

Electronic Medical Records (EMR): Call for Empathy in the Patient-Clinician Relationship within a Technological Milieu: Implications for Professional Nursing Practice

Martha Lodyga¹, Marcel Fredericks², Michael W.V. Ross², Bill Kondellas³

¹ Poznań Medical School, Poznań, Poland

²Office of Research in Medical Sociology, Loyola University, Chicago, Illinois, USA ³Department of Educational Leadership and Development College of Education, Northeastern Illinois University, Chicago, Illinois, USA

Abstract

The patient-clinician relationship is complex and evolving. Once an entirely paper-based health care system, the demands for an increase in quality and lower costs of health care have prompted health care delivery organizations to seek the digital world. Conversion of old patient paper records to new computer-based patient records, including electronic medical record (EMR) systems, has commenced. The new wave of health administration and financial systems attempts to integrate innovative health care applications into their patients' "therapeutic encounters" with the intention to improve the quality of their care. The effect of EMR on the patient-clinician relationship has yet to be fully understood. This paper provides a theoretical conceptualization of the effects that EMR may have on the patient-clinician relationship, specifically through the incorporation of central concepts and theories for careful analysis of the health care institution.

Keywords: Patient-Clinician Relations; Sociology; Society-Culture-Personality Model; Empathy; Electronic Medical Records

1 Introduction

Interactions between patients and healthcare professionals are characterized by their intrinsic complexity, which has only intensified with the advent of technological medical advances. Subsequently, a distinct health arena is born: eHealth. EHealth not only encompasses a health care system supported by electronic technology for communication as well as data storage, but also arguably forces individuals to apply an innovative state of mind. Information and communications technologies (ICTs), such as electronic medical records (EMR) and other digital document management systems (DMS), have contributed to the increasing complexity within the patient-clinician relationship. As a result of the constant inevitable changes within the health care field, the health care institution must continually reevaluate how these technological innovations will ultimately affect the patient-clinician relationship. With the concern for lower costing and higherquality care, the patient-clinician relationship may have become strained. This strain may be reflected in the change from the traditional paper-based medical formatting (PB) of the therapeutic encounter to the digitalized eHealth form or electronic-based (EB).

Nurse Susan Hamer, Director of Nursing, Midwifery and Allied Health Professionals the Department of Health Informatics Directorate in the United Kingdom, asserts in her anecdotal story about the

The electronic Journal of Health Informatics (ISSN: 1446-4381) is dedicated to the advancement of Health Informatics and information technology in healthcare. eJHI is an international Open Access journal committed to scholarly excellence and has a global readership in all health professions and at all levels.

© Copyright of articles originally published in www.ejhi.net under the Creative Commons Attribution 3.0 License is retained by the authors.

difficulty of changing habits: "I turn my pillowcases away from the door at home. It comes from Florence Nightingale, who taught the nurses to turn the pillows away from the tent flaps because sand used to whoosh into them [1]." Nurse Hamer elaborates that nurses need to be able to break their old habits. Accordingly, nurses in the future will need to adjust their practice habits by changing from paper-based to electronic medical records in the same way that nurse readjusted their pillows in the past in order to benefit their patients.[1] The necessity for clinicians to adopt and implement electronic medical record (EMR) systems into their therapeutic encounters is very apparent. Nurses need to take leadership roles in the present and future practice of Nursing Informatics to ensure proactive change, rather than reactive change, to bring about advancement, as well as proper implementation of health information technology [2]. This paper provides a theoretical conceptualization that EMR may have on the patientclinician relationship, specifically through the incorporation of central concepts and theories for careful analysis of the healthcare institution.

2 Fundamental Core: Society-Culture-Personality Model

In order to ensure the preservation of quality of health care in a technological milieu, it is imperative for clinicians to utilize the society-culturepersonality model (Figure 1):





Figure 1: Society-Culture-Personality Model

. The purpose of this model is to isolate, interpret and relate major concepts relevant to the patientclinician relationship. Society, culture and personality form an interlocking social system (SS) that is displayed in Figure 1. In other words, all three subsystems are interrelated, which means that a change in any area of the system will necessarily affect the entire system. Before one can fully understand the impact and implications of change within the health care institution, there is a need to dissect the interweaving of society, culture, and personality as visually expressed in the SCP model. This model is an organizational device to aid in the integration and synthesis of relevant concepts and theories for health care professionals. [3]

Society (S) may be defined as "an ordered and dynamic system of all the social interactions involving the members (personalities) of a total population, which can be identified as sharing a culture distinct from that shared by other populations [4]." Culture (C) is a system of conventionalized understandings of a group manifested in act and artifact, or simply a way of life. As the culture of a society is incorporated by the individual, a personality unique and distinct to the individual, but more or less adjusted to the demands of society, is developed. Personality (P) then, is the dynamic system of ideas, attitudes, habits, and values (internalized from the culture and mediated through society), which is unique to the individual [3]. The genetic basis (N1) of personality provides the mere possibility for a certain personality to develop. The final component is a functional personality that is acquired through a social interaction and/or the socialization process (SP) in various social processes; learning processes in a social environment (N2) wherein the value attitude system (VAS) of a culture is internalized.[3]. The comprehension of these concepts will facilitate clinicians in maintaining an effective therapeutic relationship with patients of various ages, social classes, races, ethnicities, families and religious backgrounds within sundry communities [5].

As the transition from paper-based (PB) to electronic-based (EB) records begins, special consideration must be taken about the societal context during implementation. It is to be noted that a society can be categorized as falling on a continuum somewhere between two polar "true" types, which are considered ideal in mental construction and orientation: Gemeinschaft (G1) (rural) and/or Gesellschaft (G2) (urban) [6]. A Gemeinschaft (G1) community is a simple, usually rural, social organization in which communication is direct and personal. On the opposite pole is a Gesellschaft (G2) community where the relationships among individuals are impersonal and communication among them proceeds in forms and along channels determined by efficiency.

Both clinicians as well as patients may adapt more easily to this change, if they become cognizant of the impact of society, culture and personality (SCP) on the patient-clinician relationship. In order to better understand the organizational as well as communicational aspects of the health care institution, it is helpful to conceptualize key terms to illustrate how they are interrelated. All medical practices utilize a generic form of Document Management Systems (DMS), which may be defined as any form of systematic organization of data storage whether the filing is paper-based or electronic-based. Paper-based (PB) is a type of DMS where data is organized and stored via paper documents. Conversely, electronicbased (EB) is data that is organized and stored via electronic means in a DMS. There are two primary categories of patient medical records: paper-based origin (PBO) and electronic-based origin (EBO). Electronic-based origin (EBO) information is data that is generated for the first time in the digital world; thus, it is "digitally born" information. After inputting the data utilizing computer-based technology, this information is then transferred to an electronic server or similar alternative electronic host environment and then stored [7].

Conversely, paper-based origin (PBO) information is tangible data (i.e. handwritten prescriptions or medical records, photograph or x-ray films, etc.) that is initially created in a non-digital medium. Electronic medical record (EMR) systems permit paper-based origin (PBO) information to be converted into a digital format to allow for increased accessibility of medical information without the need of retrieving old paper-based records from a record archive. The conversion process from physical or paper-based (PB) records to a digital form or electronic-based (EB) can be a costly as well as a lengthy endeavor [7]. In order to ensure the content remains legible and accessible, it is vital to implement high standards during the conversion process since the PB data is primarily a handwritten collection of a patient's medical history created by a diverse group of health care professionals [7].

3 eHealth's Relationship to EMR

EHealth, also written as e-Health, is established within the literature with varying definitions. Health care informatics is a term that is argued by scholars to be synonymous with eHealth. According to the Journal of Medical Internet Research (JMIR), "*e-Health is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies. In a broader sense, the term characterizes not only a technical development, but also a state-of-mind, a way of thinking, an attitude,* and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology" [8].

The multitude of eHealth functions can impact the delivery of health care by affecting the roles of all those individuals within the health care sector. EHealth may influence every member of the medical industrial complex such as nurses, physicians, pharmacists, information technology professionals, administrators, other professionals and organizations that intersect the health care sector, and the most important member: patients. It is imperative to note eHealth is a term that is constantly growing and evolving at such a rapid rate that it is difficult to predict all the innovative goods and services that it will encompass in the future. There is a need for nurses and other healthcare professionals to collaborate to bring about innovation while developing and adapting to informatics adoption for patient care [9]. Given collaboration interactional outcomes, it is apparent an effort needs to be made toward fostering partnerships not only at the level of a clinic or hospital, but also nationally as well as internationally. Many nation states have multicultural and multilingual populations, information and communication technologies (ICT) possesses the avenue to improve patient outcomes and lower cost for healthcare services at the national level as well as through multinational collaboration [10]. In Sweden, a number of patients who may not have an adequate grasp of the Swedish language will find themselves with a linguistic barrier within the patient-clinician relationship at their therapeutic encounter, which hinders the ability of the healthcare professional to provide quality care [10]. Special considerations must also be placed upon if the orientation of the society is a Gemeinschaft (G1) (rural) or Gesellschaft (G2) (urban) type to better understand the most effective means of implementing information and communication technologies for the improvement of quality health care.

A major subsection of eHealth is electronic medical records (EMR). EMRs open many new pathways for easier health care professional communication. In addition to enhancing the potentiality for innovative interactions, EMRs facilitate the systematic organization of medical information via digital formatting. This implies a level of sophistication above a conventional Document Management System (DMS), due to EMRs being more than a mere organizational tool for data storage. In health informatics an EMR is considered to possess the following functions: "clinical data repository, clinical

decision support, controlled medical vocabulary, order entry, computerized provider order entry, pharmacy and clinical documentation applications [11]." Not only does an EMR allow for clinicians to generate documents within their own practice (EBO), but also "convert" (PBO) and/or transmit a multiplicity of information from various internal and external sources (i.e. laboratories, specialist facilities, pharmacies, etc.) to others [11]. Traditionally paper-based (PB) medicine may become fragmented over time; whereas, with electronic-based (EB) medicine, there may be a decreased risk of potential data fragmentation. Therefore, EMR has the potential to positively impact the continuity of patient care by minimizing gaps in data records. EMR is designed to be a detailed, comprehensive medical record that includes an account of an individual's well-being from parturition to death.

If utilized to its full capacity, EMR may actually become a longitudinal patient record that employs information to generate a lifetime narrative of an individual's medical history. Concerning the functionality of EMR, one must consider the fostering of medical care in relation to the patient's output. The patient is a vital member of the health care team and as such, the clinician should be an active listener, as well as a communicator. Professor Francis Weld Peabody of Harvard Medical School asserted, "The secret of the care of the patient is the caring for the patient [12]." It is imperative that even though the social environment may evolve over the years, the essence of caring for the patient remains constant. EMR encourages patients to actively contribute in the cultivation of his/her own health records, such as personal health records (PHRs), by inputting their personal narratives: diet, exercise, at home test results, and detailed medication consumption schedules [11]. Accordingly, these patients' nurses utilize EMR technology in order to record an accurate longitudinal record [13]. As a result of these accurate patient narratives, the physician has a more accurate and complete depiction of the patient's health status. Consequently, this broader and more descriptive clinical picture may in turn lead to an accurate diagnosis and may increase efficiency and effectiveness in the delivery of health care in the future.

3.1 Adapting to Change within the Healthcare Institution

The socialization process (SP) of a clinician within the medical industrial complex may adopt associative social processes [e.g. accommodation (Ac), acculturation (Acc) and assimilation (As)] or dissociative social processes [e.g. conflict (Con) and competition (Com)] as indicated in Figure 2. These processes directly influence how a clinician and the medical industrial complex as a whole respond. This response to essential and/or accidental forces of change may either be proactive (initiated by an organization) or reactive (response to demand or need) within the internal or external spheres [14]. Beginning in 2005, the Government of Kenya implemented an Emergency Hiring Plan (EHP) to increase the nurse staffing in a Gemeinschaft (rural) and underserved communities. The Kenya Health Workforce Informatics System proved to be a pivotal proactive response to the shortage of nurses throughout Kenya in an accurate and timely manner, which would not have been possible prior to its creation [15]. Marc Prensky (2001) argues that contemporary society has gone through an irreversible change. In his study, Prensky examines the recent generation gap separating today's students ("Digital Natives") from their instructors ("Digital Immigrants") and its effects on their relationships. Prensky argues that this gap is due to the recent mass influx of technological availabilities. Native-born individuals, "Digital Natives" are individuals born into technology. They are able to fluently speak the language and express the culture of the digital world. "Digital Immigrants" are individuals who must actively learn how to speak the language and adapt to the culture [16]. Current clinicians must consider if their colleagues or patients are either "Digital Natives" or "Digital Immigrants" when attempting to establish a technological common ground. It is only through active mutual cooperation that effective accommodations (Ac) can be utilized to lessen this potential technological gap.

Accordingly, Prensky's concept of "Digital Natives" vs. "Digital Immigrants" may be expanded further from a technological gap into a generational gap. The younger generations are growing up with technology, while older generations are adapting to it. Technology, such as computers and the Internet, is an additional "limb" to the younger generations, while it may just be a tool for the older generations. The integration of computer technology is not a foreign concept to younger generations, but it is a natural one. Thus, conflict (Con) may arise. As a result, current and future clinicians must be educated to allow for acculturation (Acc) into this computer-based culture. Only after assimilation (As) into this new computer culture occurs will clinicians be able to utilize all of the electronic resources to their full capabilities. Prevalent barriers that have delayed and/or increased resistance to EMR implementation

from a physician perspective include: "financial, technical, time, psychological, social, legal, organizational, and change process barriers [17]." Change managers aid in the EMR implementation transition to provide assistance for the proper intervention necessary for the pertinent barriers present within the unique context of health care setting [17].

3.2 The Patient-Clinician Relationship

EMRs facilitate how information is communicated between the clinician and the patient as well as their colleagues. This facilitation may diminish unnecessary time consumption and risk of information loss, as often experienced by the postal mail and/or telephone calls. EMRs provide an enhanced availability of communication options for patient-clinician interactions. With asynchronous communication, the patient and clinician do not need to be in the same location to interact. Therefore, EMR technology acts as a depository between the patient and the clinician with asynchronous communication, such as email or other secure alternatives. A negative impact on the patient-clinician relationship may occur if either the patient or the clinician does not recognize appropriate situations for the utilization of asynchronous communication. The issue lies in the ability of knowing whether the utilization of asynchronous communication is appropriate, as to minimize any additional unnecessary stress while maintaining professionalism. In Q. Chen and colleagues' (2006) study, clinicians in an adult primary care clinic were surveyed about which features of EMR were beneficial to them. The clinician satisfaction with EMR was rated high with one reason being improved communication efficiency to create a patient's synopsis. According to 80 percent of the clinicians, a significant feature for augmenting the delivery of quality care was electronic messaging [18]. In an academic medical centre in the U.S., Type II diabetics utilized an interactive EMR with a web based disease management program that fostered an active partnership in the patient-clinician relationship for monitoring health status [19]. As a result, EMR may be capable of contributing positively to the patient-clinician relationship by creating the opportunity for patient to have a proactive role in disease management through accessibility of health information, continuity of data input, and availability of healthcare professionals to improve the quality of care.

Electronic medical records (EMR) may decrease the potential information gaps in a patient's medical history; thus it may allow for improvement in the quality of patient care. Gaps can transpire when the clinician's informational needs are not met at the point of care. Often the result is the clinician is unable to make an accurate differential diagnosis with the underlying reason due to the fact that the information provided by the patient or medical record is fragmented. This may lead to a higher risk for a misdiagnosis or patient dissatisfaction. EMR may compensate for this lack of necessary information. Healthcare professionals are able to improve patient safety and decrease preventable medical errors through the utilization of electronic medical records [20]. The main objective of EMR is to ensure that up-to-date health care information is available for clinicians at the point of care.

EMR is a tool that allows patients to take a more proactive role in their own health. Some patients perform their own preliminary research before their office visit, which may eliminate unnecessary basic questions. Due to time constraints of an office visit, both the clinician and the patient must utilize their time wisely. Thus, clinicians should become more "URL-proactive" to ensure the dissemination of information from professional organizations is accurate for distribution to patients [21]. It is clear that both clinicians and patients may view the Internet as a potential challenge to existing therapeutic relationships. A qualitative study conducted by Cicely Kerr and colleagues (2007) examines the patients' views of the effect of the Internet on their existing relationship with clinicians. Kerr argues that patients appear to view the Internet as a supplementary source to support existing and valued relationships with their clinicians [22]. Kerr, therefore, suggests that clinicians should use the opportunity to collaborate with patients for improved patient care [22]. The Internet provides not only patients, but also clinicians with new tools, including EMR.

4 Empathy in an Age of Technology: Tele-empathy

When considering the multidimensional nature of the patient-clinician relationship, the concept of empathy is not an unfamiliar one. Empathy is an exercise that evokes imagination. By entering into the metaphorical "shoes" of the patient, the clinician may better invoke the Weberian analysis of verstehen ("understanding") and attempt to feel as the patient might feel and understand as the patient might understand [5]. By doing so, the clinician may poten- tially make a more accurate differential diagnosis and ultimately, create a better treatment plan.

According to H. Spiro (1992) and his article, "What

is Empathy and Can It Be Taught?" empathy is defined as "... the feeling that persons or objects arouse in us as projections of our feelings and thoughts...when 'I and you' becomes 'I am you,' or at least 'I might be you [23].'" In a clinical setting, it is vital for clinicians to be reminded that empathy "... is not sympathy or feeling sorry for another, nor is it only respectfully listening to the patient talk," but it being able to take the patient's perspective [24] Lesley B. Heafitz captured the very essence of an empathetic physician by asserting, "Empathy, for the physician, means the ability to experience the illness with the patient, from the inside out, so to speak, feeling and seeing it through the patient's eyes. Empathy is a gift. For some, it is inborn; for others, it is learned from the best teachers; and for still others, it is acquired by actually being a patient. This was my case." [25]

As technology advances, the way patients and clinicians communicate changes. Clinicians must maintain an excellent patient-clinician relationship regardless of the utilized communication medium. Technological advancements are a socialization process for both the patient and clinician. With the introduction of new medical communication tools, clinicians are required to relearn empathetic display with their patients in order to accommodate the technological shift in the medical industrial complex. Some may argue that with the introduction of medical communication devices, such as EMR, the display of empathy will be compromised. There is the potential for empathy to develop along with the technological advances in a distinct form that obliges the evolution of quality care within the medical industrial complex in a digital-progressing society. Mixed methods studies need to be conducted to investigate the potential effects that EMR technology may have on empathetic display in the patient-clinician relationship. Currently, there is a lack of research in the literature to understand this phenomenon, which may prove to be a useful tool for proactive changes in the future education of healthcare professionals.

Accordingly, this paper suggests that clinicians may display empathy to their patient in two fundamental forms: organic and inorganic (Figure 3). Organic empathy is face-to-face physical contact between two parties. Conversely, inorganic empathy is when some sort of medium/media (i.e. computer, paper, telephone, video, etc.) is/are used to compensate for a geographical gap between two parties. Regardless if this interaction is organic or inorganic; both parties are contributing to a socially meaningful interaction (SMI) as actors or reactors. In either case, empathy in essence is not changing, but how empathy is invoked or displayed and through what media it occurs, is where the change lies. Patients may fear that EMR will diminish the quality of the patient-clinician relationship via the reduction in empathetic display. Mixed methods studies will be needed to prove if EMR technologies will positively or negatively impact the patientclinician relation- ship. The fundamental essence of empathy can po- tentially remain in the patientclinician relationship with technological modes of communication (i.e. telephone, text message, video conferencing, emails, etc.), given that proper the techno- logical assimilation into milieu commences.

There is a need to conceptualize the interrelationship between technology and the concept of empathy into a systematic breakdown as indicated in Figure 3. With the introduction of daily casual digital media (i.e. text messages, emails, etc.), the concept of tele-empathy should be examined. The term teleempathy is the display of empathy over a distance. The term is composed of the Greek word telemeaning "far", and empathy. Tele-empathy may be as simple as a clinician and a patient conversing over the telephone, or can be as complex as using satellite technology and video-conferencing equipment to conduct a real-time consultation in two different geographical locations. Tele-empathy, in a broader sense, refers to the usage of communication devices either electronic or non-electronic to display empathy over a distance. Electronic empathy is the display of empathy through electronic media such as: video, email, text message, wireless telephones, digital photos, etc. In contrast, non-electronic empathy is the demonstration of empathy through nonelectronic media such as: postal mail, paper, cordland line telephone, etc. It is pivotal for clinicians to adjust to the new social and technological environment to prevent desensitization and detachment from the patient. Accordingly, the clinician should not just treat the aliment, but rather the whole patient. As the social change occurs, the fundamental core- empathy, trustworthiness, and supportivenessin the patient-clinician relationship must remain resilient to ensure quality of care. Even though the medium of health care delivery has and is continuously changing over the years, the necessity for the clinician to consider the care of the patient is still central to the philosophy of medicine. A timeless statement by Professor Francis Weld Peabody of Harvard Medical School represents a true constant in the patient-clinician relationship - namely, "the secret of the care of the patient is the caring for the

patient." [12] Regardless of the technological milieu in the future, the fundamental foundation of expression for the promotion of the patient's well-being must always prevail.

5 Conclusion

An attempt has been made to present a simple, conceptual, and exploratory model that is an organizational device for interpreting the clinician-patient relationship in the new millennium. This model is especially adapted to the needs of health care professionals within the evolving medical industrial complex as it relates to technology. As technology advances, so too must clinicians adapt their communication medium in order to still maintain the patient-clinician relationship. The SCP model attempts to adapt to these advancements in technology by utilizing a socialization process for both the patient and the clinician. Empathy is a vital building block of the patient-clinician relationship, which may not be theoretically compromised if it gains a new face, a digital one. This digitally adapted empathy will call for the clinician to relearn empathetic display styles (i.e. tele-empathy) and techniques with their patients in order to accommodate the technological shift in the medical industrial complex. Accordingly, the nursing profession as a whole must adapt to the growing technological advances to ensure proper assimilation in order to improve patient outcomes. [26] Mixed methods studies should be performed in order to analyze the exact impact that EMR technology may have on empathetic display within the confines of the patientclinician relationship.

References

- 1 Hamer S. Making more of IT. Interview by Lynne Pearce. Nursing Standard (Royal College Of Nursing (Great Britain): 1987) October 2010; 25(7): 20-21.
- 2 Kane K. eHealth and nursing informatics. British Journal of Community Nursing. 2010:157.
- 3 Fredericks M. Dental care in society: the sociology of dental health. Jefferson, NC: McFarland & Co.; 1980: 2-17.
- 4 Zahn GC. What is society. New York, NY: Hawthorn Brooks; 1964: 34
- 5 Fredericks M, Odiet J, Miller S, Fredericks J. Toward a conceptual reexamination of the patient physician relationship in the health care institu-

tion for the new millennium. Journal of the National Medical Association. 2006; 98(3): 378-385.

- 6 Fredericks M, Odiet J, Miller S, Fredericks J. Toward an understanding of genetic sociology its relationship to medical sociology and medical genetics in the educational enterprise. Education. 2004; 125(2): 222-235.
- 7 Laerum H, Karlsen TH, Faxvaag A. Effects of scanning and eliminating paper-base medical records on hospital physicians' clinical work practice. Journal of the American Medical Informatics Association. 2006; 10: 588–595.
- 8 Eysenbach G. What is e-health. Journal of Medical Internet Research. 2001; 3(2): e20
- 9 Booth R. Educating the future eHealth professional nurse. International Journal of Nursing Education Scholarship. 2006; 3(1): 1-10.
- 10 Klein G, Kajbjer K. Medical informatics in a united and healthy Europe. eHealth tools for patients and professionals in a multicultural world. XXIInd International Congress of the European Federation for Medical Informatics. Studies in Health Technology & Informatics. 2009; 150: 297-301.
- 11 Garets D, Davis M. Electronic medical records vs. electronic health records: yes, there is a difference. HIMSS Analytics. January 2006. Accessed March 15, 2011. Available at: www.himssanalytics.org/docs/WP_EMR_EHR.p df.
- 12 Peabody, FW. The care of the patient. Journal of the American Medical Association. 1927; 88: 877-882.
- 13 Deese D, Stein M. The ultimate health care IT consumers: how nurses transform patient data into a powerful narrative of improved care. Nursing Economics. 2004; 22(6): 336-341.
- 14 Fredericks M, Miller S, Odiet J, Fredericks J. Toward an understanding of cellular sociology and its relationships to cellular biology. Education. 2003; 124(2): 237-256.
- 15 Gross J, Riley P, Rogers M, et al. The impact of an emergency hiring plan on the shortage and distribution of nurses in Kenya: the importance of information systems. Bulletin of the World Health Organization. November 2010; 88(11): 824-830.
- 16 Prensky, M. Digital natives, digital immigrants. On the Horizon. 2001; 9:5

- 17 Boonstra A, Broekhuis M. Barriers to the acceptance of electronic medical records by physicians from systematic review to taxonomy and interventions. BMC Health Services Research. 2010; 10: 231-247.
- 18 Joos DA, Chen Q, Jirjis JN, Johnson KB. An electronic medical record in primary care: impact on satisfaction, work efficiency and clinic processes. AMIA Symposium. 2006: 394-398.
- 19 Ralston J, Revere D, Robins L, Goldberg H. Patients' experience with a diabetes support programme based on an interactive electronic medical record: qualitative study. BMJ: British Medical Journal. 2004; 328 (7449):1159-1162.
- 20 Crane J, Crane F. The adoption of electronic medical record technology in order to prevent medical errors: a matter for American public policy. Policy Studies. 2008; 29(2): 137-143.
- 21 Friedewald V. The Internet's influence on the doctor-patient relationship. Health Management Technology. 2000; 21 (11):80.
- 22 Kerr C, Stevenson FA, Nazareth I. Information from the internet and the doctor-patient relationship: the patient perspective - a qualitative study. BMC Family Practice. 2007; 8.
- 23 Spiro H. What is empathy and can it be taught. Annals of Internal Medicine. 1992; 116(10): 843.
- 24 Banja J. Empathy in the physician's pain practice: benefits, barriers, and recommendations. Pain Medicine. 2006; 7 (3): 265-275.
- 25 Heafitz LB. The empathetic way. Harvard

Medical Alumni Bulletin. 1992; 66: 31.

26 de Ruiter H. Quantifying nursing: caring or catastrophe? Creative Nursing. 2007; 13(2): 10-12.

Acknowledgements

Dr. Marcel Fredericks wishes to acknowledge the Public Health Service Fellowship at the Harvard University Medical School granted by the Health Service Research Training Committee of the National Institute of Health. Our gratitude is also extended to all those who contributed to this research project: Loyola University Chicago, Harvard Medical School and Northeastern Illinois University; and members of the Loyola University Chicago's Jesuit community. Tamil Selvi Chakrapani assisted in converting the diagrams into a digitized format.

Conflict of interest

none

Correspondence

Michael Ross

Research Assistant Office of Research in Medical Sociology Loyola University Chicago

Phone: (847)-528-0692 Email: mross7@luc.edu



SCP: global village, S: society, C: culture, P: personality, N₁:nature or heredity, N₂: nurture or environment, *G₁:Gemeinschaft*, *G₂: Gesellschaft*, SP: socialization process, M: marginality, A: anomie, SS: social system, R: role, I: institution, HC: healthcare, DMS: document management system, PB: paper based, EB: electronic based, eHealth: electronic healthcare informatics, EMR: electronic medical records, PHR: personal health record, Ac: Accommodation, Acc: Acculturation, As: Assimilation, Com: Competition, Con: Conflict

Figure 2: Society-Culture-Personality Model for Electronic Healthcare Informatics.



SCP: global village, S: society, C: culture, P: personality, N₁:nature or heredity, N₂: nurture or environment, *G₁:Gemeinschaft*, *G₂: Gesellschaft*, SP: socialization process, M: marginality, A: anomie, SS: social system, R: role, I: institution, HC: healthcare, DMS: document management system, PB: paper based, EB: electronic based, eHealth: electronic healthcare informatics, EMR: electronic medical records, PHR: personal health record, SMI: social meaningful interaction, NR: nurse, PT: patient

Figure 3: Society-Culture-Personality Model for Electronic Medical Records and Social Meaningful Interaction.