PETERSON HEALTH TECHNOLOGY INSTITUTE

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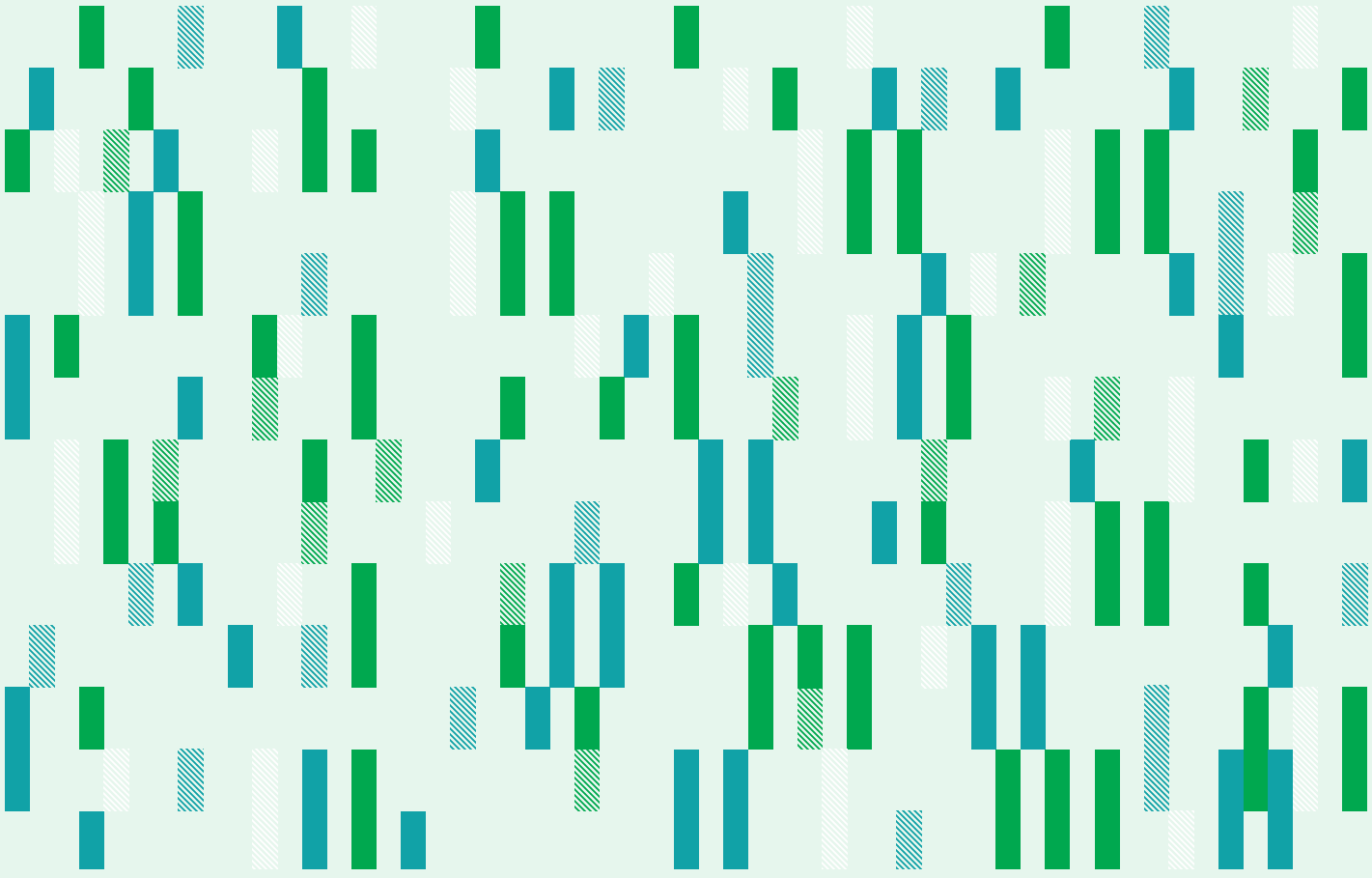
Adoption of Artificial Intelligence in Healthcare Delivery Systems: Early Applications and Impacts

Report from the Peterson Health Technology Institute AI Taskforce



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Executive Summary

As applications of artificial intelligence (AI) spread rapidly, ambient scribes are poised to become one of the fastest technology adoptions in healthcare history.

Without interrupting the natural flow of a visit, these solutions convert verbal patient-provider interactions into structured notes for clinical documentation and, eventually, medical billing. These solutions have the potential to reduce the paperwork burden on clinicians — which is a widespread source of discontent — and, in turn, reduce burnout, increase productivity, and improve the patient experience.

Today, approximately 60 ambient scribes are being implemented in practice. In an industry with notoriously long sales cycles and implementation timelines, there is no technology in recent memory that has been adopted more enthusiastically by clinicians or has scaled so uncharacteristically fast, absent a regulatory mandate.

This leaves decision-makers across the industry trying to determine if these solutions work and how to measure their impact. To answer these questions, leaders need a clear understanding of what outcomes (e.g., reduced clinician burnout, improved productivity) they are attempting to address and how to measure the performance of ambient scribes and the financial value of their improvements against those outcomes. With greater clarity about the effectiveness of ambient scribes, all health systems will have better information to guide their purchasing decisions and roll-out approach.

PHTI AI Taskforce

Recent industry and academic efforts to assess AI-enabled healthcare solutions have focused primarily on evaluating their validity, fairness, efficacy, and safety risks. However, there has not been a robust dialogue on the financial and operational implications of AI-enabled administrative technologies on the delivery system. In September 2024, the Peterson Health Technology Institute (PHTI) launched its AI Taskforce — which included executives from a broad range of health systems and AI-solution companies, along with industry experts — to address these questions.

The Taskforce convened regularly in late 2024 and early 2025 as a group and in one-on-one member meetings with PHTI to discuss health system financial and operational challenges that may be addressed by AI-enabled administrative technologies, the key factors driving implementation, how developers are aligning with strategic objectives, and opportunities for these technologies to enhance healthcare delivery for clinicians and the patients they serve. Rather than waiting to formally assess specific technologies, PHTI is publishing this report to provide actionable insights — based on the learnings of early adopters — to help the industry navigate implementation, identify the best ways to track progress, and deliver impact earlier.

Ambient Scribe Adoption

Ambient scribes have been embraced by health systems because they offer a solution to the seemingly intractable dual challenges of burnout and labor productivity. Historically, increasing productivity meant asking clinicians to do more — not less — and, therefore, increased cognitive load, administrative burden, and ultimately feelings of burnout. Ambient scribe technology offers the promise of reducing time spent on documentation (during and after work) and creating capacity for more patient visits, or increasing the revenue captured per visit. Ambient scribes essentially enable clinicians to expend less effort per visit. This could result in higher patient volume and better visit quality.

Approaches to ambient scribe implementation have varied across health system participants, but most have focused on primary care as the first use case. Physician adoption has been heterogeneous. Often, there is one cohort of heavy users; another that uses ambient for some but not all visits; and another of low- or no-use clinicians, including those who tried and stopped. Interestingly, several organizations observed that the clinicians who saw the greatest benefit were those who had not yet optimized their documentation workflows, were consistently behind in notes, spent more time in conversation with their patients, or typically had longer summary notes.

Given the highly competitive market, ambient scribe companies are differentiating by expanding the end-user base into nursing and other clinical roles; extending into the revenue cycle and adjacent administrative workflows; integrating more deeply into clinical workflows, such as visit preparation, referrals, and orders; and offering highly customized or codeveloped ambient scribes at the specialty level.

Measuring Impact

Based on the experiences of early adopters, ambient scribes appear to reduce cognitive load and burnout and improve the patient experience — all of which may have downstream positive impacts on efficiency. The current evidence base for ambient scribes improving efficiency directly by reducing documentation time and, thereby, creating capacity is limited; however, as the technology and implementation processes improve, time savings may become more apparent.

Many ambient scribes are extending into coding with the promise of optimizing evaluation and management (E&M) and hierarchical condition category (HCC) coding. It is not yet known what the downstream impact will be, though it is reasonable to expect that given existing incentive structures, ambient scribes will support higher level coding, which — even if accurate — may increase healthcare spending and the costs of care.

Health systems are actively seeking to understand when and how ambient scribes can drive impact at scale. To date, the few published peer-reviewed studies show mixed results based on heterogeneous measures and methods. Standardized metrics would improve the ability to understand how these solutions impact the system, including (1) clinician impact, (2) patient impact, and (3) financial impact.

Exhibit 1

SUMMARY OF EARLY INSIGHTS ON THE IMPACT OF AMBIENT SCRIBE ADOPTION

✚ Suggest or Support Positive Impact ■ Too Early to Draw a Conclusion ● Mixed Feedback on the Impact

Impact Area	Example Metrics	What We Know Today
Clinician	Attrition	■ Too early to draw a conclusion
	Burnout	✚ **Emerging evidence suggests a positive impact**
	Clinician experience	● Mixed feedback on the impact
	Clinician time saved	● Mixed feedback on the impact
	Cognitive load	✚ **Emerging evidence suggests a positive impact**
	Pajama time	● Mixed feedback on the impact
	Quality of clinical note summary	✚ **Data/anecdotal feedback support a positive impact, with a human in the loop**
Patient	Patient experience	✚ **Emerging evidence suggests a positive impact**
Financial	Number of patient encounters per period	● Mixed feedback on the impact
	Accuracy of coding	■ Too early to draw a conclusion

Next Steps

As ambient scribes continue to proliferate across the healthcare market, the industry is grappling with the immense potential of these tools and the evolving understanding of their strengths and weaknesses. Critically, there is a need for more standardized methodologies and metrics to understand performance across a range of indicators and for more research to understand their long-term impact on efficiency.

Beyond ambient scribes, there are many other areas ripe for transformation with the help of AI-enabled administrative technologies. Notably, AI in revenue cycle is likely to be the next significant area of at-scale solution deployment.

Our organization is dedicated to making higher quality, more-affordable healthcare a reality for all Americans. PHTI will expand on the work of the Taskforce by working with purchasers, technology developers, and other experts to develop and publish an administrative technologies evaluation framework. This framework will guide independent and objective evaluations of AI administrative technologies to aid health systems, payers, and AI developers to better understand the value that AI tools provide.

The PHTI AI Taskforce

Recent industry and academic efforts to assess AI-enabled healthcare solutions have primarily focused on evaluating their validity, fairness, efficacy, and safety risks. However, there has not been a robust dialogue on the financial and operational implications of AI-enabled administrative technologies.

In September 2024, PHTI formed its AI Taskforce ("the Taskforce") — including executives from a broad range of health systems and AI solution companies, as well as industry experts — to address these questions:

1. **What goals do health systems aim to achieve when adopting ambient scribes for clinical documentation?**
2. **In what ways can administrative technologies such as ambient scribe deliver measurable real-world impact?**
3. **How do these solutions affect clinical productivity, system efficiency, and finances?**
4. **What strategies can purchasers and developers employ to better align solution development with purchasers' goals?**

The Taskforce convened regularly as a group and in one-on-one member meetings with PHTI to discuss health system financial and operational challenges that may be addressed by AI-enabled administrative technologies, the key factors driving implementation, how developers are aligning with strategic objectives, and opportunities for these technologies to enhance healthcare delivery for clinicians and the patients they serve. PHTI is publishing this report to provide actionable insights — based on the learnings of early adopters — to help the industry navigate implementation, identify the best ways to track progress, and deliver impact earlier.

The Taskforce has a broad-based set of participants, ranging from purchasers to investors and solution developers, because an approach to assessing administrative technologies has not yet been established. The output of the Taskforce will inform the creation of a relevant assessment framework, which will be used to develop real-world insights into how the market for administrative technologies is evolving and being shaped.

The Taskforce consists of leaders from the following organizations, who shared valuable insights and time to make this report possible. The Taskforce was **co-led by Prabhjot Singh, MD, PhD,** who is a Senior Advisor at PHTI, and **Margaret McKenna,** who is a member of the PHTI Advisory Board. PHTI is solely responsible for the views expressed in the report; the report does not necessarily represent the views of contributing members or their organizations, unless explicitly attributed.

About PHTI

PHTI provides independent evaluations of innovative healthcare technologies to improve health and lower costs. Through its rigorous, evidence-based research, PHTI analyzes the clinical benefits and economic impact of digital health solutions. These evaluations inform decisions for providers, patients, payers, and investors, accelerating the adoption of high-value technology in healthcare. PHTI was founded in 2023 by the Peterson Center on Healthcare.

Exhibit 2

THE PHTI AI TASKFORCE PARTICIPANTS

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Manatt Health provided facilitation and research support for the Taskforce and throughout the development of this report.

Background

Healthcare costs are rising faster than inflation, wages, and the overall economy, and administrative complexity alone causes an estimated $250 billion in wasteful spending.[1] Concurrently, the clinical workforce has seen limited productivity gains over the past few decades and is suffering from high levels of burnout following the COVID pandemic, increasing administrative burdens, and a lack of autonomy.[2, 3, 4] This has motivated health systems to embrace new technologies — particularly those focused on administrative tasks — that promise to increase productivity and reduce the paperwork burden on clinicians, with low perceived risk to patient outcomes.

Over the past several decades, technology applications have showcased the ability of analytic methods to support operations — from assisting diagnoses (e.g., identifying infections on the basis of laboratory results) to predicting adverse outcomes (e.g., mortality and length of stay).[5] In recent years, generative AI's usability and versatility has focused on a subset of capabilities powered by large language models (LLMs) that can generate novel responses and summarize large volumes of information. Today, these AI solutions are being marketed to health systems and large provider groups to support a range of administrative functions, such as clinical workflows, revenue cycle processes, scheduling, and patient outreach.

Ambient scribes — tools that capture and transcribe patient-provider interactions and summarize them into electronic health record (EHR)-ready formats — are at the forefront of this excitement. These technologies leverage automated speech recognition and LLMs to convert audio into text and generate structured, clinical documentation or "notes." The promise of these solutions to reduce burnout and improve workflows has driven an industry with notoriously long sales cycles and implementation timelines to adopt ambient scribe faster than any technology in recent history. Ambient scribe represents the first large-scale application of generative AI in health systems. Because of the information from clinician-patient encounters that they capture, ambient scribe companies are positioning themselves to be general purpose administrative technologies that power other financial and operational workflows.

This new product category has also prompted a renewed focus on how health systems purchase, deploy, and measure the impact of new technologies, as well as the readiness of existing workflows and technology stacks to absorb and adapt to technologies that behave in fundamentally new ways. Such discussions underscore the importance of collaboration between clinical workflow, operational, technology, and financial leaders to effectively integrate, govern, and oversee these new tools.[6]

The speed of adoption for ambient scribes for clinical documentation invites the following questions: *What is driving the interest in purchasing AI-enabled administrative technologies? How are they working? And how will we measure their impact?*

Health System Challenges

In part, health systems are open to adopting AI-enabled administrative solutions because of the hype surrounding AI in general, but also because these solutions are being positioned to address major and seemingly intractable health system challenges, from financial pressures to workforce shortages. Representatives from health systems in the Taskforce highlighted the following major challenges:

1 **Financial Sustainability.** Nearly 40% of hospitals in 2023 reported negative operating margins, and average margins have been in the single digits for several years, driven largely by rising labor costs.[7, 8] Whether these numbers reflect accounting choices or real financial pressures, health system executives are increasingly focusing on internal operational efficiency in response. As a result, "why does it cost X to do Y?" is a question that requires an inventory of how people, process, and technology currently work.

> "At steady state, revenue per unit of service increases at 1%. With today's inflation, expenses per unit of service are growing at 3%. We need to close the 2% gap by becoming more efficient."

2 **Workforce Shortages.** The industry is grappling with sustained clinical labor shortages due to increased demand from an aging population, a wave of retirement among the current healthcare workforce, and insufficient training and education pipelines to meet current and future demand. By 2037, the U.S. is projected to have a shortage of nearly 190,000 physicians — 16% of the physician workforce — across 31 of the 35 physician specialties categorized; the issue is worse in rural and historically underserved communities.[9, 10] Registered nurses and licensed practical nurses are also projected to have shortages (8% and 28%, respectively) in the next decade and are experiencing high turnover rates.[11, 12] At the same time, the Advanced Practice Provider (APP) workforces, which include Nurse Practitioners and Physician Assistants, are ramping up production; however, they require more support to succeed. These challenges are motivating health systems to focus on worker retention, redeployment against higher priority activities, and finding ways to do more with a constrained workforce.

> "Currently, the average nurse spends 37% of their time at the bedside, and we aim to increase this to 41% through productivity improvements. It is essential that nurses can spend more time providing top-of-license care to patients without experiencing burnout, empowering them to handle a higher patient load effectively."

3 **Worker Burnout.** Clinician burnout has reached unprecedented levels, with the COVID-19 pandemic exacerbating an already critical issue — 48% of physicians reported burnout in 2023.[a, 13] Time spent on administrative tasks is a primary contributor. Burnout also directly affects the national workforce shortage, contributing to $4.6 billion a year cost in turnover and work hour reductions.[14] Furthermore — and critically — burnout directly affects clinical quality, with studies indicating physician burnout is associated with patient safety incidents.[15] Health system leaders see clinician burnout as a central challenge to address, which means that productivity or efficiency cannot come at the expense of workforce well-being. Optimal solutions support both.

4 **Administrative Burden.** Increased documentation requirements add an administrative burden that takes time away from direct patient care. For every hour a physician provides direct clinical interaction time with patients, they spend nearly two additional hours in the EHR to ensure appropriate documentation requirements are met.[16] One in five physicians report spending eight or more hours in the EHR outside of regular work hours per week; this additional time is commonly referred to as "pajama time."[17] Research suggests that physicians in critical care units may spend twice as much time in the physician workroom on administrative tasks than they do with patients.[18] Any strategy focused on reducing administrative burden must deeply understand what existing workflows they are replacing, reorganizing, or augmenting with AI-based solutions. This is particularly challenging if health system executives are unfamiliar with the details of their clinical and administrative workflows, or the level of variance in them across their organization.

> "We experienced a year-over-year decline in labor productivity as a direct result of documentation, coding, and other administrative requirements."

[a] Physician burnout is typically measured using validated survey instruments, including the Maslach Burnout Inventory (MBI) and the Mini-Z Survey, among others.

5 **Organizational Challenges.** The integration of disparate IT systems, the need for robust cybersecurity measures, and the management of vast amounts of data are just a few of the hurdles facing health systems today. They are, therefore, cautious about implementing technology solutions that may compound existing inefficiencies. As systems incorporate more AI-enabled tools, establishing common data pipelines and interoperable enterprise systems is essential. Further accelerating the need to address these challenges is a shift toward value-based care (VBC), which requires sophisticated analytics and interoperability between systems to track and improve outcomes. Overall, these challenges necessitate significant investment in technology, skilled personnel to manage and improve existing systems, and change-management teams. In this context, the cost of adoption of any given administrative technology is greater than the cost of purchasing it.

> “If you don’t have the right data at the right time, you can’t drive the right outcome. If you want to know whether a change is working, you need baseline architecture that will enable you to pose, and answer, those questions. We need to work on our fundamental tech foundation.”

Ambient Scribe Purchasing and Adoption

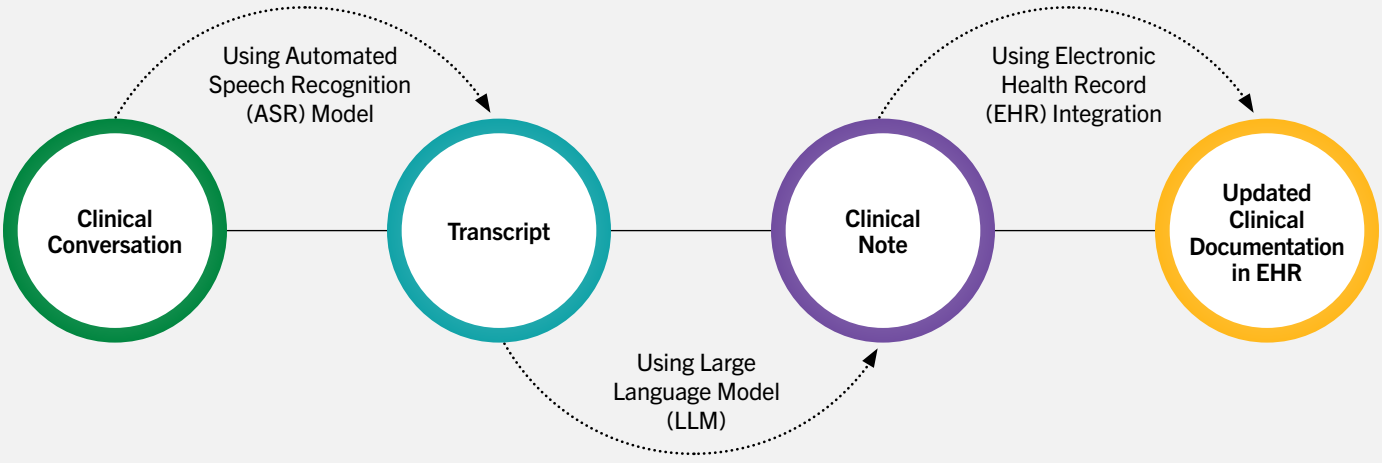
Ambient scribe technology combines speech recognition, natural language processing, and LLMs to record, transcribe, summarize, and ultimately organize patient-provider conversations into a structured note. With consent, providers use a mobile application to capture conversations with a patient without interrupting the natural flow of a patient visit. The ambient scribe then captures key clinical information and creates a summary note that can be integrated into the patient's record in the EHR, streamlining clinical documentation in preparation for prior authorizations, claim submission, and billing functions.

Historically, some physicians have used in-person scribes, remote scribes, or talk-to-text dictation for documentation support. While human scribes improve physician satisfaction and efficiency, they are costly, difficult to scale, and generally not available to all clinicians.[19] Conversely, ambient scribe technology offers a scalable alternative, which has the potential to deliver the benefits of scribing to a wider range of clinicians.

All the health systems participating in the PHTI Taskforce — including public and private systems; academic medical centers; and regional, multistate, and national delivery systems — have piloted or scaled AI-based ambient scribe technologies. Health systems are notoriously slow at new technology adoption, yet their rapid adoption of ambient scribes prompts important questions: *What has made ambient scribe uniquely compelling? Are there broader lessons for AI-enabled administrative technologies?*

Exhibit 3

OPTIMIZING CLINICAL WORKFLOWS WITH AMBIENT SCRIBE TECHNOLOGY



Source: Elion, "AI Clinician Copilots: Technology, Market Trends, and Key Differentiators," accessed January 2025. https://elion.health/resources/ai-clinician-copilots

Exhibit 4

KEY STRATEGIC CONSIDERATIONS FOR AMBIENT SCRIBE ADOPTION

Category	Key Decision-Making Questions
Purchasing Rationale	✓ What does success mean for my organization? ✓ What is driving this investment, and what is our priority area to impact? ✓ What level of IT and operations resources will we contribute to this?
Vendor Selection	✓ Should we prioritize developers in our current technology ecosystem? ✓ Should we pilot with more than one vendor? ✓ Do we want a custom tool or a product off the shelf?
Product Roll-Out	✓ Should we offer the product broadly to all who want or reserve for a smaller group? ✓ Should we offer to all specialties or roll out by service area? ✓ Should we be intentional about driving adoption — or let interest drive adoption?
Measuring Impact	✓ What are the appropriate measures to track performance? ✓ Which of the metrics matter most? To what key stakeholders? ✓ Who is experiencing the most benefit from the tool today? How might this change?

Articulating an Ambient Scribe Strategy

Health system leaders across the country are grappling with a series of critical questions that will ultimately shape purchasing, adoption, and roll-out strategies of ambient scribes, as well as AI-enabled administrative technologies more broadly. These questions fall along four domains: purchasing rationale, vendor selection, product roll-out, and measuring impact **(see Exhibit 4).**

Addressing Burnout Is Driving Purchasing Decisions

The driving force behind most organizations' purchasing decision to date has been the urgent need to mitigate clinician burnout. In many organizations, clinicians are actively requesting leadership for access to ambient scribes. With burnout as a significant factor, organizations are seeking solutions that will significantly reduce clinicians' time on administrative tasks (e.g., documentation), alleviate the cognitive strain of such work, and allow clinicians to focus more on patient care.

> "Why did we scale? The doctors were immensely happy and that was enough of a strategy early on for our executive team. We will figure out the ROI in time — we trust the data will tell us a story."

Other secondary goals that participants shared include:

- **Improving Quality of Care:** One organization noted how it views the adoption of ambient scribe as a quality initiative. It emphasized that research shows that clinicians who self-identify as burnt out provide lower quality care and that incremental improvement in burnout can save lives.
- **Improving the Patient Experience:** Organizations are enthusiastic about the opportunity for ambient scribes to "give patients their doctor back," by allowing physicians to engage directly with patients rather than from behind a computer screen. Ambient scribes also support development of patient education materials in clear, plain language.
- **Enabling Improvement in Care and Other System Activities:** Some organizations view ambient scribes as a tool to enhance patient care and streamline administrative tasks through an improvement in clinical documentation. Ochsner Health, for example, is focused on downstream impact, exploring such opportunities as real-time clinical education, better management of quality metrics, voice-based biomarkers, and personalized patient education.

- **Supporting Financial Goals:** While financial goals are not typically the primary reason for implementing ambient scribe today, organizations are eager to see financial impact through increased patient throughput and improved documentation capture. Moreover, the technology has the implicit potential to reduce burnout while also increasing productivity (e.g., seeing more patients). This could create a rare win-win scenario that can benefit clinicians, patients, and health systems. Today, financial attribution to ambient scribes is indirect.

When an organization shares whether ambient scribe is or is not "working" for them, it is crucial to understand the specific goals they were hoping to achieve from the outset.

Taskforce participants state that adoption is also enabled by ambient scribe implementation features:

Acceptable Risk Levels and Seamless Technology Are Enabling Adoption

- **Low Risk to Patients and Potential Benefits:** While there are risks associated with the use of ambient scribe, health system leaders generally consider them manageable and unlikely to adversely affect patients. Risks could include omissions in summaries or potential errors, as well as data privacy and security concerns. However, with robust policies and governance, emphasis on note review by clinicians, and ongoing enhancements to underlying AI models, leaders broadly agree that risks associated with ambient scribe can be largely mitigated or accepted. There are important potential benefits for patient experience by enabling clinicians to pay more attention to the interaction itself rather than documenting it, as well as summaries that patients could review.
- **Straightforward Integration with Core Technology:** Technologies that fail to integrate seamlessly into clinical workflows — no matter how advanced — face challenges in gaining traction within health systems. Ambient scribe developers have established deep integrations with leading EHR platforms, enabling them to create custom templates and directly populate clinical documentation. This level of integration has been a key factor in driving adoption. Moving forward, this may be more complex; companies that bundle integrations (e.g., AI applications and cloud-based services) may have a competitive advantage as organizations consider prioritizing vendors who offer platform solutions, rather than one-off, point-solution applications.
- **Minimal Workflow Disruption:** Unlike other technologies that require significant workflow redesign and training, such as EHR adoption, ambient scribe is designed to simplify existing processes. It requires most clinicians to do less, not more, easing their administrative duties by allowing them to focus more on patient care and less on documentation. Developers often work closely with health systems to customize note structure and templates, ensuring the ambient scribe support its clinicians' needs. As such, while onboarding and training are still important, they are relatively straightforward.

Lastly, and importantly, given that most health systems do not use in-person or remote scribing technology at scale today, deployment of ambient scribe does not threaten the replacement of a job class, which has major advantages in terms of labor relations and rapid implementation.

Ambient Scribe Landscape

The ambient scribe market in the United States has grown increasingly crowded, with approximately 60 companies[20] — ranging from established players (e.g., Microsoft and Oracle) to emerging innovators (e.g., Abridge, Commure, DeepScribe, Nabla, and Suki) — competing to offer these solutions. Investors suggest it is an over-capitalized segment of the market (more than $600 million invested in the last three years) with many vendors operating in a space with a limited addressable market. Most of the experts consulted by the Taskforce expect that ambient scribes will have largely penetrated the ambulatory market within the next 24–36 months.

Ambient scribing — as a discrete capability — is becoming commoditized and has low switching costs. Differences between first-generation products have diminished, pushing companies to bundle scribe capabilities into broader technology offerings to stand out. Health systems will likely prefer partners who provide more than basic scribe, seeking integrated AI solutions. For example, some vendors are positioning themselves as an AI operating system, offering assistant or copilot features that can support clinicians with multiple needs before, during, and after the patient visit. Others see themselves as administrative platforms to facilitate revenue cycle management (RCM) workflows, which require a different set of integrations and expansion strategies. The need for seamless EHR integration creates challenges for emerging companies who, though fearful that EHR companies will develop their own competitive offering, are reliant on them to integrate their products.[21]

Aligning the Technology Stack and Impact on the Ambient Scribe Market

The emerging technology stack consists of three key core layers: cloud storage and compute, core platforms, and applications. These layers work together to provide the infrastructure, tools, and functionality needed for modern healthcare operations:

- The base layer consists of cloud storage and compute, with most health systems leveraging Amazon Web Services (AWS), Google Cloud, or Microsoft Azure to support these needs. These platforms provide scalable infrastructures that enable health systems to securely store vast amounts of structured and unstructured patient data and imaging and to perform high-volume computational tasks, such as advanced analytics and search, AI-driven insights, and real-time data processing.
- Core platforms at a health system encompass enterprise functions that support the business. These include the EHR, human resources systems, RCM, and supply chain management platforms. These platforms aim to be "systems of record" that collectively support operations, data integration, and decision-making across clinical, administrative, and financial functions within a health system.
- The application layer of a health system's technology stack is composed of software applications that directly support clinical, financial, administrative, and operational functions. This includes ambient scribes, telemedicine, clinical decision support (CDS), call center agents, and other AI and business intelligence tools.

Ambient scribe is not just viewed as a standalone application but also as a key driver of data output — the byproduct of captured data that can fuel other critical workflows. To do so requires deep integration at the platform layer, while also drawing input from data housed in the core and base layers of the stack. While emerging ambient scribe companies are primarily operating at the application layer, they are forging partnerships at the platform and cloud layers, which are primarily oriented around deeper technical integration. Suki, for example, is listed as a recommended partner for Google Cloud and recently announced new features powered by Google Cloud Vertex AI Platform;[22, 23] Commure and General Catalyst, similarly, announced a partnership with AWS.[24] Abridge is a codevelopment partner with Epic, which supports distribution at the platform level.

For incumbent enterprise vendors, there is competition and alignment both horizontally and vertically. Microsoft, for example, is competing at the cloud layer with Azure and at the application layer with DAX. Oracle Health's Clinical AI Agent is built to work within the Oracle Cloud environment, leveraging data from its EHR and enterprise resource planning systems. AWS has its own ambient scribe product, AWS HealthScribe, which integrates seamlessly within the Amazon environment.[25] For example, AWS HealthScribe is being used by Amazon One Medical, powered by Amazon Bedrock (Amazon's ML platform to build generative AI applications).[26]

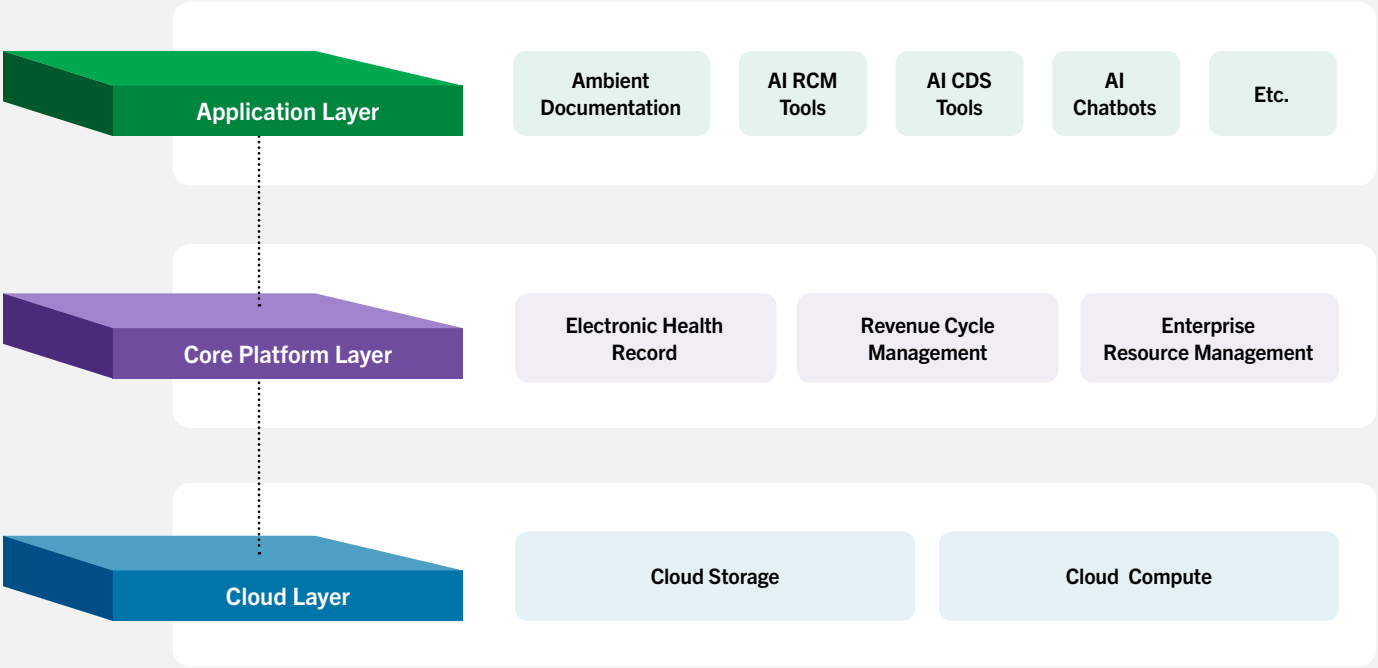
The evolution of the healthcare technology stack is shaping ambient scribe purchasing behavior, as health systems increasingly prioritize solutions that integrate seamlessly into their existing infrastructure. It is also driving developer activity, as companies that are operating lower in the technology stack have more ways to monetize the application layer. For example, Commure is offering its ambient scribe product for free to all organizations that use its revenue cycle tools, recognizing the value to customers of carrying data through from scribe to revenue cycle.[27, 28]

Within a crowded ecosystem, health systems and developers highlighted the opportunities and strategies for differentiation, described below:

Tailoring Ambient Scribes for Different Roles: Documentation needs vary widely across specialties, and health systems agree that these tools still require fine-tuning to serve each department effectively. This gap presents an opportunity for developers to broaden their users by refining workflows, tailoring them to the unique demands of nursing; inpatient care; various subspecialties; emergency medicine; and ancillary providers, like physical therapy. Abridge and Microsoft are developing ambient AI nursing-documentation products, in collaboration with health system partners.[29, 30] Nabla worked closely with Children's Hospital of Los Angeles to tailor its product to the specific needs of a pediatric hospital.[31] DeepScribe announced that its oncology-specific product will now be available through Flatiron's OncoEMR, a cloud-based EHR, reaching 4,200 providers in 800 U.S. sites.[32]

Exhibit 5

CORE LAYERS OF THE EMERGING AI TECHNOLOGY STACK (SIMPLIFIED)



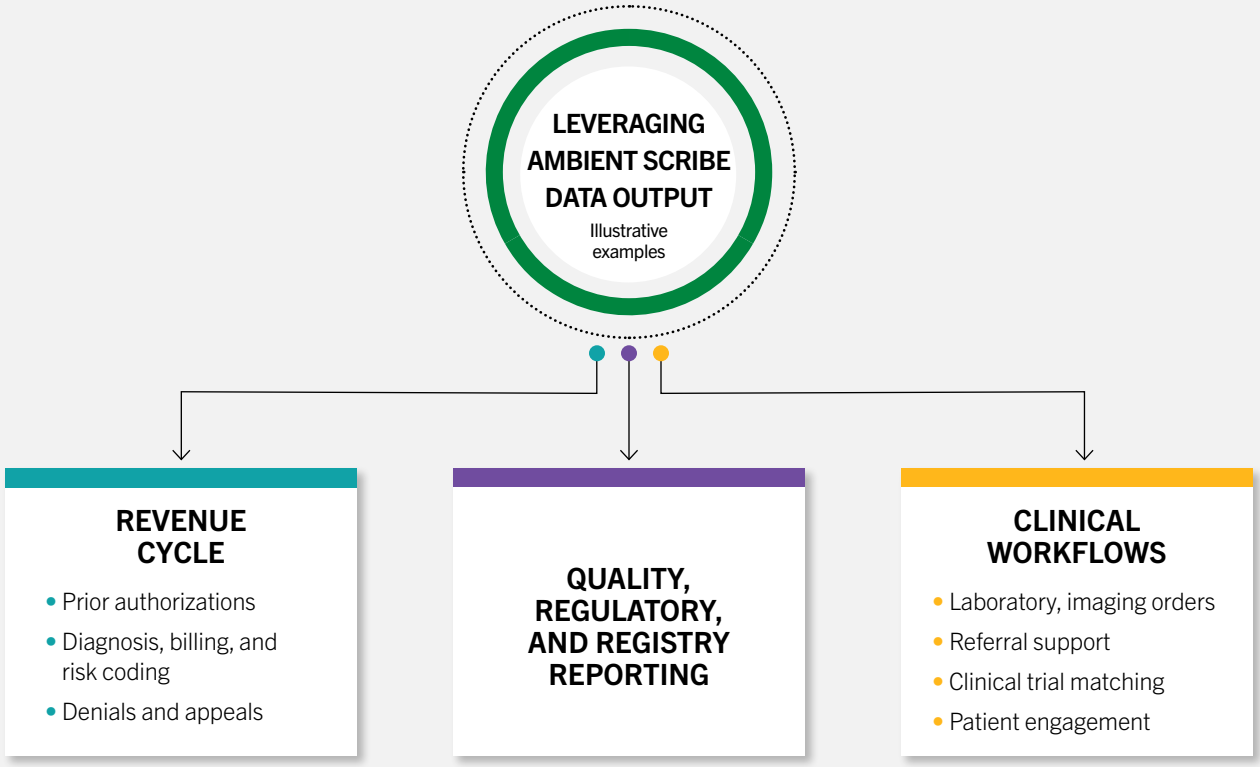
Expanding into Revenue Cycle and Other Adjacent Functions: Developers are leveraging the capabilities of ambient scribe for other adjacent product lines. For example, Commure acquired Augmedix, an ambient scribe company. This acquisition is part of Commure's strategy to build "the health AI operating system of the future," connecting various point solutions on one platform.[33] Commure now offers ambient scribe, revenue cycle, patient remote monitoring, digital navigation, and staff duress tools. In a recent funding announcement, Abridge specifically focused on RCM and billing as key areas of emphasis. Other developers are considering how clinical documentation can support other financial, administrative, and clinical activities.

Enhancing Ambient Scribe Offerings Through Partnerships: Some developers are exploring beyond the first generation of ambient scribe capabilities. Suki, for example, announced a relationship with Zoom Video Communications to offer AI-generated notes for Zoom telehealth and in-person visits.[34] Its longer-term vision is in incorporating visual data into the patient visit analysis and building out its ambient and clinical intelligence capabilities.

Codeveloping and Customizing Solutions: While some developers offer ambient scribes with limited opportunity for customization, others differentiate themselves with a willingness to partner on product development. Ochsner Health and DeepScribe, for example, have an enterprise-wide agreement and are working closely on customization (specialty, workflow, and physician-specific) to enable Ochsner to achieve both standardization and high adoption rates.[35] Commure, as another example, is in the process of cocreating clinical "nudges" with health system partners to enable AI-driven reminders at the point of care, based on data captured in ambient notes and from EHR metadata. These nudges could include patient safety, patient engagement, revenue cycle, and other areas with applicability in both the ambulatory and hospital environments. They are testing these nudges (called "CareCues") at select HCA Healthcare emergency departments, with a focus on patient safety. Most ambient scribe companies are beginning to offer similar features.

Exhibit 6

POTENTIAL USES OF AMBIENT SCRIBE OUTPUTS



Building a Platform and Enabling Developers to Leverage Capabilities and Data: Some developers are enabling outside developers to embed their tool or ambient functionality within a different application or allowing outside users to leverage the data their product develops to power other capabilities. For example, Suki offers Suki Platform, a software development kit which allows developers to embed Suki's AI and other capabilities directly into their applications.[36] Microsoft and Oracle both aim to provide a robust set of APIs and integration protocols that allow third parties to interface with their platforms. This enables developers to access and leverage data securely, facilitating the creation and enhancement of complementary applications. This is an area of distinction between different platforms, which take "open" versus "closed" approaches to accessing the information they generate depending on their business strategy.

Building Capabilities to Improve Clinician Workflows: Many ambient scribes are expanding capabilities to support and improve the end-to-end clinician workflow with "copilots," "agents," or "assistants." This includes activities such as precharting, chart summarization, real-time clinical guidance, chart Q&A, clinical documentation improvement prompts, and referral and lab/imaging coordination. For example, Oracle's newly enhanced Clinical AI Agent aims to propose clinical follow-ups, such as lab tests and referrals; answer questions about the patient's medical history; and create condition-specific medication histories.[37] It is likely that most ambient scribe developers will follow with their own versions of this technology, which is being rapidly advanced by technology companies and then filtering into domains like healthcare as they demonstrate utility.

Exhibit 7

PARTICIPATING AMBIENT SCRIBE COMPANIES AND MARKET DIFFERENTIATORS

Developer and Year Founded	Total Funding or Deal Value	Expanding Capabilities
Abridge		
2018	**Total Funding:** ~$460 million **Most Recent:** Series D, $250 million, February 2025[38]	• Launched Contextual Reasoning Engine to support clinical and billing notes[39] • Links note summarization details to transcript • Building nursing product with Mayo Clinic and Epic • Launched product for emergency care with health system partners, including Emory Healthcare, Johns Hopkins Medicine, and UChicago Medicine • Building capabilities to support medication and imaging orders • Developing discussion prompts to support clinical documentation improvement
Commure (Scribe)		
• Commure purchased Augmedix in 2024 • Augmedix was first-to-market with ambient documentation solutions for health systems and was founded in 2012 • Commure was founded in 2017	**Deal Value:** $139 million[40]	• Cocreating nudges (CareCues) with health system partners, with a focus on inpatient and emergency department • Ambient scribe deployments enhanced with: – AI-driven RCM, with closed-loop nudges and metrics – Commure Agents, or customizable assistants, to automate tasks – Acquisition of Memora Health — a digital care navigation platform — to support intelligence navigation and AI-driven, patient-engagement tools – Forward-deployed engineering • Key partners: Amazon Web Services, Vizient • Recent customer wins: North East Medical Services, Tenet, HCA Healthcare
DeepScribe		
2017	**Total Funding:** $60 million[41]	• Expanded RCM offerings, with automated E&M coding and targeted solutions for VBC, including real-time nudges and coding intelligence • Developed DeepScore to evaluate and score the quality and accuracy of AI-generated documentation; analyzes performance across six key criteria • Introduced focused oncology solutions with custom AI models designed for contextual awareness of patients' oncologic history and clinical pathways • Custom AI models and context awareness optimize documentation and clinical decision-making for VBC settings; delivered in partnership with Pearl Health • Develops AI models that adapt to individual documentation preferences and specialty-specific requirements. Leverages both user-selected and auto-learned preferences • Use of vocal biomarkers to assist clinicians in the early detection and monitoring of cognitive decline, depression, and other behavioral health conditions

Exhibit 7

PARTICIPATING AMBIENT SCRIBE COMPANIES AND MARKET DIFFERENTIATORS (CONTINUED)

Developer and Year Founded	Total Funding or Deal Value	Expanding Capabilities
Microsoft (DAX Copilot)		
Acquisition of Nuance Communications was completed by Microsoft[42] in 2022	**Deal Value:** $19.7 billion	• Supports clinical efficiency tasks, including referral letters and after-visit summaries; automates coding; can generate specific medication history and hospital discharge summaries • Allows third-party developers to leverage documentation data from Microsoft Azure's cloud infrastructure • Building out nursing AI documentation product with several health systems and Epic • Strategic collaboration with Press Ganey to highlight AI-powered, patient-clinician conversation insights[43]
Nabla		
2018	**Total Funding:** $49 million[44] **Most Recent:** Series B, $30 million, January 2024	• Advanced EHR integration with both mainstream EHRs (Epic, Cerner, athenahealth) and new generation and specialty-specific EHRs • Intuitive and extensive note customization options • Supports 35 languages across >55 specialties for outpatient, inpatient, and telehealth settings • Offers dictation compatible with all EHRs for added speed and accuracy to the clinician workflow • Automatically generates ICD-10 diagnosis codes and is expanding its capabilities to include HCC and CPT codes
Oracle (AI Assistant)		
Launched scribe capabilities in 2024	N/A	• Leverages full patient information in Oracle's history to support end-to-end clinical workflow activities, enabled by its AI-powered Clinical AI Agent • Capabilities include using voice to query the medical record; condition-specific medication history; and proposal of follow-up activities, including labs, referrals, and prescriptions
Suki		
2017	**Total Funding:** $168 million	• Partnership with Zoom to support telehealth scribe and, eventually, to incorporate video into ambient intelligence • Supports a broad array of capabilities beyond scribe, including coding and revenue cycle, Q&A, patient summaries, and dictation, powered by its Google Cloud integration

In the evolving market landscape, early adopters are actively testing and partnering with different developers. Some Taskforce organizations even piloted vendors side-by-side. They are selecting partners on the basis of organizational goals, existing technology infrastructure, vendor roadmaps, implementation support, seamless workflow integration, clinician experience, and costs **(See Exhibit 8).**

Exhibit 8

HOW LEADING HEALTH SYSTEMS ARE SCALING AND DEPLOYING AMBIENT SCRIBES

Organization	Ambient Scribe	Phase of Implementation
Intermountain Health	DAX Copilot	Scaling, all employed physicians and APPs
Mass General Brigham	Abridge and DAX Copilot	Enterprise-wide deployment, all attending physicians and APPs in process
MultiCare	DAX Copilot	Piloting, ambulatory clinicians
Ochsner Health	DeepScribe	Scaling, ambulatory clinicians
Providence	DAX Copilot	Enterprise-wide deployment, ambulatory clinicians
UC San Diego Health	Abridge and DAX Copilot	Piloting, ambulatory clinicians
Yale New Haven Health	Abridge	Enterprise-wide deployment, ambulatory clinicians

Favoring Enterprise Platforms and Leveraging Existing Infrastructure: Some Taskforce organizations adopted Microsoft Nuance's DAX Copilot, leveraging their enterprise relationships within the Microsoft ecosystem. They found that building on their existing technology infrastructure simplified implementation — minimizing new development, reducing ongoing maintenance, and avoiding added vendor complexity. Some systems noted that they prioritized developers with proven capabilities to support their large-scale, complex environments. Others highlighted the benefits of working with incumbents to speed implementation timelines.

Pursuing Customization and Codevelopment: Some Taskforce organizations prioritized developers who were willing to tailor support and development to address their unique requirements. For instance, Ochsner Health evaluated two vendors but ultimately moved forward with the company that was willing to pursue codevelopment and product customization, with a commitment from the founders to build and grow together. This smaller developer was agile and willing to deeply partner. Ochsner Health, for example, requested real-time nudges to improve HCC documentation for specific diagnoses at the point of care after they noticed initial risk profile degradation for visits utilizing ambient scribe. DeepScribe was willing to codevelop the functionality.

Supporting Multiple Vendors in a Dynamic Market: Mass General Brigham (MGB) completed a small initial proof of concept pilot with 18 physicians, followed by an evaluation of two platforms with 800 physicians, nurse practitioners, and physician assistants. It assessed product accuracy, quality, usability, clinician well-being, and time savings during the evaluation stage. With minimal difference between vendors in early outcomes, it decided to continue supporting both vendors in the near-term, while the market and developer products and capabilities evolve. Another organization in the Taskforce also shared how it is currently evaluating different products in different markets, ranging from enterprise players to emerging companies.

Implementation Approaches and Adoption

Health systems have taken various approaches to rolling out ambient scribes within their environments. Some have focused on achieving deep adoption and scaled more slowly, department by department, while others have made scribe solutions more broadly available for those who are interested, and others have intentionally targeted the technology to clinicians meeting a specific profile (e.g., average time per note).

Example Strategies

Targeted Approach

Drive Maximum Adoption: Ochsner Health emphasized that it believes the value of ambient scribes will come from widespread adoption and the enhanced quality of the documentation itself. Following an initial pilot involving 60 physicians across eight specialties, the organization adopted a phased scaling approach, expanding department by department, starting with primary care. They anticipate two years until it is fully rolled out to all its ambulatory departments, estimating about 4–6 weeks for each department. IT leaders and IT vendors work closely with departmental champions to tailor the note templates to the specialty-specific needs. Ochsner believes that the level of adoption (e.g., percentage of active users) and the depth of engagement (e.g., percentage of visits including scribe) will directly impact the level of impact to the organization. To target their efforts, they are also identifying the visit types where ambient documentation delivers the most value, defining criteria for "eligible encounters." Measures of success for ambient scribes include adoption rate, provider happiness, patient satisfaction, and documentation quality (using its vendor's analysis).

Broad Approach

Make Available to Any Interested Clinician: MGB made the decision to scale ambient scribe broadly to address its challenges with clinician burnout. Following a successful pilot, MGB offered ambient scribe to all clinicians, noting the meaningful impact and goodwill in making it widely available. Other organizations shared similar approaches: For example, Providence offered ambient scribe to all physicians and see 15% using it on an ongoing basis.

Measured Approach

Assessing Impact with a Group of Interested Clinicians: Some organizations shared that they initially offered a limited number of ambient scribe licenses with minimal guidance or a strong focus on adoption before committing to a broader organizational effort. MultiCare, for example, leveraged its existing Dragon software and Microsoft partnership to implement DAX Copilot with minimal friction. By limiting the number of available licenses and allowing any clinician to try the tool with some basic education, MultiCare generated interest and engagement without overinvesting. The organization is prioritizing its assessment on time savings, improved patient throughput, clinician satisfaction, and reduced pajama time, aiming to maintain a budget-neutral initiative.

WHO BENEFITS MOST FROM AMBIENT SCRIBE TODAY?

- Clinicians experiencing burnout
- Clinicians with longer or complex discussion-based visits
- Clinicians with less-structured note formats
- Clinicians who have not optimized their note-taking templates
- Clinicians who spend longer on their visit notes
- Clinicians who typically have lower quality notes

Findings From Early Uptake and Adoption

Interest in Ambient Scribe Technology is Uneven Across Clinicians. Ambient scribes have primarily been tested in ambulatory settings and in primary care specialties, where significant face-to-face interaction, in-depth discussions, and complex documentation are common. Some organizations report strong uptake beyond primary care, including in emergency medicine and surgical and procedural specialties. Interestingly, several organizations observed that those who benefited the most were not their tech-savvy early adopters, as those individuals had typically already optimized their documentation processes with dot phrases and templates. Instead, the clinicians experiencing the greatest benefits were those who had not yet optimized their current EHR-based clinical documentation workflows, were consistently behind in notes, spent more time in conversation with their patients, or typically had longer summary notes.

> "While ambient scribe is not a 'grand slam' solution for all clinicians… even if it can improve burnout for some, that's worth it to us. Every clinician that doesn't leave or reduce hours is a win for our organization."

Adoption has been Slower in Certain Subspecialties. Clinical documentation may be highly specialized or structured. Organizations reported that when ambient scribe is widely available, adoption rates are typically 20–50%. However, one organization achieved 75–80% adoption in the clinical areas where it has been offered, which they attributed to a deliberate emphasis on note customization followed by hands-on training. MGB shared that approximately 90% of its ambulatory primary care physicians have requested access to ambient scribe.

Among those Using Ambient Scribes, Consistency of Use is Variable. Typically, there is a cohort of ambient scribe superusers; a cohort using it for some but not all visits; and a cohort of low- or no-use clinicians, including those who tried it but stopped. Some clinicians prefer to use ambient scribe for specific types of visits, like those that require more-detailed, written summaries. Those who have stopped using ambient scribe have cited several reasons: the generated notes did not reflect their personal style or voice, they had minimal time or bandwidth to fully engage with the adoption process, they had already optimized their note-taking process and saw minimal efficiency gain, or the tool did not adequately support the languages spoken by their patients. One organization shared that in the ambulatory setting, if a provider is an active user of ambient scribe, they use it for 30–40% of visits.

While Effective at Documenting Patient-Clinician Interactions, the Technology is Still Imperfect. Feedback suggests that some ambient scribes have difficulty summarizing complex interactions — like case conferences or discussions with patients and multiple caregivers — as the technology is not always able to accurately discern different voices. From a clinical perspective, errors in documentation, such as attributing notes to the wrong person or ignoring critical details, pose risks. There is also the potential for technology "hallucinations," whereby incorrect information is included as part of the visit summary.[45]

Some Organizations are Eager to Experiment with Applications of Ambient Scribe Beyond Ambulatory Clinicians. Yale New Haven Health, for example, is piloting ambient scribe with other types of providers who spend a lot of time with patients, such as residents, physical and occupational therapists, pharmacists, and social workers. Intermountain Health is having success piloting ambient documentation in the inpatient setting with nurses. The system has been focused on reducing documentation per patient from eight minutes to four minutes. Through a care model redesign, the goal is to maximize the nurses' time at the bedside from 37% to 41% with the help of intelligent automation tools. Another organization suggested an efficiency opportunity for clinicians who need to reference each other's notes in the inpatient setting. For example, a nutritionist can review a note that was written by the attending clinician in a format that is relevant and applicable to their work. Several are leveraging ambient scribe in the emergency department and looking forward to expanding to other hospital-based clinicians.

Measuring Impact of Ambient Scribe

There is currently an institution-by-institution approach to implementing and measuring the impact of ambient scribe technologies, leading to differences in reported outcomes. This is common with other classes of administrative technologies, in part because impact is measured using organization-specific metrics that have similar intent but different definitions and data sources. More importantly, health systems often purchase a given technology, like ambient scribes, for different reasons, which results in a different set of metrics to measure the impact against their purchasing thesis. **Exhibit 9** illustrates three different approaches and outcomes to the implementation of ambient scribe based on data and anecdotal feedback:

Exhibit 9

VARYING STRATEGIES FOR DEPLOYING AND MEASURING IMPACT OF AMBIENT SCRIBES

✚ Overall Positive Impact ■ No Meaningful Impact ● Mixed Impact

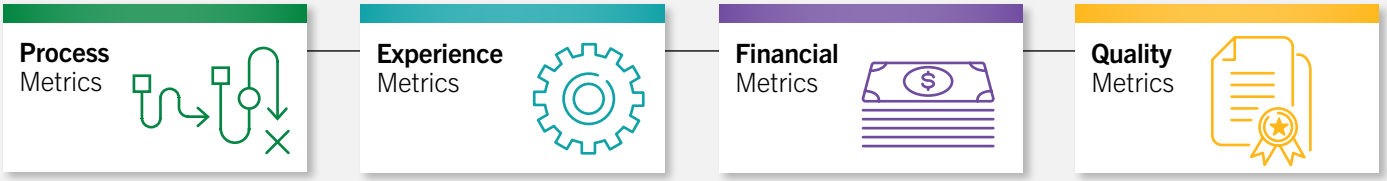
	Provider 1	Provider 2	Provider 3
Purchasing Rationale	Burnout, with downstream impact on quality	Burnout, with emphasis on adoption and clinical documentation improvement	Burnout, and continued growth of the primary care organization
Vendor Selection	Pilot and sustain two vendors with minimal custom development	Pilot enterprise vendor and start-up, continue with start-up to codevelop and customize	Pilot with enterprise partner already in vendor ecosystem
Product Availability and Adoption	Offer to any clinician who wants it	Drive adoption with department-level implementation and "at-the-elbow" training support	Limited number of licenses available to any clinician Basic training and support
Key Metrics and Impact	Pajama time ✚	Adoption ✚	Pajama time ■
	Quality and accuracy of note ✚	Time savings ●	Increased patient throughput ■
	Burnout ✚	Documentation quality ✚	Patient satisfaction ■

Most health systems have secured executive support for pilot-level initiatives but have not necessarily aligned the requisite data analytics and measurement tools to conduct a rigorous assessment of impact across a comprehensive set of process, experience, financial, and quality metrics. As a result, executives do not have all the information they need to decide to scale or refine implementation. Comparing across organizations can also be challenging given differences in operations and metric definitions. As a result, decision-makers are only willing to green-light initiatives to a certain level of spending or scale.

Across all health system Taskforce participants, a variety of metrics are being tracked **(see Exhibit 10).**

Exhibit 10

METRICS FOR EVALUATING THE IMPACT OF AMBIENT SCRIBES



Process Metrics

- Time in notes
- Time in EHR
- Percentage adoption (specialty, overall)
- Percentage encounters with ambient (specialty, overall, visit type)
- Number of provider encounters with ambient
- Time to note closure
- Percentage of notes closed same day
- Time in visit

Experience Metrics

- Clinician burnout (e.g., custom surveys, Mini Z survey, Stanford Model of Professional Fulfillment, Copenhagen Burnout Inventory)
- Clinician turnover
- Technology retention rate
- "Pajama time" (time spent on documentation after work)
- Usability and clinician experience surveys
- Patient experience (e.g., custom surveys, CH-CAHPS, Press Ganey)

Financial Metrics

- Relative Value Unit (RVU) per given period of time
- Number of patient encounters per period of time
- Average E&M code complexity level
- HCC capture and accuracy

Quality Metrics

- Percentage of note kept
- Developer-led documentation quality scores
- Word error rate
- Medical term recall rate

Health system executive participants all stated that they would benefit from efforts to standardize metrics and adopt strategies to allow for cross-system comparisons. This would include agreed-upon metric definitions, aligned with domains of interest, and rigorous study design. The Abridge Research Collaborative (ARC) is evaluating the impact of ambient scribe across clinician experience, patient experience, healthcare costs, outcomes, and health equity, with a focus on providing guidance for its application.[46] These developer-driven initiatives are a response to the absence of other independent perspectives that both health systems and developers need to track impact and progress — and present questions of objectivity.

Early learnings from health systems

The Taskforce reviewed health system participant results, as well as literature, to develop an early view on ambient scribe impact. Key findings include:

Health systems that are leveraging ambient scribes to reduce burnout are seeing positive results and are generally optimistic about its impact. Many systems shared both anecdotal and survey data highlighting a meaningful and immediate impact to clinicians' personal and professional lives. For example, MGB reported a 40% relative reduction in reported burnout in a six-week survey pilot (n=223). Similarly, MultiCare shared that clinicians surveyed after its pilot reported a 63% reduction in burnout and a 64% improvement in work-life balance due to ambient scribe.

> "Most technology we've implemented erodes relationships and makes it harder for patients and doctors to have a human connection.... The experience with ambient documentation has been markedly different: It improves the experience, drives engagement, and builds connection between patients and clinicians. There's real value in that."

Early data on the patient experience is also positive. Anecdotally, leaders share that patients feel their physicians are attentive and engaged during visits in which ambient scribe is used. Ochsner Health completed an analysis of its Press Ganey surveys, which highlighted a meaningful 8% improvement in patient experience for encounters that leveraged ambient scribe technology. Similarly, MGB noted that 79% of clinicians using ambient scribe felt that they were able to give more attention to their patients during a visit (n=157). MultiCare shared that 70% of its clinicians using ambient scribe felt that they had improved interactions with their patients. A study by the Permanente Medical Group found that 81% of surveyed patients said their physician spent less time looking at their computer when an ambient scribe was used.[47]

Evidence on ambient scribe's impact on other metrics — including efficiency — is nascent, and has yet to demonstrate reliable efficiency gains from the health system perspective. Many systems are not seeing a meaningful improvement in metrics, such as clinician time saved, patient throughput, or patient revenue. A study at Atrium Health, for example, assessed the impact of DAX Copilot on 112 primary care clinicians (specializing in internal medicine, family medicine, and general pediatrics) and concluded that ambient scribe did not drive efficiency or meaningful time savings across the group; however, they found more meaningful impact for specific subgroups.[48, b]

> "I manage an ambient scribe product, and we're still trying to figure out the ROI for our customers, too. We get love letters from clinicians…but the ROI is very difficult to quantify, despite the level of excitement."

They also did not experience any statistically significant financial improvements. On the other hand, Providence observed an increase in patients added to clinic schedules in areas with ambient scribe. A study conducted at Stanford Health Care found that ambient scribe technology can modestly reduce documentation and EHR time, demonstrating its effectiveness across a variety of specialties.[49] Some leaders expect that clinics will naturally add additional patients over time as adoption of ambient scribe increases, but most Taskforce participants were explicit that increasing patient throughput is not a priority today. In fact, Taskforce participants emphasized that reporting on patient throughput may reverse the positive impact on burnout, disincentivizing clinicians from using ambient scribes.

The chart in **Exhibit 11** offers examples of impact drawn from the experiences of health systems and developers to date. It is intended as illustrative and not a comprehensive literature review or exhaustive list of data, designed to give directional insights based on early experiences and highlight areas for further research.

[b] The study was based on the Dragon Medical One (DMO) version of DAX, not the EHR-integrated DAX.

Exhibit 11

EARLY INSIGHTS ON THE IMPACT OF AMBIENT SCRIBE ADOPTION

Metrics (Non-Exhaustive)	Evidence of Impact (Examples)	Discussion
	CLINICIAN IMPACT	
Attrition A measurement of clinicians who leave an organization over a defined period.	**Taskforce Providers:** There has been minimal research into its impact to date. Part of this is because of the length of time these products have been in market. MGB shared that 62% of its clinicians who piloted ambient scribe reported they are more likely to extend their clinical career, and they found no change in responses to "intent to leave" after a six-week survey of clinicians (not statistically significant, *n*=162). **Taskforce Developers:** Microsoft reports that 62% of clinicians (*n*=879) are less likely to leave their organization.[50]	**It is too early to assess the impact of ambient scribe on attrition.** Early feedback suggests there may be a positive impact. It will be challenging to isolate the impact of AI scribing specifically from other confounding variables that impact attrition.
Burnout A measurement of burnout, which can be evaluated using tailored questionnaires or validated tools, such as the Copenhagen Burnout Inventory, the Mini Z Burnout Survey, or the Stanford Model of Professional Fulfillment.	**Taskforce Providers:** There is consistent data and anecdotal feedback highlighting an impact on clinician burnout. MGB, for example, reported a 40% relative reduction in reported burnout in a six-week pilot survey (*n*=223). MultiCare shared that 63% of clinicians surveyed after its pilot reported reduced burnout, and 64% reported an improvement in work-life balance due to ambient scribe. **Taskforce Developers:** Developers highlight the positive impact of ambient scribe on burnout. Microsoft reports that 70% of clinicians say it improves work-life balance and reduces feelings of burnout and fatigue.[51] Abridge reports in a client case study for Christus Health a 40% decrease in burnout rate, using the Mini-Z Burnout Survey.[52] Nabla reports a 26% decrease in burnout following a five-week pilot at Iowa Health.[53] **Literature:** A study at Stanford Health Care demonstrates a positive impact on burnout using the Stanford Professional Fulfillment Index.[54]	**Data and anecdotal feedback support a positive impact on burnout.** Some clinicians have described the technology as "life changing" or emphasize that it "brings the joy back to medicine" and they can "get home an hour earlier."
Clinician experience A measurement to assess clinician experience with ambient scribe. Metrics to assess include level of ambient scribe adoption, percentage utilization (of total visits), workflow satisfaction, perception of improved patient interactions, adoption and utilization by specialty, and technology retention rate.	**Taskforce Providers:** Participants share how the experience with ambient scribe is inconsistent, impacted by prior note practices, as well as such implementation factors as note customization and education and training. For those actively using ambient scribes, participants report an overall positive experience, ease of use, and various levels of utilization. Those who choose not to use do not typically have a negative perspective. **Taskforce Developers:** A study of clinicians in ambulatory settings using the Augmedix Go product (now Commure) found that 94% of clinicians report that the tool helps them better focus on patients.[55] DeepScribe observed that clinician adoption of ambient scribe technology is approximately 20–40%, depending on how adoption is defined. **Literature:** A study at Stanford Health Care demonstrates an increase in clinician perceptions about the ease-of-use of ambient scribe following a pilot and overall positive experiences from pilot participants.[56]	**Additional research is required to understand clinician experience with ambient scribe, particularly in identifying which visit types are most suited to its use.**

Exhibit 11

EARLY INSIGHTS ON THE IMPACT OF AMBIENT SCRIBE ADOPTION (CONTINUED)

Metrics (Non-Exhaustive)	Evidence of Impact (Examples)	Discussion
	CLINICIAN IMPACT (continued)	
Clinician time saved Organizations are assessing clinician time saved with metrics such as time to note closure, percentage of appointments closed the same day, time in note, total time in EHR.	**Taskforce Providers:** Some organizations report modest or negligible time saved, while others reported more meaningful time saved. Among clinicians, this heterogeneity is even more pronounced. Some of the differences can be partially explained by such factors as version of the tool used, measurement definitions, workflow considerations, provider type, type of training and education, prior note optimization, and level of utilization. **Taskforce Developers:** Developers have noted clinical note time improvements. Oracle, for example, reports a 41% reduction in total documentation time with its Clinical AI Agent, saving clinicians on average 66 minutes per day.[57] Users in a Suki pilot study that tracked the Epic Signal instrumentation for "time on unscheduled days" saved an average of five hours per month for that metric specifically. **Literature:** A study at Atrium Health found time savings for select groups of clinicians and reported minimal overall impact on clinician efficiency. However, researchers note the heterogeneity of impact, with 18% of participants experiencing a decrease of more than one hour per day in the EHR and a decrease of 7% in documentation time for high users of ambient scribe.[58] A study at Stanford Health Care demonstrates a modest, yet statistically significant, impact on time per note, daily documentation time, after-hours time, and daily total EHR time. They highlight the variability in results, noting that some users spent more time per note when using the ambient scribe than without it.[59] Research at Penn Medicine describes 20% less time in notes per appointment.[60]	**There is mixed feedback on the impact of ambient scribe on clinician time saved.** Standardized metrics and deeper research would support understanding.
Cognitive load A measurement to describe mental effort required to complete clinical documentation. Organizations can measure using tailored questionnaires for self-reported feedback or such measurable metrics as percentage of final note generated by AI.	**Taskforce Providers:** Participants share a positive impact on cognitive load. Yale New Haven Health, for example, reported that clinicians keep an average of approximately 80% of the AI-generated draft, representing a meaningful decrease in the cognitive load of writing a note. **Taskforce Developers:** A case study published by Abridge highlights a 61% decrease in cognitive load at a Corewell Health pilot.[61] **Literature:** A study at Stanford Health Care demonstrates a positive impact on burden.[62] Research at Penn Medicine indicates that feedback from clinicians is consistent with a decrease in "mental effort" associated with documentation.[63]	**Data and anecdotal feedback support a positive impact on cognitive load.**
Pajama time A measurement of the amount of time a provider spends in the EHR outside of scheduled clinic time.	**Taskforce Providers:** Participants shared mixed impact on pajama time. For example, MGB reported a decrease in time spent outside work completing notes, from ≥90 minutes to <30, in its pilot (n=124). Similarly, by leveraging intelligent automation tools during office visits to facilitate documentation, Intermountain Health reports that clinicians save approximately 18 minutes of time outside of work hours daily. Others shared a modest or no improvement in pajama time — or expressed difficulty in assessing. **Taskforce Developers:** Case studies published by Abridge highlight a 60% decrease in after-hours work during a UVM Health Network pilot and a 48% decrease in pajama time during a Corewell Health pilot.[64, 65] **Literature:** A study conducted by the Permanente Medical Group found a decrease in total EHR time outside 7 a.m. and 7 p.m. for users of ambient scribe.[66]	**There is mixed feedback on the impact on pajama time.** Additional research is needed to explore these differences.

Exhibit 11

EARLY INSIGHTS ON THE IMPACT OF AMBIENT SCRIBE ADOPTION (CONTINUED)

Metrics (Non-Exhaustive)	Evidence of Impact (Examples)	Discussion
CLINICIAN IMPACT (continued)		
Quality of clinical note summary A measure to assess the quality and accuracy of the AI-generated note. This can be assessed using such metrics as percentage of draft retained, incorrect content, and bespoke quality of documentation analyses developed by vendors or health systems.	**Taskforce Providers:** Most organizations expressed satisfaction with the ambient scribe summary output, though emphasized the continued importance of clinician note review prior to finalization. For example, MGB reported 91% of text retained by the user during its early proof of concept. However, concerns persist regarding inaccuracies and hallucinations in transcription, with occasional incorrect information being included in the transcripts and summaries. **Taskforce Developers:** Some developers have bespoke strategies for assessing documentation quality. DeepScribe, for example, established a "DeepScore" to measure the performance of ambient AI clinical documentation, which combines metrics related to the frequency of significant errors, relevance and precision of captured medical information, user acceptance, and transcription quality control.[67] Abridge, similarly, has a strategy to evaluate its model, with analyses to assess its speech recognition program and note-generation system.[68] **Literature:** Research at Penn Medicine notes mixed reviews of the quality of ambient scribe notes.[69]	**Data and anecdotal feedback support an overall positive review of documentation, with a "human in the loop" still critical for review of the summary note.**
PATIENT IMPACT		
Patient experience A measurement to describe the patient experience and perspective on the utilization of ambient scribe. Strategies to evaluate include monitoring the percentage of patients who opt out of the technology; deploying customized or industry patient experience questionnaires, like CG-CAHPS or Press Ganey; and tracking metrics, like uninterrupted time with patients or likelihood to recommend a provider.	**Taskforce Providers:** Organizations are in the early stages of assessing the patient experience. Participants share that early data and anecdotal feedback support a positive impact on the patient experience. Ochsner Health completed an analysis of its Press Ganey surveys, which highlighted a meaningful 8% improvement in patient experience for encounters that leveraged ambient scribe technology. Leaders also shared anecdotal feedback from patients, who expressed sentiments like, "I feel like I got my doctor back." **Taskforce Developers:** A case study published by Abridge highlights a 2–4.5% increase in Press Ganey patient satisfaction scores at UChicago Medicine.[70] **Literature:** A study conducted by the Permanente Medical Group highlights the physician perspective on improved patient-clinician interactions due to ambient scribe. The study notes that 81% of patients surveyed shared that their physician spent less time looking at the computer, and all patients considered ambient scribe to have either no impact or enhanced the encounter.[71]	**Data and anecdotal feedback support a positive impact on the patient experience.** Additional research is needed to understand how the patient experience is impacted.
FINANCIAL IMPACT		
Number of patient encounters per period A measure to assess the number of patients a clinician treats during a defined time.	**Taskforce Providers:** Most organizations reported no increase in the number of patient encounters per period; however, some did note an observed increase. Informally, some have observed or anticipate greater willingness to accommodate additional patient visits with reduced documentation burdens, particularly as the technology scales and adoption grows. **Taskforce Developers:** Some developers note an increase in patient encounters. Suki, for example, shares that Suki users have 5% higher encounter volumes, generating $54K incremental annual revenue per user.[72] **Literature:** Research into the impact of human scribes highlights that scribes can increase physician productivity.[73, 74] Research also supports an increase in visit volume for physicians that leverage team-based documentation.[75]	**There is mixed feedback on the impact of scribe on patient encounters.** Additional research is required to understand the impact.

Exhibit 11

EARLY INSIGHTS ON THE IMPACT OF AMBIENT SCRIBE ADOPTION (CONTINUED)

Metrics (Non-Exhaustive)	Evidence of Impact (Examples)	Discussion
FINANCIAL IMPACT (continued)		
Accuracy or completeness of coding for billing purposes Organizations are looking into several different metrics to assess impact on coding accuracy, including average E&M score, average HCC code, and level of gap closure. Metrics are reviewed at the individual, encounter, or specialty level.	**Taskforce Providers:** There is mixed feedback on the impact. MultiCare noted a 5% increase in the number of Level 4 visits with providers using ambient scribe. Ochsner Health noted an increase in average E&M score per provider for those leveraging ambient scribe. Others saw no impact. **Taskforce Developers:** Christus Health reports a slight increase in Level 4 vs. Level 3 E&M coding from its pilot with Abridge.[76] **Literature:** A study at Atrium Health found no improvements in its DAX Copilot study on financial metrics (gross revenue per visit and work relative value unit per visit).[77]	**It is too early to assess the impact of ambient scribe on the accuracy of coding.** **Research is also needed to assess the potential for unintended consequences, such as whether scribing technologies promote higher coding intensity, and associated impacts to healthcare expenditures.**

Looking Ahead

While the initial investment in ambient scribe is often justified by its potential to alleviate burnout, this is likely to evolve. As interest grows beyond a subset of clinicians and costs remain significant, health systems will increasingly need to demonstrate a clear return on investment (ROI), particularly at current prices. One organization in the Taskforce that has a pilot scheduled to end soon is not seeing sufficient efficiency gains to make an immediate ROI argument for scaling enterprise-wide.

Health systems are actively seeking to understand where there may be downstream, secondary benefits by leveraging the output for other activities — for instance, to support coding and claims submission. It is too early to tell whether the ambient scribe "capability unlock" will yield return.

As ambient scribe technology becomes more integrated into clinical workflows, it raises important considerations beyond immediate impacts, including its long-term financial impact and the evolving role of clinicians in the documentation process.

There is ongoing analysis to determine whether ambient scribe adoption will ultimately increase costs. On the one hand, enhanced documentation quality could lead to higher reimbursements, potentially offsetting expenses — but also leading to unintended downstream consequences for patients and the market overall. On the other hand, the cumulative costs of the software may be greater than any savings achieved through improved efficiency, reduced administrative burden, or reduced clinician attrition.

There are also important discussions around the shifting role of clinicians in the documentation process. As clinicians increasingly rely on AI-generated notes rather than writing their own, a reevaluation of training protocols to ensure clinicians have the skills to effectively review AI-generated documentation is needed. Although note writing can be burdensome, it is also a means to think critically and carefully about a patient encounter, organize relevant information, and come up with an assessment and plan that reflects a methodical thought process. Ensuring that clinicians remain actively engaged in the process is essential.

Beyond Ambient Scribes: Other AI-Enabled Administrative Technologies

Early adopters are exploring AI beyond clinical documentation, with Taskforce participants identifying RCM solutions as a top priority for 2025, along with quality reporting, call centers, inbox management, and CDS as near- to mid-term opportunities. These applications do not have all the attributes that supported the rapid adoption of ambient scribes. For example, RCM applications require more significant integrations across technology platforms than ambient scribes, and CDS requires more provider involvement. However, early research suggests these solutions could impact health system financial and operational challenges, boosting overall efficiency even more than the ambient scribing capability that has spread so rapidly.

RCM: RCM refers to the end-to-end process of going from patient intake to getting paid. This represents a major administrative cost for health systems, with estimates hovering at 3–4% of net patient revenue.[78] A recent study estimated that 21% of hospital, physician groups, and payer administrative spending is on the "financial transaction ecosystem," of which RCM plays a significant role.[79] Accurate claims submissions and timely collections provide a critical financial foundation for hospital operations. Labor shortages of coders, billers, and other RCM-trained staff adds additional cost burden and operational complexity.

The State of AI Innovation and Adoption in RCM: The ongoing progress in EHR interoperability and data standardization (e.g., Fast Healthcare Interoperability Resources (FHIR) standard) is enabling richer and more-accessible datasets that can be used to support the development of AI algorithms to address pain points along the entire RCM continuum. This includes assisting with insurance verification and prior authorization processes at the front-end, coding and charge capture midcycle, and claims submissions and denial management at the back-end. One recent survey found that 74% of health systems have automated or are actively automating some portion of their revenue cycle operations, with approximately half of those using some form of AI.[80] Another study estimated that implementing RCM automation and AI-based documentation could reduce spending on financial transactions by 15–20%, or $15–20 billion annually across the country.[81]

> "We aim to reduce our cost to collect by at least 3% every year, and we usually exceed that, leveraging AI."

Some Taskforce participants have been optimizing their RCM processes for several years now and are excited about the promise of generative AI to boost productivity. A top priority is the denials and appeals processes, using AI to:

- Predict and prevent denials by addressing issues prior to claims submissions;
- Predict denial recovery to focus resources on areas of greatest recovery opportunity; and
- Draft appeals.

For example, MGB implemented CodaMetrix's AI-powered, autonomous, medical coding platform and has achieved a 74% automation rate for radiology coding and a 58.7% reduction in claims denials.[82] The estimated $750,000 in cost savings enabled MGB to redeploy 12 full-time coders to other departments, all while increasing annual growth in payments by 12%.[83] MGB is also piloting the use of generative AI to draft prior authorization letters. UC San Diego Health is leveraging Epic ML tools to predict the likelihood of hospital and patient denial recovery to prioritize human effort on high-value denials and allow automation of low-value denials.

Several health system Taskforce participants are in 10-year contracts with major incumbent RCM companies that are developing and deploying AI-based solutions through their existing RCM platforms.[84, 85] Epic has developed RCM-related capabilities through its Epic Payer Platform to enable data exchange between providers and payers, with the intent of facilitating clinical record transfers, supporting automatic prior authorizations, and reducing administrative burdens on providers. Health systems may find that AI is increasingly "seeping in" as vendors incorporate it into existing workflows. There are also a variety of start-ups emerging in the space that address pieces of the RCM process (e.g., prior authorization or denials management) or offer full-cycle solutions.[86]

Efficiency Measurement

Health systems routinely track and benchmark RCM metrics — with a focus on well-established financial measures, such as:

- **Cost to collect:** Costs (labor, technology, overhead) associated with collecting payments for services delivered as compared with revenue collected. This is the most comprehensive measure of RCM efficiency, though some health systems may allocate overhead costs differently, which can make cross-system comparisons challenging.
- **Net collections rate:** Amount of money a health system collects, net of any adjustments, over how much it charged for services delivered.
- **Accounts receivable (AR) days:** Average time it takes to collect payment after a service is delivered.
- **Discharge to bill:** Average number of days it takes to submit a bill from the time a patient is discharged.
- **Denial rates:** Rate of claims that are denied by an insurer.
- **Appeals success rates:** Rate of overturned denials.
- **Days cash on hand:** How many days a hospital can maintain operations without additional revenue inflows. This is a key metric used by credit-rating agencies, and health systems seek to optimize their cash collections to improve their days cash on hand.

If effective, AI deployments should improve these metrics, positively impacting collection rates, while lowering or keeping constant collection costs.

Patients also stand to benefit from effective AI deployment in RCM, through greater self-service functionality, quicker resolution of financial and billing queries, and improved predictability around coverage and out-of-pocket costs. Health systems will likely need to develop tailored questions or surveys to measure the specific impact of this technology on patient and provider experience.

Other Near-Term Use Cases

Beyond RCM, developers and systems are exploring the opportunity to use AI for quality and regulatory reporting, call centers, inbox management, and clinical decision support (CDS):

Quality and Regulatory Reporting: Current quality reporting processes are highly labor intensive, involving data abstraction, chart reviews, analysis, and submission. Despite some automation, most processes are manual: One study found that a hospital spent more than 100,000 person-hours (more than $5 million in personnel costs and $600,000 in vendor costs) to report 162 quality metrics.[87] While the use of AI tools to streamline data collection and reporting is still in its early stages, an increasing number of companies are focusing on the use of LLMs for this purpose.[88] Taskforce members also highlighted the potential to automate patient registries, which collect comprehensive patient data to support quality reporting and other programs. One shared that they are able to run AI programs to help clinicians evaluate if a patient is a good candidate for inclusion on a quality registry (e.g., stroke registry) but cannot yet automatically have patients submitted to registries or registry information filled out.

Call Centers: Health systems increasingly view call center automation as a key area for innovation and investment in the coming years, particularly given recent advancements in voice technologies that allow for "agents" or "copilots" to support patient conversations that would have previously been conducted by staff. One Taskforce member noted the

evolution of call center automation aptly: "Five years ago, it was unimaginable to have contact center automation that was patient facing. But recent deployments for automation of benefits verifications are going increasingly well. In the last year, there's been an uptick in the market of interest in patient-facing interactions, like instructions to prepare for a colonoscopy or reminders to refill a prescription." Another organization used an LLM to analyze trends in why patients were calling the call center to see if there were opportunities to optimize efficiencies elsewhere in the system and reduce call center volume overall.

> "2025 is the year of the voice agenda — there is significant opportunity to leverage AI voice capabilities for patient-facing and business-to-business functions."

Inbox Management: Many patients submit queries electronically to their care team via the patient portal — one Taskforce organization experienced a 62% increase in in-basket messages in the last few years, receiving over 15 million messages annually — and health systems are experimenting with integrating generative AI tools to support the management and speed of response. Like clinical documentation, managing inbox messages is a major source of clinician burnout.[89] Early studies leveraging AI to support inbox management have pointed to mixed results of use:

- A study by researchers at MGB found a reduction in physician workload and enhancement to the "informativeness and educational value" of LLM-assisted responses. However, the researchers also raised concerns that LLM responses were shaping decision-making rather than supporting the physician in more efficiently communicating a response. In addition, they flagged that, "a minority of LLM drafts, if left unedited, could lead to severe harm or death."[90]
- A study at UC San Diego Health found that generative AI-drafted replies were associated with significantly increased read time, no change in reply time, and significantly increased reply length.[91]
- A quality improvement study of an early implementation of generative AI for drafting responses to patient inbox messages by researchers at Stanford found "notable adoption, usability, and improvement in assessments of burden and burnout," but also noted that there was "no improvement in time."[92]

CDS

Unlike the other use cases discussed in this section, which are focused on primarily administrative functions, CDS tools have a direct impact on patient care and, therefore, require more testing and alignment with the organization's clinical guidelines and day-to-day workflows. There are many vendors in this space, with CDS tools being developed by large, electronic medical record companies, as well as smaller market entrants.

Innovators in the market are facing two key challenges: First, how to leverage these tools in a way that effectively augments and accelerates — rather than complicates or degrades — clinical delivery of care. Notably, Taskforce leaders report that alerts (e.g., those regarding drug interactions, allergies, dosages, vaccines, screenings) within EHR workflows are causing alert fatigue rather than clinical support, an observation validated by early studies.[93–95] Second, how to effectively build trust and establish clear liability frameworks such that clinicians are comfortable leveraging these tools in diverse settings. For example, Epic is building risk prediction models, and while more recent studies suggest the models may have improved, some early sepsis prediction models were shown to have "poor discrimination and calibration in [prediction]."[96, 97] The approach to implementation here remains to be charted.

Potential Measures to Assess AI Performance

The degree to which these tools can address health system challenges is dependent on an organization's existing infrastructure and cultural readiness and the solutions' ability to generate results — all in the context of an increasingly permissive policy landscape. While some of these functional areas have well-defined, industry standard metrics, others will likely require focused measurement approaches to identify how AI-enabled solutions should scale across an enterprise, as well as approaches to pricing that align with value creation. Below are a few key metrics Taskforce participants actively consider when evaluating new solutions in each category across their enterprise **(see Exhibit 12).**

Exhibit 12

POTENTIAL MEASURES TO ASSESS AI PERFORMANCE

Organization	Process Metrics	Experience Metrics	Financial Metrics	Quality Metrics
RCM	• AR days* • Discharge to bill • Denial rates* • Clean claim rate* • Appeals success rates* • Claim correction time* • Submission rate of quality reports • Average quality report submission time	• Staff satisfaction • Patient satisfaction	• Cost to collect* • Net collections rate* • Days cash on hand*	• Data quality
Quality Reporting	• Average report submission time • Error rate in submissions	• Clinician experience	• Cost per chart abstraction* • Cost of quality reporting function*	• Data quality and completeness • Performance on reported metrics (e.g., mortality rates; readmissions rates; surgical, cardiovascular, and other registries)
Call Centers	• Average wait time* • Average handling time* • Transfer rate*	• Patient satisfaction* • Staff satisfaction	• Cost per call*	• First-call resolution* • Average abandonment rate*
Inbox Management	• Response time • Resolution time • Message volume	• Patient satisfaction* • Staff satisfaction	• Time cost per message	• Clinician override/decision change
CDS[a]	• Time to diagnosis • CDS overrides/ decision change	• Patient satisfaction • Clinician satisfaction	• Total cost of care • Medical malpractice costs	• Guideline adherence • Clinical outcomes

RCM = revenue cycle management. CDS = clinician decision support.

Notes: * Industry standard metrics. [a] Given the wide range of uses and implications for CDS, the most relevant CDS metrics may vary depending on the AI CDS tool in use.

Conclusion

This PHTI AI Taskforce started with the following question: Can a new generation of AI solutions that target administrative tasks and day-to-day workflow improvements address the previously intractable tension between increasing productivity and reducing provider burnout? The answer is nuanced. Ambient scribes appear to reduce burnout and cognitive load and improve the patient experience. The current evidence for ambient scribe improving productivity directly by reducing documentation time is mixed, though as the technology and implementation processes improve, time savings may become more apparent. Given the costs and limited evidence to date on ROI, however, there is a real risk that as ambient scribe adoption continues apace, health systems will implement solutions in ways that add to overall costs of care.

There are many other areas of health system administration ripe for transformation with AI-enabled technologies. AI in RCM is likely to be the next significant area of at-scale solution deployment, and Taskforce members anticipate significant progress in AI for call centers, quality and regulatory reporting, inbox management, and CDS in the coming years. The promise of AI in each of these areas is compelling but the ability to deliver on that promise will take time, enhanced technological sophistication, and organizational maturation. The experiences of early adopters can inform the broader industry on whether the investment in these technologies is warranted, how to measure impact and track progress, and which technologies are delivering outsized returns.

The Taskforce has surfaced questions of impact at an early stage in the development and deployment of AI-enabled administrative technologies so that health system purchasers and solution developers can begin to align on key drivers of value. In a competitive market, this alignment should foster innovation, more efficient price discovery, and strategic differentiation that yield benefits for clinicians and patients alike. However, the market for healthcare technologies has too often evolved without the pressure to deliver meaningful results. This time could be truly different, especially given the focus and dedication to impact repeatedly expressed by Taskforce members.

As a result of the time and effort contributed by members of the Taskforce, PHTI will expand upon this initial report by working with purchasers, technology developers, and other experts to develop an administrative technologies assessment framework. This framework will guide independent and objective evaluations of AI administrative technologies to aide purchasers, solution developers, and investors to support the development of AI-enabled capabilities that can lead to a higher performing healthcare system that delivers high quality, more-affordable care for all Americans.

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