SAS Journal of Medicine
Abbreviated Key Title: SAS J Med
ISSN 2454-5112
Journal homepage: https://saspublishers.com

OPEN ACCESS

Family Medicine

Artificial Intelligence Scribes in Primary Care: A Narrative Review of Promise, Pitfalls, and Practicality

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DOI: https://doi.org/10.36347/sasjm.2025.v11i10.015 | **Received:** 03.09.2025 | **Accepted:** 21.10.2025 | **Published:** 24.10.2025

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Abstract **Review Article**

Introduction & Background**:* Within the primary care setting, one of the major issues has been how a physician can meet the clinical demands of a consult and also document effectively. The documentation has multiple purposes, including an accurate record of the consultation, and can be used in multiple future contexts, e.g. audits, medico-legal cases. The emergence of artificial intelligence (AI) tools has meant that ambient scribes are now able to synthesise a record of the consultation whilst the physician focuses on the clinical aspects. This new role of software means time saved, and also has benefits for the doctor and patient satisfaction. ***Objectives: This literature review will look at current evidence available on AI scribes used in primary care. In particular, focus on benefits, challenges, ethics, legal issues and future direction. ***Methods:*** The review was conducted on the following databases - PubMed, Scopus and Google Scholar the aim is to look at AI scribe technologies, pilot studies and implementation reports within the primary care setting. ***Results:*** The use of AI scribes has shown signs that documentation time can be reduced, allowing for the physician to focus on their interaction with the patient. This can mean a more comprehensive consult where the patient feels more engaged. In addition, from a physician's perspective, the relative burden of having to ensure a comprehensive record of the consult, in a short space of time, can help reduce anxiety and burnout. There are, however, significant challenges to seamless adoption. In particular, accuracy, integration within existing Electronic Patient Record (EPR) systems, data privacy, legal issues and costs. The patient consents to having their medical information recorded within an accepted EPR; however, an AI scribe is likely not covered by this consent process as it sits outside of the accepted information technology (IT) infrastructure. The challenges going forward are how scribes can be accepted by the wider organisation and incorporated into the process pathway of a consult. At the same time be verified from a legal and consent perspective. How can this be done cost-effectively and provide a seamless interface to the clinician? ***Conclusions:*** The AI technology now exists to allow an ambient scribe to record a consult. However, careful integration based on sound evidence needs to be conducted to allow for wider acceptance and adoption. The risks relating to patient-sensitive information need to be mitigated. Early pilot studies suggest measurable benefits, particularly in reducing documentation time and improving patient-reported satisfaction scores.

Keywords: AI scribe, primary care, clinical documentation, physician burnout, electronic patient records.

INTRODUCTION

The use of electronic patient record (EPR) systems has become ubiquitous across healthcare in general and in particular within the primary care setting. Many studies have shown that physicians now spend a disproportionate amount of time on EPRs recording, checking and verifying information. There are multiple consequences to this, one being physician burnout [1]. Within the consultation itself, in order to record the consultation as accurately as possible, often physicians find themselves typing and staring at a screen instead of focusing on the patient. An accurate record of the consultation has become a key objective and will feed into quality audits and also medico-legal investigations. This can become a distraction during consultations and heighten physician anxiety.

The study of burnout amongst physicians has become a priority in recent years, with many factors contributing. Amongst these are the concept of moral injury, where the physician is at odds with the beliefs or values associated with the medical system, which they believe is constraining their ability to care for their patient. Amongst the contributors to this moral injury is the need to complete their documentation promptly [2].

The advent of artificial intelligence (AI) scribes provides a possible way of removing the administrative burden of accurate consult recording. In this review, we explore the use of AI scribes within primary care. Specifically, the benefits and risks of the use of such tools.

REVIEW

Overview of AI Scribes

These are essentially tool designed to listen and pick up the salient points within a conversation e.g. a doctor's consultation. The information is then structured in a way which can be stored as a comprehensive and accurate record of what took place during the consultation.

The scribes use multiple methods to achieve this result, including speech-to-text processing, understanding and interpreting natural language and the ability to detect the nuanced nature of a consult from patient to patient. In the UK, the Heidi platform has gained popularity and serves as a good example of such a tool [3]. Other prominent examples are Nuance DAX [4], Suki [5] and Augmendix [6]. These solutions provide varying degrees of automation when it comes to patient consultations. The goal with all of these solutions is to reduce the documentation burden on clinicians, whilst maintaining completeness and quality of the notes.

Benefits of AI Scribes in Primary Care

There have been several pilot initiatives that suggest AI scribes can make a positive contribution when it comes to medical documentation and patient interaction. By effectively automating note creation, the clinician is able to enhance the overall patient experience and also improve their own job satisfaction [7]. There has been good general feedback from early adopters, with particular emphasis on improved patient engagement through better eye contact:

"Physicians overwhelmingly said the technology had a positive effect on patient interactions (84%) and overall work satisfaction (82%). Mental health, emergency medicine, and primary care doctors were most likely to use the technology." [8]

"Generative AI scribes not only saved physicians an estimated 15,791 hours of documentation time-equal to 1,794 eight-hour workdays-but also improved patient-physician interactions and enhanced doctor satisfaction" [9]

Another benefit of using an AI scribe is that documentation standards and presentations could become more uniform, especially if the AI tool pools the learning from multiple clinicians in a particular speciality.

Additionally, AI scribes have the potential to standardise documentation, reduce variability in note quality, and improve billing accuracy. A significant study shows that AI scribes perform well when the quality of the output is assessed [10]

The benefits of an ambient AI scribe can be summarised into the following areas: reduced documentation time, improved clinician job satisfaction and better patient interaction and enhanced note quality

Challenges and Limitations

There are promising signs that AI scribes could assist clinicians greatly; however, there remain significant challenges. One area of concern is the ability of an AI scribe to recognise the substantial complexity and nuanced nature of a patient interaction. For example, not all communications are verbal, and patients express themselves in very individual ways. The AI scribe may not be able to interpret all the verbal and nonverbal cues that clinicians are so well trained to recognise.

Furthermore, AI can misinterpret and miss information that the clinician themselves may feel is important. Conversely, without checking the information, the scribe may include documentation which could be deemed irrelevant or even offensive in nature [11].

Many AI scribes are standalone and are not integrated directly within the EPR. Here exist both technical, logistical, contractual, data privacy, and medico-legal challenges. This will inevitably mean potentially significant cost implications. Once adopted and integrated into the EPR workflows, processes and support arrangements must be in place. These issues will likely hinder the adoption of these technologies. With limited adoption at the time of writing, this area will need to be evaluated and explored in more detail. Finally, the tools will likely require the purchase of a license or subscriptions, and an evaluation/trial period will be required so that practices can justify the cost and return on investment. There is little information around this area, which again requires further exploration.

Key challenges include accuracy, workflow disruption, and medico-legal risks, each of which will need structured evaluation before widespread adoption.

Implementation in Primary Care Settings

As a new technology, there are no existing mechanisms into which the tools can be slotted. This requires significant thought to ensure processes do not become too complicated or cumbersome. This will mean pilot studies, feedback loops and a graduated rollout.

Implementing AI scribes in primary care requires careful consideration of workflow integration, clinician training, and patient acceptance. Successful models often involve pilot testing, gradual rollout, and clinician feedback loops. This was demonstrated by a rollout at Kaiser Permanente [12]:

"Key to safe deployment was a quality assurance feedback loop. The organisation carried out a 10-week pilot in early 2024, before the system was deployed throughout Kaiser Permanente's 8 regions, 600 medical offices, and 40 hospitals. Because of how widely it would be used, the organisation closely analysed clinician feedback on their experience with the technology's accuracy and usability."

This shows the level of effort that may be required for successful implementation. The positive feedback from this rollout is demonstrated as follows:

"That analysis found doctors using the AI tool spent less time looking at medical records outside of work hours and less time looking at health record notes during appointments. Also, a patient survey found that a majority felt they spent more time speaking with the physician during the visit, the doctor spent less time looking at the computer, and the technology felt neutral or very comfortable to them.

This particular implementation was evaluated and showed the following general outcomes:

The pilot included 63000 patient encounters, and a star rating was used by a quality team to evaluate the clinician's free-text patient encounters with the following results: the star ratings were positive, of the 14% of patient encounters that received ratings, 47% of ratings were 5-star, 31% were 4-star, 7% received 1 or 2 stars out of 5, the authors described this as a "largely positive user reaction.

Some specific feedback received was the tool had difficulty in tracking multiple speakers, information was missed, and assumptions made had to be corrected by physicians

Ethical and Legal Considerations

There are important ethical and legal considerations in the use of AI scribes. Clinicians should gain consent from patients and potentially allow an opt-out mechanism. Furthermore, any errors/omissions will need to be accounted for, and these must not discriminate based on people's accents, backgrounds or linguistic abilities [13].

Future Directions and Research Needs

The technology used within AI scribes is in an early phase, with some significant challenges ahead. Multiple implementations, feedback and evaluation will allow for many of the challenges to be addressed. There is a need to have a greater number of real-world examples to compare and contrast the learning experiences. There will need to be involvement and collaboration with medico-legal and data privacy professionals to ensure the tools do not fall foul of laws and regulatory frameworks.

Engagement with clinicians and careful consideration of feedback will allow for the tools to be improved, and allow for better adoption

CONCLUSIONS

The use of AI scribes clearly shows great promise in alleviating the burdens of documentation. Many of the reasons for excess time being spent on documentation are due to medico-legal considerations. The solutions will need to be compliant in this aspect. There is a need for adoption, evaluation and feedback to allow for gradual improvement. This will mean some acceptance of early phase issues like inaccuracies, deficiencies in recognising the nuanced nature of a consult and potentially even serious omissions and errors. As with all new technologies, there will be a learning curve and gradual adoption and acceptance.

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