



Technology and Its Influence on the Doctor-Patient Relationship

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Abbreviations: HIT – Health Information Technology

Key words: Technology, Medicine, Patient Relationship, Physician, Health Information

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From the ancient Egyptian concept of medicine to the present day, much has changed in the field of medicine, including new medications, procedures, equipment, and processes by which medical care is delivered. As clinicians adopt these molecular and biological advancements, incorporation of the dynamic transformation of the patient's perspective into a relationship-centered medical paradigm needs to be undertaken for physicians to be successful in the new era of patient care. Technology has helped transform the patient-physician relationship from one based on physician paternalism to one of more patient autonomy.

With technological advances come new medications and tools, but also a new platform from which medicine is now practiced. Health Information Technology (HIT) is a dynamic field that has and will continue to change the face of medicine. Technology is increasingly playing a role in almost all processes, from basic lab tests to self-care tools. However, these technological advancements have also contributed to the evolution of the physician-patient relationship. The development of widely available patient resources has transitioned the locus of authority from the physician to the patient. The advent of the Internet, in particular, has delivered a wealth of information to patients, offering a novel source of support, as well as a new challenge to the physician. Physicians find themselves spending more time explaining their decisions and incorporating a process of shared decision-making. This is not simply due to an increase in patient self-advocacy, but the expansion of different combinations of possible therapeutic effects and side effects for most disease processes. In shared decision-making, a dynamic exchange of information between the patient and physician occurs where the clinician offers options and describes their risks and benefits, while the patient expresses his or her preferences and values. The final goal is that each participant has a better understanding of the relevant factors involved and shares responsibility in the decision about how to proceed^{1,2}. Studies have also demonstrated an overall cost-saving as patients who participate in the decision-sharing model choose less invasive options³⁻⁵. Additionally, current guidelines create an opportunity to advance patient-centered care and advocate for the participation in shared decision-making^{6,7}.

Physicians in this new era of healthcare must develop methods to adequately educate patients so that they may make a well-informed decision. However, complex changes in physician compensation models and the clear need for documentation have ultimately strained the length of the patient physician encounter^{8,9}. With these demands, physicians must develop new strategies to enhance the quality of care within the available amount of. Given the advanced complexity of disease processes and procedures, novel technologies, such as visual models, should be used to help illustrate these processes. For example, DrawMD Cardiology© (<http://www.drawmd.com>) and HealthDecide© (<http://healthdecide.orcahealth.com/tag/heart-decide>) are free tablet and phone applications that allow providers to visually communicate concepts such as anatomy, diseases, and procedures that would otherwise take considerable time via conventional talk. Additionally, the use of risk calculators to illustrate the impact of their decisions may also help guide physician-patient decisions. With regards to risk/benefits of medication initiation, the use of free output calculators, such as the ACC/AHA atherosclerotic cardiovascular disease (ASCVD) application (<http://tools.cardiosource.org/ASCVD-Risk-Estimator>) to calculate risk and evaluate the use of statin therapy and the ACC AnticoagEvaluator Mobile App (<http://www.cardiosource.org/anticoagulation>) to assess stroke/bleeding risk and evaluation of antithrombotic therapy in patients with chronic atrial fibrillation, help to facilitate patient-physician discussions. Ultimately these patient decision aids will help physicians better educate patients and increase patients' involvement, which will more likely lead to informed values-based decisions¹⁰. Although physicians may be experts on medical knowledge regarding a patient's condition, this is not sufficient to make clinical decisions without the consideration of the values and preferences of the patient¹¹.

Technology has also transformed the mode of communication between the physician and patient. Technological advancements in healthcare have allowed integration of user-friendly devices outside of the confines of the traditional clinic and hospital walls. Devices like smartphones and tablets are starting to replace conventional monitoring and recording systems, and patients may have the ability to

have a full consultation in the privacy of their own homes. In addition, email or electronic correspondence is becoming more commonplace. In general, providers view communicating with patients by email very favorably given its convenience as well as improvement in patient satisfaction¹². At the same time, electronic communication does create more work for physicians, often for which they are not currently reimbursed¹³. Other modalities such as videoconferencing may also serve to replace some face-to-face and telephone encounters. Although this remains uncommon in current daily clinical practice, possibly due to limited reimbursement, this activity may become more prominent, especially for patients with barriers to transportation¹⁴ along with the possible transition to accountable care organizations (ACO).

A basic premise of the Internet is lack of central authority controlling access or information, hence directing patients to medically sound sites is imperative for patients to make accurate informed decisions. Formulating a proper list of acceptable resources for many common conditions by a professional society or even the clinician, will help guide patients to educational materials, which may eventually improve patient education and lead to improved compliance. In addition to informational websites, directing patients to social networking sites may enable patients to locate individuals with similar medical conditions to identify mental and physical resources, which would otherwise be unavailable.

Ample data show that patient-doctor communication factors affect patient satisfaction and outcomes¹⁵. Interpersonal relationships and information are intertwined as essential cornerstones of health care. Although HIT has transformed the field of cardiology, clinicians have yet to harness its full potential. HIT will ultimately change the shape and practices of health care and increase the opportunity for patients to receive care remotely. Yet, with all these changes, physicians cannot lose sight of the staple of medical care: The patient-physician relationship. No matter the changes, the foundation of excellent medical care will always be based upon communication, understanding the needs of the individual patient.

Statement of ethical publishing

The authors state that they abide by the statement of ethical publishing of the International Cardiovascular Forum Journal¹⁶.

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