



WHITE PAPER

VIRTUAL SCRIBE AND AMBIENT SPEECH COMPETITIVE MARKET INSIGHTS

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Abstract

The goal of any clinical documentation solution is twofold:

- 1.) to provide the note of highest accuracy, quality, and compliance within the most reasonable amount of time.
- 2.) minimize disruption and complement the clinical workflow.

The ongoing clinician burnout crisis has been heavily influenced by after hours ‘pajama time’ spent completing documentation, compromising work-life balance for the sake of the clinical note. Meanwhile, multiple studies show that clinician retention and wellness scores dramatically improve when they are relieved from their traditional documentation burdens.¹⁻²

Consequently, today’s clinical documentation market is driven by heavily promoted expectations for generative artificial intelligence (Gen AI) and industry efforts to separate administrative chores from clinicians’ core patient care responsibilities.

THE RISE OF SCRIBES AND AMBIENT SPEECH

Just a few years ago, live scribes were seen as the future of document creation, initially with onsite in-room support and later with virtually connected support models. Onsite scribes pose several inherent challenges since most team members are post graduates or pre-medical students with geographic limitations and a tenure expectancy of less than one year. In-room approaches also raise concerns about patient privacy and the availability of backup for absences, missed shifts, or gaps between dedicated one-to-one assigned resources.

Real-time remote scribes eliminate backup availability concerns. However, market costs for real-time remote scribes currently approach those of more affordable traditional transcription efforts. Retaining domestic real-time remote scribes, on the other hand, is challenging, as their wages can be as low as those of Walmart employees. Gap year pre-medical students perform exceptionally well when treating this work as a modestly compensated internship, simultaneously developing skills that add value to their evolving careers. However, the inevitably limited tenure of such personnel leaves many clinicians facing the same frustrations as with in-room scribes – resulting in a revolving door for domestic labor, regardless of how well replacements are trained or how effectively coverage gaps are managed.

Offshore virtual scribes, on the other hand, are predominantly credentialed medical professionals who eliminate the revolving door issues at more attractive labor rates. However, their geographic locations necessitate additional security and regulatory considerations, which can deter some clients and/or their electronic health record (EHR) vendors.

AMBIENT GEN AI POTENTIAL

The advent of Gen AI marks a cutting-edge frontier in the evolution of tools and platforms designed to help clinicians deliver better care by addressing the ubiquitous burden of clinical documentation. Clinicians, in their constrained efforts to maintain a patient-focused bedside manner while staying on schedule in a busy clinic, often cannot complete their notes until well after the visit, sometimes hours or even days later. This delay can result in notes that contain recall bias or less detail.

In contrast, ambient Gen AI tools document patient-clinician interactions in near real-time, at a fraction of the cost of live or remote scribes. Powered by advanced automated speech recognition (ASR), natural language processing (NLP), and ambient Gen AI engines that populate the EHR, these tools operate in the background to accurately capture the patient-clinician interaction. This allows clinicians to devote more time and attention to their patients rather than their keyboards and EHRs.

AMBIENT GEN AI CAUTIONS

The growing fascination with Gen AI primarily stems from its fresh, technical prowess, offering substantial reductions in time spent on documentation and a potential boost in clinician efficiency. According to Gartner's Cycle of Emerging Technologies, however, Gen AI currently resides in their category of the 'Peak of Inflated Expectations'.³ Given its limited market deployment, purchasing decisions are still driven by highly impressive yet limited scope demonstrations that promote the 'sweet-spot' of the vendor's offering.

Even in today's hyped market, Gen AI is already encountering its own set of challenges. The complexities of clinical conversations pose a particularly formidable challenge, given the variabilities of human language and the range of discussions during clinician-patient interactions. Background noise, the specific language of conversation, accents, and speech impediments influence engine performance, which can lead to inaccuracies. These encounter conversations are often infused with emotional nuances, colloquial expressions, and implicit meanings that require a deep understanding not only of the language but also of the medical, social, cultural, and legal contexts in which they are expressed. Any limited understanding of these factors poses a significant risk for omissions, misinterpretations, biases, and hallucinations.

Recent calls for a pause in AI development to explore its safety and regulation, along with the AMA's acknowledgement of significant regulatory gaps in AI applications, underscore the need for deep and careful collaboration in its application to various aspects of medical care.^{4,5}

As this technology matures, the focus should remain on creating the most compliant and accurate clinical notes possible. The true value of ambient Gen AI lies not in the technology itself but in its ability to enhance the quality and reliability of clinical documentation, ultimately supporting better workflow and patient care.



COMPETING WORKFLOW MODELS

At their core, all competing scribing and ambient speech solutions share the same basic workflow components (**Figure 1**): capturing the conversation between clinician and patient, converting that input into discrete data in an EHR record, and presenting a ‘draft’ clinical note for review and editing prior to sign off by the clinician. However, how that conversation becomes a document that is ready for review and sign-off, and the completeness and accuracy of what is presented, can vary greatly among these competing workflow models.

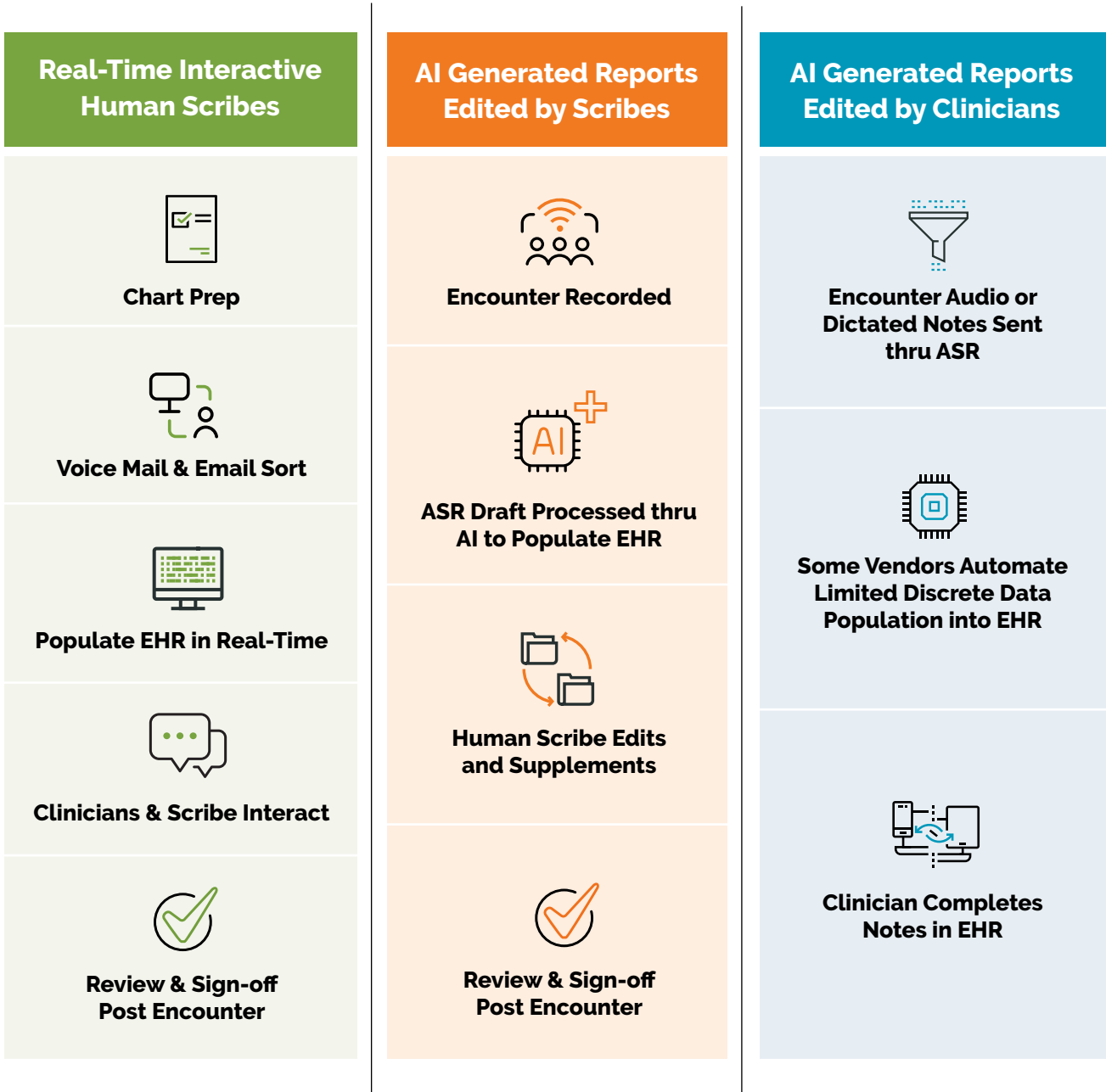


Figure 1. Competing Scribe and Ambient Speech Workflow Models

REAL-TIME SCRIBE

Although live scribes are included in this discussion (as they, like the ambient speech approaches, create clinical notes based on clinician-patient conversations), they also relieve a variety of other administrative chores that are not yet easily achieved by automated ambient speech workflow approaches, such as chart preparation, order entry, voice and email sorting/prioritization, and other clerical administrative tasks.

Advantages:

- **Two-way synchronous interaction with clinicians:** Optimizes the quality and application of individual clinician preferences.
- **Enables ancillary support:** Includes pre-charting, order entry, email/voice mail sorting, and other clerical tasks.
- **Best quality for billing and ongoing care:** Ensures discrete data capture and eliminates “pajama time”.
- **Effectively reduces burnout:** By eliminating pajama time.
- **Improved documentation quality:** Increases RVUs by as much as 12%.
- **Documentation efficiency:** Allows the ability to see more patients without additional clinic time.

Disadvantages:

- **Highest price point:** Although turnover and pricing concerns can be mitigated by offshoring.
- **General inconsistencies:** Variations from one scribe to the next can create the impression of scribes being in constant training mode for some clinicians.
- **Added documentation expense:** For clinicians required to self-document.
- **Chronic domestic staff turnover:** And back-up availability with some vendors.
- **Perceived as a stopgap solution:** Pending further development of effective AI.
- **Per-note or per-hour charge:** May impede ability to accurately budget for costs.

AMBIENT SPEECH – SCRIBE EDITED

Gen AI scribing applications offer numerous cost savings and functional benefits. However, they are unlikely to achieve 100% accuracy in capturing all clinical details, contexts, nuances, attitudes, and intentions in every clinical encounter, given the range of specialties and encounter specifics. Their performance is only as effective as their combination of ASR, NLP, and Gen AI technologies which are limited by the data sets of the LLM models used.

Since the advent of the EHR, history has shown that reliance on technology alone can create a false sense of trust, leading clinicians to inadvertently overlook critical information through intended or unintended negligence. This risk is also present with Gen AI, where there is a quickly adopted assumption that it has captured everything accurately (or accurately enough). Human-in-the-loop validation and editing have proven effective in identifying and correcting errors and omissions made by Gen AI. This is especially true in areas and processes of care where, even within the same organization and EHR instance, the complexity and heterogeneity of clinical workflows make full, seamless automation challenging to standardize, thus posing a greater risk for error.

Ambient speech with scribe editing involves processing the encounter conversation through a speech recognition engine, which is then processed by Gen AI to create a 'draft' note. A scribe then supplements this content to ensure accurate context, formatting, and downstream billing accuracy and compliance. Although all vendors highlight the capabilities of their Gen AI engines, the actual balance between AI and human (scribe or clinician) input varies considerably.

Advantages:

- **Properly formatted draft notes:** As with Live Scribes, Ambient Speech with Scribe-supported encounter notes can import and properly place supporting/reference data defined by the clinician. Gen AI content can also be linked to user-selected diagnoses to support downstream charting and coding efforts. Some vendors can also provide order entry, after visit summaries, and other 'wrap-around' tasks.
- **True documentation creation support with effective burnout relief:** Provides substantial relief from documentation burden, reducing clinician burnout.
- **Integration with other AI use cases:** May pair with other developing use cases, such as automated orders for evidence-based decision support, pattern recognition in clinical encounters to cue unsuspected diagnoses, and sentiment analysis.
- **Increases RVUs:** Able to increase RVUs by as much as 12% through billing-focused augmented support.
- **Predictable cost-modeling:** Per-FTE charge allows for more predictable cost modeling.

Disadvantages:

- **Complex personal documentation preferences:** More difficult to meet complex personal documentation preferences and may not provide ancillary support.
- **Variable cost and editing load:** Cost and final clinician editing load can be highly variable depending on the AI engine and scribe proficiency.
- **No live support of other peri-visit tasks:** Does not provide live support for other peri-visit tasks such as pre-charting and managing messages.
- **Missed components of clinical assessment:** Components of the clinical assessment not captured in conversation may be missed. Depending on the level of scribe support, additional review by the clinician may be required.
- **Turnaround time:** Longer (but still reasonable) turnaround time compared to real-time solutions.

AMBIENT SPEECH – CLINICIAN EDITED

Ambient speech output that relies on clinician editing (a.k.a., ‘stand alone AI’ solutions) vary by vendor. Accordingly, performance expectations for any clinician-edited ambient speech offering should be subject to thorough due diligence with non-investor related references supporting one’s specific needs. Results and outcomes should be validated by specialty, care environment, demographic, and clinician preference before committing to broad scope long term contracts. Otherwise, clients may feel they are funding the development of tech vendor products more than their own work task completion.

Ambient speech - clinician edited vendors have performed naturally well in some specialties or care environments, with momentum to strengthen output for additional specialties. Only by testing locally will practices and organizations be able to truly gauge expectations for individual clinician preferences and case complexity mix.

Advantages:

- **Lowest cost entry-level AI clinical documentation capture solution:** Easiest to implement with no scribe labor variables involved.
- **Strong market growth potential:** Due to increased market expectations for AI-based solutions that eliminate human labor.
- **Near real-time processing:** Efficiently processes EHR notes with decent summarization.
- **Integration with other use cases:** May pair with other developing AI use cases, such as automated orders for evidence-based decision support, pattern recognition in clinical encounters to cue unsuspected diagnoses, and sentiment analysis.
- **Clinician control:** Clinicians remain in 100% control of all content details.

Disadvantages:

- **Least impact on reducing the clinical documentation burden:** Clinicians must supplement delivered AI content for complete ongoing care and RCM purposes.
- **Variable EHR integration capabilities:** Accuracy and completeness of conversation capture, as well as formatting/template options, vary between vendors.
- **Incomplete documentation:** Studies suggest that clinicians who document hours after an encounter tend to not include the same level of documentation details as are typically produced by human scribe-supported workflows.⁶
- **Missed components of clinical assessment:** Components of the clinical assessment not captured in conversation may be missed.
- **Potential loss of malpractice coverage:** If a contested issue is traced to AI input, there could be loss of malpractice coverage.
- **Risk of payer denials:** AI generated notes followed by AI coding maximize risks for payer denials.
- **Does not fix chronic compliance issues:** AI does not address other poor documentation habits or compliance issues.

GEN AI CONSIDERATIONS

In today's early, rapidly evolving, and highly competitive space, it can be argued that there are at least two levels of ambient speech Gen AI products on the market: preliminary and obsolete. In the rush to be the first to market on the next breakthrough, competitors often introduce features before they have been properly tested.

Gen AI is expected to create original content to fill in the gaps of verbatim speech-recognized conversations through machine learning, deep learning, and reinforcement learning. As vendors scramble to gain the next competitive advantage in AI-generated document content, speed, and consistency, the industry is already seeing payers rejecting claims in batch if they suspect the claims were created entirely through automation. This conflict between AI's effort to consistently repeat what it has learned and payers' mandates for individualized, non-cloned notes is a challenge that will likely not be resolved soon. Even if successfully challenged, the cost of manually processing even a minimum volume of batch-rejected claims could very well offset the cost savings expected from converting to a fully automated process.

Accordingly, all ambient speech generated documents should be thoroughly reviewed to ensure clear encounter uniqueness. Failure to do so may result in payer batch claim rejections, remediation expenses, and related cash flow issues.

This warning is not to suggest the industry is not ready for some level of Gen AI deployment. Instead, it cautions against eliminating statistically valid QA sampling reviews to ensure that submitted claims reflect appropriate encounter uniqueness and comprehensive support. Respecting the role of quality documentation in the overall revenue cycle management (RCM) process is essential. Over-confidence in AI generated documentation without standard QA validation could become costly.

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BEYOND RCM RISKS: MALPRACTICE INSURANCE, COMPLIANCE, AND SECURITY CONCERNS

MALPRACTICE INSURANCE

Some malpractice insurance carriers are advising clients that their coverage will be surrendered if a contested issue can be traced back to a perceived documentation error in a note created by AI. Although clinicians are ultimately responsible for the content of the final notes they sign, regardless of the workflow employed, the lack of consistent and critical review of every AI generated document could lead to significant challenges.

When an organization faces a malpractice lawsuit and an error is found in an AI-generated note, liability for that error may partially shift to the AI vendor. Whether justifiable or not, this situation could prompt insurance carriers to deny coverage in such cases, leaving the clinician organization and/or individual clinician directly liable, or at the very least, lead to increased premiums. Until more reliable AI technologies are produced, healthcare providers and organizations are likely to be held liable for erroneous AI-generated content – hallucinations, misinterpretations, or omissions – that are not caught and corrected by clinicians before signing.⁷

COMPLIANCE

AI alone cannot resolve issues related to documentation compliance, as poor habits may persist despite automation efforts. Without appropriate guardrails in place, clinicians risk blindly adopting AI-based tools and accepting their output without considering accuracy. This is similar to the propagation of incorrect or inaccurate clinical information through the rampant use of “copy and paste” functionality since the introduction of the EHR.

Several factors contribute to inadequate documentation, ranging from lack of skill or incentive to time constraints. Clinicians who struggle with producing ‘best practice’ documentation could significantly benefit from Gen AI notes. However, editing these notes in a manner that removes compliance guardrails may inadvertently undermine their documentation efforts.

SECURITY

In fast-emerging fields where all vendors are racing to be first to market for application development, validating security infrastructure is a prerequisite. Third party-validated security audits, such as ISO 27001 and 9001, SOC 2 Type 2, or even KLAS Censinet certifications, confirm the policy, procedure, and IT infrastructure maturity of those operating in the highly cyber-targeted healthcare market sector.

ALIGNING CLINICIANS TO COMPETING WORKFLOW MODELS OF CLINICAL DOCUMENTATION

One clinical documentation solution may not fit all needs, as different types may be optimal for various pools of clinicians, specialties, and organizations based on personal preferences and comfort with technology, care environment, patient demographic and complexity mix, and the particular content necessary to extract from the clinical visit.

Figure 2 offers a framework to match clinician styles and preferences to workflow solutions.

Although the clinician percentage ranges accurately reflect current market conditions, the ambient speech market is attracting significant interest, driving major investments. Consequently, the segmentation mix will undoubtedly shift with the accelerated development of AI. Each workflow model includes features the others struggle to match, so some balance between the three options should be expected for the foreseeable future. Even traditional medical transcription remains a multi-billion-dollar industry as the most cost-effective choice for some specialties and niche clinical organizations.



Real-Time Scribes 30-50% of Clinicians		Ambient: Scribe-Edited 40-60% of Clinicians		Ambient: Clinician-Edited 10-20% of Clinicians	
Ideal Clinician Profile		Ideal Clinician Profile		Ideal Clinician Profile	
Desire for Control	HIGH	Desire for Control	MEDIUM	Desire for Control	LOW
Tech Aptitude/Skill	LOW	Tech Aptitude/Skill	MEDIUM	Tech Aptitude/Skill	HIGH
Case Mix	HIGH	Case Mix	MEDIUM	Case Mix	LOW
Workload	HIGH	Workload	MEDIUM	Workload	LOW
Expected Investment	HIGH	Expected Investment	MEDIUM	Expected Investment	LOW

Figure 2. Aligning Clinicians to Competing Workflow Models

COMPETITIVE LANDSCAPE / CONCLUSION

Ambient speech is an exciting new technology with great potential to cost-effectively reduce clinician burnout while simultaneously improving documentation quality and optimizing revenue. However, despite the significant momentum achieved, the industry is still in its infancy. Accordingly, there is a real risk of locking into long-term contracts for solutions that may become obsolete before the contract expires. Ensuring ongoing flexibility to shift the balance of load between different options may be a necessary strategy.

All competing vendors have referenceable clients, although some of the more recent start-ups have limited (if any) references outside of organizations that have directly invested in their businesses. This does not imply that such vendors offer inferior products, but due to some having venture capital-backed marketing budgets larger than their current annual revenue from actual clients, due diligence with non-investor references and proof-of-concept testing within one's own institution is essential.

One approach clients may adopt to identify the most appropriate vendor and product match is to ask: is my organization, practice, or panel so homogeneous that it can be fully and effectively supported by a single solution? For some, the answer may be a resounding "yes," as with a single specialty environment or narrow patient/diagnostic profile. However, for many – especially those in care environments of varying acuity, complexity, and patient mix – a single solution may inadequately support their clinical workflows, necessitating adjustments to new workstreams.

Imagine an era of care-driven versus product-driven clinical documentation solutions, where the type of visit, patient, conversation, care environment, clinical complexity, and clinician preference drive the selection for the type of clinical documentation solution. Given the inevitable shifting balance between competing workflow models, vendors and partners that offer more than a single solution modality and have a proven record of parallel labor support may find themselves in greater demand to meet the varying needs of organizations, practices, and clinicians. Their challenge will be to create operational and workforce efficiencies at scale to support such models of on-demand support.

While technology undoubtedly introduces significant efficiencies and advantages to many elements and processes of care, it has also been a primary driver of the continued overwhelming burnout experienced by clinicians. Solving tech-driven burnout with even more technology, especially in a complex human-centered industry, cannot be the sole expectation. For clinicians, the majority of whom operate in extremely high stress environments, there are tremendous emotional and operational/workflow advantages to the placement of a human-led processing layer on top of evolving machine learning algorithms, providing ideal care for both patient and clinician.



AUTHORS

J. Benjamin Crocker, MD

Senior Vice President of Care Design and Innovation

IKS Health

Dale Kivi, MBA

Analyst Relations

IKS Health

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8951 Cypress Waters Blvd
Suite 100
Coppell, TX 75019, USA

info@ikshealth.com



[ikshealth.com](https://www.ikshealth.com)