the room. Where that can be awkward at times, because especially if its someone that's complex or requires more emotional interaction, and which, is a lot of the time. So it's hard to kind of balance that into the interaction and it does become a third thing, and so it really is, it's kind of you know, it's uh, a delicate balance there that you always have to be mindful of.

I followed-up with Question 3 regarding whether they routinely shared with each other how they used the computer for different tasks based on the wide range of computer use among the three physicians. The clinicians for the first time in the interaction appeared uncomfortable, suggesting resistance to the question. I immediately realized I had unwittingly triggered a reaction against standardized practice. This rejection of what is frequently considered "cookbook medicine" is not uncommon in physician group practices, particularly those that value the autonomy of the individual physician. In fact, the perception of threat to the professional autonomy of the individual physician has been cited in the literature as one of the primary barriers to physician acceptance of

information technology (Walter & Lopez, 2008). After explaining the question was not meant to suggest standardization within the clinic of how each physician worked with their patients, but more an exchange of knowledge between those who were more experienced in using various aspects of the software program with their colleagues who were less experienced, the tense atmosphere dissolved as quickly as it had appeared. Dr. Dale admitted that in the beginning when the EMR was first introduced and everyone was learning it, there was more interaction between members of the clinical staff about individual discoveries while using the software. This was no longer done on a regular basis. Noting the different documentation methods used within this small group of three clinicians, Dr. Dale remarked, "I think we probably could share information better about this and other things. We don't always get a good opportunity to do that."

Wanting to avoid any further negative reactions, I next asked Question 5 and turned the conversation toward the ergonomic problems associated with the computerization of the clinic space. Dr. Cook commented that she had not thought about the possible relationship between her daily routine of writing patient clinical notes while standing outside the exam room and looking up at a monitor screen and her recent treatment with nerve blocks for a cervical disk problem. Although realizing the need for improved ergonomic conditions, remodeling all of the exam rooms to be more computer-friendly would entail a major financial investment. The physicians suggested other possible solutions to the ergonomic conundrum such as using laptop or tablet computers rather than desktop units, and Dr. Evans shared his one day experience of trying to use a laptop computer to see if it would be more efficient, only to find it created a different set of problems.

After sharing their attitudes toward their particular style of writing clinical notes in response to Question 2, along with the competing goals of having all of your notes written at the end of the day opposed to having protected time after the visit to think about the patient while writing a more detailed note, the physicians agreed there was no perfect technology that would satisfy the demands of their practice. I asked if they thought doctors in training now would find the use of an EMR easier compared to their experience of transitioning from a paper chart to an electronic one, "Among the younger doctors that you're training are they, how do they approach this? Are they, it's like kids growing up now are all into games and things, they've got, do you see them maybe approaching the EMR differently than say yourselves who used to write and now you have to use the computer?" Dr. Dale responded, "I think our EMR is not set up to be maximally efficient for physicians. It was written by software programmers and hopefully the next generation might be written by doctors who also know stuff like you say and it will be a lot better."

The dialogue then turned to an expression of thoughts wondering what their patients thought about the increasing use of exam room computers. The West Clinic has a contract with a commercial vendor to conduct annual patient satisfaction surveys to provide feedback to each clinician regarding the level of satisfaction among his or her panel of patients. Questions regarding use of an exam room computer are not currently part of the standardized survey, and the physicians were unaware if such questions could be added. Dr. Dale responded to Dr. Cook's comment that such a survey would be "very doctor dependent" with the observation, "I know, but that would be good to see. If there's one type of interaction that's really, the patients don't like. If they like you on all these

things, and then they say you're spending too much time on the computer, that would be good to know." This exchange led Dr. Evans to observe, "The question is, if their overall satisfaction remains the same, but you do spend more time on the computer, but you spend more time doing something else to keep the satisfaction the same."

The focus group discussion appeared to stimulate the group to ponder whether greater interaction among the clinicians should be encouraged in order to assist each other in learning the best way to incorporate the computer into their daily routine. There were a few revelations – whether the physicians had considered adding questions to the annual patient satisfaction survey regarding patient's experience of computer use is unknown. It seemed to be an original idea when Dr. Dale first made the remark. However, given the degree of patient concern present in the discussions, I would have predicted this topic would have been considered previously. The three physicians seemed to enjoy each other's company for the 25 minutes the focus group discussion lasted, but they were starting to lose interest in the last few minutes as they started to check their email accounts on their Blackberrys in anticipation of the day ahead. (The focus group was held at 8:00 am prior to the start of their clinic day at 9:00 am.)

Overview of the Focus Group: Major Themes

Three primary themes arose from the focus group conversation – the computer as a third interaction, unresolved ergonomic problems in the exam room, and curiosity about the attitudes of the West Clinic patient population toward the introduction of the exam room computer. The conversation established that the exam room computer did present a major barrier and was perceived by each of the physician's as a third interaction in the clinical encounter. The importance of ergonomic adjustments to the exam rooms to ease

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the physical strain of using an exam room computer was discussed but not resolved. The physicians also recognized during the conversation that they should consider adding a question to the annual patient satisfaction survey conducted by the clinic to assess if the introduction of the exam room computer had affected the patient-clinician interaction from the patient's perceptive. These three themes are discussed in greater detail below.

The dialogue among the three physicians participating in the focus group expanded the information collected in the individual interviews by clarifying that the exam room computer represented a significant barrier for Dr. Cook who chose to minimize her use of the computer in the presence of the patient in order to focus entirely on the patient and not be distracted by the computer. Dr. Dale and Dr. Evans also struggled with the computer as a third interaction, diverting their attention from the patient at times, but Dr. Evans had been more successful in developing adaptive strategies to be able to use the computer in the presence of the patient at each clinical visit without a sense of loosing contact with the patient. Sadly there was no structured time allowed during the busy clinic day for Dr. Evans to share his expertise with the other clinicians in order to improve their abilities to be able to use the computer more successfully. Whether the physicians decided to be more involved in sharing knowledge with each other as a result of this conversation is unknown.

The focus group discussion recognized the ergonomic problems associated not adapting the physical space of the clinic's exam rooms to be more compatible with computer use, but dismissed the problem as too expensive to fix through remodeling without identifying an alternative solution. I don't know if raising the issue in the focus group stimulated the physicians to discuss the topic further at a later date, although it did

appear Dr. Cook recognized the possible relationship between clinic ergonomic issues and her recent treatment for neck pain.

The idea of adding a question to the West Clinic's annual patient satisfaction survey to assess the patients' response to the introduction of the exam room computer arose during the focus group conversation. The demeanor of the physicians when exploring this possibility implied the inclusion of soliciting patient responses to the possible changes in the clinic after introducing the EMR and exam room computers had not previously been contemplated despite the West Clinic's commitment to an annual patient satisfaction survey as a means of providing feedback to clinical staff on practice areas requiring improvement. I don't know if the interest expressed during the focus group carried over to actually adding questions to the annual survey instrument that would provide the necessary information to determine the response of the individual patients.

Answering the Research Questions in the Context of the Literature

Did the data collected, despite the small sample, provide sufficient information to answer the research questions? The research questions of the present study were as follows:

RQ1: What effect, if any, does an exam room computer have on clinicians' empathic behavior toward their patients?

RQ 2: What are the perceived barriers, if any, to empathic communication between clinician and patient when an exam room computer is used to document the visit?

The clinicians interviewed for this study had different means of maintaining their empathic connection to their patients. Six of the clinicians chose not to use the exam room computer during clinical visits with their patients, except as a means to share images or lab results. The remaining three clinicians had adopted changes in their approach to the patient using a combination of humor, physical changes in the set up of the exam room, and mindfulness to be able to maintain a connection to their patient while using an exam room computer to document the clinical visit. In the case of delivering bad news to a patient, the clinicians who used the exam room computer the most elected to not use the computer during those visits when bad news had to be communicated to the patient so they could remain entirely focused on their patient.

The clinicians who chose not to use the exam room computer in the presence of the patient perceived barriers that led them to avoid use of the computer while with the patient. The exact nature of the barriers was not fully elucidated through the interviews; however, the resultant behavior where the clinician chose to avoid use of the computer rather than modify their clinical interaction with the patient suggests the barriers were considered insurmountable. The culture of the West Clinic is patient-centered and supportive of the individual clinician's autonomy in treating their patients, and use of the exam room computer was not mandatory since multiple methods of documenting the clinical visit were available to the clinicians to use at their discretion. The clinicians who chose to use the exam room computer in the presence of the patient addressed barriers presented by the physical configuration of the room by moving furniture, and making other adjustments to facilitate eye contact with the patient during the visit. System slowness or other distractions presented by the computer were managed through humor

or other verbal explanations to the patient. Overall, the clinicians purposefully utilized mindfulness to remain focused on the patient even when involved in other activities during the visit.

Thus for RQ1, it appears that for these clinicians the exam room computer has had an effect on their empathic behavior toward their patients. The empathic clinician may chose not to use the exam room computer, particularly in instances where it presents a potential negative distraction such as during discussions involving a poor prognosis (bad news). Or the empathic clinician can use humor and other explanations to lessen the effect of the computer being a third interaction in the clinical visit. Mindfulness by the clinician is the primary modulator that governs how the empathic clinician determines his or her approach to the patient when an exam room computer is introduced into the clinical environment.

In regards to RQ2, the perceived barriers can be extracted from the discussions of disadvantages in the individual interviews as well as the focus group discussion regarding the exam room computer as a third interaction. Barriers to empathic communication included environmental, physical barriers such as poor ergonomic design of exam rooms. Non-adjustable furniture or wall-mounted monitors could become an obstacle that prevented the clinician from being able to directly approach the patient through eye contact or touch while also using the exam room computer during the encounter. There were also relational barriers introduced by the computer. Interference with the progression of a conversation between the clinician and patient by a slow-to-respond computer program could be dismissed with humor, while other distractions from the patient produced through the use of the exam room computer were more difficult to either

define or modify through coping strategies. The exam room computer had, indeed, upset the balance of the patient-clinician interaction and the clinician had to remain mindful of restoring that balance while addressing both the patient and the technological requirements imposed by the exam room computer.

The literature regarding the adoption and use of an electronic medical record identifies several clinician-associated obstacles, chief among them that existing EMRs do not accurately or efficiently replicate everyday medical work (Clark, Hartswood, Procter, & Rouncefield, 2001). These sentiments were expressed at various times by the participating clinicians, including the example referenced above during the focus group discussion that the software was written by software engineers and might be more useful in the future if doctors who also understood computing language were the authors of the software. Dr. Ford also expressed a similar attitude when he suggested the software was "a computer engineer's attempt to try to do what I do clinically." More recent reports of stressful, but successful EMR implementation by outpatient groups (Baron, Fabens, Schiffman, & Wolf, 2005; Faron, Hale, & Jesberg, 2006) and steadily improving clinician satisfaction in the first year after introduction of an EMR (El-Kareh et al., 2009) suggest that clinical practices across the United States are gradually accepting an electronic medical record and dealing successfully with the issues raised by the adoption of these systems. At the same time powerful government-initiated motivators, such as Executive Order 13335 issued by President Bush (2004) setting the goal of a fully integrated national electronic medical record by 2014 followed by an appropriation of $40 million of the Social Security Administration's budget designated by Section 9202 of The American Recovery and Reinvestment Act of 2009 to be invested in "infrastructure

necessary to allow for and promote the electronic exchange and use of health information for each individual in the United States" (Fitts, 2009) are in place to further stimulate individual practices to adopt EMRs.

The culture of the West Clinic is compatible with the successful adoption of a clinical information system (Munir & Kay, 2003). The connection between the individual clinician and the clinic is best exemplified by the description offered by Dr. Ford when asked to describe the patient care environment:

> Dr. Ford: I think it's a very unique place. I think it's always been a wonderful, warm place, that's our reputation. I think that as we've gotten bigger, we've struggled with bigness. But I think that what we've been able to do, is we have been able to continue emphasizing seeing one patient at a time, even though we're big. And I think that's because each doctor has his pod, where you have this huge community, but when you are in the pod, everybody knows who you are. And when I'm with you, I'm with you. I'm not next door, I now anywhere else. I'm with you. And I think that still is carried on, I think that we have some great employees. I think that we're almost evangelical in that sense. The joke is you are either here two weeks or 20 years. And I think that's pretty true. So we can't rest on our laurels, we have to constantly teach new people that, we have to constantly be reminded ourselves, and all our old employees that that's what our job is, but I think we do a good job of that. And especially we have a reputation, well we are big, the big dog in town, but I hear every day from my patients how wonderful it is when they come in here. They come in here and they see the waiting room and they just "ahh" and then they start to visit with people in our volunteer group and

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everything, I think that, I think we spend as much time on that as we on the science and I'm proud of that.

Although the clinicians were not able to expressly define the exact nature of their adjustment to the use of the EMR, they were able to successfully demonstrate their level of awareness of themselves, their patients, and the clinical culture of the West Clinic that promotes the well being of patient and clinician alike. These are the criteria that must be present in order to negotiate major practice modifications successfully.

Study Limitations

Allowing the DirEMR to first approach potential participants may have introduced a confounding factor in the selection of participants, since the DirEMR was more likely to approach the clinicians she felt most likely to participate. Given the DirEMR's insider familiarity with the clinicians and their computer work habits, she could also pre-select the clinicians who used the electronic record most extensively. While purposeful sampling allows selection of participants based on specific criteria deemed most compatible to study a process of interest, this can also introduce *key informant bias* by selecting a group of informants whose views are not typical of the larger group involved in the process of interest (Maxwell, 2004). The DirEMR recommended medical oncologists as the preferred professional group because the EMR package was designed for medical oncologists (as opposed to radiation oncologists) making this group the least likely to have changed their practice habits after introduction of the EMR due to poor software design. I chose to include the nurse practitioners to increase the diversity of the respondents in addition to including a non-physician clinician group, particularly because Hojat, Fields, and Gonnella (2003) reported nurse

practitioners as a group tended to score higher than physicians in empathy during the early development of the JSPE.

Evaluating only the clinician side of the patient-clinician interaction presented a major limitation of the study. Although qualitative study samples are typically small, only three of the nine clinicians participating in the case study actually performed the behavior, using an exam room computer in the presence of the patient, I wanted to explore. Observation of the clinicians with their patients or talking with patients about their experiences with exam room computers and the effects on the patient–clinician interaction would have provided more information. I chose not to talk to patients during the present study in order to simplify the data collection process; however, the full impact of the introduction of the EMR cannot be determined without asking the patients how the introduction has affected their relationship with their clinician. The interest expressed during the focus group regarding asking the patients what they thought of the use of exam room computers implies the clinic may consider modifying the annual patient satisfaction survey to include an assessment of the patients' response to the incorporation of the exam room computer into the clinical visits by some West Clinic clinicians.

The range of clinician's scores on the JSPE surprised me. I included the quantitative instrument for triangulation purposes, that is, as a means to assure the participating clinicians were more empathic than average and thus validate my assumption that empathic clinicians would be motivated to find alternative ways of maintaining effective communication with their patients despite potential obstacles. I am unable to explain why Dr. Adams, who inadvertently took the test twice, had two scores that varied by more than the standard deviation calculated for the distribution. This does

not appear to be consistent with the published test-retest reliability of 0.65 (p <0.01) for the JSPE (Hojat et al., 2002), although distortions are possible when considering single individuals rather than a large group of tested individuals. I was also surprised that the composite scores did not show a greater shift to the right side represented by higher JSPE scores and a significantly higher mean score than the representative distribution of 704 physicians. Instead the mean score of the West Clinic clinicians volunteering to take the JSPE was quite close to the mean of the representative distribution, indicating, contrary to my expectations, empathic tendencies more consistent with a random selection of physicians rather than a clinical staff with higher than average empathic tendencies.

Finally, I solely performed the analysis of the individual physician interviews. Multiple individuals coding the interviews followed by a group discussion of the reliability of the applied codes may have guided me to think somewhat differently about some to the text units, and may have led to a more complex coding scheme. However, I believe my overall conclusions about the study would have been the same.

Summary

In the end the three clinicians who used the exam room computer the most were not able to specifically verbalize how they had changed their practice although they could provide a few examples. I was most impressed by the conscious mindfulness with which they approached the need to shift their attention back and forth between the patient and the computer, leading me to believe this reflexivity, being aware of the competing interactions, was perhaps the reason they were able to use the exam room computer successfully with their patients. Perhaps this activity is the "something else" Dr. Evans referred to when he posed the question during the focus group.

"The question is, if their overall satisfaction remains the same, [yet] but you do spend more time on the computer, [you must be spending] but you spend more time doing something else to keep the satisfaction the same?"

The West Clinic physicians have embarked on the journey to integrate the EMR into their clinical practice without losing essential elements of the interaction with their patients. Their behavior is compatible with recommendations by Ventres and Frankel (2010) that once physicians recognize the EMR as a third party in the exam room with a separate identity that exerts an effect on the relationship between the patient and the clinician, progress toward a successful and synergistic relationship is possible. The present study is a small step toward their recommendation that "research to examine how outstanding clinicians use EHRs (electronic health records) and the subsequent dissemination of these results is essential, as physicians adapting to both PRCC (patient and relationship centered care) and EHRs need guidance and encouragement in best practices" (p. 365)

Chapter 5

Conclusions

This chapter presents specific recommendations for the West Clinic based on the findings of the present study. A discussion of two areas for future research suggested by the present study, the potential effect of introducing HIT on known issues of disparity of care among minority patient populations and the market value of clinical empathy in the real world of 21ˢᵗ century medicine, are discussed prior to the final section summarizing chapters 1 through 4.

Recommendations for the West Clinic

The present study suggests the West Clinic administration would benefit from considering the following actions:

1. Consider including improved ergonomic design of the exam rooms to accommodate use of the computer in future building or remodeling projects.

2. Allot time for the clinicians currently using the exam room computer to document the clinical visit to actively share their experience with the clinicians who only use the exam room computer in a limited fashion.

3. Consider adopting the ecological model proposed by Street (2003) , particularly as adapted for cancer care (Epstein & Street Jr., 2007), as a framework to encourage all staff members to discuss problems and potential solutions to changes introduced by the EMR and other information technologies.

Ergonomic Awareness and Application to Exam Room Design

Despite awareness of the problem, the clinic management and staff have not fully addressed ergonomic problems associated with computer use due to the

prohibitive cost of either a major remodeling of exam rooms to be more conducive to the use of desktop computers or a large scale purchase of laptop or tablet computers to replace the desktop computers currently in use. This requires the clinical staff to use work-a-rounds to adapt as best they can to the physical constraints. Future construction projects should include active planning to maximize exam room design to remove barriers to non-verbal communication between the clinician and patient when an exam room computer is part of the interaction (Gorawara-Bhat et al., 2007). A possible option would be similar to an experimental clinical space containing a semicircular table and multiple chairs. Patients preferred this design compared to a standard exam room configuration of a desk and chairs when the computer screen was placed on the table where both the clinician and the patient could easily view the screen as well as each other. Patients reported their clinician shared more information with them via the computer screen in the experimental design. The experimental design also allowed additional room for caregivers accompanying the patient to participate in the clinical interaction by viewing the computer screen (Almquist et al., 2009)

Opportunities for Exam Room Computer Adopters to Mentor Non-Adopters

The clinicians who have elected to integrate the exam room computer into their daily work have remained mindful of the need to monitor their behavior in the presence of the patient and consciously adopted techniques to address both the patient and the computer in the context of clinic visit. This behavior is an example of "clinicians who value caring and sharing in the patient-clinician relationship and approach communication not as simply the transfer of information but also as the

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formation of relationships" (Epstein & Street, 2007, p. 3). These clinicians should be

encouraged by clinic management to actively share their experiences using the exam

room computer in the presence of the patient as a means to encourage other clinicians

with a similar approach to the patient to try the techniques learned through trial and

error. This would, in turn, lower the resistance of the non-adopting clinicians to using

the exam room computer as predicted by the modified technology acceptance model

for physicians (Chau & Hu, 2002). Encouraging regular discussions between the

clinicians about the changes produced in the patient-clinician relationship by the

introduction of an exam room computer would set the stage for the dialogue that needs

to occur when attempting to solve a wicked problem. The necessary elements are

present in the supportive culture of the clinic and the conscious mindfulness of the

clinicians. The only thing missing is a committed time for interaction.

Ecological Model as a Framework for Managing Change Due to HIT

  The ecological model of patient–clinician communication proposed by Street

(2003) and refined for application to communication in cancer care by Epstein and

Street (2007) presents a framework that would help guide The West Clinic to better

incorporate the EMR and exam room computers into the daily work of the clinic. The

West Clinic culture values and the clinicians currently practice the patient-centered

communication behaviors at the heart of the model. The next step involves

recognizing and managing the influences of the larger healthcare environment,

particularly the introduction of HIT, on the individual relationships within the clinic.

Encouraging regular discussions (dialogue) about changing relationships would

provide the environment necessary for solving wicked problems as they arose and/or evolved.

Epstein and Street (2007) recommended twelve specific areas for future descriptive communication research including to "observe how health care systems currently foster or impede patient/family–clinician communication" (p. 106). Investigations such as the present study are necessary to better understand the influence of the exam room computer and its modifying effects on the patient– clinician interaction. Although this study did not observe the West Clinic clinicians interacting with their patients, I hope it did stimulate the participating clinicians to think about additional ways they could incorporate the exam room computer into their practices for the benefit of their patients.

Recommendations for Future Research

HIT, Patient–Clinician Communication, and Disparity of Care Issues

As mentioned above, Epstein and Street (2007) acknowledged gaps in the current literature regarding patient-centered cancer communication and developed a list of specific areas requiring further descriptive studies to better understand the impact of effective patient–clinician communication on improving the quality of life of cancer patients. In addition to specific topics requiring further investigation, these authors also recommended patient populations and health care settings requiring increased attention. Since middle-class white women of middle age with a high school education were the most studied patient population in published studies, information regarding the care of racial and ethnic minorities is limited. Given published studies of disparities in health care among minority populations, particularly cases of delayed

diagnosis or refusal of cancer treatment, few studies of cancer care and decision-

making have been designed to evaluate the communication factors potentially

contributing to this disparity. The following discussion presents a brief review of

different factors, particularly those associated with clinicians, postulated to contribute

to health care disparities among minority populations. This review intends to provide a

knowledge base to support the argument that further studies assessing the specific case

of communication between minority patients and their clinicians, including the effects

of introducing health information technology into the exam room, are critical to

understanding and eliminating such disparities in care.

  Unequal care and aversive racism. In March 2003 the Institute of Medicine

(IOM) published a report entitled *Unequal Treatment: Confronting Racial and Ethnic*

Disparities in Health Care (Smedley et al., 2003), as a response to a charge from the

United States Congress to investigate the pervasive research findings from multiple

studies that demonstrated racial and ethnic minorities are less likely to receive the

same medical care as white Americans. The IOM committee tasked with the

investigation defined disparities in healthcare as racial or ethnic differences in the

quality of care that were not a result of access-related factors or patient preferences

when the patient was able to choose a particular treatment based on a full and accurate

understanding of the full range of treatment options available. The analysis

concentrated on two levels: 1) healthcare system operations along with the

legal/regulatory environment impacting the function of the system and 2) effects at the

level of the individual, patient-clinician interaction that resulted in differences in care

due to "biases, prejudices, stereotyping, and uncertainty in clinical communication and

decision making" (Smedley et al., 2003). While many disparities were found to be

associated with socioeconomic differences, the committee found evidence of

persistent health care disparities based on racial and ethnic factors after adjustment for

socioeconomic and access-related factors across a wide range of disease and treatment

conditions (Access-related factors refer to the ability of the patient to enter the health

care system at will. For individuals without health insurance or health care facilities

near their home, the issues of disparity of care are more complex and involve other

parameters beyond the scope of this discussion.) The committee published five

primary findings:

> Finding 1-1: Racial and ethnic disparities in healthcare exist and, because they
> are associated with worse outcomes in many cases, are unacceptable.
>
> Finding 2-1: Racial and ethnic disparities in healthcare occur in the context of
> broader historic and contemporary social and economic inequality, and
> evidence of persistent racial and ethnic discrimination in many sectors of
> American life.
>
> Finding 3-1: Many sources—including health systems, healthcare providers,
> patients, and utilization managers—may contribute to racial and ethnic
> disparities in healthcare.
>
> Finding 4-1: Bias, stereotyping, prejudice, and clinical uncertainty on the part
> of healthcare providers may contribute to racial and ethnic disparities in
> healthcare. While indirect evidence from several lines of research supports this
> statement, a greater understanding of the prevalence and influence of these
> processes is needed and should be sought through research.
>
> Finding 4-2: A small number of studies suggest that racial and ethnic minority
> patients are more likely than white patients to refuse treatment. These studies
> find that differences in refusal rates are generally small and that minority
> patient refusal does not fully explain healthcare disparities. (Smedley et al.,
> 2003, p. 19)

The clinician-related factors at the level of interaction with individual patients

that introduced disparities included clinician bias against minorities, a trend toward

less diagnostic certainty when interacting with minority patients, in addition to clinician beliefs (or stereotypes) about minority health and behaviors. Patient reactions to these clinician behaviors also had the potential to introduce disparities.

The psychological literature suggests that despite the best of intentions, many White clinicians who do not believe they are prejudiced, may exhibit unconscious, implicitly negative, racial attitudes and stereotypes. Such implicit attitudes are more subtle and may occur unintentionally. Dovidio and colleagues (2004) coined the term *aversive racism* to describe a person who is low in explicit bias toward minority groups, yet still maintains implicit racial biases. Clinical interactions in racially discordant dyads of minority patients and clinicians with attitudes consistent with aversive racism tend to be clouded by patient perceptions of "mixed messages" from the clinician. Penner et al. (2010) surveyed patients and physicians in an Midwest inner city clinic in order to assess the presence of aversive racism and effects on the patient-clinician interaction. Predicting that Black patients would respond primarily to a clinician's implicit biases, the researchers first determined a clinician's level of implicit bias using the Implicit Association Test (IAT), then interviewed both the clinician and patient after the clinic visit. Black patients reacted more negatively toward White or Asian clinicians who tested high in implicit bias and low in explicit bias than all other combinations of implicit and explicit bias among White or Asian clinicians participating in the study.

Despite the calls for reform in the 2003 *Unequal Care* monograph (Smedley et al., 2003) two recent studies recognized the persistence of disparities in health care delivery based on race, ethnicity, gender, and socioeconomic status. Suggesting this to

be fueled in part by the effects of clinician's implicit and explicit bias on communication behaviors and perceptions of patients, Sabin, Nosek, Greenwald, and Rivara (2009) reported the results of testing for implicit racial attitudes using the Race Attitude Implicit Association Test (IAT) offered on-line at the Project Implicit web site. The authors reported the IAT test results of 2,535 individuals who self-identified as physicians (MDs) by physician race, ethnicity, and gender, from among a total of 404,277 visitors to the site who took the test over a 28 month period between January 12, 2004 and May 12, 2006. Although not a truly representative sample, the authors believed the size and diversity of the volunteer sample of test-takers provided a useful pool of respondents for comparative analysis. The analysis concluded a) implicit and explicit attitudes about race among responding MDs mirrors the pattern seen in the general population where an implicit preference for Whites over Blacks exists; b) African-American MDs reflected the results similar to that of large groups of African-American Race Attitude IAT test-takers, and showed no implicit racial bias, on average, although there were wide variations among individuals in either pro-White or pro-Black implicit associations; c) males consistently showed a stronger preference for Whites on both implicit and explicit measures; and d) the MD subgroup, showed modestly related implicit and explicit attitudes toward race, supporting the possibility that one could explicitly voice egalitarian beliefs while concurrently holding implicit attitudes that favor Whites over Blacks. Klonoff (2009) also acknowledged the continued evidence of disparities in a recent review, and concluded the issue was more complicated than generally presented, particularly since factors associated with

clinicians, patients, and health care settings, as well as the interactions between these

groups, all contributed to the observed disparities in care reported in the literature:

> So, while a clinician may experience some bias toward a member of an ethnic
>
> group, it is unlikely that that bias alone in the absence of poor communication,
>
> medical mistrust, treatment 'refusal,' or any of the other myriad factors that
>
> also contribute to erroneous or inadequate diagnosis and treatment decisions,
>
> would be sufficient to produce the magnitude and breadth of differences
>
> reported earlier. As the causes for these disparities are complex, no doubt the
>
> interventions will be equally complex. (p. 61)

Social cognition research provides another avenue for understanding the

presence of clinician implicit bias toward minorities despite the same clinician's

conscious effort to be egalitarian. Burgess, Fu, and van Ryn (2004) explain the

presence of two separate, but interconnected, learning and memory systems, termed as

slow-learning and *fast-binding*. The slow-learning system extracts and applies

information rapidly, frequently unconsciously, in order for a person to be able to

process information within a complex world without consciously addressing every

stimulus. The primary failure of this system occurs when general information

associated with a particular category in the form of a stereotype is inappropriately

applied to an individual. The fast-binding system is used for "hard thinking" or to

process decision-making activities that require considerable cognitive effort. An

individual engages the fast-binding system when motivated to do so and when

sufficient cognitive resources including ample time and freedom from distraction are

available. Since the fast-binding system requires significant cognitive resources,

humans frequently utilize the slow-learning system to process stimulus information immediately, leading to the risk of incorrect application of stereotypes. The presence of the dual cognitive system can permit a clinician to have conscious beliefs that are inconsistent with their automatic, unconscious reaction to minority patients. Research indicates the automatic, unconscious thoughts dominate during periods when the individual is busy with other tasks, distracted, tired, pressured due to time constraints, or anxious. The implicit cognition supplied by the slow-learning system is generally in the form of emotions, feelings, and behaviors not easily expressed verbally. Such responses represent early learning and exposure to specific images, usually negative. Explicit cognition, on the other hand, produced by the fast-binding system, is accessible to the conscious mind, available for introspection, and can be verbalized relatively easily. When asked directly about feelings and beliefs, a person will access the fast-binding system when responding honestly about consciously held beliefs.

Clinicians can benefit from culturally competent communication training, learning methods to solicit the patient's understanding of his or her health condition and allowing time for the patient to ask questions and express concerns (Ashton et al., 2003). Clinicians can learn through cultural competence training and mindful practice methods to elicit and foster the patient's full participation in the clinical encounter (Dobkin, 2009). Unfortunately, clinics that serve predominately minority populations tend to be more chaotic, leading to conditions where "time pressure, insufficient resources, and complex patients likely constitutes a 'perfect storm' that contributes to the challenges that physicians face in providing quality care to large proportions of minority patients" (Varkey et al., 2009, p. p. 248). An experiment described by

Burgess et al. (2004) illustrates how the self-reported (conscious) racial attitudes of

Whites toward Blacks is reflected in verbal communication, but the unconscious,

implicit attitude will be expressed in the individual's nonverbal behavior. Thus,

clinicians who subscribe to unconscious negative minority stereotypes, will express

these implicit beliefs through nonverbal behavior. The nonverbal behavior is then read

and interpreted by the target minority patient as the individual's true attitude (based on

the opinion of most individuals that nonverbal communication is more difficult to

"fake" and thus more authentic in a social interaction. This explains the ability of

minority patients to recognize a clinician's implicit bias and react accordingly. This

also explains the potential risk for clinicians to exhibit implicit bias toward minority

patients in a chaotic, pressured clinical setting despite their best intentions to treat all

patients equally.

      Other cultural mediators affecting clinical talk. Cultural mediators of

patient–clinician communication persist. For example, observational studies indicate

minority (Black and Latino) cancer patients are less likely to bring a companion with

them to clinical visits and tend to ask fewer questions compared to White patients

during cancer treatment. Since the presence of a companion caregiver tends to increase

the number of questions asked during the visit, this behavior places the minority

patient at risk of receiving less information regarding treatment options (Eggly et al.,

2011). Cultural factors impact the patient's creation of a medical narrative or

explanation of illness as well as conversational behavior with clinicians (Perloff et al.,

2006). The presence or absence of a trusting relationship between the patient and the

clinician affects the amount of information revealed by Latina women patients

(Julliard et al., 2008). Language use plays a major role in effective patient–clinician communication. A clinician may fail to recognize asthma severity in Black (as compared to White) patients based on how the patient describes his or her symptoms. Black patients are more likely to describe the breathlessness that represents an acute asthma attack as upper airways symptoms (tight throat) while White patients report lower airway symptoms (deep breath), leading to an inaccurate assessment of asthma severity in Black patients and a corresponding failure to prescribe adequate treatment (Diette & Rand, 2007). Finally, Rawls (2000) offers the most compelling argument to explain a potential source of racial differences arising from conversational patterns that, in turn, may affect the medical care of minority populations. Individuals who self-identify as White engage in *categorical talk*, a conversational pattern that asks multiple questions regarding topics such as age, occupation, or place of residence. Individuals who self-identify as Black, on the other hand, engage in a different conversational pattern – *setting talk,* a conversational style more concerned with topics within the immediate context (where the conversation occurs, what one did before the conversation). The mismatch in conversational objectives can lead to Black patients feeling interrogated when a White clinician pursues categorical talk to elicit information the Black patient may not perceive as relevant to the conversation. The miscommunication persists when neither participant can engage in a conversational style that leads to common goals and expectations. Black patients ask fewer questions, share less personal information, and thereby potentially reinforce stereotypical attitudes among White clinicians that Black patients are less inclined to process health

information. The White clinician then provides a less than adequate explanation of the Black patient's health condition and the misunderstanding is perpetuated.

Potential contribution of HIT to disparity of care. Rawls (2000) description of mismatched conversational patterns between Black patients and White clinicians presents a potential problem associated with the introduction of an EMR. Templates are frequently used as the basis for the clinical notes leading clinicians to ask more categorical questions to "fill in the blanks" of the template. This type of information collecting behavior could exacerbate the mismatch of categorical talk vs. setting talk, possibly increasing the likelihood for another source of misunderstanding (preferred conversational style) between clinicians and minority patients after the introduction of an EMR. Despite an increasing number of studies investigating the effects of the EMR on patient–clinician communication, I found no studies designed to investigate a relationship between the introduction of HIT and disparity of care issues. Given the complexities of both unintended consequences associated with introducing HIT into the exam room and the multiple interactions that cause and perpetuate disparity of care for minority populations, further investigations into the potential contribution of differing conversational patterns to miscommunication between patients and clinicians are crucial.

Market Value of Empathic Communication Between Clinicians and Patients

The critical importance of empathic communication between clinicians and patients underlies the primary assumptions of the present study. However, is clinical empathy routinely valued in the real world of 21st century medicine? Empathy continues to be a frequent subject of medical blogs (Nickson, 2010; van den Broek,

2010), medical news web pages (Boyles, 2011), journal editorials (Filip, 2009; Frankel, 2009), and letters to the editor (Dubin, 2010). The September 2009 issue of *Academic Medicine* contained five articles on empathy and generated a debate in the August 2010 issue of *Canadian Family Physician* arguing opposing perspectives on whether family physicians should be empathetic [sic] (Lussier & Richard, 2010; Marchand, 2010). Humanities programs have been instituted in medical schools with the goal of increasing empathic behavior among medical students (S. Rosenthal et al., 2011), yet some studies continue to show a decline in patient-centered communication and empathy as students move from didactic training into clerkships (Bombeke et al., 2011). It would appear from the number of journal articles and opinion pieces generated about the subject of clinical empathy, its importance to clinical communication remains a hotly debated topic.

Carmel and Glick (1996) surveyed physicians on staff at the Soroka Medical Center in Beer-Sheva, Israel – first dividing them into three groups according to their level of empathic-compassionate behavior (high, intermediate, or low) as judged by their fellow staff physicians. The physicians considered by their peers to be the highest in empathy-compassion tended to be younger than their peers with fewer years of medical practice. Six months later, a follow-up questionnaire asked the responding physicians to complete demographic questions and instruments to assess each individual's measure of self-esteem, trait-anxiety, pro-social attitudes, empathy, work satisfaction and burnout. The physicians considered high in empathy-compassion scored higher on pro-social, non-stereotypic attitudes toward patients, and empathy measures. Self-esteem measures were not significantly different among the three

groups of physicians. The high empathy-compassion physicians also reported similar

levels of work satisfaction as the intermediate and low level empathy-compassion

physicians, but expressed higher levels of emotional exhaustion (burn-out) than the

other two groups. The investigators asked respondents to rank order the following six

qualities or behaviors: a) medical knowledge and or medical skills, b) good relations

with medical personnel, c) research and publication abilities, d) human relation to

patients and ability to understand patients' problems and emotions (empathy), e)

administration and management abilities, and f) devotion and readiness to help

patients first as qualities of a "good doctor." Respondents were then asked to rank

same six qualities or behaviors on importance to promotion within the hospital.

Empathy was judged to be the most important characteristic (rank of 1) of a good

doctor, but the least important characteristic (rank of 6) to be considered for

promotion. This study, although 15 years old, would probably hold true today when

judging the importance of empathy-compassion as a desirable characteristic for

promotion.

Clinical empathy is a complex phenomenon. Halpern (2001) described the

affective nature of empathy as emotional reasoning. Other authors have stressed the

interactive nature of empathy in the clinical encounter as a response to patient cues in

order to relieve the patient's suffering (Garden, 2009). Many authors relate clinical

empathy to clinician behaviors including active listening to the patient's narrative

(Charon, 2001) as well as recognizing and responding to patient cues (Suchman et al.,

1997). Detractors, on the other hand, use an argument similar to that offered as a

response to Engel's (1977) introduction of the biopsychosocial model – there is not

enough time in the average clinic visit for the clinician to perform these recommended activities. Marchand (2010), arguing against the need for family physicians to be empathic, wrote

> Empathy, sympathy, and compassion are emotions that are always seen in a positive light; however, I don't think that family physicians should be any more empathetic than the average firefighter. I support a more sober approach. I think that family physicians should develop a clearer notion of their social responsibility and the role of emotions in a life lived as a moral person. Physicians in a general and family physicians in particular already have many duties. Should empathy be one of them? I say no! (p. 741)

This statement stands in stark contrast to the assertion by Davis (2009) that despite the complexity of the busy clinician's day-to-day practice

> …health care is about caring for and connecting with our fellow human being. An empathetic approach to patient care has the potential to improve the quality of the provider–patient relationship and the effectiveness of treatment, as well as to enrich the provider's own life by creating deeper, more meaningful personal connections (p. 76)

Pederson (2009) reviewed 206 published empirical studies of empathy and found significant variation in defining empathy as well as the tendency of studies to separate of empathy from other aspects of clinical perception, judgment, and communication. Recognizing the same variation in the literature, Neumann and colleagues (2009) sought to define clinical empathy (CE) as a core feature of the

patient–clinician interaction with a therapeutic potential, offering the following hypotheses for future research:

(a) CE is a fundamental determinant of quality in medical care because it enables the clinician to fulfill key medical tasks more accurately, thereby leading to enhanced health outcomes.

(b) A broad range of biographical experiences influences the development and promotion of CE. This has great implications for medical education and medical care considering that CE is a core determinant of quality in medical care.

(c) Situational factors have a strong impact the promotion of CE. This has also great implications for the organization of work and the organizational development in medical care considering that CE is a core determinant of quality in medical care (p. 344).

In addition to the above features of CE, investigations of empathy from a neurobiological perspective showed differing brain activation patterns on functional MRI imaging between cognitive empathy and emotional empathy (Schulte-Ruther, Markowitsch, Fink, & Piefke, 2007). Combining this finding with earlier research connecting mirror neurons with expressions of empathy (Gerdes, Lietz, & Segal, 2011) the concept of empathy now includes a neurobiological component that should also be investigated in future research studies. (In a later paper, Neumann et al. (2010) claim a neurobiological basis for investigating the specific effects of the patient–clinician interaction in promoting successful health outcomes without implicating clinical empathy as the source of observed positive effects.)

Most primary care clinic visits average 15 minutes in length (Tai-Seale, McGuire, & Zhang, 2007), a time frame that is not conducive to the evaluation of complex medical problems. The 15-minute visit also presents a dilemma for clinicians who primarily care for minority populations. As mentioned above, clinicians who are stressed and rushing between patients with little time to adequately address all of the patient's issues are more likely to revert to implicit attitudes toward minority patients contributing to disparity of care issues (Fiscella & Epstein, 2008). A new medical model, the Medical Home, has been introduced to improve the quality of primary care through long-term relationships between patients and a health care team under the guidance of a physician. First introduced by the American Academy of Pediatrics in 1967 (Sia, Tonniges, Osterhus, & Taba, 2004), the concept has been reintroduced as s a model of a "patient-centered, multi-faceted source of personal primary care…based on a relationship between the patient and physician, formed to improve the patient's health across a continuum of referrals and services" (T. C. Rosenthal, 2008, p. 427). Carrier, Gourevitch, and Shah (2009) reviewed the multiple definitions established for the Medical Home by agencies such as the Patient-Centered Primary Care Collaborative, the National Committee for Quality Assurance, and the Commonwealth Fund in order to establish a shared vocabulary for policy-makers, clinicians, and health care payers wishing to develop medical home models. Adoption of health information technology and decision support systems was a key component of all of the definitions available in the literature. In light of the role of clinical empathy plays in a patient-centered practice of medicine it is critical that future research on the

development of the medical home also include investigations of the role of clinical empathy as recommended in the discussion above.

Summary of the Dissertation

The present study is a primarily qualitative case study designed to examine the patient–clinician relationship in a limited and specific scenario. The West Clinic was selected as a site for the study based on its reputation of a commitment to patient-centered medical care among oncology clinical practice groups located in the Mid-South geographical area. Nine clinicians (six physicians and three nurse practitioners) were recruited as an exemplary clinical group to respond to questions about how their practice had or had not changed after the introduction of an electronic medical record (EMR) system that included an exam room computer.

Several factors influence the patient-clinician interaction including characteristics belonging to the patient, the clinician, and the relationship itself. Patient attributes that contribute to the success or failure of the relationship include gender, ethnicity, and socioeconomic indicators such as income and education (Roter & Hall, 2006). The interaction is further modulated by cultural differences governing patient participation (Schouten, Meeuwesen, Tromp, & Harmsen, 2007) and the patient's management of information during a medical interactions (Meeuwesen, Tromp, Schouten, & Harmsen, 2007). Similarly the clinician's gender, ethnicity, and inherent beliefs also contribute significantly to the development of the relationship (Street et al., 2008). The environment, defined as the surrounding, complex mix of medical, legal, political, and economic issues, where the interaction occurs, further stimulates or inhibits the development of a mutually beneficial relationship (Street, 2003).

Chapter two reviewed the multi-disciplinary literature describing the multiple influences that enhance or limit communication between the patient and clinician as well as an overview of various models that have been proposed as representations of the ideal patient–clinician relationship. The discussion also demonstrated the competing strategies currently co-existing in the medical marketplace. Conflicts are inevitable in discussions between advocates who propose to improve medical care by reducing medical errors through the introduction of an EMR and equally strong proponents of improved communication between all of the actors in a medical encounter – patients, families, clinicians, and administrators – as the better method for improving medical care in the United States.

The introduction of an EMR was advocated to prevent medical errors (Kohn et al., 1999). The EMR works best in preventing medical errors associated with missing information. The EMR does not prevent errors caused by miscommunication, and can be instrumental in introducing such errors by modifying how healthcare workers talk to each other (Pirnejad et al., 2008). The EMR has created barriers to effective communication, particularly nonverbal communication, between patient and clinician (McGrath et al., 2007), requiring the clinician to be creative in order to maintain patient-centered communication in-spite of the various obstacles presented by the exam room computer as a portal to the EMR (Frankel et al., 2006). Sadly, not all clinicians are similarly motivated to develop new communication strategies to meet this challenge.

Solberg, Hroscikoski, Sperl-Hillen, Harper, and Crabtree (2006) sought to understand the type of practice setting most likely to provide exceptional care by

identifying the organizational and cultural attributes of small medical practices that had successfully achieved high scores on public performance report cards for preventive and chronic care in Minnesota. A qualitative case study of a family practice group of fifteen physicians identified a patient-centered focus as the most crucial factor among twelve guiding principles responsible for the group's success. The present study chose an equally exemplary group of clinicians with a similar patient centered organizational culture to describe another adaptive trait necessary for continued success in the ever-evolving environment of U. S. healthcare — how to provide empathic care while using an exam room computer as part of an EMR system. The introduction of an electronic medical record at the West Clinic mirrored many of the observations found in the literature (McGinn et al., 2011). The clinic management has proceeded cautiously, and clinicians have been encouraged, but not forced, to use the exam room computer, leading to relatively low incorporation of the exam room computer into the typical clinic visit. All of the study participants expressed thoughts and described actions consistent with both an empathic and mindful (reflexive) practice consistent with patient-centered communication (Epstein, 1999). The few clinicians who were using the exam room computer in the presence of the patient had developed coping measures to maintain their connection to the patient and chose not to use the computer when deemed necessary to better attend to the patient's emotional needs. The clinicians who chose not to use the computer in the exam room extensively in the presence of the patient justified their decision on the grounds the computer prevented them being able to interact with the patient in their preferred manner.

I designed the study to look the introduction of an exam room computer as a

wicked problem, a problem that could not be solved using a linear methodology. The

process of solving a wicked problems was framed as similar to the iterative method of

developing an empathic relationship (More, 1996), reaching a shared understanding

between patient and clinician in relationship-centered care (Suchman, 2006), or the

process of describing a problem using qualitative research methods (Miller &

Crabtree, 1999b). Building on methods described in the organizational communication

literature to explain the response to the introduction of technology in that field in the

1990's (Pacanowsky, 1995), I interviewed an exemplary group of clinicians. I

believed individuals who had adapted their practice to affectively interact with their

patients while using an exam room computer during the visit could provide valuable

information for teaching other clinicians possible methods to use in order to

successfully integrate the computer into their daily routine. Unfortunately only three

physicians out of the group of nine clinicians interviewed had decided to adapt their

day-to-day practice to include the exam room computer. Even more disappointing,

although the clinic culture was highly patient-centered, and described as by each of the

participants as "highly supportive" and "like a family," the clinicians had little

opportunity to interact with each other while caring for their panel of patients. There

was no structured time allotted for the adopters to actively share their experience with

the non-adopters. Wicked problems are best solved through dialogue (Conklin, 2006),

and failure to encourage discussions about the changes associated with the EMR or

provide dedicated time for interaction between members of the clinical staff was

potentially a factor in the limited the adoption of computer use by individual clinicians.

The information gleaned from the interview data answered both research questions:

RQ1: What effect, if any, does an exam room computer have on a clinician's empathic behavior toward their patients?

RQ2: What are the barriers, if any, to empathic communication between clinician and patient when an exam room computer is used to document the visit?

For RQ1, the exam room computer was perceived as a third interaction and had changed the dynamics of the clinical visit. The clinicians who chose to use the computer while the patient was in the room had adopted various coping strategies to facilitate empathic communication despite the presence of the computer. When situations arose where the computer presented too great a barrier, they concentrated solely on the patient's needs and completed the computer documentation at a later time. The second research question identified several barriers as disadvantages to using an exam room computer. These included physical environmental factors, including ergonomic design of the exam room, and relational problems created by system failures/slowness where the clinician felt obligated to address the interference of the "damn computer" during the conversation with the patient to explain interruptions in the clinical visit related to system problems.

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Appendix A

Wicked Problems

Urban planners Horst Rittel and Melvin Webber first defined social planning problems as either tame or wicked problems (Rittel & Webber, 1973). While tame problems were well defined, stable, and linear with a clear endpoint when the problem was solved, wicked problems were not so simple. Ritchey (2005) lists the 10 criteria Rittel and Webber specified as necessary for a complex long-term social and organizational problems to be deemed wicked problems.

There is no definite formulation of a wicked problem.

Wicked problems have no stopping rules.

Solutions to wicked problems are not true-or-false, but better or worse.

There is no immediate and no ultimate test of a solution to a wicked problem.

Every solution to a wicked problem is a 'one-shot operation'; because there is no opportunity to learn by trial-and-error, every attempt counts significantly.

Wicked problems do not have an enumerable (or an exhaustively desirable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan.

Every wicked problem is essentially unique.

Every wicked problem can be considered to be a symptom of another [wicked] problem.

The causes of a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution.

[With wicked problems] the planner has no right to be wrong (pp. 2-3).

Appendix B

Tablet Computers and the Patient Care Monitor (PCM) at The West Clinic

When patients first arrive at the clinic for an appointment and before they see the clinical staff, an administrative assistant hands them a tablet computer pre-loaded with the Patient Assessment, Care, and Education system™ (PACE). The PACE system™ includes two modules: the Patient Care Monitor™ (PCM™), a psychometric instrument to assess the patient's current health status compared to the previous visit, and a patient education system that allows the patient to access information in various media formats retrieve information about selected medications and/or disease states. The patient may review the educational information on the tablet computer or print out the information they would like to have on hand for later review or reference. The staff of the clinic encourages each patient to print out as much information as he or she would like.

After receiving the tablet computer, the patient answers a series of questions that comprise the PCM™, a psychometric instrument that queries the patient about symptoms they experienced in the interval between appointments. PCM™ was developed from a prior highly reliable and valid instrument, the Cancer Care Monitor (CCM) (Fortner et al., 2003). The PCM™ is designed to measure six domains of patient symptoms and functioning (Fortner et al., 2006) through a self-administered review of systems. The patient reviews a list of symptoms arranged by body system, indicating which symptoms are currently present and rating its severity on a 10 point Likert scale. After completion of the PCM™, the patient's responses are uploaded wirelessly to the EMR system and compiled to produce the six symptom burden

indices. These indices include General Physical Symptoms, Treatment Side Effects, Acute Distress, Despair, Impaired Ambulation, and Impaired Performance. A hard copy is then printed utilizing a graphic presentation that draws the clinician's attention to the symptoms judged most severe by the patient, as well as by comparison to responses given for the same symptoms during the previous visit. The graphical representation allows the clinician to concentrate his or her attention on the areas of greatest concern for the patient during the office visit. The print-out can also be used as feedback for the patient to monitor their treatment progress from visit to visit (Mark et al., 2007). Figure 3 is an example of the printout for a test patient.

Sample Printout of Patient Responses to PACE Symptom Survey

PATIENT CARE MONITOR REPORT

Patient Name: ALICE B TEST PATIENT
DOB/Age/Sex: Jan 1 1980 / 27 / Female
Doctor: Kurt Tauer

MR #:
Survey Date/Time: Sep 10 2007 (Mon) / 2:21PM
Version: English
Dx/Dx Date:

Review of Systems	Current 9/10/07	8/28/07	8/27/07	First 3/23/06
1. Allergic/Immunologic				
Sinus problems	1	[X]	3	9
Hives (welts)	0	[X]	5	4
2. Constitutional				
Chills ↓	3	10	4	0
Fever ↓	2	9	2	0
Weight gain ↓	1	5	2	0
Weight loss ↓	0	3	1	0
Fatigue ↓	0	4	1	0
3. Eyes				
Eyes tearing (watery eyes) ↑	10	7	8	0
Trouble seeing ↓	4	9	6	0
Dry eyes	[X]	8	7	0
4. ENT/Mouth				
Dry mouth ↑	9	6	10	0
Change in taste of food ↑	8	5	9	0
Sore throat ↑	6	3	7	0
Mouth sores/ulcers ↑	5	2	6	0
Trouble swallowing ↑	4	1	2	0
Difficulty hearing	3	2	0	0
5. Pain				
Headache	1	[X]	1	9
Physical pain	0	[X]	2	9
6. Cardiovascular				
Rapid heart beat ↓	1	5	0	0
Swelling ↓	0	7	0	4
Chest pain	0	[X]	0	9
7. Respiratory				
Coughing	7	9	2	0
Wheezing ↓	5	8	3	0
Difficulty breathing ↓	5	10	4	0
8. Gastrointestinal				
Decreased appetite	3	5	7	0
Constipation ↓	3	7	10	0
Heartburn (indigestion) ↓	3	7	6	0
Nausea (queasy feeling) ↓	2	6	6	0
Increased appetite ↓	1	6	9	0
Vomiting ↓	0	7	7	0
Diarrhea ↓	0	8	8	0
9. Genitourinary				
Problems with urination ↓	0	3	5	4
Vaginal itching ↓	0	6	2	4
Vaginal dryness ↓	0	7	0	4
Vaginal bleeding ↓	0	8	0	4
Vaginal discharge ↓	0	9	1	4
Menstrual pain/cramping	[X]	4	3	4
10. Musculoskeletal				
Weakness of body parts ↓	4	8	2	4
Joint pain	4	[X]	3	4
Muscle aches	4	[X]	4	4
11. Integumentary (skin, breast)				
Hair loss ↓	1	7	0	4
Breast tenderness ↓	0	7	5	4
Nipple discharge ↓	0	7	9	4
Itching ↓	0	7	2	4
Rash	0	[X]	9	4
Dry skin	0	[X]	7	4
Nail changes	0	[X]	1	4

Review of Systems	Current 9/10/07	8/28/07	8/27/07	First 3/23/06
12. Neurological				
Memory loss	1	0	3	4
Burning in hands/feet	1	3	5	4
Dizziness/lightheadedness ↓	1	4	6	4
Trouble thinking (concentrating)	0	0	2	4
Daytime sleepiness	0	0	3	4
Trouble sleeping at night	0	2	4	4
Numbness/tingling ↓	0	3	5	4
13. Endocrine				
Day sweat ↓	2	5	9	9
Sexual problems ↓	1	6	10	9
Night sweat ↓	0	4	7	9
Hot flashes/flushes ↓	0	6	9	9
14. Hematologic/Lymphatic				
New lump/mass	0	[X]	8	9
Bruising	0	[X]	7	9
Easy bleeding	0	[X]	6	9
15. Psychiatric				
Crying/feeling like crying	2	·	·	4
Worry	2	·	·	4
Feeling worthless	2	·	·	9
Lost interest in people	1	·	·	4
Feeling helpless	1	·	·	4
Absence of pleasure	1	·	·	4
Sad (depressed)	0	·	·	4
Nervous, tense, anxious	0	·	·	4
Feeling hopeless	0	·	·	4
I would be better off dead	0	·	·	4
Feeling guilty	0	·	·	4
16. T-Scores				
Despair/Depression	56.8	·	·	69.1
Distress	51.4	·	·	62.8
17. Physical Functioning				
Sit up	1	·	·	9
Walk	1	·	·	9
Driving	1	·	·	9
Household work	1	·	·	9
Run errands	1	·	·	9
Stay out of bed	0	·	·	9
Bathe or dress	0	·	·	9
Run	0	·	·	9
Light work or activity	0	·	·	9
Hard work or activity	0	·	·	9
Function normally	0	·	·	9
Cook for self	0	·	·	9
Attend social activities	0	·	·	9
Attend paid job	0	·	·	9

Symptom scores & severity: 0=none; 1-3=mild; 4-6=moderate; 7-10=severe; ↑ = worse by ≥ 3 points; ↓ = better by ≥ 3 points; ■ = severe; = moderate; [X] =skipped; · =not asked; ↻ = referral suggested;

Notes:

History

Health Habits	
Social History	
Medical History	
Family Med History	

Alerts/Changes

Refill			

Signature: Date:

This report includes information supplied by the patient. It is intended to supplement information collected by the physician and/or nurse. Information contained in this report should not be used to make a diagnosis(es) of physical or psychiatric symptoms, to arrive at toxicity ratings or to make treatment decisions without appropriate clinical interview as deemed by the physician.

TN-WC-HUM   Result ID: 477202   02-101-120305

Appendix C

Demographic Interview Questions

1. Age: (a) 26 – 35 (b) 36 – 45 (c) 46 – 55 (d) 56 – 65 (e) 66 – 75 (f) 76 – 85

2. Gender:

3. Ethnicity:

4. What year did you finish your formal clinical education? What level, school, residency, or fellowship was that?

5. How long have you been practicing in oncology? Did you practice in another area of clinical medicine prior to oncology? If so, what?

6. Was training in communication techniques part of your basic clinical training? Have you attended any communication skills training programs as a practicing clinician? If so, was the training useful for your practice?

7. How would you describe your computer skills?

    a. Very basic, "I know just enough of the essentials to get through a clinic visit."

    b. Intermediate, "I know a lot about the system and but occasionally need help from someone else. I still have a lot to learn to be as proficient as I think I need to be using the computer."

    c. Expert, "I am interested in all aspects of practice computerization and usually the first person to adopt new functions. Other clinicians come to me for help with computer problems."

8. How long have you been associated with the West Clinic? Have you been associated with other Oncology practices prior to the West Clinic?

9. How would you describe the patient care environment of the West Clinic? How does this environment compare with the environment of other practices with which you have been associated?

10. How would you describe your input into the decisions to introduce new technologies, such as exam room computers, into the clinic? Are you satisfied with this level of input?

Appendix D

The Jefferson Scale of Physician Empathy (JSPE)

The JSPE consists of 20 statements. Respondents indicate the degree of agreement with each statement using a seven point Likert scale, where the higher the rank, the more agreement with the statement. The 20 statements of the JSPE-HP are listed below.

1. My understanding of how my patients and their families feel does not influence medical or surgical treatment.

2. My patients feel better when I understand their feelings.

3. It is difficult for me to view things from my patients' perspective.

4. I consider understanding my patient's body language as important as verbal communication in caregiver patient relationship.

5. I have a good sense of humor that I think contributes to better clinical outcomes.

6. Because people are different, it is difficult for me to see things from my patient's perspectives.

7. I try not to pay attention to my patients' emotions in history taking or in asking about their personal beliefs.

8. Attentiveness to my patients' personal experiences does not influence treatment decisions.

9. I try to imagine myself in my patients' shoes when providing care to them.

10. My patients value my understanding of their feelings, which is therapeutic in its own right.

11. Patients' illnesses can be cured only by medical or surgical treatment; therefore, emotional ties to my patients do not have a significant influence on medical or surgical outcomes.

12. Asking patients about what is happening in their personal lives is not helpful in understanding their physical complaints.

13. I try to understand what is going on in my patients' minds by paying attention to their nonverbal cues and body language.

14. I believe that emotion has no place in the treatment of medical illness.

15. Empathy is a therapeutic skill without which success in treatment is limited.

16. An important component of the relationship with my patients is my understanding of their emotional status as well as that of their families.

17. I try to think like my patients in order to render better care.

18. I do not allow myself to be influenced by strong personal bonds between my patients and their family members.

19. I do not enjoy reading nonmedical literature or the arts.

20. I believe empathy is an important therapeutic factor in medical or surgical treatment.

Hojat (2007) published descriptive statistics for the generic version of the JSPE that included the above items based on results obtained from 193 medical students and 41 residents who completed the instrument. For the medical students the actual range of scores was 87-139, compared to the possible range of 20-140, with a mean of 118 and a standard deviation of 11. The resident sample had an actual range of 88-140, with a mean of 118 and a standard deviation of 12.

The Cronbach's coefficient alpha internal reliability was 0.87 for the residents and 0.89 for the medical students, considered to be reliability coefficients sufficient for educational and psychological instruments.

Construct validity was established by factor analysis of the items. Criterion-related validity was established by calculating Pearson correlation coefficients between the JSPE and 16 criterion measures including three subscales of the Interpersonal Reactivity Index (IRI), two facets of personality from the NEO Personality Inventory (NEO-PI-R), a faith-in people scale, and ten other criterion. Correlations were low but statistically significant with variables of compassion, warmth, dutifulness, faith-in-people, trust, tolerance, personal growth, and communication.

In developing the JSPE-HP, the instrument was mailed to 1,007 Jefferson Health system physicians in the greater Philadelphia, Pennsylvania area affiliated with Thomas Jefferson University Hospital and Jefferson Medical College. Of these physicians, 704 returned completed questionnaires. The descriptive statistics for this sample (possible score range 20-140, actual range 50-140) were reported as a mean of 120 with a standard deviation of 11.9, an alpha reliability estimate of 0.81, and a test-retest reliability of 0.65 (Hojat, 2007).

Appendix E

Qualitative Analysis Software – Transana 2.42

Transana was developed at the University of Wisconsin as a research tool to transcribe and analyze video and audio data (Fassnacht & Woods, 2007). Transana allows researchers to manage large collections of video/audio data by organizing selected data clips into categories through assigned analytic keywords. Once coded, Transana produces graphical and text-based reports by searching the database by assigned keyword.

Recorded video/audio data is transferred in a digital format directly into Transana's transcript function, allowing the researcher to create detailed transcripts for analysis. Transana supports multiple transcript-based annotation systems, including Jeffersonian notation for video analysis. Jeffersonian notation, developed by Gail Jefferson, is a transcription notation utilized in conversation analysis (Heritage & Maynard, 2006). Jeffersonian notation allows the researcher to capture the details of interactive conversations through specific notations capable of indicating overlapping or simultaneous talk, periods of silence, and aspects of speech including intonation. After the transcript is created, the researcher can create and manipulate selected clips, equivalent to the process of cutting text documents into analytically coded sections and sorting the collected text sections into thematic units. Codes applied to video/audio clips can later be searched and reported graphically to locate patterns for further research analysis.

I chose Transana as the analytical software for this project because it is inexpensive (once free, the developers now charge $50 to download a copy of the program to support the continued development of the program) and it is compatible with

the Macintosh operating system. Although Transana's strength lies in its video analysis, it can also manage audio data. The Transana web site includes video training tutorials as well as User forums where researchers learning the program may contact more experienced users through on line discussion group.