The Power + Potential of AI
in the Healthcare Revenue Cycle

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Taking action with AI

Current media hype around artificial intelligence — and generative AI specifically — is at an all-time high, but how can healthcare executives separate the existing possibilities from the excitement?

In this report, we'll cover the major questions surrounding the implementation of AI in the healthcare revenue cycle.

How is AI being applied in RCM?

In RCM today, AI is used to optimize charge capture, accelerate reimbursements, prevent waste and improve contract management. Generative AI has the potential to further reduce administrative burdens for physicians and staff by tapping into unstructured data – a wealth of information previously inaccessible.

What are AI best practices?

> Use it intentionally. Ensure use cases help make your organization more efficient and help meet strategic business goals.

> Start small. Focus on high-value, low-risk areas to test and gain buy-in.

> Don't underestimate the complexity of RCM processes. Ensure operational experts help guide development.

> Ensure compliance with HIPAA and other security or privacy policies.

> Build diverse models. The more variables that inform models, the more valuable their insights become.

01

Artificial resource, actionable intelligence

Artificial intelligence is an umbrella term that refers to machines simulating human intelligence. Traditional AI was essentially a series of rules-based, if-then business logic.

But as computing power, data access and data availability expanded, additional categories of AI were created to leverage these new opportunities. Today's AI offerings are much more robust and can process many different levels and types of data.

Machine Learning

Machine learning refers to algorithms — sets of rules and calculations — that tell a computer how to learn and operate on its own. These algorithms ingest a large volume of data to detect patterns, so computers can make decisions without a person intervening.

Predictive AI

Also called predictive modeling or analytics, predictive AI uses machine learning to power data analysis, making predictions and identifying trends in data. This type of analysis relies on historical information to support decision-making.

Deep Learning

Deep learning is the subset of machine learning that spawned generative AI. This is essentially machine learning at warp speed; relying on more data input and the use of neural networks, which provide layers of processing to support more complex representations of data. One example of this is the development of facial recognition technology.
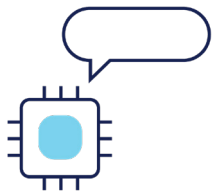
Generative AI

A specific type of deep learning, generative AI uses large language models (LLMs) trained on large volumes of data to understand the contextual knowledge stored in unstructured data (i.e., notes, chats, images) and generate new text, image, audio or video content based on prompting. LLMs can be built for specific situations, so an LLM designed for clinical applications would differ from one designed for revenue cycle needs.

Machine Learning

Predictive AI

Deep Learning
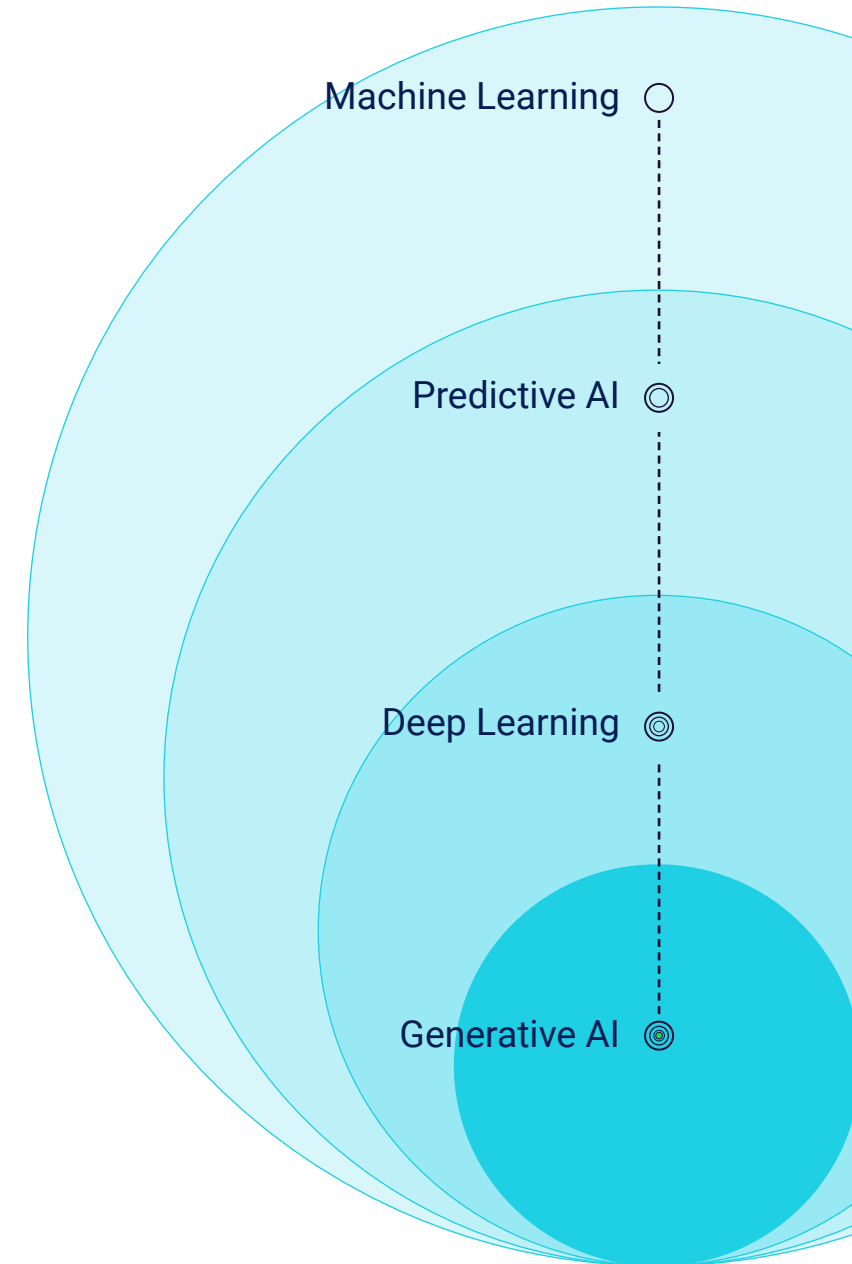
Generative AI

02

Hope amidst the hype

While the media buzz around ChatGPT and its cohort can be deafening, there are many reasons to be optimistic about the potential of generative AI in healthcare.

- ● **Flexibility + range:** There are numerous use cases within healthcare that can potentially benefit from LLMs. Examples of existing LLMs include a chatbot tool to help reduce the time providers spend on administration, and another which assists in provider-patient correspondence and clinical documentation.

- ● **Physician buy-in:** A recent AMA survey notes physicians are most excited by AI's potential in supporting diagnosis and workflow. The same survey found the most common use or planned use of AI tools are for administrative-related burdens, with 50% of respondents specifically indicating automation of these tasks would be the most beneficial.

- ● **Augmentation rather than replacement:** Many healthcare providers are overwhelmed with their current workloads. Applying generative AI can reduce the time to gather information and take action. Results from AI can augment decision-making and improve efficiency, so physicians and associates can focus on more complex problems. Rather than feeling threatened, there is opportunity for excitement for what increased adoption of this technology might bring.

- ● **Ability to derive value from unstructured data:** Generative AI can make sense of unstructured data to create insights and content. With 80% of healthcare data unstructured, this represents a fundamental shift in what can be analyzed and achieved.

- ● **Low barrier to usage:** The ability to input text, images or data in a conversational way means a wide audience can benefit from generative AI with minimal if any training necessary. However, the ability to ask good questions (a practice known as prompt engineering) can yield 10–20x better outputs than an average user's prompts.

- ● **Executive buy-in:** In a 2023 Accenture CXO Pulse Survey, 97% of executives said generative AI would be transformative to their company and 95% of organizations were increasing investments as a percent of revenue.

Practical applications of AI in RCM

When implemented correctly, AI can help reduce administrative burden across the revenue cycle and improve financial performance for healthcare organizations. Now with the ability of generative AI to process unstructured data — including medical images, clinical notes and discharge summaries — the potential for both payers and providers is even greater.

50%

of healthcare administrative cost could be reduced by well-implemented AI

The active use of AI by payers

Until 10 years ago, insurance companies used payment integrity tactics retrospectively, focusing on fraud, waste and abuse. Now payers are heavily investing in AI for preemptive payment scrutiny.

Cigna allegedly used an algorithmic system to deny 300,000+ claims in two months.

UnitedHealthcare allegedly used an AI-powered algorithm to wrongfully deny coverage of medically necessary care.

Humana faced a class-action lawsuit alleging that it denied rehabilitative care for seniors based on algorithmic targets not tied to an individual patient's needs.

With payers investing heavily in this type of technology for payment integrity, providers themselves cannot afford to fall behind.

AI in the provider's revenue cycle

In RCM today, AI is actively applied to optimize scheduling, coding, charge capture and billing; accelerate reimbursements and audits; prevent fraud; and improve contract management. Artificial intelligence ultimately makes operations more efficient — and healthcare organizations are taking notice, with nearly 60% considering using generative AI for their revenue cycle operations.

Practical applications of AI in RCM

Front-office

> Streamlined appointment scheduling, taking into consideration which providers are credentialed for which payers

> Automated and optimized scheduling to boost utilization

> Automated insurance verification and prior authorization retrieval prior to service

> Virtual assistants managing patient communications regarding financial inquiries, payment plans and insurance-related questions to enhance the patient experience

Mid-office

> Thorough clinical documentation based on natural language processing during patient encounters

> Automated coding and charge entry based on clinical data

> Automated coding and charge audit for all accounts to ensure accurate reimbursement for services provided

Back-office

> Denial prediction and prevention based on historical data for proactive interventions to prevent revenue loss

> Automated billing and payment posting to reduce errors and accelerate reimbursements

> Contract management and analytics to support underpayment recovery, improve reimbursement and support payer contract negotiations

> Payer portfolio management to analyze and predict payer-specific trends, behaviors and patterns associated with reimbursement

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Best practices for AI implementation

Moving from basic concepts to deployment of well-crafted, purpose-built LLMs in the revenue cycle is easier said than done. To do so efficiently, be sure to consider these critical elements from the beginning.

Best practices

01 **Get a firm grasp on the complexity of RCM.** The federal and local regulatory landscape — including billing and coding updates, payer policies and specific workflows — is always shifting and changing.

When implementing LLMs and other forms of AI, proper handling of sensitive data including patient information and adhering to regulatory guidelines like HIPAA is key. To avoid negative consequences, organizations must stay on top of changing legal and data regulations.

02 **Focus on operator-centered design.** Pair expert operators (the users of AI) with data scientists, so that the two can work in tandem to design and fine-tune models in an agile and iterative development environment.

Leverage subject matter experts who are well-versed, not just in following health system best practices, but in implementing those same recommendations from start to finish.

Historical data can and should be codified within AI, drawing upon multi-system or facility perspectives. This helps to avoid an N=1 bias in model development during the training or evaluation of a model.

03 **Draw upon rich datasets for effective model building.** Prioritize access to a deep pool of talent, levels of expertise, geographic locations and perspectives that can be represented in datasets.

This will help to support robust LLMs that can prevent overfitting a model to a limited set of instances, while also incorporating a diversity of contexts and patterns through a broader range of data and insights. This, in turn, provides a valuable and more generalized approach which supports effective model building.

04 **Support data with a sound and scalable technical foundation.** Robust AI models are informed by thousands of variables and consume billions of transactions. The more variables provided to inform models, and the greater the volume and variety of data available for consumption, the more complete and valuable models become — providing better and faster insights at the point of decision.

For many hospitals, this type of processing power can be difficult to support in house, so a data partner can be an invaluable asset.

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AI in action:
Ensemble Health Partners

At Ensemble, we've invested more than $100 million and 2 million development hours to build and refine our AI engine, EIQ®, gaining nine patents for innovative process automation and data exchange capabilities.

Our RCM operators work with in-house data scientists and product engineers to codify best practices and continually fine-tune our RCM-specific models, drawing on more than 800 terabytes of harmonized data from hundreds of facilities and systems.

25B+ transactions mapped to outcomes

25K+ variables informing AI models

5.5K+ AI models deployed over past decade

Prevent coding + charge errors.

IMPACT: $3.1M+ average annual revenue increase per client

We go beyond sample audits and human review to analyze all accounts automatically before they're billed. Our AI models help recognize patterns humans don't expect, to prevent errors before they're billed.

How it works

Natural language processing assists in extracting relevant information from clinical notes and documentation, reducing manual effort and improving accuracy.

ML models analyze 80,000+ data points per account to adaptively learn what features are more likely to result in coding or charge changes.

Accounts are shortlisted and prioritized based on probability of errors for operator work queues.

Systemic errors are identified based on multi-facility data otherwise missed in single-facility audits.

Increase collection yield.

IMPACT: 23% increase in yield per touch and 57% reduction in low-value touches

Instead of the typical "high-dollar-first" approach to account resolution, our complex models help increase revenue yield by analyzing all account variables, automating routine work and routing critical tasks to operators.

How it works

ML models analyze 10,000+ variables to stratify accounts based on anticipated yield, complexity and specialty.

Based on stratification, accounts are routed for resolution by robotic process automation or operator work queue.

Recommendations are automatically provided to guide operator next steps based on the unique account criteria.

Prevent
payment anomalies.

IMPACT: $175M+ in underpayments identified and recovered for clients in 2023

We don't rely on the payment variance report to identify missed revenue opportunities. We detect payment variances based on multi-factor models and predictive analytics to ensure full claim payment for services rendered.

How it works

More than 50 ML models analyze 100% of zero-balance accounts to identify potential variances based on a variety of account-specific factors including payer contracts, chargemaster data, coding scenarios and length of stay.

More than 180 daily payer-issued updates are automatically captured, evaluated and routed to necessary teams or systems with recommended actions for operationalization.

Payer trends are tracked and compared to peer performance to identify outliers, detect problematic patterns, and recommend steps to resolve ad-hoc and systemic issues.

The bottom line

AI holds incredible potential for the healthcare revenue cycle, but it's not a silver bullet — no standalone technology could be.

And, unlike other technologies, the massive data and processing requirements of artificial intelligence — and the legal and regulatory shifts practitioners must stay ahead of — mean most healthcare organizations should not undertake these efforts alone.

There's speed to value in partnering appropriately. Implementation of AI is too critical and massive to be left to one person or team. Artificial intelligence and generative AI in particular should be used very intentionally; take a thoughtful approach by partnering to gather existing

datasets, harmonize them appropriately and effectively build out models that can provide iterative insights.

There's payoff and power inherent in reducing administrative waste, a pressing concern for physicians and executives alike. This means that artificial intelligence — harnessed thoughtfully — stands to be a critical tool for organizations looking to improve their revenue cycle operations.

With 95% of organizations already increasing investments into generative AI and payers leaning on the technology for payment integrity, the question becomes not if an organization should integrate these processes into their own revenue cycle efforts, but when.

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BEST IN KLAS® END-TO-END REVENUE CYCLE OUTSOURCING 2024

BEST IN KLAS® REVENUE CYCLE OUTSOURCING 2022

BEST IN KLAS® REVENUE CYCLE OUTSOURCING 2021

BEST IN KLAS® REVENUE CYCLE OUTSOURCING 2020

Ranked #1 end-to-end revenue cycle firm for partnership and performance, again and again.

Ensemble is the leading provider of tech-enabled revenue cycle managed services, delivering holistic financial health for hundreds of healthcare organizations across the country.