Implementation of a Virtual Asynchronous Scribe Program to Reduce Physician Burnout

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SUMMARY

Goal: Administrative burden is one of many potential root causes of physician burnout. Scribe documentation assistance can reduce this burden. However, traditional in-person scribe services are challenged by consistent staffing because the model requires the physical presence of a scribe and limits the team to a single individual. In addition, in-person scribes cannot provide the flexible support required for virtual care encounters, which can now pivot geographically and temporally. To respond to these challenges, our health network implemented an asynchronous virtual scribe model and evaluated the program’s impact on clinician perceptions of burnout across multiple outpatient specialties.

Methods: Using a mixed-methods, pre-/postdesign, this evaluation measured the impact of an asynchronous virtual scribe program on physician burnout. Physicians were given the Professional Fulfillment Index tool (to self-assess their mental state) and free-text comment surveys before virtual scribe initiation and again at 3-, 6-, and 12-month intervals after program implementation. Descriptive statistics of survey results and qualitative review of free-text entries were analyzed for themes of facilitation and barriers to virtual scribe use.

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**Principal Findings:** Of 50 physician participants in this study, 42 (84%) completed the preintervention survey and 15 (36%) completed all 4 surveys; 25 participants (50%) discontinued scribe use after 12 months. Burnout levels—as defined by dread, exhaustion, lack of enthusiasm, decrease in empathy, and decrease in colleague connection—all trended toward improvement during this study. Importantly, quality, time savings, burnout, and productivity moved in positive directions as well.

**Practical Application:** The cost burden to physicians and the COVID-19 pandemic inhibited the continued use of asynchronous virtual medical scribes. Nevertheless, those who continued in the program have reported positive outcomes, which indicates that the service can be a viable and effective tool to reduce physician burnout.

**INTRODUCTION**

Physician burnout is a condition in which clinicians lose satisfaction and a sense of efficacy in their work, which leads to a loss of well-being. Concern about the consequences of physician burnout is growing (Jha et al., 2019). As the Agency for Healthcare Research and Quality (AHRQ) notes, “The rising prevalence of burnout among clinicians has led to questions on how it affects access to care, patient safety, and care quality” (AHRQ, 2017, p. 1). Around 42% of all U.S. physicians exhibit at least one symptom of burnout (Chandawarkar & Chaparro, 2021). Burned-out physicians may cut back on clinical care, pursue nonclinical career options in medicine, or take their talents outside the healthcare field altogether, thus exacerbating the U.S. physician shortage (Association of American Medical Colleges, 2020) and access-to-care problems (Dyrbye et al., 2018).

In a Medscape survey (2018), >15,000 physicians across 29 specialties (56% of respondents) said that the primary cause of physician burnout was “too many bureaucratic tasks [e.g., charting, paperwork]”; increasing computerization of practice with electronic health records (EHRs) ranked fourth (24%). The combination of EHR documentation related to the clinical encounter required to meet billing requirements, requisite quality reporting, and separate justification for each test order is creating an unsustainable burden, which is associated with physician dissatisfaction (Shanafelt et al., 2017). Data entry requirements adversely affect physician–patient interaction and physician satisfaction (Dzau et al., 2018; Lyon et al., 2020; Rassolian et al., 2017).

Measures to address physicians’ clerical and administrative tasks can reduce the burden of clinical documentation. Employing a scribe to facilitate documentation in the EHR can allow more time for physicians to focus on the human element of relationships and decision-making and optimize workflow (Bates & Landman, 2018; Taylor et al., 2019).

Our healthcare organization, an integrated health network of 8 hospitals and 162 outpatient clinics across northeast Pennsylvania, is addressing clinician burnout with the implementation of an asynchronous virtual scribe program.
This article presents a report on that program and its impact on the clinicians’ perception of burnout.

Asynchronous Virtual Scribe Program

In an asynchronous virtual scribe program—administered with patient consent—a scribe working in a remote location asynchronously listens to a recording (encrypted for secure access) from a patient encounter and then enters clinical information into the EHR as directed by the physician. The scribe reviews the audio as many times as required for accuracy using Health Insurance Portability and Accountability Act (HIPAA)—compliant technology. The physician uses a desktop, mobile phone, or tablet to communicate with the scribe and provide details for documentation.

Our virtual scribe company uses a team approach in which several scribes are familiar with physicians’ workflow and documentation preferences, so there is little to no disruption for the physicians. Virtual scribes work to ensure consistent support. In addition, they are well suited for practices in remote geographical areas (such as some of our organization’s locations) where it may be difficult or too costly to hire full-time physical scribes.

Scribes, whether physically or virtually present, can be cost-effective when they allow the physician to see more patients and improve the coding and billing. For all specialties, an average of two additional new patients or three additional returning visits per day have been found to be enough to cover scribe expenses (Miksaneke et al., 2021). Higher-level billable documentation is facilitated because physicians have more time for patient precharting, communication management, referral management, and ordering.

METHODS

Program Implementation

For this study, implementation of the asynchronous virtual scribe service began in November 2019. Given our organization’s particular need for clinician support in ambulatory settings, the program was launched across primary care and medical specialty practices. The organization covers half of the scribe costs, with the participating physicians assuming the remaining half. Although the program is ongoing, this article describes its initial implementation.

Patient populations included all payers and all patients older than 18 years. Physicians who opted into the program were discouraged from opting out of services until after they had been in the program for 6 months. Physicians who took longer than their peers to complete their charting and had a history of time management challenges (i.e., those who use the computer system most frequently after hours during nonclinical time) were specifically invited to participate.

Before starting in the program, physicians signed a contract that outlined expectations and requirements of participation. In addition, they completed multiple assessments of perceptions regarding burnout. Program onboarding occurred over 4 weeks. During this gradual process, notes were edited, preferences learned, and standards achieved in both recording and scribing the notes. Each participating physician was assigned a secure tablet, which allowed encrypted
audio files to be sent to the scribe service. The audio files were scribed by a dedicated team member who reviewed the audio to ensure accuracy, detail, and correct placement of content in each note. The drafted notes were delivered to the physician via the EHR the following morning.

The remote scribes team performed quality control before note completion. Feedback was provided to physicians regarding how well the audios were recorded, any areas they missed, and callouts (such as for physical exams) they did not complete. We created and sent a dashboard of key performance metrics to physicians that included data on how their scribe usage influenced their time with patients, patient satisfaction, and operational metrics.

**Wellness/Burnout Assessment**
The Professional Fulfillment Index (PFI) was used to assess physicians’ well-being (Trockel et al., 2018). The PFI includes a 16-question instrument that maps to professional fulfillment, work exhaustion, and interpersonal disengagement domains. The secure web-based REDCap platform was used to distribute questions to participants; evaluation data were later collected and managed using REDCap tools (Harris et al., 2009; Harris et al., 2019). Surveys were sent out before implementation of the virtual scribe program and at three points after implementation based on the enrollment date for each participant (3 months, 6 months, and 12 months). Questions regarding burnout were asked in all four surveys; the open-ended questions were asked in each of the three postimplementation surveys. A planned subsequent round of surveys was not distributed because of the COVID-19 pandemic’s impact on clinical operations beginning in March 2020.

Surveys were administered between July 2019 and January 2021 to the 50 eligible participants by e-mail; they were confidential to the program evaluation team but were not anonymous. Eligible participants were those physicians who enrolled in the program, were not on the implementation team, and completed a survey before scribe program utilization. Respondents chose from a Likert scale of 1–5, where 1 was not at all and 5 was extremely—the higher the score, the higher the degree of burnout. A mean score of responses was calculated for each burnout question and compared at each time point.

Free-text field survey results, including comments from participating physicians who stopped using the virtual scribe product, were also analyzed by the coding team. Qualitative themes were identified as either facilitators/positive or barriers/negative attributes of the scribe program.

**RESULTS**
Forty-two out of 50 eligible virtual scribe program participants responded to the preintervention survey (84% response rate). They had practiced between 1 and 40 years (average years in practice: 16). Males and females were represented almost equally. The number of surveys sent and completed decreased over time as physicians left the program, for an overall loss of 9 respondents and a net decrease of 46% in survey completion. Fifteen of the original 42 respondents (36%) completed all surveys.
TABLE 1

Performance in Dread, Exhaustion, and Lack of Enthusiasm

|                      | Preintervention, Mean Score | 3 Months, Mean Score | 6 Months, Mean Score | 1 Year, Mean Score |
|----------------------|-----------------------------|----------------------|----------------------|-------------------|
|                      | \( n = 42 \)                | \( n = 33 \)         | \( n = 29 \)         | \( n = 19 \)      |
| During the past 2 weeks, I have felt |                      |                      |                      |                   |
| A sense of dread when I think about work I have to do | 3.07 | 2.3 | 2.28 | 2.53 |
| Physically exhausted at work | 2.95 | 2.24 | 2.07 | 2.11 |
| Lacking in enthusiasm at work | 2.79 | 2.03 | 2.03 | 2.32 |
| Emotionally exhausted at work | 2.81 | 2.18 | 2.31 | 2.32 |

Note. Scale: 1 = not at all; 2 = very little; 3 = moderately; 4 = a lot; 5 = extremely.

When first-year data for this analysis were completed, half of the initial 50 program participants had dropped out, mostly because of the cost of the scribe service charged to the participants. Although the sample size decreased along with the differences in scores, there was an overall trend toward improvement in all nine domains of the PFI (Tables 1–3). Slight regression back toward preintervention levels in dread, lack of enthusiasm and empathy with patients and colleagues, and less sensitivity and connectedness were seen at 12 months, at which point the sample size was less than half of the initial group.

A coding team analyzed free-text field survey responses using immersion crystallization, a qualitative analytic method in research that identifies themes, categories, and patterns in data. Qualitative themes were identified as either facilitators or barriers to program implementation. Those themes included quality, time, burnout, productivity and engagement, and implementation. See Table 4 for positive themes and comments.

The dashboard of physician key performance indicators has demonstrated a trend toward enhanced patient satisfaction and decreased time spent writing notes, with limited impact on encounter time. These data published as Supplemental Digital Content, available at http://links.lww.com/JHM/A85, were not evaluated for statistical impact in this report but are under review for future analysis.

DISCUSSION

This analysis of our program indicates that an asynchronous virtual scribe service can affect physician burnout positively when coupled with ongoing scribe service
TABLE 2
Performance in Lack of Empathy, Interest in Patients

|                           | Preintervention, Mean Score | 3 Months, Mean Score | 6 Months, Mean Score | 1 Year, Mean Score |
|---------------------------|-----------------------------|----------------------|----------------------|-------------------|
|                           | n = 42                      | n = 33               | n = 29               | n = 19            |
| During the past 2 weeks   |                             |                      |                      |                   |
| my job has contributed to me feeling |                     |                      |                      |                   |
| Less empathetic with my patients | 2.02                      | 1.55                 | 1.62                 | 1.84              |
| Less interested in talking with my patients | 2                          | 1.64                 | 1.66                 | 1.68              |
| Less connected with my patients | 2.29                      | 1.7                  | 1.66                 | 1.58              |

Note. Scale: 1 = not at all; 2 = very little; 3 = moderately; 4 = a lot; 5 = extremely.

Optimization to demonstrate the program’s value to the physician. From the patients’ perspective, scribes support acceptable clinical encounters (Danak et al., 2019). Although scribes do not have much impact on patients’ perceptions of satisfaction and their impact on the clinical encounter itself is minimal, the potential

TABLE 3
Performance in Empathy, Connection With Colleagues

|                           | Preintervention, Mean Score | 3 Months, Mean Score | 6 Months, Mean Score | 1 Year, Mean Score |
|---------------------------|-----------------------------|----------------------|----------------------|-------------------|
|                           | n = 42                      | n = 33               | n = 29               | n = 19            |
| During the past 2 weeks   |                             |                      |                      |                   |
| my job has contributed to my feeling |                     |                      |                      |                   |
| Less empathetic with my colleagues | 1.98                      | 1.58                 | 1.48                 | 1.63              |
| Less sensitive to others’ feelings/emotions | 2.12                      | 1.67                 | 1.55                 | 1.68              |
| Less connected with my colleagues | 2.17                      | 1.76                 | 1.72                 | 1.95              |

Note. Scale: 1 = not at all; 2 = very little; 3 = moderately; 4 = a lot; 5 = extremely.
### TABLE 4

**Scribe Service Program Positive Themes, Qualitative Analysis**

| Positive Themes | Codes Identified in Free Text | Quotes |
|-----------------|--------------------------------|--------|
| Quality         | Accurate capture of information in real time | Complete notes | Increased patient satisfaction | Good for brief/uncomplicated notes | Scribe program tries to actively improve their process (customer service) |
|                 |                                 | Time savings | Increased time for other tasks during the workday | Able to spend more time focused on the patient |
| Time            |                                 |            |                                      |                                      |

“Service documents some very good material that I never would have included in my notes.”

“Accuracy and attention to detail in documentation is amazing with the program.”

“Scribe program has directly resulted in a reduction in the hours I spend documenting patient encounters by at least 5 hours/week.”

“I can get inbox tasks completed during the workday—so, faster turnaround for staff and patients. And I can get out of the office on time.”
### TABLE 4
(Continued)

| Positive Themes                      | Codes Identified in Free Text                                                                 | Quotes$^a$ |
|--------------------------------------|-----------------------------------------------------------------------------------------------|------------|
| **Burnout**                          | Increased work–life balance                                                                  |            |
|                                      | Decreased stress/anxiety going into the workday                                               |            |
|                                      | Mental health breather by not having to document                                              |            |
|                                      | Helping to decrease burnout and fatigue                                                      |            |
|                                      | Decreased pressure to remember details for later documentation                               |            |
|                                      | “I would recommend this service to anyone. It has significantly improved my quality of life and increased my joy in seeing patients.” |            |
|                                      | “Less stress while working, more time at home.”                                               |            |
|                                      | “I have not needed to do anything over the weekend since starting the service.”              |            |
| **Productivity and engagement**      | Increased opportunity to add simple visits to schedule                                         |            |
|                                      | Can use the EHR as a tool and not have to focus on charting                                   |            |
|                                      | Can address more patient concerns in one visit                                                |            |
|                                      | More schedule availability                                                                   |            |
|                                      | “This service has allowed me to focus more on what the patient is saying. I’m able to engage more, and with better eye contact. It has made a world of a difference.” |            |
|                                      | “I’m paying more attention, probably listening better, and having more meaningful discussions. Not sure that my time with patients has decreased, but it definitely seems more meaningful.” |            |
|                                      | “The service has been very good for the most part.”                                          |            |
|                                      | “I’m happy about the upgrade with schedule embedded in the tablet.”                          |            |

**Note.** EHR = electronic health record.

$^a$Quotes edited for clarity.
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for scribes to reduce physicians’ documentation burden is valuable. In addition, the growth of telemedicine is a positive trend for virtual scribes because their service can be used at any time, at any location, and in any situation, which is not the case for physical on-site scribes (Lyon et al., 2020).

A unique aspect of scribe services is that they enable the translation of an encounter into a formatted note with limited physician intervention, which dictation tools simply taking audio content verbatim cannot do. Enabling physicians to complete their encounters without additional dictation can significantly ease their documentation burden. Our data demonstrate that those who used the service and took the time to align their expectations with the scribe program team’s expectations enjoyed value worthy of the investment.

There are, however, arguments against virtual scribe programs. One main concern is that manual documentation allows physicians to structure their thoughts, think critically, and reflect, and removing that practice could adversely affect the way they practice medicine (Willis & Jarrahi, 2019). In addition, using a virtual scribe service requires proactive planning and effective implementation. At our organization, the surveys of participating physicians revealed that the discontinuation rate was most directly tied to the financial model (50% covered by organization, 50% by each physician), along with the need for continuous improvement for quality assurance of the service to suit individual provider preferences. Physicians’ feedback also identified areas of dissatisfaction such as the timing of note return (some favored real-time delivery over asynchronous delivery), issues with verbiage used by scribes, and the need to edit their notes. Although ongoing program optimization is required for any service model, it is clear from our experience that virtual scribes can allow physicians to focus on patient care, disconnect from the computer and administrative tasks, and improve patient outcomes (Gidwani et al., 2017).

Study Limitations

Some benefits of scribes have been reported historically, although with small sample sizes (Reick-Mitrisin et al., 2019). Our program started with a small sample size and then saw a 50% dropout rate, declining response rates to surveys, and inconsistent timing of baseline data because of rolling enrollment. The program began only a few months before the start of the COVID-19 pandemic, which caused significant disruption to enrollment and survey follow-ups. In addition, analysis of the dashboard key performance indicators for physicians was incomplete when this report was being prepared. However, this early review suggests an impact from the virtual scribe services beyond physician burnout. Further investigation is warranted around these points, as is a review to ensure that the service itself is the driver of these findings rather than the Hawthorne effect (i.e., with responses shaped by an awareness of being observed). These issues limit generalizability to other organizations using virtual scribe services, although the qualitative themes provide important insight into the utility of a virtual scribe program to promote physician well-being.
CONCLUSION
Virtual asynchronous medical scribe services can reduce emotional distress and burnout by lessening the administrative burden of practicing physicians. Our results demonstrate that multiple factors are involved in clinician satisfaction and longevity with these programs. For those who persist with use, a significant wellness benefit can be realized. The 50% of participants who remained with this program have found high value in it.

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