

# Medical Scribe Impact on Patient and Provider Experience

CAPT Kimberly A. Taylor, NC USN\*; Deborah McQuilkin†; Ronda G. Hughes‡

**ABSTRACT** Introduction: The electronic health record (EHR) has created additional administrative burdens on providers to perform data entry while trying to engage with the patient during the health care visit. Providers have become frustrated and distracted with the documentation requirements which further hindered connectivity, and communication with the patient. The utilization of medical scribes in the outpatient clinical setting was a strategy shown to enhance patient and provider interaction, decrease clinician's administrative tasks, and promote satisfaction among providers and patients. This was an innovative quality improvement pilot project to improve the patient and provider experience using scribes in an outpatient setting. Materials and Methods: Two providers, to include one Family Medicine doctor and one Internal Medicine physician, and four hospital corpsmen participated in this pilot project. The four hospital corpsmen received a 2-week training of the fundamentals of the EHR and their role as scribes prior to the start of the project. Two corpsmen were designated for each provider and worked with their provider throughout the 12-week project period. The two primary aspects evaluated during the implementation of the scribes were the patient experience, and provider experience. Navy Medicine and the University of South Carolina Institutional Review Boards (IRB) considered this project exempt from full IRB review. Results: The experience questionnaire results indicated a slight mean decrease, but did not negatively impact patient satisfaction or overall patient experience. The local Medical Treatment Facility patient satisfaction, obtained through the Interactive Customer Evaluation, and the Joint Outpatient Experience Survey, indicated that there was no decrease in patient satisfaction or overall experience during the project period. The providers' experience improved with an average 50% decrease in time spent after hours documenting in the EHR, enhanced engagement with patient, staff, and ancillary team members, and improved work life balance. Additional findings of improved clinic efficiencies, completion of notes for both providers and positive qualitative comments from the scribes were identified. Conclusion: In multiple settings, documentation requirements burden providers. The consideration of scribes could foster work life balance, retention, and wellness. The patient and provider experience was strengthened through the utilization of medical scribes, so future research centered on the provider and patient experience could be beneficial to organizations. Further study of the scribe's experience, especially considering the positive comments from the hospital corpsmen that participated as scribes during the project, could provide beneficial outcomes. Navy Medicine is advancing every opportunity to strengthen clinical and operational readiness, health and partnerships to provide the highest quality care and promote wellness for our patients. This type of quality improvement initiative could positively support readiness, quality and wellness for our organization, providers, and patients.

## INTRODUCTION

A strong provider–patient relationship is critical to promote collaboration, partnerships, and ultimately optimal patient outcomes.<sup>1</sup> With the ongoing transition to electronic health records (EHR), providers have additional administrative burdens to perform data entry while engaging with the patient during the health care visit.<sup>2</sup> The complex nature of the EHRs has left providers frustrated and distracted which has hindered connectivity to, and communication with the patient.<sup>3</sup> The utilization of medical scribes in the outpatient clinical setting was used as a strategy shown to enhance provider and patient interaction, decrease clinician's administrative tasks, and promote satisfaction among patients and providers.<sup>4,5</sup>

With the adoption of the EHR, Koshy, Feustel, Hong, and Kogan<sup>6</sup> noted that providers believed “that the use of the EHR threatens their relationship with the patient because attending to a computer interferes with the doctor–patient interaction” (p. 259). Likewise, Bank and colleagues<sup>7</sup> indicated that when an EHR was utilized, the personal interaction with patients was hindered, not patient centered, and fragmented. To improve the patient–provider interaction, medical scribes were utilized with increased prevalence to improve productivity, efficiency, and patient and provider experience.<sup>8</sup>

The research on the benefits of scribes in the practice setting is increasing. Evidence indicated that in a variety of settings, such as outpatient settings, positive outcomes occurred for patients and providers.<sup>7,9–16</sup> Bank and Gage<sup>17</sup> found that during an outpatient visit providers using scribes saved approximately 2.5 hours during each scheduled day. Bank and Gage added that providers were able to spend more time directly engaging with patients resulting in “increased face-to-face interaction with patients during a clinic visit without distraction from interaction with a computer” (p. 494).

Additionally, Bastani and colleagues (2013) discovered that the implementation of a scribe program positively impacted patient satisfaction and improved overall scores by

\*Naval Health Clinic Corpus Christi, Command Suite, 10651 E Street, Corpus Christi, TX 78419.

†University of South Carolina, College of Nursing, 1601 Greene Street, Columbia, SC 29208.

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14%. The use of scribes also improved provider efficiencies allowing the physician to arrive on time to see the patient, thus enhancing the patient care experience and improving patient satisfaction.<sup>17</sup> Similar to Bank and Gage<sup>17</sup> findings, Bank and colleagues<sup>7</sup> noted that “time spent in direct patient interaction (without using the computer) was over fourfold greater on scribe visits. Overall quality of the physician-patient interaction was also significantly better on scribe... visits” (p. 402).

These recent studies and literature conveyed the importance of considering utilization of scribes to alleviate the provider administrative burden. Scribes facilitated their focus on the patient during the visit, strengthened the patient-provider relationship, and improved patient and provider experience. To promote quality care and high reliability, the Surgeon General gave direction to advance patient experience, cultivate partnerships, and promote health for the Navy Medicine team and their beneficiaries.<sup>18</sup> A quality improvement pilot project was implemented within the Family Medicine clinic to determine benefits of scribes on patient and provider experience consistent with the Surgeon General’s direction.

## **METHODS**

This project was performed at an Ambulatory Care Military Treatment Facility (MTF) in the Family Practice outpatient setting during routine scheduled outpatient visits. The design was a non-experimental project using a mixed methods approach, qualitative and quantitative methodologies combined, to facilitate greater understanding of how scribes impact the patient and provider experience.<sup>19</sup> Additionally, a convenience sample of voluntary patient participants scheduled for an outpatient appointment was utilized. Similar to the literature, the providers to receive scribes in this pilot project were two male primary care physicians, a Family Practice doctor and an Internal Medicine doctor. Four hospital corpsmen, three males, and one female, were selected as scribes.

These corpsmen served as scribes after they received 2 weeks of training. The training included orientation to the EHR, data entry into the EHR, and scribe simulation. During the simulation, the scribe was paired with their designated physician in a training atmosphere with opportunities to perform scribe functions with a simulated patient. The scribes used designated laptops during the patient visit.

A two to three question Likert scale patient questionnaire centered on the satisfaction of the interaction with the provider, overall experience during the visit, and scribe impact to the visit. An 11 question Likert scale provider questionnaire centered on ability to give full attention to patient during visit, EHR documentation impact to communication and interaction with patient, and number of after hours spent documenting. These questionnaires evaluated the patient experience and provider experience pre and post implementation. Additionally, the project was expanded to include check in and check out efficiencies.

Navy Medicine and the University of South Carolina Institutional Review Boards (IRB) considered this project exempt from full IRB review. Respective chain of command approved team members to participate. The questionnaires utilized in this project were developed specifically for this initiative, in compliance with Navy Medicine guidelines, and approved for use.

Scribes, paired with the same physician throughout the project period, accompanied the provider during the visit to perform real-time documentation into the EHR. Scribes performed data entry as verbally dictated by the provider during the healthcare visit. Data entry included physical assessment findings, patient medical concerns, and treatment plan. This process allowed the provider to focus solely on the patient without stopping to document in the record during the visit. Providers maintained direct oversight of scribes and validated documentation before closing the encounter. Patients provided verbal consent at the beginning of the appointment.

Prior to the launch of the scribes, patients willing to participate were surveyed via a printed questionnaire for one week. Of the initial 100 questionnaires given to patients, 89 were returned and included for analysis. Patients that agreed to participate were surveyed via a printed questionnaire during the final week of the pilot project with 96 questionnaires collected. For providers, printed questionnaires were disseminated and collected prior to the pilot project and 3 days after completion.

The first part of the project occurred during a 6-week period. Afterwards, the check in and check out times for patients were evaluated using a one-way ANOVA, and the Dunnett’s C Post-hoc test of multiple comparisons. This provided an opportunity to analyze the efficiencies gained by providers when utilizing scribes. The number of days used in the one-way ANOVA, and the Dunnett’s C Post-hoc test of multiple comparisons were different due to sporadic gaps in data capture during the designated periods.

IBM SPSS Statistics Version 21 software was used to assess the Mann–Whitney *U* tests on the patient experience with both the pre and post questionnaires. The Mann–Whitney *U* test was used to evaluate whether there was a statistically significant difference in patient satisfaction with the provider interaction when scribes were present. Additionally, other quantitative analysis to include a one-way ANOVA and the Dunnett’s C Post-hoc test of multiple comparisons on the time efficiencies was performed. Since the constructs of the pre and post provider questionnaires were not congruent, further statistical analysis was not possible.

## **RESULTS**

### ***Patient Experience***

From the patient perspective, the pre-implementation experience survey mean was 4.7 out of a possible 5, during the sixth week of the project implementation the patient experience mean dropped to 4.5 indicating that there was a slight

decrease in experience. During the 12th week, the patient experience mean increased to 4.9 demonstrating an overall improvement in experience when their provider used scribes. The Mann–Whitney  $U$  test was used on the first group of patients that did not have scribes present during the medical visit ( $n = 89$ ), and the second group of patients that did have scribes present ( $n = 96$ ). The results of the test were significant, but not in the expected direction ( $z = -2.47$ ,  $p = 0.014$ ). The group with scribes had a mean rank of 86.10 and the group without scribes had a mean rank of 101.57, indicating that the group without scribes was more satisfied. While the test was significant ( $p = 0.014$ ), the average scores for the two groups on the first questionnaire item were within a quarter point of each other at 4.72 and 4.52, respectively.

To evaluate whether there was a difference in the patient overall rating of the visit experience when scribes were present, a second Mann–Whitney  $U$  test was completed. The results were similar to the first test, and were significant but in the opposite expected direction ( $z = -2.5$ ,  $p = 0.012$ ). The overall experience mean was 102.03 for the group without scribes and 85.68 for the group with scribes. The mean score for the group without scribes was 4.65 and the mean score for the group with scribes was 4.47 out of a possible 5. The results for these two groups were statistically significant ( $p = 0.012$ ), but the mean scores on the two questionnaire items were less than 0.18, and not in the expected direction; therefore, indicating that patients were slightly more satisfied and overall experience was slightly higher when the scribe was not present.

### Provider Experience

Qualitatively, the two physicians indicated more engagement with their patients, closed their notes within the 72-hour time period, and decreased after hours charting. Prior to the utilization of scribes each providers spent 20–26 hours after work charting in the EHR weekly. After the initial 6-week implementation of scribes, both providers reported that they spent less than 10 hours weekly. This was a remarkable improvement of at least 50% in time spent after hours documenting in the EHR. Both providers indicated that they were able to spend this time engaging more fully with patients, team members, and clinic support staff. The use of scribes allowed the providers to have positive and focused dialog with the patient during the encounter.

This scribe process allowed the providers to timely complete their scheduled appointments and were able to improve their work life balance. Additionally, the providers had scribe teaching opportunities on physical assessment, pathophysiology, medical diagnosis, symptoms, and treatments. This teaching elevated the corpsmen's knowledge and increased clinical readiness. Upon attempting to run a quantitative analysis, it is important to note that the pre and post questionnaires did not utilize the same construct and this

was not identified prior to the start of the project; therefore, further statistical testing was not feasible.

Utilizing Clarke and Braun's<sup>20</sup> thematic analysis approach, weekly debriefings, physician responses and post-project narrative comments were analyzed. Four themes emerged from the qualitative analysis of provider comments of improved efficiency, decreased time documenting in the EHR, improved experience when using scribes, and a concern that the presence of scribes may hinder the full transparency of a patient's concerns. To mitigate the concern of patient openness with sensitive concerns, patients were told that at any point during the visit that the scribes could step out if they needed to discuss something private. This particular situation arose less than five times during the project period and these patients were excluded from the final analysis.

The experience questionnaire results indicated a slightly decreased patient satisfaction and experience. However, the local Military Treatment Facility (MTF) patient satisfaction obtained through the Interactive Customer Evaluation (ICE) remained consistently at 100% for the providers using scribes. Likewise, the Joint Outpatient Experience Survey (JOES) remained at least 90% which indicated that patient satisfaction or overall experience was not negatively impacted during the project. Local MTFs utilize ICE to evaluate patient satisfaction. JOES is a survey tool utilized throughout military medicine to improve overall care experiences for patients. With the project's limitation of size and variation between questionnaire analysis, further investigation could be conducted on the patient experience in the outpatient setting to validate the benefits to patient experience. Qualitatively, the providers' experience improved with decrease in time spent after hours documenting in the EHR, enhanced engagement with patient, staff, and ancillary team members, and improved work life balance as revealed in the weekly debriefing sessions, and post project narrative comments.

### Additional Findings

The presence of the medical scribes improved clinic efficiency of time in the room. This was evaluated using a one-way ANOVA and the Dunnett's C Post-hoc test of multiple comparisons. The visit-elapsed time dependent variable (DV) was measured as a continuous measure in minutes. The check-out variable was a nominal measure of *Yes* for checked out and *No* for did not check out. The independent variable (IV), the scribe presence based on three different observations, had three levels including: (a) 51 days when the data was collected with no scribe present (phase one); (b) 17 days when the data was collected during the presence of a scribe (phase two); and (c) 72 days when the data was collected after increased training and presence of newly trained scribes during doctor visits (phase three). Using a random sample of 250 observations from each of the three groups ( $N = 750$ ), a one-way ANOVA was conducted to evaluate the difference in patient-visit elapsed time (DV)

based on the presence of a scribe (IV). The underlying theory was that the presence of a scribe increased the overall efficiency of the clinic as measured by patient-visit elapsed time.<sup>10,11,17</sup> The continuous DV was measured in minutes and the nominal IV consisted of three levels: (a) pre-treatment (before scribe presence); (b) scribe present; and (c) continued scribe presence with increased training and rotation of scribes. Table I provides the descriptive statistics for the three levels. The results of the ANOVA were significant,  $F(2, 747) = 5.90, p = 0.03$ . There was a statistically significant difference ( $p = 0.03$ ) in patient-visit elapsed time based on the presence of a scribe.

Because the comparison of means test was significant, further interpretation on the multiple comparisons post-hoc test determines the extent to which the three treatments differed. The Levene's test of homogeneity of variance was significant ( $p = 0.02$ ), and therefore the Dunnett's C (equal variance not assumed) *post hoc* test was used to interpret the comparison of the three observations. As shown in Table II, for the pre-intervention comparison, the elapsed time decreased significantly when a scribe was present (-13.64 minutes), and the difference was slightly greater (-13.88 minutes) when additional training was provided to the scribes. The difference in the patient-visit elapsed time was much less, and still decreasing, when comparing the scribe-present and the continued scribe presence with increased training and rotation of scribes (-2.40 minutes). With this gained efficiency, providers were able to achieve an improved work-life balance and gain greater satisfaction during the work day by reducing the number of hours spent documenting after the work day from more than five to less than two, and completing the scheduled visits for each work day.

While not measured during this project, the hospital corpsmen trained to serve in the project scribe role provided

anecdotal accounts that indicated a drastic improvement in: (a) their physical assessment skills; (b) documentation skills; (c) ability to proactively identify diagnosis; (d) improved collaboration with their assigned provider; (e) comfort level engaging with the patient; (f) team cohesion and efficiency; and (g) preparation to treat patients in the operational setting after having participated in the scribe project. This additional benefit to the project was in direct support of the Navy Surgeon General's mission of Readiness, Health and Partnerships.<sup>21</sup>

**DISCUSSION**

Consistent with literature, this quality improvement project demonstrated that the use of scribes in an outpatient setting reduced the administrative burden of provider documentation into the EHR, and improved provider work life balance. While the patient experience revealed a slight decrease, this was shown to be less than 0.18. Additionally, throughout the project, patients were receptive to the scribes, and continued to provide positive experience feedback via ICE and JOES from patient's provider utilizing scribes. These slight variations in these two factors revealed that the overall patient experience and satisfaction were not negatively impacted when using scribes. These findings were similar to other pilot projects and studies performed in the outpatient setting.

This evidence-based emerging process highlighted the positive impact that scribes can have on fostering collaborative teamwork, and elevating a family practice clinic's efficiency among outpatient healthcare settings. Policies focused on the patient and provider experience, centered on improving the patient and provider interaction and quality of the visit as well as clinic and documentation efficiencies, will further strengthen the ability of organizations and individuals to promote high reliability and drive optimal patient and organizational outcomes. To mitigate risks, it would be beneficial to have policies that govern verbal order practices, supervision of the scribe, and validation of the documentation by a physician prior to closing the encounter.

The delivery of health care is a multifaceted team approach in the fast-paced environment of evolving EHRs. Further study of the scribe's experience, especially given the positive qualitative comments from the hospital corpsmen that participated as scribes during the project period could

**TABLE I.** Descriptive Statistics for the One-Way ANOVA (Time Efficiencies) ( $p = 0.03$ )

Treatment	N	Mean	SD
Pre-intervention (Phase 1)	250	43.59	69.11
Scribe intervention (Phase 2)	250	30.30	36.96
Scribe continued with increased training (Phase 3)	250	30.06	43.45

**TABLE II.** The Dunnett's C Post-hoc Test of Multiple Comparisons between Scribe Interventions

Observation (I)	Comparison (J)	Mean Diff. (I-J)	Standard Error	Sig	95% Conf. Interval	
					Lower Bound	Upper Bound
Pre-intervention (Phase one)	Scribe	13.64*	4.96	0.007	1.96	25.33
	Post-new Scribe	13.88*	5.16	0.000	1.71	26.06
Scribe intervention (Phase two)	Pre-intervention	-13.64*	4.96	0.010	-25.33	-1.96
	Post-intervention	0.240	3.61	1.00	-8.28	8.75
Scribe continued with increased training (Phase three)	Pre-intervention	-13.88*	5.16	0.008	-26.06	-1.71
	Scribe	-2.40	3.61	1.00	-8.75	8.27

\*Mean difference is significant at the 0.05 level.

provide beneficial outcomes. The utilization of medical scribes strengthened provider experience. Future research centered on the provider experience could be beneficial to organizations. In multiple settings, documentation requirements burdened providers, and the consideration of scribes could foster work life balance, retention, and wellness.

Additionally, research focused on the development and validation of instruments, such as the one utilized for this project, to effectively measure patient and provider interaction with the presence of scribes as well as the experience of providers and patients when using scribes would be beneficial. Furthermore, the collection of demographics in future projects will enhance the author's ability to identify causal factors that may influence fluctuations in experience and time efficiencies.

Navy Medicine is advancing every opportunity to strengthen clinical and operational readiness, health and partnership. This type of innovative evidence-based process, utilizing medical scribes in the outpatient primary care setting, could yield best practices and facilitate optimal patient and organizational outcomes.

Limitations included a need for a validated questionnaire for the pre and post patient and provider experience, and the small-scale size of the project minimized the generalizability of the project results.

Navy Medicine developed initiatives to foster innovation in care delivery in order to streamline care and enhance the patient experience utilizing concepts of the quadruple aim.<sup>22-25</sup> Providing world class care to our nation's most deserving citizens is an honor and privilege, and the quest for maximizing patient outcomes is on the forefront of the minds of our nation's leaders.<sup>25,26</sup> To improve communication and engage patients in their care, it is crucial for organizations to scrutinize the needs of their patient population and determine innovative strategies that will facilitate effective partnerships with patients.<sup>27</sup>

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