Electronic Health Records (EHRs) in the Oncology Clinic: How Clinician Interaction With EHRs Can Improve Communication With the Patient

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Interacting with computers in the clinic can feel like a burden, or even a barrier to important interpersonal aspects of patient care. Similar barriers can be posed by other electronic devices used in patient care, such as tablets, smartphones, or PDAs. Despite the expectation that such devices might improve the quality of care, electronic health record (EHR) systems in particular generally have complex, cumbersome computer interfaces that demand much attention and many keystrokes during a clinical encounter.[1] Coupled with increasing documentation requirements and "meaningful use" initiatives, EHRs can be a time sink in a busy clinic. EHRs pose a particularly difficult problem in the oncology clinic, where emotionally difficult topics are often addressed, requiring sufficient time and attention; in this setting, the computer can feel particularly obtrusive and distracting.

Patients and clinicians alike express frustration about these issues publicly. A recent report in the lay press describes the phenomenon of "distracted doctors" who are so busy interacting with computer screens that they fail to make eye contact with their patients.[2] Similarly, clinicians write that EHRs interfere with their ability to attend to the patient as a person.[3,4] On the other hand, although patients may not like distracted doctors,[5] they seem to be excited about the prospects of EHRs. In a recent national survey, 41% of patients said that they would consider changing clinicians just to gain online access to their medical records.[6]

Regardless of this tension, one thing is certain: the EHR in the examination room is here to stay. Our goal here is thus to provide evidence-based suggestions to help busy clinicians integrate the EHR into their workflow in a way that is constructive for communication and the patient-clinician relationship in oncology. We recognize that not all EHRs are created equal, and that some may impose additional barriers. However, we contend that even a "perfect" EHR can be disruptive to patient-clinician communication, especially without conscious attention to how one interacts with it in the examination room. With careful attention, the EHR might actually enhance patient-clinician communication, even on a busy day. Here we will highlight relevant data on EHRs and then make specific recommendations for how clinicians can successfully integrate the EHR into a clinic visit.

EHRs in the Primary Care Clinic: What We Know So Far

The clinical application of health information technology (HIT) is occurring before its downstream implications are apparent, including effects on communication and the patient-clinician relationship. This has spurred the emergence of research exploring the impact of a most important component of HIT, the EHR, on the clinical encounter, from the perspective of both the patient and the clinician.[7,8] A brief discussion of these data is illustrative in informing strategies to constructively integrate the EHR into the oncology clinic (also summarized in Table 1).

Surveys indicate that clinicians view use of the EHR in the examination room as distracting and burdensome. In a 2013 survey of more than 300 practicing clinicians, 48% reported feeling that "spending sufficient time with patients" is challenging, and 77% felt that "using health information technology in my practice" is either "very" or "somewhat challenging."[9] Furthermore, a majority of clinician respondents felt that little to no progress has been made in ensuring ease of use of HIT (56%), improving patient relationships (61%), or increasing efficiency (66%). It is also clear that the EHR changes clinicians' behavior; older data show a change in work style from one of conversational, continuous data recording to a more staccato, "blocked pattern," alternating between computer and patient.[10] However, existing studies do not support the assumption that the examination room EHR inherently degrades communication. Rather, it appears to amplify existing communication behaviors, good or bad.

Frankel et al[11] studied the impact of EHRs on communication in a primary care clinic using video-recorded assessments both before and after computers were installed in all examination rooms; "postcomputer" video assessments were done 1 and 7 months later. Because all participating clinicians had already used the EHR in the hallways for 6 years prior, this study provides insight about the impact of the addition of the computer itself, separate from the usual hurdles that would be posed by learning a new electronic record system. Video-recorded assessments, analyzed by qualitative sociologists, provided valuable insights about clinician communication behaviors in relation to the computer. The main measure of interest in this

Table 1. Published Data on the Effect of the EHR in Practice

Author	Setting	Study Type	Key Findings
Warshawsky et al (1994)[10]	Primary care clinic (Israel)	Observational study with video-recorded encounters	After EHR, no change in appointment length; change noted in proportion of time spent on specific parts of the visit Clinician work style changed from one of continuous data recording to more of a "blocked pattern" of interval data entry
Als (1997)[5]	General practice (Denmark)	Observational study with video-recorded encounters	Patients disturbed by not knowing what their clinician was doing when interacting with the computer Patients preferred being able to see the screen Clinicians were surprised at how their behavior appeared on video and wanted to improve it
Patel et al (2000)[16]	Diabetes clinic (Canada)	Observational study with video-recorded encounters Multistage study of paper and computer-based records, analysis of logged EHR interactions	Using the EHR changed clinician-patient dialogue and gathering of clinical information Structure of the EHR affected dialogue, with verbal activities generally mirroring the content of EHR interactions
Makoul et al (2001)[15]	General internal medicine clinic (US academic center)	Observational study with video-recorded encounters, questionnaires, medical record review	EHR made it more difficult to focus attention on patient-centered aspects of communication, eg, eliciting the patient's agenda, exploring psychosocial and emotional issues, discussing how health problems affect the patient's life
Garrison et al (2002)[12]	Family practice clinic; patients with blood pressure or lipid problems (United States)	Postal survey	Positive association between patients' perceptions of clinician's computer skills and patient satisfaction. Satisfaction with the computer's effect on the visit
Booth et al (2004)[14]	Primary care clinic (United Kingdom)	Qualitative ethnographic study with video-recorded encounters	General physicians are not able to multitask at the level required to manage the EHR and maintain high-quality communication These tasks can be accomplished in the same consultation, but not simultaneously As tasks became more complex, they intruded on the doctor-patient relationship
Frankel et al (2005)[11]	General physicians and physician assistants/nurse practitioners (United Kingdom)	Observational qualitative study with video-recorded visits both before and after the introduction of a computer into the exam room	Examination room computing amplifies both positive and negative communication behaviors. Spatial orientation of the computer in the exam room creates communication challenges and opportunities. Clinicians do not appear to adapt much over time, as behaviors changed very little in the 6-mo observation period
Margalit et al (2006)[13]	Primary care clinic (Israel)	Observational study with video-recorded encounters	Gazing at the monitor was inversely related to physician engagement in attending to emotion and in psychosocial questioning/exchange. Keyboarding activity inversely related to physician and patient contribution to dialogue

Abbreviation: EHR, electronic health record.

qualitative study was the amount of attention paid to the patient rather than the computer screen; more than a 30-second absence of any verbal, visual, or postural attention to the patient was considered a communication shortcoming. Ultimately, clinicians with poor communication skills at baseline were noted to be even less effective with the introduction of a computer into the clinical encounter.

For those who were more successful communicators, the investigators observed three specific strategies that clinicians used to maintain their attention toward the patient. These strategies were (1) maintaining verbal continuity, continuing to talk to the patient while looking at the screen; (2) maintaining visual continuity, maintaining eye contact with the patient intermittently, while using the computer (every 15 seconds, or while talking with the patient); and (3) maintaining postural continuity, orienting one's head or torso toward the patient, rather than turning away. Interestingly, in comparing pre and post assessments of visit organization and both verbal and nonverbal behaviors, the addition of the computer to the examination room appeared to amplify clinicians' baseline positive and negative behaviors. In other words, those who were better communicators at baseline tended to figure out ways to continue doing so with the computer in the examination room, while those who already struggled with communication did even worse once the computer was added.

Other research links patient satisfaction with the clinician's proficiency at using computers.[12] We expect that this association reflects patients' experiences with clinicians who can expertly interact with the computer while still ensuring that they feel heard and attended to. This idea is supported by other data that demonstrate a negative association between time spent viewing the computer screen and attention to psychosocial inquiry, and emotional responsiveness.[13] Unfortunately, qualitative study suggests that the EHR leads clinicians to sometimes miss or ignore opportunities and invitations to connect meaningfully with their patients.[14] The presence of the EHR in the examination room may therefore further impair clinicians' abilities to focus on important aspects of patient-centered communication, including eliciting the patient's agenda and exploring emotional or psychosocial issues.[15] Given these findings, we recommend following an explicit communication strategy in using the EHR in the oncology clinic.

The EHR in the Oncology Clinic: Six Ingredients for Success

On the basis of available evidence, introduction of the EHR into the clinical encounter affects clinician-patient communication and visit organization.[16] Furthermore, clinicians' own perspectives (eg, acceptance of the new record-keeping method, their own comfort and experience with evolving technology, their own communication skills) highlight the disruptive nature of this innovation in practice, potentially leading to frustrations and pressures that may encourage the development of bad habits and shortcuts in patient-clinician communication. Taken together, these findings suggest the need for specific strategies to improve or maintain high-quality communication as the computer becomes a central part of the clinical encounter. Potentially complicating this goal are the many challenges already inherent in caring for patients with cancer.

Compared with other health care settings, communication in oncology is often even more high-stakes, involving complex dilemmas, emotional content, clinical uncertainty, and life-limiting illness. What effect does the computer have in this high-stakes setting in which, even without computers, oncologists frequently neglect opportunities to express empathy for their patients?[17] The presence of a computer may amplify this shortcoming. How can we prevent the computer from being obtrusive or even counterproductive in this difficult context?

High-quality research from the last several decades demonstrates that patient-centered communication is a discrete skill set that comprises teachable, learnable, and measurable behaviors.[18] A specific set of behaviors is even associated with improved outcomes and patient satisfaction.[19] Although the evidence base informing communication behaviors around EHR use is small, the application of time-tested principles of patient-centered communication is likely to be helpful in this case. Here are six evidence-based suggestions, extrapolated from the substantial evidence on high-quality patient-centered communication, to promote the successful integration of the EHR into the oncology clinic (Table 2).

Position yourself for dual access, to the EHR and to the patient. Successful communication requires a connection between clinician and patient. Just as word choice and body language can either impede or promote connection, so can the computer, depending on its position in the examination room. If the computer is placed in juxtaposition to the patient, it may feel like a distraction, pulling the clinician away from the patient as he or she turns toward the screen.[15] This creates a sense of conflict as the clinician must consciously choose between patient and screen throughout an encounter. On the other hand, the computer can be a "bridge" when positioned unobtrusively between the patient and clinician, thereby helping to mediate connectedness and communication in the clinical encounter. Here, the computer can be used as a conduit for information flow, and an opportunity for more active patient participation in their care. This allows the patient to view the screen along with the clinician, perhaps to look at trends in laboratory values, radiographs, educational materials, and so on. Evidence suggests that patients' eyes follow the gaze of the clinician.[20] This can be used strategically during the clinical encounter to more actively involve patients with the screen and the EHR. Successful use of this technique was noted frequently in the Frankel et al[11] study described above.

Ask permission or acknowledge that you will use the EHR. The computer can feel out of place in the examination room, especially when it is first introduced. Providing an explicit explanation and invitation about the computer and the EHR can be an effective way to prepare patients for the clinician's interaction with the computer during the encounter.[21] Explicitly mentioning an impending interaction with the EHR has been successful in primary care settings.[14] For example, one might say, "It's important that I accurately document our visit. I'm going to be typing while we talk, to make sure I get it right. Is that okay with you?" Few, if any, patients will decline, but asking their permission helps to position the computer more positively as an integral component of their care. Outright apologies for the computer without showing its benefit in a patient's care are unlikely to be effective in improving communication or establishing rapport.

Use the EHR as a teaching tool. Technology may help patients better understand their illness, and the computer can facilitate this during the clinical encounter. Using graphing features to highlight trends in laboratory results, or showing radiographic images, can be a powerful way to integrate the EHR into patient care. For example, the clinician might say, "I'd like to talk with you about the results of your CT scan. Would it be helpful if we look at the images while we talk about it?" This also helps to illustrate links between objective data and the patient's subjective experience. Another example might be, "This is a graph of your blood counts over the last 3 months. This line shows that your RBCs have decreased quite a bit since starting chemotherapy. I suspect this is why you feel more tired. Let's talk about some ways to address this."

Preserve nonverbal contact with the patient. The presence of the computer may decrease the frequency of eye contact between clinician and patient or the clinician's ability to recognize signs of distress by virtue of reducing attention to patients' nonverbal cues. It is therefore important to consciously use periodic eye contact by looking up from the computer when speaking to the patient. Spending the entire visit looking at or interacting with the computer is certain to make patients feel ignored or uncared for. It is important to recognize that the EHR appears to amplify any good or bad communication behaviors that a clinician already has.[11] In the pre-post study by Frankel et al,[11] clinicians with less organized visits experienced further disorganization after the computer was introduced into the examination room; the clinician disruptively moved back and forth between patient and computer, negatively affecting the focus and flow of the visit and increasing its length. The disorganized clinician may be more likely to get lost in the clicking and the typing, such that the patient feels ignored, neglected, or even disrespected.

Table 2. Strategies for Success With the EHR in the Oncology Clinic

Strategy	Example	Try to . . .	Avoid . . .
Positioning	Use the computer as a bridge between you and the patient, rather than a barrier	Use it to mediate connectedness and communication; encourage patient participation in care; show graphics, trends, imaging	Positioning it directly between you and the patient, or where the patient cannot see the screen
Invitation	Introduce the EHR as an important part of high-quality cancer care, and ask permission to interact with it during the visit	Prepare patients for your use of the computer; ask the patient if they would like to learn more about your use of the EHR	Apologizing for its presence or your interactions with it
Involvement	Involve the patient in using the EHR, such as by showing radiographic images, graphing laboratory values, or trending vital signs	Discuss changes in the patient's disease trajectory via graphs, imaging, etc.	Excluding the patient; they may feel ignored, or wonder what you are typing about them
Nonverbal	Maintain good nonverbal communication behavior, such as by nodding, looking up from the screen frequently, reflecting or responding to emotion, etc.	Make it a point to periodically look directly at your patient	Letting its presence decrease eye contact with your patient
Organization	Negotiate an agenda for the visit upfront; elicit the patient's agenda, present yours, and set a plan for the content of the visit, recognizing that you cannot accomplish everything each time	Organize the encounter. Plan when to use the EHR, what to show, and when to step back from the computer to focus on the patient	Allowing the computer to preoccupy you and further disorganize the encounter
Activation	Use the computer to present and demonstrate some useful resources for the patient	Have online resources readily available to show the patient	Being unprepared and having to Google sites in the examination room

Abbreviation: EHR, electronic health record.

Organize what you want to accomplish before the visit. Recognizing that the computer seems to amplify existing behaviors, good or bad, and considering increasing time pressures of clinical practice, it is important to be explicit about the purpose and content of each clinical encounter. Disorganized clinicians are likely to remain disorganized after the computer enters the clinic; organization and goal setting are thus even more important in the era of the EHR. Setting an agenda for the visit upfront can help clinicians to use the computer in a less disruptive manner, can save time, and may even improve patient satisfaction with a visit. In this way, both patient and clinician are able to set an agreeable and reasonable agenda for the visit.

Demonstrate Internet resources that might contribute to patient activation. Although we have focused on reducing the negative consequences of computers in the oncology clinic, clinicians can also make use of the computer in positive, activating ways. One approach might be to encourage patients to do some of their own fact-checking using Internet-based resources that can help them become more knowledgeable, comfortable with their illness, and active in their own care, including verifying the accuracy of information present in the EHR.[22] For example, one emerging source of patient engagement and activation related to the EHR is the Office of the National Coordinator's "Blue Button" system, which facilitates patients' direct access to their records online.[23]

Limitations

Although our recommendations and approach are rooted in evidence and best-practice standards in communication, computers are relatively new in the clinical workflow, especially in the examination room, and most of the available evidence does not consider the computer's impact. We therefore do not yet have much specific data to guide our approach further, especially in the oncology setting. Regardless of the potential benefits of the EHR, some patients may resist the use of the computer in the examination room, and we should be respectful of their viewpoint. This may necessitate slightly shortening the visit to allow time for documentation outside the examination thereafter; this can be communicated openly, and negotiated with the patient as necessary. It is also important to recognize that in the oncology clinic, patients who are distraught deserve our full attention and should be accommodated, regardless of the presence of the computer. In these situations, it will rarely, if ever, be appropriate to be attending to the computer when the patient is in need of direct attention.

Conclusion

The addition of the computer into the examination room has great potential to improve patient care, and even communication, if it is thoughtfully integrated into a visit. The computer may also amplify bad habits and negative communication behaviors, so careful attention to this issue is needed. Applying principles of patient-centered communication to the use of the EHR points to the importance of several practices, including (1) positioning, (2) asking permission, (3) involving the patient, (4) nonverbal communication, (5) organization, and (6) patient activation. By attending to these principles, the computer can be successfully integrated into the oncology clinic. Clinicians must be attuned to the fact that the computer will amplify pre-existing positive and negative communication behaviors, thus conscious attention to communication strategies around the computer is important. More research in this area is needed to provide further guidance about patients' perceptions of the EHR, and to generate data on the efficacy of our recommended strategies to improve communication in the oncology clinic.

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