Electronic Health Records and the Disappearing Patient

Linda M. Hunt,
Department of Anthropology, Michigan State University

Hannah S. Bell,
Department of Anthropology, Michigan State University

Allison M. Baker, and
Harvard T. H. Chan School of Public Health, Harvard University

Heather A. Howard
Department of Anthropology, Michigan State University and Centre for Aboriginal Initiatives, University of Toronto

Abstract

With rapid consolidation of American medicine into large-scale corporations, corporate strategies are coming to the forefront in health care delivery, requiring a dramatic increase in the amount and detail of documentation, implemented through use of electronic health records (EHRs). EHRs are structured to prioritize the interests of a myriad of political and corporate stakeholders, resulting in a complex, multi-layered, and cumbersome health records system, largely not directly relevant to clinical care. Drawing on observations conducted in outpatient specialty clinics, we consider how EHRs prioritize institutional needs manifested as a long list of requisites that must be documented with each consultation. We argue that the EHR enforces the centrality of market principles in clinical medicine, redefining the clinician's role to be less of a medical expert and more of an administrative bureaucrat, and transforming the patient into a digital entity with standardized conditions, treatments, and goals, without a personal narrative. [electronic health records, technology, ethics of care, clinical culture change, professional autonomy]

Keywords

Over the past few years, we have been conducting an ethnographic study in two outpatient specialty clinics of a major health system in the United States, observing clinical consultations and interviewing clinicians and patients. We have been doing observational research in clinical settings for many years and have watched a gradual but profound transformation of health care into a practice that begins with, flows through, and ends with a computer.

In this study, on any given day, we would see eight to 10 clinicians and medical assistants working diligently at long desks with their backs to each other, each intently and silently engrossed in reading, clicking, and typing on their laptop computers. There's a bit of banter now and then, mostly about how to interpret something that has come up on the computer screen or how to work around a confusing interface. The laptop is essentially an appendage of each clinician. It is either constantly cradled in one arm or wheeled on a cart, seamlessly moving with them throughout the day. When clinicians enter a consultation room, they situate the computer in front of them as they face the patient. They attend to the computer continually throughout the consultation, working on the electronic health record (EHR)—opening and closing pages, clicking check boxes, and typing notes—stopping only for the briefest of physical examinations before returning to the computer. When consultations are over, the clinicians return to their desks with the laptops and type away to complete required entries in the EHR, sometimes for long hours after their patients have gone.

Drawing on our research in these specialty clinics, in this article we consider the dominant role the EHR has come to play in clinical encounters and some of the effects this has on patient care. We will argue that as health care is increasingly governed by corporate interests, EHRs are structured to serve a variety of institutional purposes that lie beyond the medical encounter, requiring standardized reporting to facilitate such things as billing, quality monitoring, and institutional oversight. We further argue that in prioritizing these purposes, the EHR is transforming clinical interactions in important ways. It seems to be obstructing clinicians' authority to direct consultations based on their knowledge, and is all but erasing patients as individual persons from the clinical encounter, replacing them with a digital representation as the object of care. We question whether the improvements to health care intended through the expanding use of EHR are paradoxically being undermined, disrupting care more than enhancing it.

The Corporatization of American Medicine

Health care in the United States is a major industry, with spending in 2014 accounting for more than 17% of the national GDP (World Bank 2016). It is therefore unsurprising that the health care industry is increasingly responsive to the principles of the marketplace. The consolidation of individual, free-standing practices, clinics, and hospitals into large-scale health care organizations is a long-term trend in American medicine that has been accelerating in recent years and is expected to continue (Creswell and Abelson 2013; Dafny 2014). While this trend is portrayed as a means to improve efficiency and lower costs, numerous concerns have been raised about how the expanding prevalence of market-based principles in medicine may impact patient care. The increasing emphasis on financial accountability and market efficiencies have changed the institutional landscape of medicine, transforming clinical relationships toward routinization and quantifiable outcomes (see review in Dao and Mulligan 2016).

A significant consequence of the growth of large-scale health networks has been increasing prevalence of corporate strategies in health care delivery. Dorsey and Ritzer (2016) argue that corporate rationalization principles designed to improve productivity are replacing the most central and cherished values of medicine, including care for the individual and

meaningful patient-physician relationships. They maintain that the principles of efficiency, calculability, predictability, and control are coming to dominate the way health care is delivered.

Anthropologists have considered some of the unintended consequences of market-based health care reforms in reshaping the content and quality of health care, noting that such reforms present particular burdens for disenfranchised groups (Mulligan 2016). Studies both within and outside the United States have documented decreasing availability and quality of care as a direct result of reforms designed to increase efficiencies, decrease waste, and incentivize quality improvement (see, e.g., Adams 2016; Horton 2006; Horton et al. 2014; Lamphere 2005; Oldani 2010; Willging 2005).

An important part of the trend toward market-driven medicine is the increasing emphasis placed on enumerated documentation to facilitate external evaluation and verification of processes and procedures (Mulligan 2010). A number of anthropologists have examined emerging issues around the increased prevalence of auditing of all manner of social phenomena, noting that turning social indicators into data points imposes novel values, omits nuances, and assumes that unrecorded or unreported data fields are unimportant (Biruk 2012; Merry 2016; Strathern 2000). Through such processes of quantification, it is argued, social realities are transfigured, resulting in datasets that reflect the priorities of the audit, rather than reality (Sangaramoorthy and Benton 2012).

Erikson pushes this critique further, positing that administrative apparatus may not only transfigure representations of reality, but through a process of "performativity," actually restructure the clinical behavior they are designed to monitor (Erikson 2012). She argues that electronic health information systems not only quantify health data, but reify health as domains of business and governance. As such, the EHR itself can be considered a form of audit, related to the desire for regulatory oversight. Some recent changes in U.S. health care regulations are having an important effect on the prominence of EHRs, which are amplifying the transformative effects of counting, auditing, and routinization on health care. In the implementation of such corporate rationalizations, clinicians encounter a dramatic increase in the amount and detail of health record documentation required in their work, which, we will argue, seems to structure and drive much of what occurs in the clinic, more than simply reflect it.

Electronic Health Records: Serving Many Masters

In 2009, the HITECH Act (Health Information Technology for Economic and Clinical Health Act) was signed into law as part of the economic stimulus bill (the American Reinvestment and Recovery Act). The HITECH Act was designed to promote and incentivize the adoption and use of EHRs across health care settings in the United States— an area in which the country was lagging behind other developed nations (Schoen et al. 2009). The program has been very successful: The number of office-based physicians using certified EHRs reached about 83% in 2014, and hospital use is up to about 93% (ONC-HIT 2016). HITECH's primary goal in promoting the use of EHRs was to improve the quality, safety, and efficiency of health care through preventing medical errors, reducing redundancy,

coordinating care, facilitating communication, and thereby lowering costs (CMS 2015). However, over time the initiative has evolved to encompass a variety of additional goals, many of which serve various market and institutional interests.

Edmunds et al. (2016) provide a comprehensive review of the development and implementation of policy resulting from the HITECH Act. They report an impressive array of stakeholders integrally involved in developing EHR policy, including federal agencies and politically connected private organizations and foundations. They note that many of the standards and regulations that now govern the uses of EHRs were developed in response to the interests of a long list of private industries and public institutions, with minimal input from clinicians and patients. The resulting regulatory environment is complex.

Beyond this regulatory context are additional stakeholders whose interests add further layers of complexity to the design and function of the EHR: software developers and vendors, health care payers, health system management, quality monitoring organizations, pharmaceutical suppliers, and others (Bloomrosen et al. 2011). The diverse concerns and priorities of these various factions all influence the structure and function of the actual EHR screen that a clinician encounters, resulting in a complex, multi-layered, and often cumbersome documentation system. No doubt, EHR interfaces are designed to make their use as efficient as possible, allowing clinicians to choose between checkboxes and radio buttons for predefined options. As EHRs evolve, these embedded layers add up and increasingly require that clinicians, at the time of care, enter a vast amount of highly structured information, much of which may not be clearly relevant to the individual patient.

Noting that moving from paper medical records to EHRs has shifted the primary focus of clinical documentation from monitoring patient progress to recording data pertinent to institutional priorities, de Ruiter et al. (2016) argue that clinicians have lost discretionary control over documentation standards and practices. EHRs, they point out, are designed to both standardize data for sharing records across units and to collect data relevant to institutional priorities, resulting in a blurring of the distinction between clinical concerns and what's needed for standardized reporting for institutional purposes. This results in deemphasizing the patient narrative, instead representing patients as a set of data points and metrics.

Critics have argued that the trend toward addressing institutional priorities through EHRs may undermine clinicians' ability to act in accordance with medical knowledge, prioritizing instead the agendas of institutional stakeholders such as insurance companies and government agencies. Through the reporting requirements of the EHR, the role of the clinician may become subordinate to bureaucratic authority, resulting in unintended consequences that counter the clinical agenda (Bowman 2013; Fareed et al. 2015; Reich 2012).

EHRs' Impact on Care

As a result of this massive expansion of EHR documentation, the primary focus of clinical care seems to be shifting away from monitoring patient progress onto priorities that are not

clearly clinically relevant. Because the EHR has been developed in the service of many masters, it implicitly and explicitly reflects many competing models of reality. As Smith and Koppel (2014) observe:

> [I]mplementing EHR introduces an additional representation of reality—one that comes between the clinician and the patient. … When these representations fail to match the patients' conditions and clinicians' mental models, EHR can distort reality, which they nevertheless continue to array neatly in specified columns and rows.
>
> (p. 123)

In anthropological terms, one might argue the EHR is a complex symbolic system, both a "model of and a model for reality," simultaneously reflecting reality and shaping reality to itself (Geertz 1973, 93). While the primary purpose of the EHR may be to capture the patient's condition and the consultation, in many ways it is coming to structure clinical reality (Erikson 2012). Dorsey and Ritzer (2016) argue that, because it specifies the questions and tasks to be completed in each visit, the EHR controls doctor-patient interactions, replacing the clinician's judgment with the computer's.

Evaluating the success of EHRs is elusive in part because they address so many purposes for so many stakeholders. It therefore is challenging to define what values should be prioritized and assessed. While CEOs or payers may value outcomes that support market-based principles, patients and clinicians may be more concerned with the content and quality of what actually transpires in the consultation. However, in his review of the literature on health information technology, Kuziemsky (2015) found that evaluations of EHRs tend to focus on effects related to the technology itself and not consider the organizational or clinical context of its use.

Clinicians writing on the subject of EHRs have indeed expressed concerns about the priorities enforced by this technology. Wachter (2015), for example, while optimistic about potential benefits of reduced errors and improved communication, is concerned that we may be at risk of losing the vital bond between physicians and patients. Verghese (2008) more forcefully states a similar concern: "The patient is still at the center, but more as an icon for another entity clothed in binary garments: the 'iPatient'" (p. 2749).

By using an ethnographic approach, we are able to closely consider the EHR in the context of its use, allowing us to examine just how such a digital patient is constructed and the impact this may have on clinical care. In this article, we will draw on clinical observations and interviews with clinicians and patients at two outpatient specialty clinics of a major Midwestern health system. We will consider how the agendas of institutional stakeholders accumulate and are manifest in the EHR and how they combine to drive the content and context of the clinical consultations the EHR is meant to capture.

The Study

We conducted clinical observations, interviews, and medical chart reviews at the Diabetes Services Clinic (DSC) and the Weight Services Clinic (WSC) of a large health care system

we will call Superior Health Systems.[1] The DSC and WSC shared consultation space and business office staff during the time of the research but are separate departments within Superior Health Systems. Both clinics offer an array of services, from physician consultations to diet counseling and support groups.

Superior Health Systems had made a major commitment to using EHRs in all aspects of care, moving all patient records and related documentation to a fully electronic system two years prior to our study. The EHR software it uses integrates a variety of elements such as quality measures, a patient portal, lab result access, and automated prescribing. Two significant EHR transitions occurred at Superior Health during the course of our data collection: Stage 2 Meaningful Use criteria became effective, and Superior Health transitioned to a new diagnostic code system, ICD-10. These two developments, which we will return to below, brought discussions of the EHR to the forefront in the clinics, enhancing our ability to observe the impact of the expanding EHR on clinical care.

During the study, we observed 122 clinical consultations, paying especially close attention to the use of the EHR. We noted how clinicians interacted with the computer and with patients, and documented any conversations that took place during consultations. We interviewed nearly all the staff at these two clinics, totaling 24 clinical and support staff members, and a purposive sample of 52 patients whose clinical consultations we had observed. We also reviewed the EHRs of these patients, focusing especially on notes pertaining to the consultations we had observed. Following IRB-approved protocols, all study participants gave informed consent for each phase of the study: observations, interviews, and medical record review.

EHRs in the Context of Use

Throughout the study, we were impressed by the centrality and predominance of the EHR both in and out of clinical consultations. As we began to explore what was driving this, we encountered layers of federal regulations, institutional policy, performance oversight, safety monitoring, and pragmatic concerns such as billing and pharmaceutical orders all present in the EHR and competing for the clinicians' attention. The clinical consultation itself seemed to be far down a long list of pressing priorities that needed to be attended to in the course of clinical care. In what follows, we present case examples to highlight the array of factors being addressed through the EHR during the course of a consultation. We want to emphasize from the outset that these are but a few illustrations of the complex set of extra-clinical influences that defined nearly all of the clinical consultations we observed. We also want to emphasize that these factors are ubiquitous in current clinical care in the United States, and by no means are they special to Superior Health or the two clinics where we conducted this study.

[1]All proper names and some personal details used in this article have been changed to assure anonymity.

The Long Shadow of Standardized Reporting

With the predominance of large-scale health providers and payers, the corporate management principle of efficient documentation has become central to medical recordkeeping. For organizations like Superior Health, a major concern is that all activities be documented in a standardized format that can be readily reviewed by the health care system and transmitted to various organizations such as payers, federal regulators, and quality monitoring organizations. While in the past information needed to address such "institutional priorities" (de Ruiter et al. 2016) was abstracted by hand from paper charts, this is now automated through intricate coding systems embedded in the EHR. Much of the information must be collected by the clinician during the consultation and fit into a complex set of codes designed to document all diagnoses and clinical activities pertinent to that particular consultation.

The U.S. national standard for medical reporting requires use of the ICD-10-CM codes for classifying diagnoses and reasons for clinical visits, and the ICD-10-PCS for coding procedures and services performed (CDC 2016). These systems jointly comprise more than 140,000 codes, which are the common language for medical billing, reporting, and quality monitoring. The HITECH Act's long-term goal in requiring this level of specificity is interoperability—making medical records readable and shareable between different software platforms, providers, and institutions.

Choosing the appropriate codes for a given clinical encounter requires a great deal of precision. For example, there are more than 120 codes for diabetes diagnoses, which go well beyond identifying the disease itself, specifying such things as type of diabetes, degree of glucose control, if insulin is being used, and specific details about complications.

While working with the EHR, clinicians must navigate through various screens that require entering precise specifications, often preventing them from moving past a given screen until a very specific item is chosen. The EHR interface includes features designed to make this as simple as possible, offering drop-down menus and checkboxes for possible selections. In our consultation observations, it was common for clinicians to turn their full attention to the computer screen for several minutes at a time while clicking through drop-down menus and searching for appropriate codes, leaving the patient to simply wait for the consultation to resume.

While noting some advantages to using EHRs, such as easily accessing lab results, communicating with patients, and ensuring completeness of each consultation, many clinicians expressed frustration with the dominant role the computer has come to play in the clinic. In the words of one physician: "You spend more time checking boxes and doing things because it's part of the EHR rather than because it's actually important." Most clinicians found the drop-down menus and checkboxes helpful, but many also expressed frustration because they were forced to choose between options that were not quite appropriate or which included extraneous details.

We also heard of a variety of situations where clinicians found incorrect or outdated codes in the EHR but were unable to correct them. Several mentioned frustration with the indelibility

of some EHR entries that are filled automatically by the computer program, noting that they were obliged to sign off on charts they may have felt were less than accurate.

Concern about recording data in a way appropriate for billing and acceptable to payers was a major theme throughout our observations, reflective of the apparent centrality that market-based principles have come to take in clinical medicine. Indeed, strategizing how to represent the patient in the EHR to assure that payers would cover a given procedure or medication was a frequent topic of conversation.

Coding for Payers

Finances are, of course, a major concern of health systems such as Superior Health, and one of the primary purposes of standardized documentation is assuring efficient and accurate billing. Current trends are for clinicians to be increasingly responsible for generating documentation directly relevant to billing as part of the record of each consultation (de Ruiter et al. 2016). This has allowed for some previously unrecognized services to be billed for, and thus more institutionally valued (Howard et al. 2016).

The clinicians were for the most part resigned to the EHR documentation process required for such billing: "We know that there are things you have to document for billing, so we will ask [patients] certain things for that."

The nurse-manager of one of the clinics explained the fiscal importance of this new era of extremely thorough diagnostic coding. In discussing the transition to the highly detailed ICD-10 coding system, she said:

> It will change getting to the nitty-gritty details. So you used to maybe say, "Oh, I have a diabetic type 2 patient." Well in the future it's going to be, "I have a diabetic type 2 patient non-reactive to Metformin." I mean it's just so much more DETAILED. … It's just unbelievable. The more specific you are, the more money that you will most likely get.

Concerned that patients not be faced with unnecessary out-of-pocket expenses, clinicians often strategically classified diagnoses and services to assure they met payers' coverage. This was especially true for selection of medications. Almost all the clinicians we interviewed talked at length about the determinative effect insurers had over which pharmaceuticals they could prescribe for a given patient. As one nurse practitioner told a patient in exasperation: "Your insurance is taking care of your diabetes, not me!"

The impact of EHR reporting on treatment selection was especially noteworthy in the WSC, where documenting that the patient has met insurers' requirements for the weight loss program determined whether or not the insurer would cover bariatric surgery for that patient. While the specific criteria for coverage varied between different insurance companies, EHR documentation of the patient's successful participation in the clinic's weight loss program over several months was usually a prerequisite for coverage.

In addition to making coverage decisions, insurers may also use billing codes more proactively. Mulligan (2016) has reported that insurance companies may employ data

mining techniques on EHR information to maximize revenues. Indeed, we learned of some cases where payers, in response to billing codes, attempted to directly influence how clinicians manage their patients. For example, a physician assistant told us:

> Sometimes I get e-mail or fax alerts from insurance companies. They'll say: It's been a year since this patient has had an A1c[2]. … I think they track it through the billing side of things. … Or if a person has diabetes, they'll say, "Just for your consideration, think about adding statin for this patient." They're just reminders, but a lot of times I'm like, "Well, there's a reason why they're not on a statin."

While such specific suggestions for clinical management were rare, it was common for payers to directly influence treatment choices by limiting what procedures or medications they would cover under a given billing code. Clinicians often had to request prior authorization for a specific management strategy to be covered: A letter arguing that a certain medication or service is medically necessary must be sent to the payer, who may elect to approve or disapprove paying for it. Several clinicians expressed great frustration with this. As one endocrinologist lamented:

> Insurance allowing, I get to practice the art of medicine. So it's not, "What does the patient need?" But it's "What does the insurance company allow?" Because they definitely have their opinions and their algorithms. … When I write a prescription, that's my authorization. I shouldn't have to do a prior authorization to explain why I did what I did. I have the medical degree. I signed my name. That's my prior authorization.

While the clinicians were often frustrated with payers' demands and restrictions, for the most part they viewed these as external to their practice: a necessary evil that one could work around. Perhaps more significant for the content of clinical practice are the ways the EHR has become an instrument for enforcing institutional compliance with a variety of regulations and standards of practice.

Attending to the Needs of Institutional Oversights

As EHR technology develops, an increasing number and complexity of items required by accreditation and regulatory agencies are tracked through the EHR. In this environment, the default assumption is: "If it was not documented, it was not performed" (de Ruiter et al. 2016:54). In the everyday clinical work we observed, this was manifest as a long list of items that had to be documented in the EHR for each consultation. While the intent may have been to promote health information exchange and improve patient outcomes, the end result was often that these requirements drove the content of care and dominated clinical time.

One important application of standardized EHR data is for quality monitoring and quality improvement. Quality oversight programs are now a ubiquitous feature of health care in the United States. Quality oversight has its roots in programs developed for the manufacturing

---

[2]·A1c is a measure of glycated hemoglobin in the blood, thought to reflect three-month average glucose levels. An A1c of 7.0 is the current goal number set by the American Diabetes Association (ADA 2016).

industry, which were designed to increase efficiency within a culture of continuous improvement (Radnor et al. 2012). Donald (2001) argues that such quality measurement takes evaluation of the individual out of care and substitutes evaluation of population-based criterion. Quality monitoring requires documentation of all relevant work as measurable and trackable data. Quality-reporting programs initiated by CMS, such as the Physician Quality Reporting System, establish the standard for most clinical quality monitoring, setting specific reporting requirements and financial incentives for their fulfillment (CMS 2016). Additionally, quality indicators may be reviewed and incentivized by insurers, accreditation organizations, and the health care system itself to assess physician performance.

As EHR use has grown, so has the number and complexity of items being tracked for quality oversight. As one nurse-manager in our study, tasked with quality reporting, explained to us:

> Quality measurement was not a big deal ten years ago. I'd say in the last ten years it's really grown in importance and sophistication and all the different measurements. There are all these accreditations that [Superior Health] is a part of, and now it's all about data reporting and comparing to others and driving change based on the numbers. I mean, it's huge. … They literally hire people just to be able to meet the need of the data collection and reporting.

In addition to facilitating quality monitoring, documenting the meaningful use of EHRs is another primary function being served by the EHR. In order to assure that the HITECH Act's financial incentives for adopting EHRs are not wasting public funds, regulations have been developed defining measurements to demonstrate meaningful use of EHRs (Edmunds et al. 2016).

Meaningful use regulations are rolling out in three stages, with increasingly comprehensive criteria regarding electronic capture and transmission of clinical data, enhancement of clinical processes, and quality monitoring (CMS 2016). Stage 2 came into effect during our study. Requirements include, for example, recording patient demographics, generating electronic prescriptions, using clinical decision support, medication reconciliation for new patients, and providing patient access to online health information.

While there is some overlap between what's required in the EHR for quality monitoring and for meaningful use, the clinicians in our study did not make a clear distinction between these. Instead, "meaningful use" was the generic term they used to describe various items they were required to include in the EHR. Regardless of the source, the combined effect of quality monitoring and meaningful use requirements was to monopolize clinical time.

For example, clinicians we observed spent a lot of time documenting the accuracy of a patient's medication list. This may sound straightforward, but consider complex conditions like obesity with diabetes: Patients are seen by many different clinicians, all of whom may prescribe several medications. Some of the patients in our study were on more than 20 medications. The act of reviewing those medications at each clinical visit can be time consuming. In fact, in our observations, the medication review for such patients could take 15 minutes, which might be half of the time scheduled for the consultation. There was a

great deal of exasperation expressed by both patients and clinicians concerning this time-consuming ritual.

One frequently mentioned annoyance was the redundancy or irrelevance of such reviews. The following scene drawn from our field notes was typical in our observations:

> The nurse asks the patient to confirm her allergies. The patient says, "You know that! You saw me two days ago!" The nurse looks up from the computer and says yes, but she has to go through the whole list again. She then reviews the 14 items on the patient's medication list, asking if the patient is still taking each of them.

Clearly, the reporting requirements add tasks to the clinical encounter and come to take up a large portion of the consultation time. Meanwhile, information that may be clinically relevant, but does not readily fit into the EHR template, does not find its way into the medical record. When we compared the EHR to our field notes, we found a surprising lack of documentation of issues highly relevant to diabetes and weight management, which were volunteered by patients outside the structured questions. For example, there was no EHR note that one weight management patient said she was getting no exercise due to severe back pain, nor that a diabetes patient mentioned eating a whole pizza the night before the consultation.

One physician told us that when she used to use paper charts, she would have scribbled a note into the margins about such things, but now she doesn't include them in the EHR at all: "The patient might've said, "Oh, by the way … " but I'm already out of that section [of the EHR], and it would take a bunch of clicks to go back, and I just don't have time, so I don't put in the note."

Perhaps even more concerning is how meaningful use regulations and quality monitoring requirements may structure the clinical consultation itself. Standardized data in the EHR are key to this type of reporting. Large health care organizations like Superior Health build meaningful use compliance and quality reporting into EHR functionality. Documentation of clinical activities must appear in appropriate fields to be counted by automated reporting systems, rather than simply included in the clinicians' notes. This is one of the reasons why clinicians find it necessary to stick closely to the EHR-driven script. If a clinical activity isn't noted in the proper field, it won't be counted for billing or in quality reviews.

Such requirements are consistent with recommended clinic practice, assuring that clinicians are thorough in performing the basic tasks of the type of care being tracked. For example, foot exams or eye exams which are tracked for quality measurement usually did take place in the diabetes consultations we observed and were duly noted in the EHR.

Reporting procedures may also introduce clinically extraneous elements to a consultation that could be both disruptive and confusing, taking the consultations in unexpected directions. Midway through our study, a mandatory data field was added to the EHR at Superior Health: the question "Do you feel safe in your home?," intended to screen for intimate partner violence (HHS 2013). While certainly instituted with the best of intentions, in practice, the question was posed by clinicians as they followed computer prompts, and would confusingly come to the patient out of the flow of the consultation. For example,

consider this excerpt from our field notes of a diabetes consultation with a 57-year-old man with advanced diabetes, whose first language is Spanish.

> One by one, the patient confirms that he is taking each of 13 medications. The medical assistant then asks details about the diabetes medications he's taking. They proceed to discuss two types of insulin he uses, reviewing the dosages for each and adjustments the patient makes for food intake.
>
> Apparently following the computer screen, the medical assistant abruptly asks: "Do you feel safe in your home?" The patient looks at him, seems confused, and doesn't answer. The medical assistant tries again: "Do you feel safe domestically? Is there violence? Do you feel you might be in danger at home?" The patient finally takes up the last question and says he's had a fall at his home, and that's a problem because he can't get up by himself and had to have his 12-year-old grandson help him. He says his wife is trying to get an alarm for him that he can wear and push if he falls again. Clicking on to the next screen, the medical assistant next asks if the patient needs any refills for his medications.

Perhaps in part due to his limited English proficiency, the patient clearly never understood the intent of the out-of-context question triggered by the EHR. Still, the EHR report for this consultation, under the section labeled "Domestic Abuse Assessment," states that the patient "reported no domestic violence concerns" and that he feels safe in his home and his relationship. The EHR includes no mention of the patient's concerns about falling and his need of assistance for getting back up.

Throughout our observations, disruptions of this sort were commonplace: The structure of the EHR required countless items be addressed, many of which were unrelated to the interests and priorities of the patient and clinician, while items of interest were excluded from the record.

Assessment of EHRs in Clinical Care

Thus far, we have considered a variety of ways the extra-clinical priorities that are built into the EHR may disrupt, structure, or complicate clinical consultations. There are also numerous ways that the EHR is valued and embraced by both clinicians and patients. Clinicians in our study found the EHR especially useful in communicating with patients and providing easy access to past consultation notes and lab results. They also found it useful for tracking medications and warning of potential drug interactions. Patients likewise appreciated that they could communicate with clinical staff through their EHR portal and that their clinicians had access to lab results and medication histories. Patients also liked the ease of filling prescriptions ordered through the EHR. Most of the patients said they valued the EHR summary printouts they receive after visits and were glad to have a written record of instructions.

Aside from these practical advantages, most clinicians and patients also said they were deeply discouraged by the ways clinical interactions are changing as the EHR becomes increasingly central to consultations. They objected to the way the EHR comes to drive the content of consultations. Some recent research has documented the specific ways this occurs

(Booth et al. 2013; Montague and Asan 2014). For example, based on video analysis, Makoul et al. (2001) found that using the computer during consultations draws clinicians' attention away from patients, making them more active in administration and less active in patient-centered care.

While all the clinicians in this study raised concerns about using EHRs, those with prior experience giving care without an EHR were most critical. As one endocrinologist noted, to order a lab test on paper might take one checkmark, but in the EHR this required clicking through five different selections. More concerning still are the subtle but important ways using the EHR changes the practice of medicine. One clinician explained that when she used paper records, she would chat with a patient for five minutes at the start of a consult, often learning something important to understanding their diabetes. Now, she says, she doesn't have time to do that and feels she's missing important things that don't come out with directed questions.

Only one clinician, a physician assistant, seemed able to carry on the normal rhythm of a conversation while filling in the EHR, apparently due to her extraordinary mastery of touch-typing and multi-tasking. This exception aside, in the consultations we observed, the EHR's demands routinely came between clinicians and patients. Patients would commonly stare in silence at the floor or clock as the clinician typed away, muttering at screens or searching for a necessary drop-down menu. Frustrated with ordering a test, a nurse practitioner commented: "I hate this! It won't let me put this in. This is the hardest part of my job: not controlling blood sugar, but controlling this computer!"

In interviews, patients frequently mentioned feeling that the computer monopolized clinicians' attention, occupying them with typing instead of talking with the patient. A 65-year-old retired auto worker who was a patient in the WSC was especially clear spoken about his view of this:

> They're so bogged down with having to enter all that information that it takes away from your quality time with your provider because they are busy, and they need to get through it as quickly as possible. And hopefully along the way, they don't miss something in the translation. … Sometimes you have to repeat over and over again to get your thought across because he's trying to work on making sure he gets all this stuff entered. … I think that feeling of real trust between you and your provider is lost, because you're not looking me in the eyes when we're talking, you've got your head down. … And I think you lose that personal thing.

Many of the clinicians similarly expressed frustration with the depersonalizing effect of the EHR and the ways it may reframe and misrepresent the clinical encounter. In the words of one clinician: "We've become so computer-laden … it's almost like we're dehumanizing care. … There's just some things you can't put an absolute number to, you can't put a data field to."

Meet the Digital Patient

Several of the clinicians told us about ways they tried to resist the demands of the EHR. For example, one physician, who had only been with Superior Health for two months at the time we interviewed him, said he resisted by writing his notes in narrative form, as he had always done in his 20 years of practice: "I'm kind of rebelling. I'm trying not to conform to what the machine wants me to. … So instead of doubling my work and checking boxes and still adding my own things, I might as well just write the note and I'm done."

Shortly after our interview, this physician had begun to get negative feedback from Superior Health about his failure to fill in required boxes and fields. Toward the end of our time observing these clinics, he began to change, shifting toward following the EHR structure as closely as his colleagues did. The following excerpt from our field notes captures the impact this seems to have had on his interaction with patients. While the clinical details of this particular case are extreme, the character and rhythm of the interaction is typical of what we observed in these clinics.

> The 50-year-old diabetes patient has an oxygen tube going into her nose from a small shoulder bag. Her right eye is squinted shut. The physician sits on a stool with the computer between them. Glancing up as he types, he asks her if she had the oxygen tank the last time she was here. She says it was recently prescribed, related to kidney dialysis that she has started. The doctor types and says nothing in response, then questions her about insulin dosages and other medications. After answering, the patient cheerfully adds: "Did you see my A1c? It improved!" The doctor doesn't respond, instead asking details about her other medications. He then turns his attention to lab reports, pointing out that her recent A1c was 8.2. The patient smiles broadly and says it's the best she's had in 26 years. The doctor doesn't comment. After clicking through computer pages for several more minutes, he says, "It was 9.3 last time, so it's going in the right direction."

> The doctor asks some brief questions about diet and exercise, then stands, pushing the computer table to the side, and approaches the patient, saying, "I'm going to take a listen to you." He puts his stethoscope to her neck, back, and chest, remarking that her lungs sound good. As he's finishing this, the patient lifts up her pant legs and asks about leg swelling she's been having. He presses a finger into each of her calves, then returns to the computer without further comment. As he types, the patient tells him that her 26-year-old son was just diagnosed with diabetes with an A1c of 14. She's very worried about him, saying that he's in denial about it and won't see a doctor or take insulin. The doctor doesn't look up, but as he types, he comments: "That's high!"

> As the doctor continues to type, the patient says, "I really want to get my A1c to 7.0 now that I'm doing better. I want to save my other eye." She explains that she recently lost vision in her right eye following complications of a retina surgery. The doctor stops typing, looks up at her, and says: "OK. Here's the plan." He gives her detailed instructions about her insulin dosages and how to adjust them depending

on her glucose readings and what she's eating. He says, "I'll put this in your instructions," and goes back to typing.

The patient says, "I wanted to check to see if I'm type 1 or type 2," referring to her specific diabetes diagnosis. The doctor tells her, "It doesn't matter; it won't affect your treatment." The patient explains that it does matter. She needs kidney and pancreas transplants, but if she's type 2 she can only be on the kidney list; she needs to be type 1 to be listed for both. The doctor doesn't respond, but later I see in her EHR that he's ordered the test she requested. The doctor finishes typing, looks up, and says, "OK, so I've put all your instructions in." He tells her to see how it goes, and come back in 3 months. The patient asks if he's ordered lab work, and he says he has. The doctor leaves the room.

It was impressive how disjointed this conversation was and how little of the patient's experience was acknowledged. It was especially disappointing to observe how disengaged from the patient this physician had become after several months of working with Superior Health's EHR, and how little of what the patient tried to communicate is captured in the EHR. Her suffering is starkly reduced to ICD-codeable terms: "DM, type2; ESRD[3]; diabetic retinopathy; peripheral neuropathy." There is no mention of her son, her blindness, or an organ transplant.

Despite the doctor's constant typing and clicking at the computer throughout the consultation, the EHR does not represent many of the serious concerns the patient attempted to tell him about. Instead, he has complied and dutifully translated this patient into a series of structured data points required by the EHR.

Discussion

Throughout this study, we have encountered evidence of the pivotal role the EHR plays in realizing the systematic transformation of clinical medicine from an intimate interplay between health professionals and their patients to a corporate enterprise. The principles of corporatization are inserted directly and insistently into clinical encounters by the EHR, which is becoming a site for surveillance and compliance enforcement, restructuring clinical reality into terms placing auditing and compliance priorities over clinical concerns (see de Ruiter et al. 2016; Erikson 2012; Pine 2011; Sangaramoorthy 2012). We saw that an extensive array of complex items must be documented at the time of care to satisfy federal regulations, institutional policy, performance oversight, safety monitoring, and for billing and reporting.

In the consultations we observed, attending to these requirements was monopolizing clinical time and structuring care. While the EHR served many useful purposes for clinicians and patients, such as facilitating communication and offering easy access to labs and past notes, it also proved excruciatingly cumbersome—persistently responding to the auditory assumption that a lack of documentation means a lack of performance. Clinicians spent nearly all of their time filling in required fields in the EHR, and patients often found

---

[3]·End Stage Renal Disease.

themselves answering seemingly redundant or irrelevant questions, or simply waiting silently for information to be typed into the computer. Clinicians lamented the amount of documentation they had to complete that was not pertinent to their patients' needs, and we often found that patient narratives went undocumented, with no place for them in the EHR.

While this small observational study is specific to our sample, the influences we identify as fundamental to these developments are pervasive in current clinical medicine in the United States. Health care is increasingly shaped by corporate logics requiring systematic documentation for billing, regulatory, and quality monitoring purposes. The ascendancy of corporate rationalization principles in U.S. health care have resulted in prioritizing market efficiencies, such as financial accountability and quality oversight, above providing individuals with appropriate care (Dorsey and Ritzer 2016; Mulligan 2016). At the time of care, clinicians must perform a seemingly endless set of administrative and auditing tasks, addressing the broad array of interests which have been integrated into the EHR by the long list of public and private institutions and stakeholders whose combined interests have culminated in the complexity of its design and function (Bloomrosen et al. 2011; Edmunds et al. 2016).

The dominance of the EHR over clinical activity enforces the centrality of market principles of efficiency, calculability, predictability, and control, raising concerns that the clinician's role is being de-professionalized and redefined to be less of a medical expert and more of an administrative bureaucrat, while the patient is simultaneously transformed into a digital entity with standardized conditions, treatments, and goals, erased of a personal narrative (Bowman 2013; Donald 2001; Dorsey and Ritzer 2016; Fareed et al. 2015; Reich 2012). Clinical goals and successes are increasingly defined in terms of quantifiable outcomes, requiring the digitization of each patient's health status to a set of data points. It appears that beyond the managerial implications of these trends, medical judgment itself is being moved out of the hands of clinicians and replaced with automated diagnostic and treatment judgments, based on risk models and evidence-based medicine. Social scientists have taken up a robust critique of the ways these formulations are generated and that they are becoming a defining feature of clinical care, but that discussion lies outside the present analysis (see, e.g., Greene 2007; Jewson 1976; Kreiner and Hunt 2013; Norris et al. 2011; Wendland 2007).

The layers of functions and purposes included in EHRs may be very effective in fulfilling a broad array of institutional priorities such as assuring accurate billing or facilitating quality monitoring, clearly satisfying market sensibilities and corporate logics. But we are left to wonder: Is this what patients have signed up for? Through the profound changes introduced by the EHR, clinical medicine is being transformed to serve a variety of institutional masters and rationalized purposes—but is this at the cost of the individual patient disappearing?

Acknowledgments.

References Cited

Adams V 2016 Metrics: What Counts in Global Health Durham: Duke University Press.

American Diabetes Association (ADA). 2016 Classification and Diagnosis of Diabetes. Diabetes Care 39: S13–S22. [PubMed: 26696675]

Biruk C 2012 Seeing Like a Research Project: Producing "High-Quality Data" in Aids Research in Malawi. Medical Anthropology 31: 347–66. [PubMed: 22746683]

Bloomrosen M Starren J, Lorenzi NM, Ash JS, Patel VL, and Shortliffe EH. 2011 Anticipating and Addressing the Unintended Consequences of Health IT and Policy: A Report from the Amia 2009 Health Policy Meeting. Journal of the American Medical Informatics Association 18: 82–90. [PubMed: 21169620]

Booth A, LaCouteur A, and Chur-Hansen A. 2013 The Impact of the Desktop Computer on Rheumatologist-Patient Consultations.Clinical Rheumatology 32: 391–93. [PubMed: 23247554]

Bowman S 2013 Impact of Electronic Health Record Systems on Information Integrity:Quality and Safety Implications. Perspectives in Health Information Management 10: 1–19.

Centers for Disease Control (CDC). 2016 International Classification of Diseases, 10th rev., Clinical Modification (Icd-10-Cm). http://www.cdc.gov/nchs/icd/icd10cm.htm (accessed September 23, 2016).

Centers for Medicare and Medicaid Services (CMS). 2015 Electronic Health Records Provider. https://www.cms.gov/Medicare-Medicaid-Coordination/Fraud-Prevention/Medicaid-Integrity-Education/Downloads/docmatters-ehrproviderfactsheet.pdf (accessed March 21, 2017).

Centers for Medicare and Medicaid Services (CMS). 2016 Electronic Health Records (Ehr) Incentive Programs. https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/index.html?redirect/ehrincentiveprograms (accessed September 2, 2016).

Creswell J, and Abelson R. 2013 New Laws and Rising Costs Create a Surge of Supersizing Hospitals. New York Times http://www.nytimes.com/2013/08/13/business/bigger-hospitals-may-lead-to-bigger-bills-for-patients.html (accessed March 21, 2017).

Dafny L 2014 Hospital Industry Consolidation—Still More to Come? New England Journal of Medicine 370: 198–99. [PubMed: 24328443]

Dao A, and Mulligan J. 2016 Toward an Anthropology of Insurance and Health Reform: An Introduction to the Special Issue. Medical Anthropology Quarterly 30: 5–17. [PubMed: 26698645]

de Ruiter HP, Liaschenko J, and Angus J. 2016 Problems with the Electronic Health Record. Nursing Philosophy 17: 49–58. [PubMed: 26603947]

Donald A 2001 The Wal-Marting of American Psychiatry: An Ethnography of Psychiatric Practice in the Late 20th Century. Culture Medicine and Psychiatry 25: 427–39; discussion 467–72.

Dorsey ER, and Ritzer G. 2016 The McDonaldization of Medicine. JAMA Neurology 73: 15–16 [PubMed: 26569617]

Edmunds M, Peddicord D, and Frisse ME. 2016 The Evolution of Health Information Technology Policy in the United States In *Healthcare Information Management Systems: Cases, Strategies, and Solutions*, edited by Weaver CA, Ball MJ, Kim GR, and Kiel JM, 139–62. Basel, Switzerland: Springer International.

Erikson SL 2012 Global Health Business: The Production and Performativity of Statistics in Sierra Leone and Germany. Medical Anthropology 31: 367–84. [PubMed: 22746684]

Fareed N, Bazzoli GJ, Farnsworth Mick SS, Harless DW. 2015 The Influence of Institutional Pressures on Hospital Electronic Health Record Presence. Social Science & Medicine 133: 28–35. [PubMed: 25840047]

Geertz C 1973 The Interpretation of Cultures: Selected Essays. New York: Basic Books.

Greene JA 2007 Prescribing by Numbers: Drugs and the Definition of Disease. Baltimore: Johns Hopkins University Press.

Health and Human Services (HHS). 2013 Screening for Domestic Violence in Health Care Settings. https://aspe.hhs.gov/report/screening-domestic-violence-health-care-settings (accessed September 28, 2016).

Horton S 2006 The Double Burden on Safety Net Providers: Placing Health Disparities in the Context of the Privatization of Health Care in the US. Social Science and Medicine 63: 2702–14. [PubMed: 16908090]

Horton S, Abadia C, Mulligan J, Thompson JJ. 2014 Critical Anthropology of Global Health "Takes a Stand" Statement: A Critical Medical Anthropological Approach to the U.S.'s Affordable Care Act. Medical Anthropology Quarterly 28: 1–22. [PubMed: 24395630]

Howard HA, Malouin R, and Callow-Rucker M. 2016 Care Managers and Knowledge Shift in Primary Care Patient-Centered Medical Home Transformation. Human Organization 75: 10–20.

Jewson ND 1976 The Disappearance of the Sick-Man from Medical Cosmology, 1770–1870. Sociology 10: 225–44.

Kreiner MJ, and Hunt LM. 2013 The Pursuit of Preventive Care for Chronic Illness: Turning Healthy People into Chronic Patients. Sociology of Health and Illness 36: 870–84. [PubMed: 24372285]

Kuziemsky CE 2015 Review of Social and Organizational Issues in Health Information Technology. Healthcare Informatics Research 21: 152–60. [PubMed: 26279951]

Lamphere L 2005 Providers and Staff Respond to Mediciad Managed Care: The Unintended Consequences of Reform in New Mexico. Medical Anthropology Quarterly 19: 3–25. [PubMed: 15789624]

Makoul G, Curry RH, and Tang PC. 2001 The Use of Electronic Medical Records: Communication Patterns in Outpatient Encounters. The Journal of the American Medical Informatics Association 8: 610–15. [PubMed: 11687567]

Merry SE 2016 The Seductions of Quantification: Measuring Human Rights, Gender Violence, and Sex Trafficking. Chicago: The University of Chicago Press.

Montague E, and Asan O. 2014 Dynamic Modeling of Patient and Physician Eye Gaze to Understand the Effects of Electronic Health Records on Doctor-Patient Communication and Attention. International Journal of Medical Informatics 83: 225–34. [PubMed: 24380671]

Mulligan J 2010 It Gets Better If You Do? Measuring Quality Care in Puerto Rico. Medical Anthropology 29: 303–29. [PubMed: 20694893]

Mulligan J 2016 Insurance Accounts: The Cultural Logics of Health Care Financing. Medical Anthropology Quarterly 30: 37–61. [PubMed: 25331937]

Norris SL, Holmer HK, Ogden LA, and Burda BU. 2011 Conflict of Interest in Clinical Practice Guideline Development: A Systematic Review. PLOS ONE 6:e25153. [PubMed: 22039406]

Office of the National Coordinator for Health Information Technology (ONC-HIT). 2016 Health IT Quick Stats. http://dashboard.healthit.gov/quickstats/quickstats.php (accessed September 23, 2016).

Oldani MJ 2010 Assessing the "Relative Value" of Diabetic Patients Treated through an Incentivized, Corporate Compliance Model. Anthropology and Medicine 17: 215–28. [PubMed: 20721758]

Pine A 2011 From Healing to Witchcraft: On Ritual Speech and Roboticization in the Hospital. Culture Medicine and Psychiatry 35: 262–84.

Radnor ZJ, Holweg M, and Waring J. 2012 Lean in Healthcare: The Unfilled Promise? Social Science & Medicine 74: 364–71. [PubMed: 21414703]

Reich A 2012 Disciplined Doctors: The Electronic Medical Record and Physicians' Changing Relationship to Medical Knowledge. Social Science & Medicine 74: 1021–28. [PubMed: 22357300]

Sangaramoorthy T 2012 Treating the Numbers: HIV/AIDS Surveillance, Subjectivity, and Risk. Medical Anthropology 31: 292–309. [PubMed: 22746680]

Sangaramoorthy T, and Benton A. 2012 Enumeration, Identity, and Health. Medical Anthropology 31: 287–91. [PubMed: 22746679]

Schoen C, Osborn R, Doty MM, Squires D, Peugh J, and Applebaum S. 2009 A Survey of Primary Care Physicians in Eleven Countries, 2009: Perspectives on Care, Costs, and Experiences. Health Affairs 28: w1171–w83. [PubMed: 19884491]

Smith SW, and Koppel R. 2014 Healthcare Information Technology's Relativity Problems: A Typology of How Patients' Physical Reality, Clinicians' Mental Models, and Healthcare Information Technology Differ. Journal of the American Medical Informatics Association 21: 117–31. [PubMed: 23800960]

Strathern M 2000 Audit Cultures: Anthropological Studies in Accountability, Ethics, and the Academy. London: Routledge.

Verghese A 2008 Culture Shock—Patient as Icon, Icon as Patient. New England Journal of Medicine 359: 2748–51. [PubMed: 19109572]

Wachter RM 2015 The Digital Doctor: Hope, Hype, and Harm at the Dawn of Medicine's Computer Age. New York: McGraw-Hill Education.

Wendland CL 2007 The Vanishing Mother: Cesarean Section and "Evidence-Based Obstetrics." Medical Anthropology Quarterly 21: 218–33. [PubMed: 17601085]

Willging CE 2005 Power, Blame, and Accountability: Medicaid Managed Care for Mental Health Services in New Mexico. Medical Anthropology Quarterly 19: 84–102. [PubMed: 15789628]

World Bank. 2016 Health Expenditure, Total (% of Gdp). http://data.worldbank.org/indicator/SH.XPD.TOTL.ZS (accessed August 11, 2016).