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The Evolving Role of Medical Scribe: Variation and Implications for Organizational Effectiveness and Safety

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Abstract. Increasing use of medical scribes is an unintended consequence of electronic health record adoption in the U.S. The role of scribe is not universally defined, leading to variations in scribe training and operations, as well as questions about scribe efficiency, effectiveness, and safety. Studies published since 2009 have primarily focused on the financial aspects of scribe use, but no published studies have taken an organizational view of this phenomenon. This paper describes stakeholder perspectives on scribes working in outpatient settings within an urban tertiary academic medical center. It places factors associated with of scribe systems within an eight-dimension sociotechnical framework for evaluating health information technology, and discusses key aspects of those perspectives.

Keywords. Electronic health record, medical scribe, communication, patient safety, sociotechnical systems

1. Introduction

The implementation of electronic health record systems (EHRs) may improve patient care and physician satisfaction. However, it may also result in unintended consequences that jeopardize patient care and lead to physician dissatisfaction. [1-4]

Coincident with widespread adoption of EHRs in the U.S., some organizations have added medical scribes to their care teams to reduce their documentation workload, increase documentation efficiency, and improve patient-physician communication. The number of scribes appears to be growing rapidly. According to an advocacy group associated with a scribe staffing company, in 2015 there were more than 15,000 scribes working in more than 1,300 U.S. medical institutions; the same organization estimates that by 2020 there will be 100,000 scribes employed in the U.S. [5]

Scribes document patient encounters in the EHR. They may also help healthcare providers locate and use information within the EHR, as well as perform other duties. [6-8] Scribes are often used in hospital settings where provider time is especially valuable (e.g., emergency department, orthopedic surgery), but they may also be found in ambulatory settings. [9]

Although the Joint Commission (JCAHO) in 2012 defined the role of scribe as "an unlicensed person hired to enter information into the electronic medical record (EMR)

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or chart at the direction of a physician or practitioner," [10] in the U.S. there do not appear to be any national, state, or local regulations governing scribe scope of practice. As a result, scribe staffing companies and healthcare organizations (HCOs) may choose to use the definitions offered by JCAHO, the Centers for Medicare & Medicaid Services (CMS), and medical associations, or to create their own. Similarly, while the Commission on Accreditation of Allied Health Education Programs (CAAHEP) published standards and guidelines for scribe education accreditation in 2015, [11] organizations may elect to train and use scribes however they choose.

The variation in scribe roles, training, and operations is significant because of the sensitive ways in which scribes relate to providers and patients. Interposed between providers and EHRs, scribes may alter how and what patient information is captured, as well as how providers think about and seek information during patient encounters. When a scribe accompanies a provider into an examination room, the scribe becomes an actor in the patient encounter and may affect how the patient interacts with the provider.

In 2006, Guglielmo [9] suggested that some of the issues associated with the use of scribes included limited clinical knowledge that might affect whether patient information is captured completely and accurately, changes in the clinical reasoning process that might make providers less effective; missed clinical decision support alerts warning providers of adverse drug interactions, scheduled tests, and missed diagnostic or treatment connections; and inhibition of patients, which may make them less likely to communicate fully with the provider, particularly around sensitive health problems.

None of the relatively few published scribe studies [for example 12-16] explicitly address how the variations in scribe role definition, training, and operations may affect patient care. The complex, interrelated features of scribe systems suggest that sociotechnical theory may provide a useful lens for holistically studying the scribe phenomenon.

As we began to explore scribe systems, we identified differences in scribe backgrounds, how scribes are managed, and how scribes interact with providers. We identified three scribe staffing models: a "licensed" model, in which healthcare professionals such as Certified Medical Assistants (CMAs), Certified Nursing Assistants (CNAs), Certified Ophthalmic Technicians (COTs), and licensed practical nurses (LPNs) perform scribe duties; a "commercial" model, in which scribe staffing companies provide scribes to HCOs; and a "student" model, in which pre-medical, pre-nursing, and pre-physician assistant students act as scribes. Scribes in the commercial mode come from a wide variety of backgrounds and may not have had healthcare and EHR training and experience. Scribes in the student model gain exposure to clinical practice and establish professional relationships in preparation for matriculating into graduate school.

With respect to management, we determined that scribes may be "pooled" in many-to-many relationships with providers, "dedicated" in one-to-one relationships with providers, or placed in a "hybrid" structure whereby a single scribe works with several providers. Some HCOs fund scribes at an institutional level, while scribes at other HCOs are compensated by clinical departments, practices, or individual providers.

We also noted that scribes interact with providers in three different ways. Scribes may document in the EHR during the encounter with or without clinical interaction. They may also document after the encounter outside the examination room.

Our study aimed to explore the medical scribe phenomenon within one HCO from an institutional perspective, using a sociotechnical framework.

2. Methods

This study was conducted at an urban tertiary academic medical center ("institution") that utilizes the licensed or student scribe model in several outpatient clinics. Two departments – Dermatology and Ophthalmology – operate under the licensed scribe model. In Dermatology, which established its scribe program in 2013, 12 CMAs work with 10 providers; in Ophthalmology, which started its scribe program in 2015, 3 COTs work with 2 providers. A centralized scribe program comprising 25 student scribes serves 40 providers within 12 departments; OB/GYN was the first, and is the largest, department within this centralized program.

Seven scribe stakeholder groups were identified for study, based on information gleaned from scientific literature and discovery conversations: former and current scribes, providers, practice managers, risk managers, compliance managers, and quality managers. Because the study's intent was to explore institutional perspectives of scribes, patients were not included in the stakeholder list.

In order to gain a broad perspective, the research team recruited individuals representing all seven stakeholder roles via email; the institution's scribe program manager facilitated access to participants. Ultimately the study comprised seven participants: two former scribes, two practice managers, one risk manager, one compliance manager, and one quality manager. Four potential participants, representing current scribes and providers working with scribes, did not respond to email invitations to participate.

Semi-structured interviews were used to elicit perceptions about scribes from the selected stakeholders. The team developed an initial interview guide and received institutional review board (IRB) study approval in July 2016 (OHSU IRB00010027). The guide was modified as new information emerged during seven interviews conducted in August 2016. Interviews lasted approximately 25-40 minutes and, with the exception of one interview conducted by phone, were conducted face to face at locations convenient for participants. Interview audio was digitally recorded and transcribed by the team.

Each transcript was read by three team members several times over several weeks. Electronic copies of the transcripts were uploaded into NVivo analytic software to facilitate thematic coding and additional data exploration. The team took two approaches to data analysis. Part of the team conducted template analysis based on an *a priori* list of eight sociotechnical dimensions offered by Sittig and Singh [17] Remaining team members took a grounded theory approach in order to assess the validity of the template approach and to discern additional themes and subthemes.

3. Results

Collectively, participants mentioned at least one aspect of all eight sociotechnical dimensions. Some dimensions were mentioned by more participants, and more frequently, than others. Sittig and Singh's concepts of Workflow and Communication, Internal Organisational Features, and People were mentioned by the most participants, and with the greatest frequency (Figure 1). All themes developed using grounded theory were found to be closely related to, and sometimes identical to, the *a priori* sociotechnical concepts, and so are included in those sections in the following analysis.

Table 1. References to sociotechnical concepts, ranked by number of participants.

Dimension	Number of Participants Referencing (n=7)	Number of References Coded
Workflow and Communication	7	80
Internal Organizational Features	7	67
People	7	39
Measuring and Monitoring	4	17
Human-Computer Interface	3	4
External Rules and Regulations	2	8
Clinical Content	1	2
Hardware and Software Computing Infrastructure	1	1

Workflow and Communication

Scribe-provider workflow and communication models vary by specialty, case complexity, and provider preferences within the institution. In one specialty department, for example, scribes are pooled. This is possible because all department providers using scribes have agreed to use a standardized note template for documentation. In another department, scribes are dedicated to a particular provider or providers; this enables them to develop close professional relationships that they believe result in better documentation.

Some providers focus exclusively on the patient and do not communicate with the scribe during the encounter; others engage the scribe and communicate more collaboratively. One participant believes the latter approach is more effective. “You need a provider who is willing to talk out loud…you need the scribe to be able to have the confidence to ask questions, and you need the provider to say ‘OK, let's regroup.’”

Internal Organizational Features

The institution has evolved to a partially federated scribe structure whereby all departments using scribes – regardless of staffing model – operate electively under a policy developed at the institution level by the centralized scribe program. “There has not been a mandate that scribes go through that centralized policy,” said one participant. But “the central department makes it easier for us to work with them to regulate and monitor to make sure it is being done well.”

The institution’s scribe policy defines a scribe as “a person who records, verbatim in any format, what the provider says while creating the medical record documentation for a patient interaction.” [18] While most participants agreed with this definition in principle, some questioned its feasibility in practice. “Compliance wants you to rote just transcribe,” said one participant. “That's not what they [scribes] do – they have to translate.” Said another participant, “I don't think it's humanly possible that anyone's going to be able to do it [capture the encounter verbatim], said another participant.

People

Participants noted advantages and disadvantages with both staffing models. Student scribes tend to be intrinsically motivated, said one participant. They "just...want to be in there, and they don't care how long it takes. They're not there for the money." However, because these students view scribing as an activity en route to graduate school, organizations employing them must be prepared for turnover.

One challenge of using licensed health professionals (CMAs, CNAs, and COTs) as scribes is the need to explicitly distinguish their roles during encounters. "You can have someone who is an MA and a scribe in the same combined role, but they can't combine the functions of those two roles at the same time," noted one participant.

Measuring and Monitoring

Responsibility for monitoring compliance with scribe policy lies with individual departments. According to one participant, "What they need to be doing is…making sure there's routine training…that the attestation statements comply with the requirements…that the documentation appears to be done by the appropriate person, and that it appears to be following the strict guidelines that the scribe cannot be making medical judgments, cannot be adding information that's not at the direction of the provider that they're scribing for. They have to be working at the direction, and on the key statements, including or incorporating word for word, what the physician is saying, or what the provider is saying."

In one department, said a participant, "the provider is always reviewing the note prior to signing off, etc. But we don't have a formalized auditing program in place for anything like that."

Human-Computer Interface

Difficulty navigating the EHR interface is one factor driving scribe use, "…to help the process of transition [to EHRs]…that's less of a financial, less of a quality, more of a helping the productivity of someone who otherwise might get left behind by all the technology," said one participant.

External Rules and Regulations

In the absence of regulation, the institution has elected to follow the JCAHO definition [10] and CMS guidelines. [19] "From a regulatory standpoint, Medicare/CMS and Joint Commission have certain authority over us," noted one participant. "Because we get Joint Commission-accredited, we have to follow their rules."

Clinical Content

One participant addressed the question of how EHR alerts are managed by scribes during the patient encounter. In the participant's experience, alerts typically did not fire during the visit, but might occur before the encounter, while the patient's record was being prepared for documentation.

Hardware and Software Computing Infrastructure

According to one participant, a challenge arises when a provider needs to review a substantial number of imaging studies during an encounter. Because there is only one workstation in the exam room, and the scribe uses that workstation, a second computer is required to view the studies.

4. Discussion

The results suggest questions around aspects of intra-institution variation that may be important to explore further in order for HCOs to utilize scribes safely, effectively, and efficiently,

- Which departmental and provider preferences are important to accommodate? To standardize? How should these decisions be made?
- How can the apparent discrepancies between what the institutional scribe policy requires (verbatim transcription) and the reality of how it is implemented (summarization, translation) be reconciled?
- Under what circumstances might it make sense to use an institutional (federated) scribe governance model versus a departmental (distributed) model? In either case, how can policy compliance be monitored and measured accurately and credibly?

4.1. Limitations

We were unable to include participants from all seven stakeholder groups in this initial exploratory study. Although we interviewed all available participants within certain stakeholder groups (risk management, compliance, quality), relatively few participants were studied overall and it is unclear whether saturation was achieved. The scribe system was studied at a single point in time using a single method.

5. Conclusion

It remains to be seen whether the use of scribes is a transitional phenomenon or a permanent response to limited EHR usability and the interposition of the computer into the patient-provider relationship. For the foreseeable future, HCOs considering using scribes should consider organizational issues related to scribe implementation that may affect patient care and safety, healthcare costs, and provider satisfaction.

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