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BRIEF REPORT

Scribes with PGY-1 Residents on Inpatient Medicine Teams: Effect on Time Spent in Meaningful Work

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Abstract

Background: **The high documentation demands and limited time in direct patient care in the first year of internal medicine residency represent concerns for burnout and low job satisfaction in this important year of training.**

Objective: **To assess the effect of scribes on the time PGY-1 residents spent on various work tasks.**

Methods: **Participants were 24 PGY-1 internal medicine residents on two inpatient medicine teams at one site for 6 months (September 2019−February 2020). Residents were assigned a scribe during the first or second 2 weeks of a 4-week rotation and had no scribe for the other 2 weeks. Time study observers documented resident work activities. Residents ranked the meaningfulness of work activities via survey at the end of each 2-week period.**

Results: **Of 24 residents, 18 (75%) completed the survey at both time points. Residents ranked patient care as the most meaningful and EHR work as the least meaningful work activity. EHR work claimed the largest percentage of time, with or without a scribe (mean, 33.2% and 39%, respectively). With a scribe, residents spent significantly less time (−5.8%, $P < 0.0001$) in EHR work and significantly more time (1.3%, $P = 0.0267$) in direct patient care and coordinating patient care (3.0%, $P < 0.0001$).**

Conclusions: **The presence of a scribe with PGY-1 internal medicine residents on inpatient teams resulted in a significantly greater percentage of total work time spent in work they considered most meaningful and a significantly lower percentage of total work time in work they considered least meaningful.**

Keywords: Medical scribes, Electronic health record, Residents, Wellbeing, Meaningful work

1. Introduction

PGY-1 internal medicine residents have been reported to spend only 11.8%−13% of a work shift in direct patient care[1] and 5 or more hours a day doing EHR work.[2] The use of medical scribes in settings such as emergency and primary care departments has been shown to reduce time spent in electronic documentation and potentially free physicians for more meaningful work activities.[3-14] The use of scribes with internal medicine residents on inpatient teams has not been studied.

We examined the effect of medical scribes on resident time in various activities on inpatient medicine teams and elicited PGY-1 resident rankings of meaningfulness of work activities.

2. Methods

This pilot study was approved with exempt status by the Medstar Health institutional review board (STUDY00001280) and was conducted at a 300-bed community teaching hospital. The participants were a convenience sample of 24 PGY-1 internal medicine residents assigned to two inpatient medicine teams on an intermediate medical care unit. Each inpatient team consisted of 1 PGY-2 or PGY-3 resident and 2 PGY-1 residents assigned to the team for a 4-week rotation. PGY-1 residents were primarily

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responsible for writing all daily progress notes for the team's assigned patients. The study began in September 2019, when first-year residents were expected to be fully oriented to their role, and ran for 6 months.

The research team consisted of 2 research coordinators, 2 internal medicine residents, and 3 internal medicine residency faculty members who were not assigned to any of the resident teams in the study. The scribe role was filled by externs. Externs in our hospital typically support internal medicine residents with clerical tasks such as entering proposed orders based on observation on rounds. The externs and research coordinators were experienced in working in our healthcare system. Research coordinators, scribes, and time study observers (TSOs) had all completed medical school but not residency. Scribes received 2 h of initial training with a resident physician member of the research team (AK, LJ) on opening a progress note and documenting exactly what the PGY-1 resident dictated to them. The TSOs received 1 h of training from a research coordinator on how to observe and record the work activities of the PGY-1 residents.

A scribe was present with each PGY-1 every workday for 2 weeks of the rotation, and a TSO was present with each PGY-1 for the entire rotation, excluding one weekend day each week. At the start of each rotation, a research team member notified the attendings on both intermediate medical care unit teams by email that a TSO and scribe would be present. The purpose and hypotheses of the study were not shared with resident teams, scribes, TSOs, or attendings.

On Day 1 of each rotation, a research coordinator (MH or AM) met with the PGY-1 residents on both teams to describe the role of the scribe and the TSO. The PGY-1 residents were provided with a written informed consent statement, which included the option to change their rotation without negative consequences if they did not want to participate in the study. Research team members were available to PGY-1 residents and scribes for any concerns.

The two PGY-1 residents on Team 1 were each assigned a scribe for the first 2 weeks of the rotation, and the two PGY-1 residents on Team 2 continued with the usual daily routine. On day 15 of the rotation, the scribes then switched to Team 2, and Team 1 worked without the scribes for the rest of the 4-week period. Each resident served as his or her own control for statistical comparisons. This design was repeated as teams rotated every 4 weeks for a total of 6 rotations (24 total PGY-1 residents). No PGY-1 residents repeated this rotation during the study period.

Scribes were present when residents were performing direct patient care activities and documented the oral observations of the PGY-1 resident in real time. Scribes completed EHR daily progress notes using their own EHR credentials with the information provided by the resident. Resident physician members of the research team (AK, LJ) reviewed a sample of scribe notes on each rotation and provided feedback/guidance to the scribes as needed. The PGY-1 resident reviewed, edited, and co-signed the progress note and submitted it to the attending physician for final review. The resident team completed all other documentation and patient care activities as usual.

TSOs documented resident time spent in publicly observable work activities in 5-min increments into a spreadsheet in real time, using the categories of care coordination (discussing patient care with other team members, calling consults, sign out to the next team), education (morning report, didactics), personal time (meal times, breaks, non-work activities), team rounds at bedside, table rounds, direct patient care (any time in room with patient and their families other than documentation), EHR work (documenting or dictating to the scribe), and "other." Percentage of time spent in each category by each resident was calculated because the shift time varied each day and between residents.

At the end of each 2-week period, a research coordinator gave PGY-1 residents a paper survey (see Suppl. Material 1). The survey included five non-identifying personal data questions that yielded a code number or a letter to connect PGY-1 residents' data from all parts of the study. Participants were advised in writing and orally that completion of the surveys was voluntary and could be declined with no negative consequences. No identifying information about participants was stored, and only the two research coordinators (MH, AM) were able to connect the code with the individual. Surveys were collected by the research coordinator immediately after completion, placed together in an envelope, and stored in a locked drawer in a locked office.

The survey instrument included the Professional Fulfillment Inventory,[15] a validated 16-item measure of physician burnout and fulfillment. Responses were based on a five-point Likert scale ("not at all" to "extremely" for burnout items; "not at all true" to "completely true" for fulfillment items). Six items were averaged for a fulfillment score, and 10 items were averaged for a burnout score. For this instrument, a score $\geq$3.0 indicates good fulfillment and $\geq$1.33 indicates burnout.[15] Participants ranked the categories of work activities used by the TSOs from

most (1) to least (7) meaningful,[16] with activities adapted (SD, AK, LJ) from a previous study[16] to fit typical PGY-1 responsibilities. The survey also included free text items where residents could note personal opinions about their time at work and experiences on the rotation.

2.1. Statistical methods

A mixed-effect model was used to test the effect of a scribe on the percentage of total work time spent in each category for each PGY-1, where the intercept was treated as the random effect and scribe present versus absent was treated as the fixed effect. Paired t tests were used to compare burnout and fulfillment scores for each PGY-1 resident with and without a scribe. Analysis was done by a biostatistician (SD) using SAS version 9.4.

3. Results

With or without a scribe, the largest percentage of PGY-1 resident work time was spent completing EHR work (33.2% with and 39% without), but EHR time with a scribe was significantly lower ($P < 0.0001$) than without a scribe (Table 1). After EHR work, residents spent the most time on coordination of care, team rounds at bedside, and direct patient care. Percent time in direct patient care and coordination of care were significantly higher with a scribe ($P = 0.0267$ and 0.0001, respectively).

For the 18 residents who completed surveys at both time points, mean fulfillment score was slightly above the cutoff level, indicating the presence of professional fulfillment, and burnout score was above the cutoff level, indicating the presence of burnout, both with and without a scribe (Table 2). No significant effect of a scribe was observed on these scores. Meaningfulness rankings of work activities on Day 28 were summarized for 16 PGY-1 residents, with 2 excluded because of missing data or duplicate ranking order. Most of these residents (75%) ranked patient care as the most meaningful activity (mean ± SD ranking, 1.38 ± 0.72) and ranked EHR work as the least meaningful activity (mean ranking, 5.5 ± 1.15) (Table 3).

In free text responses, residents noted a desire for more time for educational activities such as reading, didactics, learning from residents and attendings (18 residents) and for discussion with their team/attendings (9 residents). Eight residents noted better time management and better patient care when the scribe was present. Five said the quality of the scribe notes should be improved with more training, and two said writing the notes themselves helped them gather their thoughts for the care plan. No disruptions to daily schedule were noted.

4. Discussion

In this pilot study, PGY-1 residents spent a significantly greater percentage of time in direct patient care and coordination of care and a significantly lower percentage of time in EHR work with a scribe compared to without a scribe. These preliminary findings suggest that the use of scribes on inpatient resident teams could help to improve job satisfaction in PGY-1 medical residents. These findings support those of previous studies in other physician populations that have reported reduced physician time spent in administrative tasks, improved provider satisfaction, improved accuracy of documentation, and increased provider productivity in ambulatory and emergency department settings.[3-14,17,18] These findings suggest that the use of scribes with PGY-1 residents may offer benefit to this important physician population.

The first year of internal medicine residency is especially challenging with extraordinary documentation demands. Time observers have noted that PGY-1 residents spend only 11.8%–13% of a work shift in direct patient care,[1] and a review of EHR usage found that PGY-1 residents spent 5 or more hours a day doing EHR work.[2] Our findings showed a similar low percentage of time spent in direct patient care and a much higher percentage of time spent in EHR work. An improvement in this distribution of PGY-1 resident time could represent

Table 1. Impact of medical scribe on percentage time in work activity (N = 24).

Observed Work Activity	% Time spent without scribe (mean ± SE)	Change in % Time in presence of scribe (mean ± SE)	P value
EHR Time	39.00 ± 0.94	−5.77 ± 0.55	<0.0001
Direct Patient Care	12.03 ± 0.55	1.29 ± 0.58	0.0267
Coordination of Care	13.39 ± 0.97	2.99 ± 0.66	<0.0001
Educational Activities	9.6 ± 0.54	0.90 ± 0.77	0.2429
Team Rounds at Bedside	12.21 ± 0.81	0.82 ± 0.8	0.3098
Table Rounds	10.25 ± 0.7	−0.67 ± 0.7	0.3592
Personal Time	2.74 ± 0.39	0.50 ± 0.28	0.0878

SE, standard error; EHR, electronic health record.

Table 2. Impact of medical scribe on fulfillment and burnout using the professional fulfillment inventory[15] (n = 18).

Factor	Scribe Present, Mean ± SD	Scribe Absent, Mean ± SD	DF	t-Value	P value
Professional Fulfillment[a]	3.7 (0.7)	3.6 (0.7)	17	−0.76	0.4549
Burnout[b]	1.9 (0.5)	1.8 (0.5)	17	1.25	0.2286

SD, standard deviation; DF, degrees of freedom.
[a] Mean score ≥3.0 indicates the presence of professional fulfillment.
[b] Mean score ≥1.33 indicates the presence of burnout.

an opportunity to expand other desirable dimensions of the training experience.

We did not observe a significant effect of the presence of scribes on burnout or fulfillment, possibly because of the short intervention time (2 weeks for each resident) and small sample size. Significant changes were observed in percentage of time spent on some tasks, but the increase or decrease in total time spent was small. However, any increase in meaningful work and decrease in less desirable work may be an indication of the potential benefit of scribes on PGY-1 resident teams. Future investigations could build on this pilot study by engaging larger numbers of PGY-1 residents and extending the intervention time. Future study could also focus on whether reliance on scribes affects resident knowledge and skills development.

This study has some limitations. Experienced scribes might have had a bigger effect on outcomes. Each resident worked one weekend day for which time study data were not collected because observers did not work 7 days a week. However, this practice was consistent throughout the study and therefore had a consistent effect on data collection for all residents. The actions of the PGY-1 residents might have been influenced by the presence of an observer, though anonymity was repeatedly assured, and the observers were volunteers from outside the residency program. It is also possible that participants independently discerned the purpose of the study, which could have influenced their behavior. Previous studies suggest that the use of scribes is cost-effective,[6,7] but we did not assess this factor.

Table 3. PGY-1 resident rankings of meaningfulness of work activities (n = 16).

Work Activity	Meaningfulness Ranking[a] (mean ± SD)
Direct patient care	1.38 ± 0.72
Educational activities	2 ± 0.82
Rounds at the bedside	3.69 ± 1.08
Care coordination	4.44 ± 1.75
Table rounds	4.75 ± 1.57
Personal time	5.25 ± 2.14
EHR work	5.5 ± 1.15

EHR, electronic health record.
[a] 1 = most meaningful, 7 = least meaningful.

In conclusion, PGY-1 residents in this study spent significantly more time in the most meaningful activity, direct patient care, and significantly less time in the least meaningful activity, EHR work, with a scribe present versus working without a scribe. Future directions include studying the effect of scribes on a bigger sample, using a longer exposure time with scribes to better evaluate possible effects on resident fulfillment and burnout, exploring how resident education may be affected by the use of scribes, and performing quality review of the documentation of scribes.

Poster presentation

Hartman-Hall H, Kanwal A, Jory L, Maharaj A, Desale S, Detterline S. "Scribes on an inpatient resident team: creating time for meaningful work." Presented at the International Conference on Residency Education (ICRE), virtual format, October 22, 2021. Oral presentation: Detterline S, Hartman-Hall H, Kanwal A, Jory L, Maharaj A, Desale S. Oral research presentation: "Scribes on an inpatient resident team: Creating time for meaningful work." MedStar Health-Georgetown University CENTILE Colloquium for Educators in the Health Professions, virtual format, May 2021.

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IRB approval

MedStar Health IRB STUDY00001280.

Conflict of interest

The authors declare no potential conflict of interest in connection with this study.

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Supplementary Material

See Supplemental Material at https://scholarlycommons.gbmc.org/jchimp/vol13/iss1/6/ for "Survey given to PGY-1 Residents.

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