ONLINE
EXCLUSIVE

ORIGINAL RESEARCH

Can medical scribes improve quality measure documentation?

Yes, according to this study that found significant improvements in the documentation of 4 pay-for-performance quality measures and higher patient/physician satisfaction.

Jessica Platt, MD; Wayne Altman, MD, FAAFP
Tufts University Family Medicine Residency at Cambridge Health Alliance (Dr. Platt); Tufts University School of Medicine (Dr. Altman)

➥ jpplatt@challiance.org

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ABSTRACT

▶ **Purpose** To avoid disruption of administrative and clinical workflow in an increasingly complex system of health information technology, health care systems and providers have started using medical scribes. The purpose of this study was to investigate the impact of medical scribes on patient satisfaction, physician satisfaction, and quality measure documentation in a family medicine office.

▶ **Methods** We reviewed 1000 electronic health records for documentation of specified quality measures in the family medicine setting, before and after the use of medical scribes. We surveyed 150 patients on attitude, comfort, and acceptance of medical scribes during their visit. Five physicians shared their perceptions related to productivity, efficiency, and overall job satisfaction on working with medical scribes.

▶ **Results** Documentation of 4 quality measures improved with the use of scribes, demonstrating statistical significance: fall risk assessment (odds ratio [OR] = 5.5; P = .02), follow-up tobacco screen (OR = 6.4; P = .01), follow-up body mass index plan (OR = 6.2; P < .01), and follow-up blood pressure plan (OR = 39.6; P < .01). Patients reported comfort with scribes in the examination room (96%, n = 144), a more focused health care provider (76%, n = 113), increased efficiency (74%, n = 109), and a higher degree of satis-

faction with the office visit (61%, n = 90). Physicians believed they were providing better care and developing better relationships with patients while spending less time documenting and experiencing less stress.

▶ **Conclusions** Use of medical scribes in a primary care setting was associated with higher patient and physician satisfaction. Patients felt comfortable with a medical scribe in the room, attested to their professionalism, and understood their purpose during the visit. The use of medical scribes in this primary care setting improved documentation of 4 quality measures.

The widespread implementation and adoption of electronic health records (EHRs) continues to increase, primarily motivated by federal incentives through the Centers for Medicare and Medicaid Services to positively impact patient care. Physician use of the EHR in the exam room has the potential to affect the patient-physician relationship, patient satisfaction, physician satisfaction, physician productivity, and physician reimbursement. In the United States, the Health Information Technology for Economic and Clinical Health Act of 2009 established incentive programs to promote meaningful use of EHRs in primary care.[1] Integrating EHRs into physician practice, adoption of meaningful use, and the increasing challenge

INSTANT POLL

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☐ *Yes*

☐ *No*

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of pay-for-performance quality measures have generated additional hours of administrative work for health care providers. These intrusions on routine clinical care, while hypothesized to improve care, have diminished physician satisfaction, increased stress, and contributed to physician burnout.[2]

The expanded role of clinicians incentivized to capture metrics for value-based care introduces an unprecedented level of multitasking required at the point of care. In a clinical setting, multitasking undermines the core clinical activities of observation, communication, problem solving, and, ultimately, the development of trusting relationships.[3,4] EHR documentation creates a barrier to patient engagement and may contribute to patients feeling isolated when unable to view data being entered.[5,6]

▌**Potential benefits of scribes.** One means of increasing physician satisfaction and productivity may be the integration of medical scribes into health care systems. Medical scribes do not operate independently but are able to document activities or receive dictation critical for patient management—eg, recording patient histories, documenting physical examination findings and procedures, and following up on lab reports.[7]

In a 2015 systematic review, Shultz and Holmstrom found that medical scribes in specialty settings may improve clinician satisfaction, productivity, time-related efficiency, revenue, and patient-clinician interactions.[8] The use of scribes in one study increased the number of patients seen and time saved by emergency physicians, thereby increasing physician productivity.[9] Studies have also shown that physicians were more satisfied during scribe engagement, related to increased time spent with patients, decreased work-related stress, and increased overall workplace satisfaction.[10-12]

Studies on the use of medical scribes have mainly focused on physician satisfaction and productivity; however, the data on patient satisfaction are limited. Data about the use of the medical scribe in the primary care setting are also limited. The aim of our research was threefold. We wanted to evaluate the effects of using a medical scribe on: (1) patient satisfaction, (2) documentation of primary care pay-for-performance quality measures, and (3) physicians' perceptions of the use of scribes in the primary care setting.

METHODS
Data collection
This study was conducted at Family Practice Group in Arlington, Massachusetts, where 5 part-time physicians and 3 full-time physician assistants see approximately 400 patients each week. The representative patient population is approximately 80% privately insured, 10% Medicaid, and 10% Medicare. The EHR system is eClinicalWorks.

The scribes were undergraduate college students who were interested in careers as health care professionals. They had no scribe training or experience working in a medical office. These scribes underwent 4 hours of training in EHR functionality, pay-for-performance quality measures, and risk coding (using appropriate medical codes that capture the patient's level of medical complexity). The Independent Physician Association affiliated with Family Practice Group provided this training at no cost to the practice. The 3 scribes worked full-time with the 5 part-time physicians in the study. Scribes were not required to have had a medical background prior to entering the program.

After the aforementioned training, scribes began working full-time with physicians during patient visits and continued learning on the job through feedback from supervising physicians. Scribes documented the patient encounters, recording medical and social histories and physical exam findings, and transcribing discussions of treatment plans and physicians' instructions to patients.

We reviewed patient EHRs of 5 family physicians over 2 time periods: the 3 months prior to having a medical scribe and the 3 months after beginning to work with a medical scribe. Chart data extraction occurred from 4/11/13 to 8/28/14. We reviewed 1000 patient EHRs—100 EHRs each for the 5 participating physicians before and after scribe use. Selected EHRs ran chronologically from the start of each 3-month period. Reviewing EHRs at 3 months after the onset

> **Sixty-one percent of patients were more satisfied with their office visit with a scribe present.**

of the medical scribe program allowed time for the scribes to be fully integrated into the practice and confident in their job responsibilities. Chart review was performed by an office administrator who was blinded as to whether documentation had been done with or without a scribe present during the visit.

Eight quality measures were evaluated in chart review. These measures were drawn from the Healthcare Effectiveness Data and Information Set (HEDIS), a tool used to measure performance in medical care and service.

We surveyed 30 patients of each of the 5 providers, yielding a total of 150 survey responses. A medical assistant gave surveys to patients in the exam room following each office visit, to be completed anonymously and privately. Patients were told that surveys would take less than 2 minutes to complete. Office visits included episodic visits, physical exams, and chronic disease management.

After the trial period, we surveyed participating physicians regarding medical scribe assistance with documentation. We also asked the physicians 3 open-ended questions regarding their experiences with their medical scribe.

This study was reviewed and approved (IRB Approval #11424) by the Tufts Health Science Campus Institutional Review Board.

Data analysis

During chart review, we assessed the rate at which documentation was completed for 8 quality outcome measures commonly used in the primary care setting (**TABLE 1**), before and after the introduction of medical scribes. These quality measures and pertinent descriptors are listed in **TABLE 2**.[13] Presence or absence of documentation on all quality measures was noted for all applicable patients.

One hundred fifty patients were surveyed immediately after their office visit on their perceptions of medical scribes, including their attitude toward, comfort with, and acceptance of medical scribes (**TABLE 3**). Five participating physicians were surveyed to assess their perceptions related to productivity and job satisfaction with the use of medical scribes (**TABLE 4**), and regarding time saved and additional patients seen. Those who collected and analyzed the data from the surveys were blinded to patient and physician identifiers.

Statistical analysis

Using chi-squared tests, we compared the number of positive documentations for the 8 outcome measures before and after the use of medical scribes. Two-sided P values < .05 were considered statistically significant. All statistical analyses were performed with the use of STATA version 9 (StataCorp LP. College Station, Tex).

Physician survey data were calculated on a Likert scale, with a score of 1 corresponding to "strongly disagree," 2 "disagree," 3 "neither agree nor disagree," 4 "agree," and 5 "strongly agree." Using the 5 answers generated from the 5 physicians, we calculated the mean for each question.

RESULTS

The use of scribes demonstrated a statistically significant improvement in the documentation of 4 (out of 8) pay-for-performance measures (**TABLE 1**): fall risk assessment (odds ratio [OR] = 5.5, P = .02), follow-up tobacco screen (OR = 6.4; P = .01), follow-up body mass index (BMI) plan (OR = 6.2; P < .01), and follow-up blood pressure plan (OR = 39.6; P < .01). Sample sizes of each quality measure vary as there were differing numbers of applicable patients for each quality measure within the overall 1000 charts.

We established at the beginning of the study a target of obtaining surveys from 30 patients of each of the 5 physicians (total of 150). Response rates for surveys were 100% for both the 150 patients and the 5 physicians. No patients declined to complete the survey, although some did not answer every question.

Patients generally had positive experiences with medical scribes (**TABLE 3**). The majority of patients (96%, n = 144) felt comfortable with the scribe in the room during the visit with their provider. Patients felt that the provider focused on them "a little to a lot

> **Physicians believed they were saving, on average, 1.5 hours each day with the use of a scribe.**

TABLE 1

Completion of documentation for primary care pay-for-performance quality measures 6 months before and after use of medical scribes

Documentation completed?[a]		Scribe	No scribe	Odds ratio	Confidence interval	P value[b]
Depression screen	No	6	9	2.2	0.76-6.27	.14
	Yes	211	145			
Depression screen follow-up plan	No	10	13	3.2	0.52-20.37	.2
	Yes	5	2			
Fall risk	No	3	6	5.5	1.24-24.1	**.02**
	Yes	52	19			
Tobacco screen	No	46	50	1.1	0.72-1.66	.68
	Yes	452	450			
Tobacco screen follow-up plan	No	18	23	6.4	1.6-25.52	**.01**
	Yes	15	3			
BMI follow-up plan	No	117	220	6.2	4.21-9.14	**< .01**
	Yes	165	50			
Transition of care management	No	1	4	8	0.66-97.3	.10
	Yes	8	4			
Blood pressure follow-up plan	No	30	54	39.6	5.08-308.5	**< .01**
	Yes	22	1			

BMI, body mass index.

[a]1000 patient charts were reviewed.

[b]Bold measures show statistically significant improvements with medical scribe involvement.

more" (75.8%, n = 113) and thought their visit was more efficient (73.6%, n = 109) as a result of the scribe being present vs not being present. Most patients were more satisfied with their office visit with the scribe being present (60.8%, n = 90).

Physicians felt that working with a medical scribe helped them connect with their patients, made patients feel that their physician was more attentive to them, contributed to better patient care, decreased the time they spent documenting in EHR, and contributed to faster work flow (**TABLE 4**). The physicians also believed they had saved a mean of 1.5 hours each day with the use of a medical scribe, and that they did not have to change their schedule in any way to accommodate additional patients as a result of having a scribe.

DISCUSSION

Documentation of fall risk assessment, follow-up tobacco screening, follow-up BMI plan, and follow-up blood pressure plan all demonstrated statistically significant increases with the use of medical scribes compared with practice before scribes. Follow-up depression screen and transition of care management had relatively high ORs (3.2 and 8, respectively), but did not yield statistically significant values, in part due to small sample sizes as the number of patients who were hospitalized and the number of patients who screened positive for depression were relatively small out of the total group of 1000 patients. The use of scribes had little effect on depression screen and tobacco screen. This is likely due to the fact that there were already effective office systems in

TABLE 2

Means of confirming quality-measure documentation

Pay-for-performance quality measure	Verified by a record of …
Screening for depression	PHQ-9[13] score
Following up on PHQ-9 score > 9	Management plan for depression
Screening for fall risk in patients ≥ 65 y	Fall risk assessment
Screening for tobacco use in patients ≥ 18 y	Presence or absence of tobacco use
Counseling tobacco cessation	Patient's readiness for tobacco cessation and a discussion of treatment options
Screening for BMI outside of normal range (< 18.5 or > 25)	Treatment options discussed for BMI outside of normal range
Managing transition of care for patients ≥ 65 y	Follow-up plan after discharge from inpatient facility
Treating elevated blood pressure in patients ≥ 18 y	Treatment options for elevated blood pressure and planned follow-up

BMI, body mass index; PHQ-9, 9-question patient health questionnaire.

place at the practice that alerted medical assistants to complete these screens for each appropriate patient.

We found that the use of medical scribes in a primary care setting was associated with both higher patient and physician satisfaction. Although the 5 physicians in this study chose not to see additional patients when using a medical scribe, they believed they were saving, on average, 1.5 hours of time each day with the use of a scribe. All 5 physicians reported that medical scribes enabled them to provide better patient care and to help patients feel as though they had more of the physician's attention. Patient respondents attested to their provider focusing on them more during the visit. According to patient surveys, 40.4% of respondents felt that physicians addressed their concerns more thoroughly during the visit, while the remainder of patients did not.

Some concerns of introducing medical scribes into a health care system include possible patient discomfort with a third party being present during the visit and the cost of employing medical scribes. In this study, the vast majority of patients (96%) felt comfortable with a scribe in the room. Future research could compare patient discomfort due to the presence of a medical scribe with patient discomfort due to a physician using a computer during the visit.

❚ **Limitations of this study** include the small sample size of both physicians and patients; a lack of validated measures for calculating productivity, time/efficiency, and overall satisfaction; and short time periods leading up to and following the introduction of medical scribes. In addition, EHRs of patients were chosen sequentially and not randomly, which could be a confounder. Participating physicians were aware of being studied; therefore, documentation could have been affected by the Hawthorne effect. The study also was limited to one family medicine site. Although improved documentation of primary care pay-for-performance quality measures was reported, wide confidence intervals and small patient numbers hindered generalizability of findings.

Additional studies are needed with a robust analytic plan sufficient to demonstrate

TABLE 3

Patient survey results regarding the experience of having a medical scribe present during their office visit

Question	Answer choices	Results (%)[a]
Did you feel comfortable with the scribe in the room during your visit with your provider?	Yes	144 (96%)
	Somewhat, but I may have shared less with my provider because the scribe was present	4 (2.7%)
	No	2 (1.3%)
As a result of the scribe being present, do you feel like your provider focused more on you?	A lot more	70 (47%)
	A little more	43 (28.8%)
	No difference	31 (20.8%)
	No	5 (3.4%)
As a result of the scribe being present, do you feel like your provider addressed your concerns more thoroughly?	A lot more	5 (3.4%)
	A little more	54 (37%)
	No difference	44 (30.1%)
	No	43 (29.5%)
As a result of the scribe being present, do you feel like your visit was more efficient?	Yes	109 (73.6%)
	No change in visit length	38 (25.7%)
	No, I felt my visit took longer	1 (0.7%)
As a result of the scribe being present, did you feel more satisfied with the visit with your provider today?	A lot more	46 (31.1%)
	A little more	44 (29.7%)
	No difference	53 (35.8%)
	No	5 (3.4%)

[a]Percentages were calculated using the total number of actual responses to each question.

baseline provider familiarity with EHRs, accuracy of medical scribe documentation, and improved documentation of pay-for-performance quality measures. Additional investigation regarding the variable competency of different medical scribes could be useful in measuring the effects of the scribe on a variety of outcomes related to both the physician and patient.

It is possible that the improved documentation yielded by the use of medical scribes could generate billing codes that reimburse physicians at a higher level (eg, a higher ratio of 99214 to 99213), leading to increased pay. Future research could aim to quantify this source of increased revenue. Furthermore, investigations could aim to quantify the revenue that medical scribes generate via improved quality measure pay-for-performance documentation. **JFP**

CORRESPONDENCE
Jessica Platt, MD, 195 Canal Street, Malden, MA 02148; jpplatt@challiance.org.

TABLE 4

Physician survey results regarding productivity and satisfaction after working with a medical scribe

Statements physicians rated on a Likert scale of 1-5 (1 = strongly disagree; 5 = strongly agree)	Mean score
Keeps me more organized with patient care	4.4
Helps me connect with my patient	4.6
Contributes to better patient care	4.6
Makes patients feel like I am more attentive to them	5
Decreases the time I spend documenting in EHR	4.6
Cuts down the amount of hours I spend in the office	4
Allows me to finish notes by the end of the day	3.8
Contributes to faster work flow	4.8
Decreases my stress level	4.6
Makes my life easier	4.4

EHR, electronic health record.

❯ **Documentation of 4 out of 8 pay-for-performance measures showed statistically significant improvement with the use of scribes.**

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