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Autonomy and Electronic Health Records: Can We Have Both?

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ABSTRACT

Physicians, as highly-trained professionals, have a sense of autonomy about how they perform their work. Electronic health record (EHR) systems can be constraining and thus may affect physicians' sense of autonomy. Such effects have been reported in the literature, but they may be due to managers using the EHR to exercise more control. We are studying an EHR implementation in an organization known for the autonomy it allows affiliated primary care practices. We are collecting longitudinal, qualitative data and using grounded theory methods. We found that healthcare professionals think broadly about autonomy and want control over how their practices operate. After the implementation of the basic EHR, few autonomy effects were observed, but more functionality is being implemented, including physician order entry and a patient portal, that may have stronger effects on autonomy. To test these possibilities, we will be collecting a second round of data after physician order entry is implemented.

Keywords

Healthcare, Autonomy, Professional Autonomy, Electronic Health Records, EHR.

INTRODUCTION

Healthcare organizations (HCOs) around the world are implementing electronic health record (EHR) systems to reduce costs and increase the quality of, and access to, healthcare services. Governments around the world are investing in, supporting, and/or requiring HCOs to use such systems. As a result, the number of HCOs adopting EHRs is increasing, e.g., 22% and 60% increases in EHR use by U.S. physician offices since 2005 and 2001 respectively (Hing, Burt, & Woodwell, 2007).

While EHRs hold great promise for delivering on cost, quality, and access objectives, physicians and other HC professionals have legitimate concerns about EHRs. To study the effects of EHRs on HCOs, we have undertaken a grounded theory study of HCOs implementing EHRs. Because we are employing grounded theory techniques, we are not starting with particular effects in mind, but are letting those effects emerge from our data. Our data are from interviews of HC professionals who are asked open-ended questions about their jobs and how they have changed after EHR implementation. Our general research questions explore what changes are observed in HCOs after the implementation of an EHR, how the EHR contributes to these changes, and how HC professionals respond to these changes.

In this paper, we report our preliminary observations about the effects of an EHR software package implementation into an HCO known for the autonomy it provides for HC professionals. To date, we have completed one round of interviews with ten physicians and the HC staff working with them, for a total of fifty interviews. A consistent theme emerging from these interviews is the value these HC professionals place on their autonomy. In the literature, autonomy (i.e., individual autonomy) is defined as "the degree to which the job provides substantial freedom, independence, and discretion to the individual in scheduling the work and in determining the procedures to be used in carrying it out" (Hackman and Oldham, 1980).

The autonomy theme arising in our data is interesting because one of the major concerns reported in the literature about EHRs is that they can interfere with professional autonomy, which is defined as the freedom to practice one's profession in accordance with one's professional training (Engel, 1970). EHRs are typically perceived as a threat to physician's professional autonomy (Darr, Harrison, Shakked, & Shalom, 2003; Walter & Lopez, 2008). EHRs have the potential to reduce physicians' professional autonomy by enabling more control over physician decision making about what care they

deliver and how they deliver it. EHRs can also be used to standardize workflow and thus reduce HC professionals' ability to decide how to perform their work tasks, affecting individual autonomy.

In this paper, we investigate the autonomy theme in more detail, based on our data. Our goal in doing so is to understand how an EHR affects the autonomy of HC professionals, both their individual autonomy and their professional autonomy. This investigation is carried out in the context of an HCO, and its employees, that place a high value on autonomy. The HCO works hard to only take away autonomy when there is a good reason that can be clearly articulated. This HCO, then, provides a context to investigate the extent to which autonomy can be preserved after an EHR implementation, when the literature reports threats to autonomy from EHRs.

We focus on the following questions:

Q1:   What aspects of autonomy do HC professionals value? Because our data are from responses to open-ended interview questions, the responses broadly discussed autonomy and did not narrowly focus on professional autonomy. Knowing which aspects are valued can help managers avoid compromising the autonomy aspects of importance to HC professionals as an EHR is implemented.

Q2:   How has the first stage of EHR implementation at our HCO affected autonomy along these aspects of autonomy? The first implementation stage in this organization introduced basic EHR functionality.

Q3:   As the HCO moves toward a more complete implementation and toward ensuring "meaningful use", how will autonomy be affected?

From our current data, we have answers to questions one and two, which are presented in this paper. Based on these results, we briefly speculate on possible answers to question three, to inform our second round of interviews.

RESEARCH METHOD

We are collecting qualitative interview data and coding these data using grounded theory techniques, which are well suited for understanding technology-enabled organizational change (Glaser & Strauss, 1967; Locke, 2001; Strauss & Corbin, 1998).

Field Site

Our field site is a private, non-profit integrated HC system in New England, USA that includes a large academic hospital, four community hospitals, home health agencies, long term care facilities, and mental health services, as well as a multi-specialty physician group practice with over 1,000 physicians located in over 100 community and hospital sites. The primary care physicians (PCPs) in this group practice are the focus of our study. While some community practices have fewer than five PCPs, the hospital-based practices are much larger.

Each of the 100 practices (sites) in the group practice operates independently with oversight by the group practice's central administration. Each practice determines its own organization, staff mix, and workflows, resulting in large variations in operations across practices. This variability is due to the group practice's decade-long growth strategy through acquisitions of privately-owned practices in the region, each of which may retain its office structures, workflows, and staffing models.

In 2007, this HCO began to phase-in a well-known EHR package, beginning with a successful pilot at seven practices involving 18 PCPs. The rollout of full functionality will take a number of years. To date, the rollout of the basic system is complete, including the electronic patient record, e-prescribing, storage of transcribed physician notes, problem lists, medication lists, and allergies, and electronic tasking among HC providers and staff. Much more functionality, including physician order entry for labs and tests, the patient portal, and structured notes, remains to be implemented.

Data Collection

We interviewed ten physicians from the different primary care sites, each of whom volunteered to participate. We also interviewed those who worked with them, typically a nurse, medical assistant (MA), clerical support person, and office or practice manager, resulting in 50 total interviews. Each subject received $75 for participating. A second round of interviews of these 50 individuals is planned and will occur after physician order entry is implemented.

Interviews take approximately 45 minutes, and are recorded and transcribed. The interview protocol consists of open-ended questions about the interviewee's job and their practice, how their performance is measured, how organizational change is initiated and implemented, how their job has changed with the EHR, and what they like best about working for the HCO. These data provide a baseline as we collect another round of interviews.

Data Analysis

Using codes the data suggested, we coded transcripts to identify the broad themes that interviewees discussed. One of these themes, autonomy, is the focus of this paper. We used the NVivo software package to support this coding. The first author performed most of the coding. During the coding process, she met weekly with the second and third authors to discuss coding practices and emerging codes.

As autonomy emerged from open coding as an interesting theme, we initiated axial coding to examine relevant themes within autonomy and how they were related to changes following the EHR implementation. By comparing across similarly coded passages in different interviews, we started to identify patterns of commonalities and differences reported by interviewees.

These data-driven patterns were then related to existing literature, indicating that individual autonomy and whether it can coexist with an EHR might provide a theoretical foundation for understanding our findings. The results reported in this paper are from the axial coding of themes related to autonomy and EHR implementation, as well as the literature on autonomy.

BACKGROUND ON AUTONOMY

As is accepted grounded theory practice, we did not examine the literature until autonomy emerged as a key theme. When we did, we examined the organizational and management literature on autonomy, especially when the context was healthcare, as well as literature that specifically addressed the effects of EHRs on autonomy. We briefly review this literature so that readers can assess the value of our study and its results.

The definition of autonomy commonly used in the literature is Hackman and Oldham's (1980), namely autonomy is "the degree to which the job provides substantial freedom, independence, and discretion to the individual in scheduling the work and in determining the procedures to be used in carrying it out." This definition captures their research work over a decade on the job characteristics that motivate individuals to perform well. Autonomy is one of five such job characteristics (Hackman & Oldham, 1980). Davis (1996) summarizes the autonomy definitions in the literature as "a condition in which the performer, rather than someone else, determines the sequencing of tasks which comprise the job and how long one performs a given task before switching to another", a definition capturing the same sense as Hackman and Oldham's (1980).

Professionals are acknowledged to have a special claim to autonomy, referred to as professional autonomy. Professional autonomy is freedom to practice one's profession in accordance with one's professional training (Engel, 1970). Walter and Lopez (2008) summarize the professional autonomy definitions in the literature as "professionals' having control over the conditions, processes, procedures, or content of their work according to their own collective and, ultimately, individual judgment in the application of their profession's body of knowledge and expertise." The sense is that professionals work to standards defined by their profession, which are separate from any organization for which they work. Thus, for example, the medical profession, rather than a HCO, determines whether physicians meet their professional obligations. The healthcare context is often used in studies of professional autonomy because it is considered to be a standard for the definition of a professional (Engel 1970). For example, it has distinct educational processes and licensing procedures to designate a physician as a member of the medical profession.

One line of inquiry in the literature is investigating whether being an employee means having less professional autonomy (Davis, 1996; Engel, 1970). Engel (1970) investigated this question for physicians and found that physicians in solo practices do not have the highest sense of professional autonomy due to the many constraints of running their own practice. The highest autonomy was experienced by physicians in private group practices where physicians made the decisions. Our HCO has similar characteristics to the high professional autonomy organizations Engel (1970) studied. Another study examined whether these individual senses of self-determination in the healthcare industry were attributable to individual characteristics or to group/organizational characteristics. It found that group/organizational variables had much more effect (Koberg, Boss, Senjem, & Goodman, 1999). Some HC professionals working at our HCO volunteered that they chose to work there because of the autonomy provided to HC professionals.

Another line of inquiry is the relationship between autonomy and performance. A premise of Hackman and Oldham's model (1980) is that autonomy significantly contributes to performance (under various moderating conditions, e.g., employees have skills and knowledge to perform the job). Thus, designing jobs that provide employees with higher autonomy levels makes good business sense. The number of errors made by medical residents decreased at an increasing rate as perceived autonomy increased, when there was a high organizational orientation toward learning and improvement (Stern, Katz-Navon, & Naveh, 2008). When the learning orientation was low, the relationship between autonomy and errors was u-shaped. While moderating conditions are important, e.g., skills and learning, there is substantial evidence that highly-trained professionals, such as physicians, will be more intrinsically motivated, will perform better, and will assume responsibility for quality

outcomes when they have autonomy to perform their jobs as they choose. Thus, health IT researchers and practitioners and HCO managers should be concerned about whether or not EHRs reduce the perceived autonomy of HC professionals.

Unfortunately, EHRs are perceived as threats to the professional autonomy of HC professionals. A study of hospital physicians found that junior physicians perceived the EHR as a burden and as a limit to their professional autonomy (Darr, et al., 2003). Senior physicians, however, did not see threats to their professional autonomy, possibly because they were secure in their positions, but also because they identified more with the EHR's advantages for hospital administrators. In a survey of several hundred physicians, an EHR's threat to professional autonomy directly affected physicians' intent to use that EHR (Walter & Lopez, 2008).

Loss of professional autonomy after an EHR implementation, however, may be attributable more to managers using the EHR to exercise control than to the EHR itself. We are studying the implementation of an EHR in a HCO that attracts HC professionals in part because of its respect for their autonomy. This provides an opportunity to investigate whether it is possible to gain the organizational benefits from "meaningful use" of an EHR, while maintaining a high level of autonomy.

AUTONOMY DIMENSIONS AND EHR EFFECTS ON THEM

Open coding revealed autonomy as a characteristic our interviewees valued highly about their HCO. For example,

> I have had a really good experience with [HCO]. They allow an office to work autonomously, within the structure…As long as you are professional, as long as you are working for the benefit of the patient, in terms of, you know, keeping the customer happy, basically, so that they keep coming back, they pretty much let you work independently… They're not Big Brother, keeping you under their thumb. (Site 1, Nurse)

Further coding revealed the following dominant themes about autonomy:

1. Who decides how individual practices operate?

2. Who controls physician work schedules?

3. How important are outcome measures?

None of these specifically address medical or clinical decision making. Our interpretation is that autonomy in medical decision making in this organization is assumed. The interviewees are interested in who makes various decisions about how their practice operates. Davis (1996) argues that professional autonomy only applies to those decisions covered by a profession's standards. In our data, medical professionals have a broad sense of autonomy that applies not only to decisions about treating patients, but also to decisions about how to run a medical practice. Thus, the above dimensions of autonomy cover elements that Davis (1996) might consider as individual or organizational autonomy.

Below we discuss each of these themes because they are likely to be important in ensuring a successful EHR implementation. We also examine what our data reveal about how the implementation of the EHR to date affected autonomy. Because the EHR had few effects on autonomy, we also assess why it has had so few effects.

Who Decides How Local Practices Operate?

While our interviewees value site-based decision-making, they acknowledge that large-scale, resource-intense change initiatives are the purview of the organization's central administration. These include implementation of the EHR and of new service delivery models for group care of select diseases, e.g., diabetes. Such projects are typically initiated, funded, and managed centrally. They also acknowledge that the central administration must pay attention to financial aspects. On the other hand, interviewees expect that local change initiatives will be initiated locally based on need with no interference from central administration. Local practice workflows are designed by and the responsibility of members of the local practices.

> We have certain people, I guess, in each division who are quality officers, and then the medical center has a quality office and quality officers. And so they usually focus on areas where there's finance attached, because the contribution to margin is getting smaller and smaller at all the medical centers. So they typically focus on those areas of concern. Now, on a more local level, these types of projects spring up from other things, like where we are… (Interviewer: And how did that change come about?) I thought it was a good idea. (Site 4, Physician)

> (Interviewer: As you look at processes, that's something that,–) That we develop internally (Site 6, Office Manager)

> Obviously we have a leadership hierarchy…but we have monthly faculty meetings were we discuss these issues, and those people who are involved in that particular site, which is not everybody, came to some conclusion. (Site 8, Physician)

Maintaining their own internal organizational structure, roles, and operation workflows is very important to the local practices. As a result, there is considerable variability among practices about how they are organized. For example, some practices pool their nurses and MAs. Each nurse triages phone calls for several physicians. Each MA is assigned to a physician each day, based on which physicians are at the practice that day.

> Well, my base is five [physicians]...And you work for these same five Physicians every day. Pretty much, and occasionally more. (Site 4, Nurse)

These practices tend to be larger, and thus phone triage is a major task to which employees can be assigned fulltime. They often involve physicians who spend less than half their time seeing patients because they have responsibilities at the nearby medical school and are involved in medical research. Other sites, often smaller and with physicians whose primary role is seeing patients, maintain more traditional relationships between physicians and other HC professionals.

> We run our practice. Each one of us has a specific nurse that we're paired with, who over time gets to know us, and more importantly gets to know our patients. (Site 1, Physician)

These practice organization types are only two of the practice organization variations in our data. Each practice has chosen its organization and processes to best fit its needs based on its history, HC staff, and patients.

EHR Effects on Practice Organization and Operations

In terms of decision-making authority, the EHR did not change the status quo. Central administration with the IT group had responsibility for the EHR implementation. Interviewee responses about the implementation and their role in it indicated that the local sites had little authority to make implementation decisions, and in fact, often seemed "in the dark" about what was going to happen and when it would happen.

> I think we had about a month's notice that we were going [live]. And they wanted me to adjust the physicians' schedules, take a slot out here and there, so that they would have time to familiarize themselves. Everybody had to go for training in that month. ... I thought it would have been wise to go live with one of my clinics first, and they said, no, no, you're going to do them all. And I thought, oh God, so. But it turned out to be a blessing for me, because I really, you know it's like when you're being tested and your feet are right to the fire, it's a time to prove yourself, and I've never failed, so I thought, I just have to devote all my time into really understanding the electronic medical record. So because of that it went really well in all of the clinics. (Site 6, Practice Manager)

> We didn't know ... If we get an IV [intravenous] do we do a note, do we just write it down, how is it going to work? We didn't know. We thought we were getting the order part because as of now we, because we don't have that part yet. So we didn't really know, are we getting it, or we're not getting it. The Physicians were a little confused, do I order through the EHR, do I put the form out, it wasn't really clear, so it was hectic. (Site 6, Physician)

Because of local autonomy, the EHR had minimal effects on local practice organization or staffing, or even on operating workflows. Practices readily received the system, but absorbed it into their existing office practices with little change. Practices mostly operated using pre-EHR workflow processes, replacing paper-based tasks with similar electronic-based tasks. When asked about how the EHR changed their jobs or the jobs of particular roles (physician, nurse, MA), some interviewees considered these to be a change in their jobs, while others did not perceive a change because it is only a change in the mode of information storage.

> Before I was having a paper chart and I was writing, my follow-ups were all like write-ups. And now it's dictation... Actually it's no different. (Site 2, Physician)

> Yeah, absolutely [asked about the jobs of nurses and MAs]. Because they have a lot of data entry that they have to do. I think it's a lot quicker to jot down a blood pressure on a piece of paper than to enter it into the computer. And, you know, here, we have them go over the patient's med list, too, and ask about, there's a lot of things they have to ask about. So it's made the process of putting a patient in a room take longer. (Site 7, Physician)

> The workflow has definitely gotten a little bit easier as far as paperless. ... I just think that the paper, it seemed to just take up more time. Whereas now everything is kind of in the system already and you just plug in whatever the vital signs and you don't have to write everything out so it's kind of easier now. It just cuts probably about two minutes of time that you have between patients, which is a lot by the end of the day. (Site 5, MA)

While the implementation of the EHR is being managed by the organization's central administration, any decisions to leverage change-enabling EHR functionality in local processes resides with local practices, which mostly chose not to initiate major changes. For example, the idea of using scripted templates to assist the triage process for incoming patient calls was discussed among several employees at one practice. A nurse was aware of the available functionality but continued to use the existing and more familiar process.

> Q: Does the electronic medical record system have guidelines for questions you should ask as you're doing triage.

A: They do. And you know what? I don't use that. That's one thing, I remember them talking about that…It's like a template or
something. Yeah, I don't use it. I don't think any of us ---. (Site 6, Nurse)

The practice manager at the same office was considering the available triage templates, but they needed to be modified to accommodate local preferences.

We're to the point of we really want to be able to refine the triage messages into best practices which would be, what do you say per
call? So it's almost like we would have a text template to make sure that no matter who answered the phone on the clerical side,
they would answer, they would ask all the salient questions. (Site 6, Practice Manager)

It is still an open question whether individual practices will implement some of these "best practices" without being mandated to do so by central administration and without compromising the autonomy of HC professionals.

Who Controls Physician Work Schedules?

For physicians, nurses, and MAs, the biggest obstacle to high-quality care delivery they identified is lack of time. All roles, but especially physicians, feel time is their scarcest resource.

Well, sometimes those things, you know, the time pressures, you know, you just don't have the time to be as complete as usual.
(Site 9, Physician)

The time demands on physicians, and thus the time demands on their associated staff, are primarily driven by their schedule for seeing patients. To schedule patients with physicians, practices establish daily time templates for each physician. When patients are allocated less time on the schedule than they will typically take, physicians will routinely run behind schedule and will feel pressured for time.

The patient appointments are in a template, a template of time. They're new patient appointments, transfer patient appointments,
urgent care appointments, follow up appointments, post hospitalization appointments. Then I have a certain amount of time based
on a template. (Site 4, Physician)

Physicians' freedom to set and control their own work schedule is a known factor contributing to their sense of autonomy (Burdi & Baker, 1997).   At our HCO, physicians varied in how much control they reported having over their schedules.

I don't like it that we don't have better control with the time…they used to have much longer appointments, but the chief just kind of
changed that, so the providers are just talking really fast. (Site 6, Physician)

I have a different way I set my day up … I was running two hours behind if I tried to book the way my mentor booked. Didn't work.
So I learned that I needed to book in 20 minute slots, not 15 minute slots. As a result, I see fewer patients per day. (Site 1,
Physician)

Well, I have in the last year or so purposely cut back from seeing, it used to be 20 a day, five days a week, 100 people… But see, I
don't want any squeeze ins. I shut myself off at 4:00pm. I don't want to see people after 4:00pm. And Friday, about a year ago, I
cancelled Friday afternoon. (Site 3, Physician)

The first physician above sees little flexibility in setting his/her own schedule, whereas the second quote represents a number of physicians who have negotiated a different schedule. Even this quote, however, acknowledges that s/he is doing something different than usual. The third quote captures a different way in which physicians handle a tight schedule. Rather than seeking longer appointment times, physicians restrict their scheduled hours, e.g., no patients after 4pm.

A physician's workload is also affected by his/her panel size, i.e., the number of patients assigned to that physician. For the larger practices sites, the practice typically sets a standard panel size based on industry standards, but adjusted somewhat by physician productivity. When we asked physicians at the smaller sites about their panel size, few physicians knew their panel size or knew whether or not it was increasing. This is consistent with the general inattention to outcomes measures at most of the local practices, as is discussed later.

EHR Effects on Physician Schedules

From our interviewees, it is difficult to assess the effect of the EHR on physician schedules. With the EHR, the schedule templates are in the system. Prior to the EHR, the schedules were also typically in a computer system supporting management of the practice. Furthermore, while physicians might overall set their schedules, those schedules are maintained and filled in by office staff. Thus, whether schedules have become less flexible and less open to adjustments by individual physicians due to the EHR is difficult to determine.

How Important are Outcome Measures?

We asked each of our interviewees "What measures are used to evaluate your work"? Of the various roles interviewed, physicians were the only ones who could articulate at least one defined, quantifiable measure. Even for physicians, their

responses varied, e.g., five different measures were cited across the ten physicians, the most common being a measure of monthly productivity produced by central management.

> They don't measure me at all. (Site 5, Physician)

> For me it's I get my job accomplished within the time allotted. I don't like to keep patients waiting, and at the end of the day, at the end of the session if I'm a half an hour behind I don't like that. (Site 6, Physician)

> They look at the number of patients that I see and the charges, so the amount of revenue I generate…And we get some little report card that you're doing fine, or this or that. But no one looks over my shoulder and says, you're doing this right or you're doing this wrong, as far as medical decision making or anything like that. (Site 3, Physician)

As these quotes indicate, while the HCO captures measures that gauge physician productivity and revenue generated, these measures do not seem to be a focus for physicians. While centrally managed expectations are shared with physicians, as long as practices are providing good care, are productive, and patients are satisfied, physicians maintain substantial autonomy over their work.

Outcomes measures are also not a focus of other medical professionals or staff. In fact, the majority of nurses and medical assistants interviewed are unaware that productivity measures exist.

> You'd have to ask my supervisor. I don't know. We don't have performance [measures] from what I understand. (Site 7, MA)

> I guess we're told. A nurse manager watches us. The office manager is out on the floor a lot so she watches what we do and just gives us feedback through that… (Site 9, MA)

EHR Effects on Outcome Measures

Potentially, the EHR could produce additional outcomes measures, even local measures that could be used for managerial control within local practices. As far as we could tell, the EHR was not being used to produce outcome measures to use for controlling performance. One physician mentioned pay-for-performance, recognizing the potential for using system information to adjust pay based on certain performance measures related to patient treatments.

> Well, I'm not sure…now there's this pay for performance…And down the future I think they think of this as a way they will be paid more than by the work I do. So as a result, they have started to pay more attention to, do I get the proper blood testing at the proper intervals, on patients with certain diagnoses. And [the organization] does utilize that to look and see if I'm doing what I'm supposed to do. (Site 1, Physician)

LONGER TERM EHR EFFECTS ON AUTONOMY

Most interviewees' responses are consistent with the HCO's reputation as supporting a high level of autonomy for HC professionals, even after EHR implementation. They acknowledge that the central administration has responsibility for major change initiatives such as the EHR and also for the financials. Physicians do have concerns about their tight schedules, but some have found ways to have lighter schedules. One physician noted the possibility of tying pay more closely to physician performance. Although they have these autonomy concerns, interviewees mostly did not attribute them to the EHR. With the current state of implementation of basic EHR functionality, a high level of professional and individual autonomy remains.

For two related reasons, this could change in the near future. First, additional functionality is being rolled out, including physician order entry for labs and tests and the patient portal, which are functionality that a number of physicians prefer not to use (Davidson & Chismar, 2007). Second, the "meaningful use" requirements developed in the U.S. require a certain level of use of these functionalities to receive EHR incentive payments from the government (Centers for Medicare and Medicaid Services, 2011; HIMSS, 2011). Our field site is striving to meet these meaningful use requirements by fall 2011, and in doing so, may need to require physicians to use the EHR in ways that negatively affect their autonomy. As a result, the new functionality and the meaningful use requirements may mean that meaningful use of a comprehensive EHR could be inconsistent with a high level of individual and professional autonomy.

When we have our second round of data collected, we may see effects on autonomy if the HC professionals do not like the new changes to the EHR, and object to using them. On the other hand, for at least two reasons, we may observe little change. First, the initial meaningful use requirements are somewhat lenient, requiring only a relatively low level of usage to qualify for the early incentives. There may be enough use without mandating it to meet these requirements. Second, professionals may choose to embrace the changes and try to have a say over how they are implemented. For example, Levay and Waks (2009) report that professionals found a balance between their autonomy and the requests of the outside environment for transparency about their operations. Professionals at our HCO might find a balance by tailoring the system to their needs. This would require a different relationship between the practice sites and the IT implementation group than currently exists. The implementation group seems to have a sense of autonomy that does not involve working closely with the practices much

before implementation. In addition, tailoring the system would require time and resources that may not be available in the timeframe in which the HCO must meet meaningful use deadlines.

NEXT STEPS

This paper has presented research-in-progress. The preliminary results reported here from our first round of data collection raise questions that can guide our next set of interviews. In the second round, we will include probes on autonomy to provide data to help us elaborate the construct of autonomy as perceived by the interviewees. For example, if losses in autonomy are perceived by interviewees, we will probe about those losses to determine what types of decisions and choices were affected. For example, are decisions about what care should be delivered being affected or are the losses primarily associated with more standardized workflows? We will specifically ask about clinical decision making and whether the EHR has any effects on that decision making. This will help to distinguish between professional and individual autonomy effects.

In addition to continuing our study at our field site, future research should address these autonomy issues at other HCOs, in particular, those that place less value on retaining physician autonomy. For example, some HCOs are using EHRs to increase the standardization of work processes and restrict the flexibility of physicians in choosing care options. Research should investigate the extent to which physicians in these organizations perceive a loss of autonomy.

ACKNOWLEDGMENTS

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