Computer-Based Simulation for Enhancing Patient-Clinician Communication in Computerized Settings

Aviv Shachak, PhD
Institute of Health Policy, Management & Evaluation, University of Toronto
155 College St.
Toronto, ON M5T 3M6 Canada
aviv.shachak@utoronto.ca

Elizabeth Borycki, RN, PhD
School of Health Information Sciences, University of Victoria
PO Box 3050 STN CSC
Victoria, BC V8W 3P5 Canada
emb@uvic.ca

Sharon Domb, MD, CCFP
Sunnybrook Health Sciences Centre
2075 Bayview Ave.
Toronto, ON M4N 3M5 Canada
Sharon.Domb@sunnybrook.ca

Andre Kushniruk, PhD
School of Health Information Sciences, University of Victoria
PO Box 3050 STN CSC
Victoria, BC V8W 3P5 Canada
andrekl@uvic.ca

Shmuel Reis, MD, MHPE
Bar-Ilan University Faculty of Medicine
8 Henrietta Szold St.
Safed, Israel
reis@netvision.net.il

Amitai Ziv, MD, MHA
MSR- Israel Center for Medical Simulation, Sheba Medical Center and Tel-Aviv University
Tel-Hashomer, 52621 Israel
Amitai.Ziv@sheba.health.gov.il

Abstract
In this paper, we discuss the importance of face to face consultation. We argue that information systems such as electronic medical records (EMRs) have both positive and negative impacts on the patient-clinician interaction. We propose computer based game-like simulation as a tool for training clinicians in integrating EMR use into the consultation.

Author Keywords
Patient-clinician communication; Electronic medical record; Computer based simulation

ACM Classification Keywords
J.3 LIFE AND MEDICAL SCIENCES- Medical information systems; K.3.1 Computer Uses in Education
Introduction
In this position paper, we argue that face to face interaction remains extremely important form of patient-clinician communication. We further contend that information systems, such as electronic medical or health records (EMR and EHR, respectively), affect patient-clinician communication in various ways, both positive and negative. However, current training rarely focuses on how to effectively integrate the EMR into the consultation. Therefore, we are proposing to discuss a technology for training clinicians in how to better use EMRs during the patient-clinician encounter i.e., game-like computer based simulation.

The Importance of Face to face Communication
The patient interview has long been recognized as one of "most powerful, encompassing, and versatile instrument[s] available to the physician" [3]. Interpersonal and communication skills are one of the core competencies of medicine. Communication has been associated with patient satisfaction, adherence to prescribed therapy, and various health outcomes such as improved physical and emotional health status, better performance in daily-life activities, and enhancements in clinical markers [12].

Contemporary information and communication technologies (ICTs) open multiple one to one, one to many, and many to many communication channels such as email, text messaging, videoconferencing, blogs, discussion groups, and other social media [4]. Still, face to face consultation remains extremely important. Various media theories support this idea. Media Richness Theory suggests a hierarchy of media richness, which places face to face communication at the top for its ability to provide immediate feedback, multiple cues, high language variety, and personal focus [1]. Media Synchronicity Theory suggests that asynchronous media are better for conveyance (i.e., the transmission and processing of information) while convergence processes (i.e., agreeing on the meaning of information) require highly synchronous media [2].

These ideas are consistent with our understanding that communication often affects health indirectly through proximal and intermediate outcomes such as patient understanding, trust, and clinician-patient agreement [12]. Many of these require convergence, and are therefore most suitable for synchronous communication via rich media. Face to face probably remains the most effective channel for achieving these proximal and intermediate outcomes.

The Effect of EMR on Patient-Clinician Communication
Information systems such as EMRs change the clinical consultation into triadic patient-clinician-computer relationships. While EMR use is often positively related to information exchange it often interferes with psychological and emotional exchange, establishing rapport and maintaining eye contact with the patient [11]. It has been demonstrated that, in computerized settings, much of the interaction is driven by the EMR and not by the patient’s agenda. Both patients and physicians’ style as well as physicians’ basic communication skills affect this interaction [8]. With time, both patients and clinicians can adapt to the EMR and clinicians develop strategies and best practices for integrating it into the consultation [10]. These strategies and best practices can be learned; however, current EMR training rarely addresses this issue [5].
Computer-Based Simulation for Enhancing Clinicians’ Competence in Computerized Settings

We developed a simulation-based training with standardized patients (actors) for enhancing family medicine residents’ communication skills in computerized settings [9]. However, widespread implementation of this simulation is compromised by its cost and the need to bring trainees for a day-long workshop at the simulation center. A viable alternative is game-like computer simulations, which can be widely distributed and implemented. It has been shown that computer simulation is an effective way of teaching a variety of clinical skills, including ‘soft’ skills, and even in communication-intensive areas [6; 7]. Several authoring tools enable the development of simulation software without extensive knowledge in graphic design or programming. These simulations can be embedded within EMRs to allow for creating realistic scenarios. We will discuss these technologies and their application to patient-clinician-computer communication training.

About the Authors

The authors of this paper are practitioners and researchers in family medicine, health informatics, medical education and HCI. They share a common interest in patient-clinician communication in computerized settings and potential ways to improve it.

Aviv Shachak, PhD (Participant), studies interventions for improving the use and realizing the benefits of biomedical information systems including training, support, documentation and interface design. His study on the patient-physician-computer interaction and underlying cognitive elements formed the basis for the simulation training described above.

Sharon Domb, MD, CCFP, FCFP, is the director of family and community medicine at Sunnybrook health Sciences Centre where she led the EMR implementation process.

Shmuel Reis, MD, MHPE, is a family physician, medical educator and an expert in patient-physician communication. He is the former director of Galil Center for Medical Informatics and Telemedicine at the Technion, Israel, and the present Director of Faculty Development at Bar-Ilan University Medical School, Israel.

Elizabeth Borycki, RN, PhD, research interests include health information systems safety, clinical informatics, organizational change management, patient safety, and information seeking involving health information systems.

Andre Kushniruk, PhD, conducts research in the areas of human-computer interaction in health care, cognitive science and the effects of technology. His work includes the development of novel methods for conducting video analysis of computer users and he is currently extending this research to remote study of e-health applications and advanced information technologies.

Amitai Ziv, MD, MHA, is the Deputy Director of Sheba Medical Center, Israel. He is a world renowned expert in medical simulation, the founder and director of MSR-Israel Center for Medical Simulation and Clinical Associate Professor at Tel-Aviv University Faculty of Medicine.
References


