Refereed paper

Communication and the electronic health record training: a comparison of three healthcare systems

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ABSTRACT

Background The electronic health record (EHR) used in the examination room, is becoming the primary method of medical data storage in primary care practice in the USA. One of the challenges in using EHRs is maintaining effective patient–provider communication. Many studies have focused on communication in the examination room.

Purpose Scant research exists on the best methods in educating nurse practitioners and other primary care providers (clinicians). The purpose of this study was to explore various health record training programmes for clinicians.

Methods One researcher participated in and observed three health systems' EHR training programmes for ambulatory care providers in the Pacific Northwest. A focused ethnographic approach was used, emphasising patient–provider communication.

Results Only one system had formalised communication training in their class, the other two systems emphasised only the software and data aspects of the EHR.

Conclusions The fact that clinicians are expected to use EHRs in the examination room necessitates the inclusion of communication training in EHR training programmes and/or as a part of primary care nurse practitioner education programmes.

Keywords: electronic health record, patient–provider communication, primary care

What is known about this subject
- The computer in the examination room impacts the encounter, communication and the patient–provider relationship.
- The EHR is a tool that can enhance patient–provider communication and empower patients.

What this paper adds
- Current health systems training is not standardised and does not incorporate content regarding patient–provider communication.
- Better models of training–education need to be established, with the almost universal usage of EHRs in primary care settings.

Introduction

Electronic health records (EHRs) are an effective, efficient and secure way of both storing patient information and sharing this information with all who provide care to the patient while addressing many safety and quality concerns. EHRs can reduce medication errors, increase preventative care, help providers keep track of patients with chronic diseases and improve adherence to clinical practice guidelines.[1] In addition, an EHR that includes electronic prescribing as well as electronic charting offers substantial financial benefits to individual clinics, primary care organisations and the larger healthcare system.[2] Moreover, as patients in the future begin accessing their own health records for self-care, primary care clinicians may be expected to facilitate the use of these systems by their patients.[3] Few studies have been done to investigate consequences of introducing EHR technology in primary care and ambulatory care settings where the majority of health care occurs. Effective implementation of an EHR in a small primary care practice can be limited by poor understanding of how the clinic functions and how informal decisions occur, issues that existed many years before EHR implementation.[4] New technology must take into account the interaction of practice members as a team and how it intersects with the new technology.[5]

A number of studies have focused on how the EHR impacts upon patient–provider communication in the examination room, either positively or negatively.[6–12] A common conclusion of all studies is that communication issues need to be addressed before providers begin using EHRs with patients so as to maximise the EHR potential.

Based on our interest about communication in the examination room and how to assist new clinicians to integrate computer use, nursing and medical student EHR training specifically related to communication was lacking. In addition, the literature lacked a comparison of healthcare system strategies for training providers in the use of EHR. Because of this paucity of information, we examined EHR training at three different healthcare systems in the Pacific Northwest to observe actual training procedures. We chose classes that were geared directly toward practitioners in the outpatient setting, i.e. physicians and nurse practitioners.

Methods

We carried out a literature review from CINAHL and Medline data bases using the search terms 'electronic health record', 'communication' and 'primary care'.

This descriptive study used an ethnographic focus. Ethnography is a set of qualitative research methods borrowed from the field of cultural anthropology that focuses on describing the colour and texture of human conduct in natural situations.[13] Cecil Helman MD and medical anthropologist defined three fundamental tasks that characterise the ethnographic approach: (1) observing what people do; (2) investigating what people say they do, believe and think; and (3) interpreting what people actually believe and think.[14] The core principles of ethnography involve defining a question, interviewing informants, becoming a participant observer in a community or setting, analysing one's observations and presenting results.[15]

Participant observation, the foundation of this observational study, is characterised by a lengthy social interaction between the investigator and the informants during which data is discretely and systematically collected.[16] Participant observation should aim to place the investigator in the midst of an unfolding story. By asking and answering questions relevant to the story, the investigator can develop insights about how events are experienced and reported.[15]

Participant observation

For approximately 20 hours, the first author attended EHR trainings for three different healthcare systems in the greater Portland, Oregon area. Findings of these observations included descriptions of the settings of the classes, the content of the trainings and information about who provides EHR training within these three systems. Reflective field notes, memoing and discussions among researchers occurred around first authors experiences in these trainings. IRB (research ethics) approval was not sought for this observational exercise as training is considered part of regular business practice and no identities of individuals were saved or recorded. For identification purposes, the three healthcare systems were assigned the letters A, B and C.

Health system A is a closed-panel Health Maintenance Organization (HMO) with approximately 8.7 million members and 14 000 employed physicians with 421 clinics. It provides services in various geographical areas nationwide. Health system B is a private organisation subsidised by state funding with a medical university and approximately 1000 physicians in eight primary care clinics and numerous specialty clinics throughout the state of Oregon. Health system C is an open panel full-spectrum health service provider with over 20 primary care clinics in Oregon employing 350 physicians and approximately 30 hospitals in five western states.

Results

Each of these three healthcare systems structured its EHR training differently. Health system A's EHR training was part of the Department of Graduate Education, the instructors of the classes had a widely varied educational background, some had a healthcare background; others did not. The level of education varied with the majority of trainers having a four-year university education. The most important criteria for this system were knowledge of the particular EHR and the ability to impart that knowledge to clinicians. Health system B's training was part of a large IT department; the majority of trainers had a healthcare background from medical technicians to RNs. However, none of the trainers had used the EHR as part of primary care practice. It was not known if any of the trainers had any primary care experience. Health system C's EHR training was based in the outpatient division or clinic services department. The trainer was an RN responsible for a number of continuing education programme trainings. The training structure of all three systems was different, with no standardisation across these healthcare systems.

All three systems spent most of the training time on how to use the various features of the EHR such as order entry, looking up patient information, documentation and communicating with other clinicians within the EHR. Each participant in all three trainings had access to a computer. The trainings differed in length and set-up from one 8-hour day to several 4-hour modules.

Health system A's training focused more extensively on patient–provider communication issues than the other two systems. Yet, in the 8 hours of health system A's training, only 30 minutes focused on watching a video on the use of the EHR in the examination room.

Health system A's training video presented multiple scenes with either a medical assistant or a primary care clinician using the EHR in an examination room. The first of these scenes showed the 'wrong' way to use the computer in the examination room, such as walking straight to the computer without introducing yourself to the patient, looking only at the computer, complaining about the computer system, cutting the patient off when talking in order to answer computer prompts and positioning the computer as a barrier between the patient and the provider.

The video scenes showing the 'right' way to use the computer start with the clinician entering the room and introducing herself to the patient. She then explains the use of the computer as she turns the computer at an angle so that she can look at the patient and the computer screen as well. If she has any data that she wants the patient to see, such as laboratory results, she turns the computer so that they can both see the computer screen and she explains to the patient what they are looking at and how it impacts the patient's health.

Health system B's 6 hours of training did not address any communication issues at all. In health system C's 4 hours of training, communication was addressed for approximatley 15 minutes. The trainer explained that health system C does not expect its primary care clinicians to use the computer system in any one way and that it may take some time to become familiar with using an EHR with a patient. Different clinicians use the computer system as they deem fit, most of them entering in information in the examination room but not completing their documentation until after the visit. Table 1 summarises the variety of methods used in training clinicians to use the EHR in clinical practice.

Table 1 Comparision of three different EHR trainings

	System A	System B	System C
Total length of training (hours)	8	6	4
Number of classes required before able to use system	1	2	1
Types of trainees	Providers	All outpatient staff, then providers	Providers
Number of trainees (including observer)	10	12, then 11	2
Time devoted to patient–provider communication	30 minutes	none	15 minutes

Discussion

Principal findings

Although all three healthcare systems had similar formalised EHR training, they differed significantly in the way that they taught patient–provider communication in the exam room. Only one healthcare system had any formalised communication training, recommending the 'right' way to use an EHR in the exam room. According to the literature, a computer in the examination impacts the encounter, communication and the patient–provider relationship.[7–10,12,17,18]

Implications for practice and teaching

It is necessary to teach clinicians – both nurses and physicians – early on in their education, how to efficiently use EHRs because of many policy changes promoting EHR adoption throughout the USA and the increasing use of EHRs worldwide. Limited data exists on EHRs and the education of healthcare providers. Computer training by self-reports leads to more favourable attitudes to computers, less computer anxiety and more awareness of co-workers expectations about computer use in community health centres.[19] The small amount of literature on educating nursing and medical students in the use of EHRs focuses on training in the 'nuts and bolts' or technical aspects of the systems, techniques for gathering information from the patient, security concerns and data management.[20–22]

Because of the multitude of challenges and potential pitfalls of EHR use in patient communication, a significant portion of this training should focus on how the computer in the examination room impacts the patient–provider relationship.[12] Providers should be taught that the way in which they use the computer impacts how the patients view their visits with their clinician. For example, nursing and medical students can participate in mock patient–clinician scenarios in which they are exposed to different communication techniques. The students determine which set up and communication techniques make them feel more comfortable as a 'patient'. Candid interviews can occur with patients or set up patient panels to obtain the patient's perspective of different communication techniques.

Videos, as shown by health system A, are also an effective means of demonstrating communication techniques that enhance the patient–provider relationship.

By teaching providers the 'right' way to use the computer in the examination room by using video examples of behaviours that enhance or detract from the patient relationship, health system A is teaching a consistent practice that providers will be able to emulate during patient encounters. This method is consistent with recommendations found in the literature.[10,23] In summary, based on observation of three training sessions and working in five different clinical sites these recommendations remain essential for using the EHR as a tool for enhancing the communication between patient and provider.

Comparison with the literature

Historically, the provider–patient relationship has been viewed as a dyad with the examination room being set up to reflect that reality.

With the addition of the computer to the examination room, the relationship has become three way.[24,25] Being aware of the room set-up is essential when there is a computer in the examination room.[17] Using laptop computers or monitors on mobile arms is important for promoting communication in the examination room. Mobility is the key. The patient should be able to see information on the computer screen and the provider should be able to turn and face the patient in order to make good eye contact.[9,23]

Another important factor in promoting good communication is making a connection with the patient before looking at the computer. A good way to do this is to begin with small talk, then explain to the patient that the provider will now be using the computer for charting. During times when they will be looking up information, the clinician should explain what they are doing, so there is not an uncomfortable silence.[10,23]

When a patient is sharing emotional problems or otherwise needs undivided attention, the clinician should know to push the computer away and focus their attention to the patient.[18,23]

In patient encounters using an EHR, the frequency of provider-initiated discussion about self-care increases due to the EHR cues providing easy access to laboratory and other data which can prompt questions about self-care.[8] Communication between patient and provider can be enhanced by setting up the room in an 'open' manner, so that the provider can look at the patient and the patient can also see the screen. This research noted that while the provider is using the computer, the patient may have time to think of questions or concerns they may have forgotten.[17]

Examination room set-up and its impact on patient communication is paramount to patient-centred care. A negative correlation exists between using the computer and eye contact/conversation with the patient, and a positive correlation between use of closed questions and use of the keyboard. The room set-up prevented patients from seeing the computer screen, and the providers did not share EHR information with the patients. Communication is negatively impacted

when only the provider can see the screen and the computer prompts a provider into asking closed questions.[11] Pearce *et al*[24] discuss ways to position the desk, computer, its component elements and the patient chair to make the examination room in a GP practice more inclusive.

The individual provider communication skills whether positive or negative, were amplified after the implementation of the EHR. If patients are to be receptive to an EHR and feel at ease with their provider, patient-centred communication skills are necessary before beginning to use an EHR in the examination room.[9]

Different provider communication styles may be amplified when the EHR is used. 'Informationally focused' providers used the computer-guided questions; 'interpersonal' style providers focused on their patient's narratives and faced the patient more while using the computer less; and 'managerial' providers alternately focused on the patient and computer at different times. As well, computer position in the examination room impacts communication and a provider's communication style may determine the room set-up.[18]

Focusing on nurse practitioner (NP) practice in the UK, NPs reported a negative impact of the computer in their patient consultations, disrupting their connection–relationship with the patient and leading to longer consultations. These NPs struggled with how to record and type information with the patient present and develop individual strategies for addressing this. Sharing information with patients for some NPs reflected their sense of inadequacy and the need to appear expert to the patients, while others found sharing information helpful in validating and reinforcing their management plans with patients.[6]

Limitations of this study

This research study, although exploring a timely and significant issue, is limited by observing training in three healthcare systems in the Pacific Northwest. Our research did not explore training for nursing students, medical students and medical residents, which may have a different focus. The unique perspective of patient and provider on EHR training needs was lacking in this study.

Conclusions

The EHR is a tool to enhance communication and empower patients and should be used as such. EHRs are more than just technical systems to be learned as complicated recording devices. In order to realise their full potential in health care, EHRs must be presented to clinicians in a manner that emphasises their full potential in the exam room and beyond. More research is needed about how to standardise the training for all clinicians so that these objectives can be met.

REFERENCES

1 Hillestad R, Bigelow J, Bower A, Girosi F, Meili R and Scoville R. Can electronic medical records transform health care? Potential health benefits, savings, and costs. *Health Affairs* 2005;24(5):1103–17.

2 Wang S, Middleton B, Prosser L *et al.* A cost–benefits analysis of electronic medical records in primary care. *American Journal of Medicine* 2003;114:394–403.

3 Winkelman WJ, Leonard KJ and Rossos PG. Patient perceived usefulness of online electronic medical records: employing grounded theory in the development of information and communication technologies for use by patients living with chronic illness. *Journal of the American Medical Informatics Association* 2005;12(3): 306–14.

4 Crosson J, Stroebel C, Scott J, Stello B and Crabtree B. Implementing an electronic medical record in family medicine practice. *Annals of Family Medicine* 2005; 3(4):307–11.

5 Yoon-Flannery K, Zandieh S, Kuperman GJ, Langsman DJ, Hyman D and Kausal R. A qualitative analysis of an electronic health record (EHR) implementation in an academic setting. *Informatics in Primary Care* 2008;16: 277–84.

6 Adams A, Adams R, Thorogood M and Buckingham C. Barriers to use of e-health technology in nurse practitioner–patient consultations. *Informatics in Primary Care* 2007;15:103–9.

7 Arar NH, Wen L, Grath JM, Steinbach R and Pugh J. Communicating about medications during primary care outpatient visits: the role of the electronic medical records. *Informatics in Primary Care* 2005;13(1):13–22.

8 Arar NH, Wang C and Pugh J. Self-care communication during medical encounters: implications for future electronic medical records. *Perspectives in Health Information Management* 2006;3(3):1–20.

9 Frankel R, Altschuler A, George S, Kinsmand J, Jimison H and Robertson NR. Effects of exam-room computing on clinician–patient communication: a longitudinal qualitative study. *Journal of General Internal Medicine* 2005;20(8):677–82.

10 Ventres W, Kooienga S, Vuckovic N, Marlin R, Nygren P and Stewart V. Physicians, patients, and the electronic health record: an ethnographic analysis. *Annals of Family Medicine* 2006;4(2):124–31.

11 Margalit RS, Roter D, Dunevant MA, Larson S and Reis S. Electronic medical record use and physician–patient communication: an observational study of Israeli primary care encounters. *Patient Education and Counseling* 2006;61(1):134–41.

12 O'Malley A, Cohen G and Grossman J. *Electronic Medical Records and Communication with Patients and Other Clinicians: are we talking less?* Center for Studying Health

System Change: Washington, DC, 2010, Contract No. 131.

13 Spradley JP. *Participant Observation.* Holt, Rinehart and Winston: New York, 1980.

14 Helmann C. Research in primary care: the qualitative approach. In: Norton P, Stewart M, Tudiver F, Bass M and Dunn E (eds) *Primary Care Research: traditional and innovative approaches.* SAGE: Newbury Park, CA, 1991, pp. 105–24.

15 Ventres WB and Frankel RM. Ethnography: a stepwise approach for primary care researchers. *Family Medicine* 1996;28:52–6.

16 Bogdan RC. Participation observation in organizatonal settings. *Nursing Economics* 1972;21(2):85–8.

17 McGrath JM, Arar NH and Pugh JA. The influence of electronic medical records usage on nonverbal communication in the medical interview. *Health Infomatics Journal* 2007;13(2):105–18.

18 Ventres W, Kooienga S, Marlin R, Vuckovic N and Stewart V. Clinician style and examination room computers: a video ethnography. *Family Medicine* 2005; 37(4):276–81.

19 Yaghmaie F and Jayasuriya R. The roles of 'subjective computer training' and management support in the use of computers in community health centres. *Informatics in Primary Care* 2004;12:163–70.

20 Melo D and Carlton KH. A collaborative model to ensure graduating nurses are ready to use electronic health records. *Computers, Informatics, Nursing* 2008; 26(1):8–12.

21 Altman M. The clinical data repository: a challenge to medical student education. *Journal of the American Medical Informatics Association* 2007;14(6):697–9.

22 Speedie SM and Niewoehner C (eds). *The Minnesota Virtual Clinic using a stimulated EMR to teach medical students basic science and clinical concepts.* AMIA Symposium Annual Symposium Proceedings, 2003. http://proceedings.amia.org/

23 Ventres WB, Kooienga S and Marlin R. EHRs in the exam room: tips on patient-centered care. *Family Practice Management* 2006;13(3):45–7.

24 Pearce C, Walker H and O'Shea C. A visual study of computers on doctors' desks. *Informatics in Primary Care* 2008;16:111–17.

25 Pearce C, Shachak A, Kushniruk A and Lusignan SD. Usability: a critical dimension for assessing the quality of clinical systems. *Informatics in Primary Care* 2009;17: 195–8.

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