# AI risk and opportunity assessment

DRAFT

BAIN & COMPANY

# Summary perspectives on AI risks and opportunities for <Target>

- <Target> competes in **E2E and point solution markets** that **will be impacted by the continued innovation and deployment of AI.** Under all potential market evolution scenarios, <Target> will need to invest in AI capabilities to continue to **expand its capability and performance gap vs. its customers** and maintain differentiation vs. the market

- The RCM market today is early **in AI adoption** with most processes supported by 'light tech-assist' workflows, and while providers cite GenAI as a top priority and recognize it as an opportunity to drive further efficiency, most have limited visibility into where specifically it is used and the potential efficiency gains

- Over the next 5 years, **deployment of AI solutions** will impact Mars and its served markets, with a fan of outcomes based on the pace of innovation and rate of adoption. The most likely scenarios will **benefit leading outsourced RCM vendors** as AI-led efficiency gains will widen the capability gap vs. customers, drive further outsourcing and have potential to expand gross margins as cost to serve declines
  - The E2E market will benefit from participation in all parts of the E2E value chain allowing vendors to benefit from front-end, mid-cycle, and back-end efficiency gains; long-term contracts support gross margin expansion as AI gains adoption; even in more aggressive AI adoption scenarios E2E providers are expected to be net winners
  - <Target's> point solutions will face more risk in scenarios where the market shifts to further AI-enablement, with more aggressive adoption scenarios slowing market revenue growth and constraining the profit pool (to current levels) as tech-led solutions present outsourcing and pricing pressure

- There are a range of levers to de-risk the **go-forward market evolution for <Target>**, including more aggressive mix shift of business to E2E contracts, and prioritizing organic and inorganic levers to maintain AI-module specific performance (especially in back-end solutions)

- **Outside-in assessment** of <Target> AI capabilities, suggests they are **largely on par with competitors**, but lag in **specific front-end modules**. A comprehensive AI-strategy as part of the value creation plan will be critical to success

# Providers believe GenAI is a top priority; while they recognize the potential benefits, most have limited visibility into how it is applied across outsourced activities

PRELIMINARY

| | |
|---|---|
| **GenAI is a top priority** | All providers have confirmed that **GenAI is now a top priority for their health system** and acknowledge the need to go beyond traditional automation (RPA, robotics) to leverage GenAI |
| **Recognize second-order benefits of GenAI** | Providers recognize **GenAI-enabled tech can bring them additional benefits** with better performance (e.g., clean claims, denials and underpayment recovery) and enhanced patient and clinician experience |
| **Workflow impact greatest in coding and denials** | Providers believe that **NLP and unstructured data processing can transform specific workflow elements**; they believe coding and denials are the biggest opportunity areas |
| **Limited visibility into outsourced processes** | While most providers understand GenAI and its potential, they **lack visibility into how specifically it is used in outsourced workflows** today; most are unfamiliar with specific AI-enabled capabilities of vendors like <Target> |
| **Expect to share in benefits w/some cost savings** | Most customers **expect to receive a share in cost savings enabled by GenAI** but would be happy with 26-50% of the benefits, acknowledging the important role of the vendor and investment required to build out solution |
| **Believe benefits will be realized over next 3-5 yrs** | Most providers **expect to realize GenAI-enabled savings over the next 3-5 years**; none of the providers have GenAI savings baked into their 12–24-month plan, recognizing it is still very early in their level of enablement |
| **Can have a mixed impact on outsourcing but net positive** | **Some believe automation could lead to more insourcing** (e.g., relieving provider hiring challenges, upstream automation leading to more 'clean claims'), and **most believe outsourcing will become more valuable** due to the specialization and technology investment of vendors, citing evidence of those who've tried and failed |

Source: Market participant interviews; Bain analysis; Literature search

# Traditional AI is reactive, responding to predefined tasks and inputs, while Gen AI also reacts by generating content based on data, and Agentic AI is proactive

AI ADVANCEMENTS | KEY DIFFERENTIATION

**Traditional AI performs tasks requiring human-like intelligence, while Gen AI creates new content based on learned patterns. Agentic AI takes this further by enabling autonomous, collaborative agents that make decisions and adapt in real-time to solve complex tasks efficiently**

| | Traditional AI | Generative AI | Agentic AI |
|---|---|---|---|
| **Definition** | AI systems designed to perform specific tasks based on predefined rules or algorithms | AI systems focused on generating new content or data, like text, images, or music | AI systems composed of autonomous agents that collaborate, make decisions, and adapt in real-time |
| **Task Focus** | Solves well-defined, rule-based tasks (e.g., data analysis, pattern recognition) | Creates content based on existing data (e.g., text generation, image creation) | Handles dynamic and complex tasks through collaboration and real-time decision-making |
| **Learning Capabilities** | Limited to pre-programmed rules or supervised learning | Uses large datasets to create and generate new content based on learned patterns | Continuously learns from experiences, feedback, and collaboration with other agents |
| **Autonomy** | Limited autonomy, follows predefined instructions or patterns | Limited autonomy in content creation but still operates based on pre-existing models | Fully autonomous, capable of making decisions and adapting without human intervention |
| **Collaboration** | Does not typically collaborate with other AI systems | Can work with other models to generate content, but not typically collaborative in execution | Inherently collaborative, with multiple agents working together to solve complex tasks |
| **Flexibility** | Operates within defined boundaries and tasks | Flexible in content generation but focused on a single output (text, image, etc.) | Highly flexible, capable of adjusting to new tasks, scenarios, and dynamic environments |
| **Complexity Handling** | Handles low to medium complexity tasks | Generates creative content but has limited reasoning capabilities | Capable of managing complex, unstructured tasks through adaptive decision-making |
| **Use Case Examples** | Fraud detection, recommendation systems, predictive analytics | Text generation, image creation, music composition | Autonomous customer service agents, multi-agent systems in finance, HR and Retail |
| **Interaction** | Typically provides structured output based on input | Produces new, often unstructured output based on patterns in the data | Interacts with users and systems autonomously, makes decisions, and collaborates with other agents |

Source: Bain experience and analysis; Lit. Review

# AI shows the most transformative potential in mid- and back-end functions, where unstructured data and decision-heavy tasks dominate

**AI VALUE CHAIN** | Impact: Low | Low-medium | Medium | Medium-high | High | *Target modular revenue* | PRELIMINARY

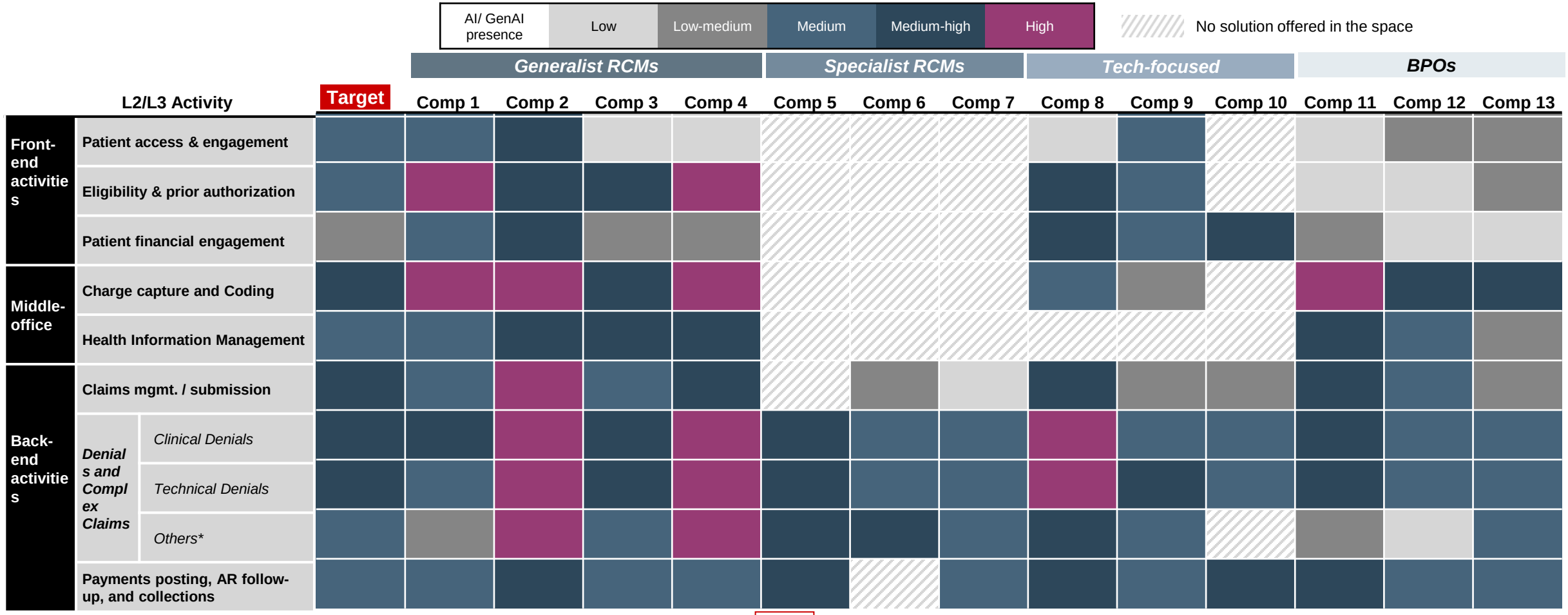
Key Steps

| FRONT-END | | | MID-CYCLE | | BACK-END | | |
|---|---|---|---|---|---|---|---|
| Patient access & engagement | Eligibility & prior authorization | Patient financial engagement[1] | Charge capture and Coding | Health Information Management | Claims mgmt. / submission | Denials and complex claims | Payments posting, accounts receivable follow-up, and collections |
| Patient scheduling | Eligibility and benefits verification | Patient out of pocket cost estimation | Charge capture | Clinical documentation (transcription, dictation, ambient) | Claims edits | Denials management<br>Clinical Denials<br>Technical Denials | Payments posting |
| Patient registration and check-in | Prior authorization | Propensity to pay analytics and payment plan enrollment | Coding service | Document management and validation | Claims submission (incl. clearinghouse, statusing) | | Patient statements |
| Referral management | | Point of sale payment capture | Clinical documentation integrity (CDI) | Release of information | | Underpayment recovery | Accounts receivable (A/R) recovery |
| | | Financial clearance and counseling | Diagnosis related group (DRG) Validation | | | Transfer diagnosis related group | 340B[2] (drug pricing program) |
| | | | | | | Complex claims | Bad debt and write offs |

Notes: 1. Patient financial engagement solutions engage with customers in the front and back end of the value chain; 2. U.S. federal government program created in 1992 under; Note: GenAI impact assessment (i.e., shading) shows assessment on moderate complexity use cases. high complexity use cases Section 340B of the Public Health Service Act
Source: Bain analysis; Lit. search; Market participant interviews

# <Target> has a strong AI foundation and presence across most processes; <Competitor 2>,<Competitor 5>, and <Competitor 8> are recognized AI leaders

COMPETITIVE LANDSCAPE / BASED ON PRODUCT RELEASES / PRELIMINARY




**Imperative to invest to maintain position—not just to keep up with current leaders, but to avoid falling behind AI-native players**

Note: (*) Others includes ‘Complex claims’, ‘Underpayment recovery’ and ‘Transfer and diagnosis related group’ | Source: Lit search, Bain analysis

# Denials management is evolving from manual triage to autonomous resolution — with AI reducing cycle times, rework, and human intervention at scale

CLAIMS MANAGEMENT | DENIALS

| AI transformation scenarios | Where we are today | Low | Base | Medium | High |
|---|---|---|---|---|---|

/NON-EXHAUSTIVE

**Current market evolution / path to AI-enablement in next 5 years**

**Increasing technological abilities, correlated with higher share of activities automated**

## Manual

- **Labor-intensive intake and triage:** Staff manually process 835/EOB files and hand-enter denial data, resulting in low productivity and high error potential
- **Fragmented system navigation:** Teams toggle between EHRs, payer portals, and IVRs, often requiring phone follow-ups to confirm status — driving inefficiency and workflow friction
- **Manual rework and resubmission:** Coders manually re-key CPT/ICD claim data, compile appeal packets, and batch upload — slowing down the resubmission process
- **Outcome: Highly manual effort** per denial**,** 3–5-week resolution cycles, and significant variation in outcomes due to process complexity

## Light Tech-assist

- **Bot-driven intake automation:** Clearinghouse bots or RPA scripts auto-download ERAs and populate work queues using basic reason-code mapping, reducing manual triage
- **Workflow enhancements through point automation:** Code scrubbers detect common data issues; bots scrape auth/status data from payer portals — minimizing human lookup time
- **Semi-automated claim resubmission:** One-click batch resubmissions improve speed, but staff must monitor bot errors and manually reconcile across fragmented dashboards
- **Outcome: Hands-on time cut by 30-40%,** and cash cycle improves; however, solutions are fragile, often breaking with payer rule or UI changes

## Gen AI/ML Deployment at scale

- **Contextual Copilots in Workflow Intelligence:** LLM copilots embedded in the PM UI provide contextual "claim cards," draft correction narratives, and suggest code/eligibility fixes for quick human validation
- **Predictive routing & classification:** ML models classify denial sub-types, auto-prioritize queues, and pre-fetch required data — reducing decision latency and manual prep time
- **Document intelligence & API integration:** Vision/NLP tools extract data from scanned faxes, while API agents fetch eligibility and status — escalating only exceptions to human agents
- **Outcome: Labor time compresses by another 50% per claim,** turnaround time shrinks; more human input is now focused on auditing, less on tactical execution

## Theoretical, Frictionless Future

- **Always-on denial listeners:** Agents subscribe to payer webhooks, triggering workflows as soon as a technical denial is posted — eliminating delay in response
- **Autonomous remediation loop:** Chained AI agents handle end-to-end tasks —verifying coverage, retrieving documents, correcting codes, and resubmitting claims — logging all actions in an immutable audit trail
- **Self-healing upstream fixes:** Pattern-recognition agents detect recurring errors and push automated rule updates to front-end systems, preventing repeat denials at the source
- **Outcome:** Human touch **reduces more meaningfully,** denials corrected and reimbursed more rapidly, with repeat technical denials shrinking

Source: Lit. search, Bain analysis

# AI significantly reduces denial handling effort, transforming workflows from manual triage to autonomous orchestration

CLAIMS MANAGEMENT | DENIALS

*AI transformation scenarios*: Where we are today | Low | Base | Medium | High

/ NON-EXHAUSTIVE

**Current market evolution / path to AI-enablement in next 5 years**

**Increasing technological abilities, correlated with higher share of activities automated**

| Phase | Time per claim (Manual, indexed to 100) | Manual | Light Tech-assist | Gen AI/ML deployment at scale | Theoretical, Frictionless Future |
|---|---|---|---|---|---|
| **Detection & Intake** | 15 | Staff **manually download** 835s, **interpret denial codes**, and **key data** into the practice management system | RPA bots and clearinghouse feeds **ingest ERAs** into a basic work queue sorted by **rule-based code buckets** | **NLP models** classify denial subtypes, **GenAI surfaces** claim snapshots, and **auto-routes** tasks to the best reviewer | Payer webhooks **trigger intake agents** to open cases, tag **root causes**, and prioritize workflows—fully hands-free. |
| **Analysis & Validation** | 30 | Analysts **navigate EHRs, portals, and faxes** to locate 837s, eligibility, and auth docs, then **manually verify** codes | **One-click context launches** surface claim and eligibility info; **bots retrieve auth numbers** and modify rules highlight obvious gaps | A **"claim card"** auto-fills required fields using **LLMs**, extract data from PDFs, and **validate eligibility via APIs**—flagging only exceptions for manual review | Validation agents **monitor APIs**, retrieve missing documents, and run all rules checks—escalating only low-confidence cases |
| **Correction & Resubmission** | 20 | Coders **re-enter CPT/ICD** edits, **compile PDF packets**, and **upload corrected 837s** for next-day clearinghouse submission. | **Code scrubbers** suggest edits for user approval, followed by **one-click same-day batch submission** | **GenAI** drafts **correction narratives**, assembles clean 837s with attachments, and **submits via REST API** with a full audit trail | Remediation agents **correct data, cite policy,** and **submit claims** with a fully auditable, zero-touch process |
| **Follow-up & Closure** | 35 | Staff **monitor portals or call payers** for payment status, **manually record the cash input**, and **track denials** in monthly reports | Status checks run **bi-daily**, **payments are auto-posted**, and **denial KPIs refresh** nightly via dashboard. | **Conversational bots** engage payers, GenAI generates **root-cause reports**, triggers **upstream training**, and **auto-closes** cases on zero balance | Agents **confirm payment** via API, reconcile cash, **update upstream logic,** and **auto-retire cases** with no staff intervention |
| **Total time** | **Index = 100** | Current base-line performance | **70-80** | **40-50** | **15-30** |

**Reduction in average time per claim**

Source: Lit. search, Bain analysis

# The most likely scenarios include continued adoption of AI capabilities without widespread adoption of agents

**AI TRANSFORMATION SCENARIOS** / **PRELIMINARY**

**Increasing technological abilities, correlated with higher share of activities automated →**

| | | **Scenario 1:** Microproductivity *(Slowed momentum)* | **Scenario 2:** Continued improvement in AI capabilities *(Base case)* | **Scenario 3:** Accelerated adoption and step-change in capabilities *(Accelerated momentum)* | **Scenario 4:** Fully-automated RCM through AI *(Full potential)* |
|---|---|---|---|---|---|
| **Definition** | | Limited AI augmentation yielding only microlevel productivity gains | Benefits accrue to RCM vendors, with some client price pressure to share gains | Most sophisticated providers leverage tech; outsourcing trajectory stalls as top providers insource more | AI's full potential realized, driving transformative changes in RCM operations |
| **RCM / AI-driven Performance improvements** | | **Minimal**<br>Small task-level gains but tech advances remain limited | **Moderate**<br>AI copilots boost efficiency in discrete tasks with notable but modest gains | **Significant Gen AI**<br>AI automates large parts of workflows under human oversight | **End-to-end AI enablement**<br>AI near-fully automates end-to-end processes |
| **Directional Likelihood** | | ***0-10%*** | ***30-40%*** | ***30-40%*** | ***5-20%*** |
| **Assumptions** | **Providers** | • Stick to status quo with **minimal AI adoption**<br>• Only **small pilots**; no major process changes | • Adopt some **AI tools for high potential tasks** (e.g. coding assistance) but overall RCM processes remain intact<br>• Outsourcing patterns on current trajectory | • Leverage **advanced AI** to perform more RCM in-house<br>• **Outsourcing trajectory stalls** as top-tier providers begin to insource tasks previously outsourced | • Embrace **agentic AI-driven RCM** (largely automated processes in-house or via platforms)<br>• Human involvement minimal across the revenue cycle |
| | **Competitors** | • **No disruptive moves** by competitors or tech firms<br>• RCM industry **continues business-as-usual** with incremental tech enhancements | • RCM vendors broadly **integrate AI assistants**<br>• **Slight competitive pressure** on price<br>• EHR platforms introduce **basic AI-driven RCM features,** but not sophisticated enough to influence outsourcing | • Competitors also pivot toward **tech-centric offerings or consolidate**<br>• EHR platforms introduce **AI-driven RCM features,** and gain traction in front-end / patient or provider-focused areas<br>• Market shifts toward tech-enabled models, **reducing reliance on traditional BPO** | • RCM industry reinvented by technology – competitors and EHRs offer **end-to-end AI solutions**<br>• **Tech giants and platform** players dominate with fully automated RCM offerings<br>• Traditional **labor-only outsourcing** becomes largely **obsolete** |

Source: Lit. search; Bain analysis

# Across each scenario, AI-enabled RCM services leaders will likely be advantaged

Positive — Negative

SUMMARY

PRELIMINARY

| | | Scenario 1: Microproductivity *(Slowed momentum)* | Scenario 2: Continued improvement in AI capabilities *(Base case)* | Scenario 3: Accelerated adoption and step-change in capabilities *(Accelerated momentum)* | Scenario 4: Fully-automated RCM through AI *(Full potential)* |
|---|---|---|---|---|---|
| **Description** | | Limited AI augmentation yielding only microlevel productivity gains | Benefits accrue to RCM vendors, with some client price pressure to share gains | Most sophisticated providers leverage tech; outsourcing stalls as providers insource more | AI's full potential realized, driving transformative changes in RCM operations |
| **Impact on market opportunity** | **E2E services** | • Outsourcing slows as gap between providers and RCM vendors remains stable<br>• Minimal AI-driven margin upside, but market growth continues | • Steady **outsourcing growth continues**<br>• Efficiency gains largely **accrue to RCM vendor gross margin** | • **Outsourcing growth accelerates** further, especially at non-Mega hospitals<br>• Substantial **margin upside** | • Traditional **outsourcers require leadership on automation to compete**<br>• **AI platforms handle most RCM tasks** with minimal human involvement |
| | **Services-led point solutions** | • **Continued outsourcing** trajectory<br>• **Yield and efficiency gap stagnates** | • Steady **outsourcing growth continues**<br>• **AI-enabled services** leaders **have share and performance advantage** | • **Back-end RCM (denials)** volume impacted by effective upstream activities<br>• **Software point solutions** being to gain traction with Mega customers who further insource<br>• **Services providers** need to have strong technology/AI to compete | • Market **consolidates around a few advanced point** solutions<br>• Further impact on back-end denials volumes / follow-ups<br>• **Services providers siloed** to highest complexity / value claims |
| **Winners** | | • **RCM services** with embedded tech remain advantaged (downside from un-successful R&D efforts)<br>• **Offshore BPOs** and other 'people-based' offerings are protected | • **Leading AI-enabled services vendors** benefit from significant margin expansion opportunity<br>• **Tech / software solutions** continue to gain share with largest providers<br>• **GenAI solutions** remain highly attractive **M&A targets** w/ strong valuations | • **Leading AI-enabled services vendors** remain competitive, but the 'winners circle' is narrower<br>• **Tech / software solutions** continue to gain share with largest providers<br>• **GenAI solutions** remain highly attractive **M&A targets** w/ strong valuations | • **Narrower set of E2E vendors** that compete based on embedded AI capabilities (blurring of the lines b/w current services and software vendors)<br>• **Agentic-AI point solutions**, especially in highly addressable categories (like denials) |
| **Losers** | | • **Theoretically disruptive AI tools** with limited adoption / functionality | • **BPOs, traditional RCM services** | • **BPOs, traditional RCM services**<br>• **RCM platforms** with lagging AI capabilities (both services and tech) | • **Point solutions services** vendors without best-in-class AI<br>• BPO, RCM services vendors with **lagging AI** |

**<Target> should adopt an AI investment posture to capitalize on 'offensive' opportunity in scenarios 2 and 3, and protect against disruption in scenario 4**

Source: Lit. search; Bain analysis

# E2E growth outlook remains positive across scenarios with accelerated revenue gross margin opportunity in most likely scenarios

**AI TRANSFORMATION SCENARIOS** | **E2E**

**PRELIMINARY**

**BCN:** Base case values basis the TAM model

**Increasing technological abilities, correlate[illegible]with higher share of activities automated**

| | | 2024 | **Scenario 1:** Microproductivity *(Slowed momentum)* | **Scenario 2:** Continued improvement in AI capabilities *(Base case)* | **Scenario 3:** Accelerated adoption and step-change in capabilities *(Accelerated momentum)* | **Scenario 4:** Fully-automated RCM through AI *(Full potential)* |
|---|---|---|---|---|---|---|
| Levers | **E2E Served market size** | ~$10B | ~$15-17B | ~$15-16B | ~$16-17B | ~$8-10B |
| | **E2E served market growth** | n/a | ~9-11% | ~9-10% | ~10-12% | ~(1-3%) |
| | **Outsourcing** | ~20% | ~20-22% | ~22-24% | ~25-30% | ~20-22% |
| | **Contingency rate** | ~4% | ~4-5% | ~4% | ~3-4% | ~2-3% |
| | **Efficiency improvement** | | +0-10% | +15-20% | +20-30% | +30-40% |
| | **Gross margin ($, CAGR %)** | $3.5B (baseline GM) | ~$5.7-6.3B (10-12% CAGR) | ~$6.4-6.7B (13-14% CAGR) | ~$7-7.6B (15-17% CAGR) | ~$4.1-4.5B (3-5% CAGR) |
| **Revenue market growth** | | | • Rising patient volumes and complexity<br>• Lags baseline projections since AI-driven gains are minimal<br>• Vendors rely on labor-driven models, limiting scalability | • AI-augmented services boost vendor productivity and value<br>• RCM vendors leveraging AI can handle more volume per staff | • RCM served market expands rapidly as automation drives new value<br>• With AI handling much of the grunt work, RCM vendors can scale services significantly | • Vendors offering AI-driven RCM solutions experience a surge in adoption<br>• More providers implement autonomous RCM and outsource remaining manual elements |
| **Gross margin market growth** | | | • Minimal uplift since with negligible automation, operational costs stay high<br>• Manual execution limits margin upside | • Healthy margin expansion via partial automation<br>• Cost reductions outpace modest fee declines<br>• Early adopters gain moderate edge | • Significant uplift as AI replaces manual effort<br>• Cost-to-collect falls and vendors gain scale leverage<br>• Price competition and insourcing cap full margin capture | • Major margin gains from near-full automation<br>• Cost-to-collect drops sharply<br>• Margins peak<br>• Most margin captured by tech-first, platform-native players |
| **Implications for <Target>** | | | • Limited tech differentiation<br>• Margins squeezed by rising labor costs | • Integrates copilots to boost productivity<br>• Gains efficiency and market edge | • Tech-driven transformation<br>• Supervises AI workflows and scales volume efficiently | • Low-cost, autonomous RCM delivery<br>• Business model shifts to technology-enabled services |
| **Other key competitive considerations** | | | • Incumbents compete on service<br>• Little AI disruption | • Early AI adopters gain share<br>• EHRs & vendors embed copilots | • AI reshapes market<br>• EHRs, tech firms, and top vendors lead | • RCM consolidates into few AI platforms<br>• Tech giants may enter |
| **Key assumptions** | | | • Minimal AI use, humans do most tasks<br>• Limited automation<br>• Few AI copilots adopted | • AI copilots adopted for discrete tasks<br>• Humans remain central<br>• Modest digital investment | • AI handles large workflows with supervision<br>• Industry adopts robust AI governance | • Near-total automation<br>• Providers outsource to AI platforms<br>• Compliance & interoperability solved |

Source: Lit. search; Bain analysis

# Denials/backend market expected to grow in most scenarios; however, high AI adoption scenarios pose the greatest disruption to <Target>

**AI TRANSFORMATION SCENARIOS** | **DENIALS**

**BCN:** Base case values basis the TAM model

**PRELIMINARY**

**Increasing technological abilities, correlat… with higher share of activities automated**

| | | 2024 | Scenario 1: Microproductivity *(Slowed momentum)* | Scenario 2: Continued improvement in AI capabilities *(Base case)* | Scenario 3: Accelerated adoption and step-change in capabilities *(Accelerated momentum)* | Scenario 4: Fully-automated RCM through AI *(Full potential)* |
|---|---|---|---|---|---|---|
| **Levers** | **Served market size** | ~$2B | ~$3B | ~$3-3.5B | ~$2-2.5B | ~$1-1.5B |
| | **Denials / backend served market growth** | n/a | ~8-11% | ~9-12% | ~2-5% | ~(5-10)% |
| | **Services Outsourcing rates** | ~35% | ~40-50% | ~40-50% | ~30-40% | ~30-35% |
| | **Contingency rate** | ~6% | ~6% | ~5-6% | ~3-4% | ~1-2% |
| | **Recovery rate**** | ~60% | ~55-65% | ~60-65% | ~65-70% | ~70-75% |
| | **Denials** | ~8-10% | ~9-11% | ~9-11% | ~7-9% | ~4-6% |
| | **Efficiency improvement** | n/a | +0-10% | +20-30% | +30-50% | +70-80% |
| | **Gross margin ($, CAGR %)** | ~$1B | $1.5-1.7B (8-12% CAGR) | ~$1.8-2.2B (14-17% CAGR) | ~$1.5-1.8B (9-13% CAGR) | ~$0.8-1B (~(-3)-0% CAGR) |
| **Revenue market growth** | | | • Constrained growth driven by low efficiency gains and tight budgets<br>• Providers under pressure seek stopgap solutions | • Growth is fueled by the combination of rising denial rates and increasing provider investments in denial solutions | • More providers are spending on software solutions and AI-powered services<br>• Denial volumes remain high with urgency to invest | • AI investment boosts denial management spending, though long-term gains in efficiency may curb future growth |
| **Gross margin market growth** | | | • Most hospitals still relying on manual denials management<br>• Small labor savings, low scalability | • Moderate AI use begins to reduce avoidable denials and improve collections<br>• Recovering some lost revenue and lowering rework cost | • Broad AI adoption prevents a larger share of denials, and streamlines appeals, significantly boosting net revenue<br>• Automation reduces rework costs | • Nearly eliminating preventable denials and recovering most recoverable claims<br>• However, payers continue to leverage AI to increase denials<br>• AI systems recoup large portion of lost revenue, slashing manual rework costs |
| **Implications for <Target>** | | | • Focus on operational scale and labor-driven recovery<br>• Emphasize efficiency and expertise; little need for tech investment short-term | • Sustain competitive edge with reliable performance and initial AI tools<br>• Blend tech with service quality to maintain growth | • <Target> must compete on outcomes, ROI & integration<br>• Embed AI in workflows, improve recovery rates and reduce cost | • Reinvent as AI platform provider or specialist for complex cases<br>• Success depends on superior AI or niche expertise |
| **Other key competitive considerations** | | | • Traditional BPO vendors dominate; low threat from startups<br>• Limited AI use means labor capacity is differentiator | • Broad RCM vendors and denial specialists compete<br>• EHR vendors enhance denial modules<br>• Tech-enabled vendors gain ground | • Tech-forward RCM and EHR players lead<br>• AI startups can disrupt niche | • Few dominant platforms (EHRs, tech giants)<br>• New entrants from tech sector possible |
| **Key assumptions** | | | • Denials remain high<br>• Providers rely on labor<br>• Regulatory and payer complexity persists<br>• No major tech shift | • Providers pursue yield and efficiency gains; limited regulatory changes | • Many denial tasks automated<br>• Payers adopt similar tools<br>• Interoperability improves | • Most denials handled automatically<br>• Providers expect near-perfect results<br>• In-house AI might be prevalent<br>• Pricing models shift |

Source: (*) Incremental impact | Source: Lit. search; Bain analysis

# Payers and their vendors counteract RCM AI measures by boosting denials using AI-driven interventions that target improper, high-risk, and non-essential claims

AI INTEGRATION | PAYERS AND VENDORS | PRELIMINARY

*Payer & vendor AI strategies*

| | Objective | AI Application & Outcomes | Key player examples | Impact on RCM workflow | Countermeasures for RCM |
|---|---|---|---|---|---|
| **Claim & Coding Validation** | To increase **denial of improper charges** and to prevent **payment leakages** | • ML and NLP is used to **analyze claim data** and medical records to flag errors **prior to payment**<br>• Avoiding improper payments and a higher 'first-pass' accuracy leads to **higher denial yield** and **cost savings** | Lyric, zelis<br>Lyric and Zelis **embed ML and rules-based engines** into claims editing, to analyze and flag errors before payment | • Payers' advanced edit engines **enforce strict coding standards** triggering **instant denials**, delaying payments and increasing rework | • Deploy **AI-driven claim scrubbers**, dynamic rules engines for **continuous AI training**, and **assisted coding tools** to align with evolving payer rules |
| **Clinical Documentation & Audit** | To tighten claim validation process and to prevent payments for **non-covered** treatments | • Models use NLP to **cross-check documents** against policies and guidelines to **flag unsupported claims** before payment<br>• AI-driven screening has led to up to **16x more denials**, improving **cost control** and reduced **manual review** effort | eviCore healthcare, Availity<br>EviCore and Availity use AI powered algorithms to **analyzes clinical docs** against **payer policies** for real-time decision-making | • AI-driven **medical necessity** audits increase denial frequency and **unpredictability** leading to growing appeal workloads | • Leverage AI-powered NLP tools for **documentation analysis**, **predictive audit targeting**, and adaptive learning pre-submission |
| **Fraud Detection** | To increase denials by flagging **suspicious/ fraudulent claims** | • ML models used to detect **anomalous billing patterns** by analyzing historical and live claims, to flag **high-risk submissions**<br>• Higher **fraud interception** rates and **reduced financial exposure** through early detection and targeted audit triggers | COTIVITI, MultiPlan.<br>Cotiviti and MultiPlan **sift through claim data** to flag suspicious billing behavior such as **abnormal service frequencies**, "phantom" claims | • Payer AI systems **increase surveillance** and **potential false positives**, leading to **payment holds** and risks from **billing anomalies** | • Utilize AI-driven **self-auditing tools**, **FWA compliance checks**, and **rapid audit response tools** to manage billing risk and payer scrutiny |
| **Denial Targeting** | To boost **denial yield & accuracy** by targeting high-risk/ error-prone claims | • Predictive models **score incoming claims** by risk, directing auditors to likely **errors and outliers**<br>• **6x increase** in payment error detection; reduced **audit effort** and **faster throughput** for compliant claims | Lyric<br>LyricIQ identifies **outlier claims** and **flags** billing trends that warrant **closer review** | • Payer-driven, algorithmic denials trigger **default claim rejections – surging appeal volumes**, **losses** and **appeals escalation** at scale | • AI-driven **denial risk scoring**, **targeted pre-submission QA**, and **automated appeal workflows** to counter payer denial algorithms |
| **Automated Prior Authorization** | Automate **denials for non-essential/ expensive claims** | • Real-time algorithms **evaluate requests** with medical criteria and trends, auto-approving **routine cases** and denying **low-value** care<br>• Denial rates **increased up to 16x** for non-essential services; faster decisions cut **payout exposure** and free up clinical review capacity | APIXIO<br>Apixio's Apicare uses ML to **predict prior auth outcomes** and integrates with workflows via APIs for **automated decision-making** | • AI-driven prior authorization denials **accelerate rejections**, shifting the **appeal burden to providers** and straining administrative resources | • Streamlining **prior authorization** with intelligent submission, **real-time denial tracking & triage**, and utilizing bots for **automated appeals** |

Source: Lit. search; Bain analysis

# <Target> is early in its AI journey but is primed to scale quickly through targeted investments, partnerships, and tech integration

**<TARGET'S> AI ENABLEMENT**

PRELIMINARY

## Solid Foundation, Early Journey

- <Target> is early in its AI journey with **AI efforts mostly in pilot stages**
  - Developed its AI Denials Management platform by integrating ML and LLMs with payer-specific training data
  - Offers AI-driven coding and clinical documentation improvement (CDI) tools to generate billing codes (augmented by the ARMCO coding acquisition)
  - Leverages ML to predict and address denials through analytics and workflow tools via its Miller & Milone acquisition
- <Target> shows **strong digital readiness** through its existing automation and data management capabilities
  - Acquisition of <3P software> augments <Target's> RPA capabilities, enabling the automation of traditional front-desk responsibilities
  - AI powered tool using clinical data to suggest billing codes, marking an early foray into NLP and medical coding automation
- <Target> has a well structured data environment and are on a path of cloud migration and tech modernization

## Forward-looking enablers

### Introducing AI-driven improvements / enhancements

- <Target> can **invest aggressively in AI** over the next 1–2 years to rapidly catch up to competitors
- <Target> can strengthen its AI capabilities by **enhancing existing products** or **exploring adjacent opportunities** through AI innovation

CASE EXAMPLES

- <Competitor 29> has developed an **AI-driven prior authorization solution** that automates the process of obtaining approvals from payers using machine learning to predict authorization requirements

**Comp 29 logo**

- <Competitor 11> partnered with the University of Texas at Dallas, to enhance its **PULSE Coding Automation Technology** using generative AI and LLMs

**Comp 11 logo**

### Scaling AI via partnerships with leading technology providers

- <Target> can also **adopt existing AI models and tools** by partnering with leading technology providers
- It can integrate proven AI platforms to conceive and deliver AI solutions in a **short timeframe**

CASE EXAMPLES

- **<Comp 2>** has partnered with **<3P tool>** to launch **R37**, an AI lab transforming healthcare revenue through agentic AI

**Comp 2 logo** **3P tool logo**

- **<Comp 2>** deployed a new **LLM AI application for physician coding in under four months** by leveraging Microsoft's Azure OpenAI Service

**Comp 2 logo** Microsoft

- **<Comp 8> has collaborated with Google Cloud** leveraging generative AI to streamline healthcare payments

**Comp 8 logo** Google Cloud

### Building robust ecosystem by integrating tuck-in AI solution

- <Target> can **integrate point AI solutions** for specific RCM functions like coding and claims denial mgmt.
- <Target> can pursue **similar plug-and-play AI solutions** through strategic partnerships or by acquiring niche AI companies

CASE EXAMPLES

- New Mountain Capital formed **<Comp 5>**, an AI-driven healthcare efficiency platform, by combining SmarterDx, Thoughtful.ai, and Access Healthcare

NMC New Mountain Capital LLC **Comp 5 logo**

- <Comp 4> **integrated an AI-driven coding solution** through a partnership with Solventum to enable autonomous inpatient coding

**Comp 4 logo** solventum

- <Comp 2> **acquired <Company 1>** to optimize revenue cycle & consumer engagement with automation & AI in healthcare

**Comp 2 logo** **Company 1 logo**

Source: Lit. search; Bain analysis

# <Target> can unlock AI-driven growth and margin expansion by leveraging proven peer strategies across product, operations, and adjacencies

INVESTMENTS REQUIRED

PRELIMINARY

| | Existing product improvements | Operations & cost optimization | New product adjacencies | Secondary growth opportunity |
|---|---|---|---|---|
| **Competitive strategies** | • **Streamline patient intake and verification** by integrating AI with EHRs and payer systems<br>• **Enhance coding and documentation** through real-time gap detection, confidence scoring, and strengthened **CDI capabilities**<br>• Include functionalities to **prevent denials and detect fraud** to analyze documentation and billing data<br>• **Automate compliance oversight** with AI-driven monitoring and align workflows with payer policies to boost **regulatory accuracy and process efficiency** | • **Cutting down admin costs** by automating high-cost workflows using AI claims bots and denials platforms<br>• **Optimize collections** by using AI to segment A/R by collectability<br>• **Boost upfront collections** through AI-driven patient liability estimates and personalized communication<br>• **Enhance cost control** with predictive financial modeling that delivers **real-time RCM insights** and supports smarter decision-making | • Use **ML and LLMs** to **automate appeal workflows, prioritizations,** and **extract denial insights**<br>• **Enhance patient engagement** by deploying **chatbots and voice AI**<br>• Leverage **custom AI bots** and **transcription apps** to **optimize clinical documentation**<br>• **Streamlining decisions and improving RCM yield** by deploy predictive modeling and REVA (AI Utilization review model) to forecast service demand and enhance care level assessment | • **Expand capabilities through tuck-in and transformational M&A** in areas such as complex claims, CAC/CDI, and Medicaid eligibility<br>• **Enter new markets** such as utilization management and rural healthcare<br>• **Broaden geographic reach** and improve cost efficiency by acquiring offshore and regional players<br>• **Unlock synergies and cross-sell opportunities** by integrating complementary solutions |
| **Peer strategy moves** | • **<Comp 2> integrated ML** and **GenAI** into **R1 Entri** reducing **front-end denials** by up to **50%**<br>• **Experian Health** automated **ClaimSource** to enhance claim scrubbing, **reducing denial rates to <4%** | • **Access Healthcare** deployed **echolock+** (governance platform) to track user activity, boosted productivity by over **6.5%** and **reducing cost per output**<br>• **Experian Health reduced collection costs** by integrating **Wave HDC's AI (now Patient Access Curator)** to automate eligibility scan and insurance discovery | • **<Comp 2> established R37 Lab with Palantir** to develop **AI agents** that autonomously manage tasks across the RCM value chain<br>• **Experian Health** created an **AI Advantage Denials Suite** with **predictive models** flag high-risk claims by appeal likelihood | • **<Comp 2> acquired Cloudmed**, the tuck-in broadened R1's capabilities in complex claims analytics and revenue recovery<br>• **Solventum** partnered with **Ensemble Health** to deploy an AI-powered coding system for complex specialty cases, enabling cross-sell with vendors using Solventum's AI |

Source: Lit. search; Bain analysis

*Outside-in view based on publicly announced initiatives / expectation is that many of these are not widely deployed in the market*

# **<Target's> AI Roadmap:** Expansion of AI & tech across the entire RCM value chain remains at the forefront for its future including exploring strategic M&A opportunities

INVESTMENTS REQUIRED

PRELIMINARY

## Future AI expansion roadmap

***Current focus on AI growth***

Several initiatives across the RCM value chain are planned & in-process for 2025, focusing on **automation, AI integration, and system modernization**

- <Target> is currently expanding scope of AI in **denials management** to include admin and soft denials
- Plans for this year also include **building a next-gen CDI tool,** and applying the toolset of AI denials management to professional fee billing

***AI expansion from 2025-2027***

<Target> has a detailed roadmap outlining AI/GenAI enhancements for the next year tailored to specific business functions

- In next 2-3 years, <Target> plans to focus on hybrid cloud migration, expanded **generative AI** (clinical documentation, chatbots, predictive denial prevention), **voice AI** for service automation, **predictive financial modeling**, and compliance automation
- <Target> is focused on expanding generative AI, predictive analytics, and automation across **clinical, financial, and compliance workflows** to drive greater efficiency, accuracy, and operational scalability

***Futuristic Innovation Opportunities***

AI integration and enhancement is a pervasive part of the company's product roadmap, supported by resourcing and training

- <Target> is further planning for future AI expansions including real-time clinical decision support, **AI-driven patient financial personalization**, and **automated regulatory compliance**

## Strengthening AI capabilities through M&As

<Target> is currently focusing on bolstering technology capabilities by actively pursuing strategic M&As

- <Target> currently has **12 M&A targets** in pipeline and has evaluated ~100 opportunities in **2024,** including:
  - Increase AI capabilities in **revenue integrity** and **claim status** automation technologies
  - Automated and AI coding capabilities driving **coding speed** and efficiency
  - Data driven, **AI analytics** for hospitals, health systems and health plans
- Acquiring **leading technologies to drive automation, client ROI and internal efficiencies** has been stated as a top M&A priority for <Target>
- Increasing AI & technological capabilities (such as **AI coding capabilities and AI analytics** for hospitals) serve as top tucked-in and transformational opportunities for <Target> through M&As

## Management commentary

*"The use of AI tools for **driving collection efficiency** will continue to expand. The number of use cases where we can bring in AI driven system rules into our workflow, all of those types of things will improve"*

*"We're focused in on **AI authorizations** right now, being able to actually submit for the authorizations in an automated format. We are **scaling our denials management application t**o include other administrative and soft denial types"*

SVP, Product Strategy, <Target>

Source: Internal data

# Future-proofing <Targets'> position requires a thoughtful and strategic approach

**INVESTMENTS REQUIRED**

**Innovate on cost delivery** to consistently outperform key competitors and seize cost-leadership in a market where customers prioritize cost and impact

**Own leading applications and attack lower hanging fruit** that provide the highest leverage for <Target's> core workflows; re-evaluate existing stack of traditional AI/ML models (e.g., OCR) to find opportunities to apply GenAI where it can improve speed and accuracy

**Leverage scale to insulate and gain an edge** over other market participants; actively seek out opportunities to leverage scale workforce to create enduring / proprietary advantage in a world of LLMs and evolving tech disruption

**Capitalize on data** and integrate with more client systems (e.g., medical records) to build proprietary data assets that can be used to train and tune models

**Remain vigilant and partner with leading next gen solutions** to become the 'go-to' E2E solution for customers with a scale service and tech forward offering; maintain threshold level of tech-enablement

**Create a future back tech strategy and execute** with a future oriented CTO; make the right build vs. buy vs. partner decisions and evangelize <Target> brand with a strong network of promoters

# Maximizing AI's value will require proactive mitigation of risks — from bias and system gaps to regulatory and strategic misalignment

KEY CONSIDERATIONS

PRELIMINARY

*Key considerations*

| | Description | Mitigation strategies |
|---|---|---|
| **AI reliability & integration**  | • Algorithms may learn biases or produce inaccurate outputs due to skewed training data. This can cause them to **wrongly flag correct claims as errors** or **draft appeal letters with incorrect clinical details** ultimately compromising product reliability<br>• AI integration may alter existing roles, requiring **structured change management** to **mitigate resistance** and workflow disruption<br>• Maximizing AI impact requires targeted **employee training / upskilling**, as capability gaps can hinder adoption and limit functional utilization | • **Regular bias audits** along with ongoing **validation, testing, and human oversight** for critical decisions<br>• **Transition planning** to align roles, manage expectations, and drive organizational readiness<br>• Invest in targeted **training** and **upskilling programs** to ensure effective AI adoption and maximize feature utilization |
| **Operational and cost concerns**  | • Automated collection and processing of sensitive patient data during patient intake raises risk of **privacy breaches** and **cyberattacks**<br>• Automated insurance eligibility checks and authorization risk **misinterpreting payer policies** causing **critical treatment delays** and **patient safety concerns**<br>• Risk of **inefficiencies or unexpected costs** from system errors or **degradation** | • Investment in **security infrastructure—encryption, monitoring, and backups** to safeguard AI-managed data and mitigate financial and legal risk exposure<br>• Regular **compliance audits** to identify potential issues early and avoid unexpected costs and risk of inefficiencies; testing models under **clinical advisory supervision**<br>• Tracking key **operational metrics** like **denial rates**, **days in accounts receivable**, and **cost per claim** evaluates AI cost-effectiveness |
| **Regulatory compliance**  | • **Stringent laws and regulations** on health data (HIPAA in the US) along with **emerging AI-specific regulations** necessitate regulatory compliance | • Integrate **legal compliance reviews** during product development processes while continuously monitoring **evolving global regulations** |
| **Strategic alignment**  | • **Misalignment in tech stacks**, culture, or operating models can delay value realization from tuck-in or transformational acquisitions<br>• Expanding into new markets (e.g., Medicaid, rural healthcare) introduces varied evolving compliance requirements<br>• Movement towards E2E platform poses potential **pricing pressure** and competition from **pre-existing tech giants** | • Assess for compatibility between the **AI system** and **existing platforms** to **avoid integration delays**<br>• Confirm that the AI models, code, and data are **fully owned** and **not dependent on third-party rights** to avoid legal or operational issues<br>• Differentiate through **domain-specific capabilities, integration flexibility** and **ecosystem partnerships** |

Source: Lit. search; Bain analysis

# <Comp 2> is deploying GenAI across the revenue cycle today, & positioning autonomous AI agents as the backbone of a fully automated, insight-driven RCM

COMPETITIVE SCAN | <COMP 2>

Comp 2 logo / PRELIMINARY

| | | Current AI use case | Future plans to expand AI capabilities |
|---|---|---|---|
| *Front-end* | **Patient Access & Management** | • <Comp 2> leverages **digital workflows** to **automate** prior authorizations during **scheduling**; Baptist Healthcare partnered with <Comp 2> **to accelerate patient access** and reduce administrative overheads | • Leveraging **AI-driven LLMs** to **automate patient scheduling** and intake by **scheduling workflows** and streamline front-office registration |
| | **Eligibility & Prior Authorization** | • **AI models streamline insurance eligibility** by rapidly analyzing patient data to identify active or undisclosed coverage, enabling **faster and accurate** coverage verification | • Deploying **autonomous AI agents** that can overturn **prior-authorization denials** on the back end and **prevent** auth-related denials **upfront** |
| | **Patient Financial Management** | • Integrated **AI as a co-pilot** in patient call centers to enhance service quality and efficiency by **instantly summarizing unstructured data**, enabling faster, more informed patient interactions | • <Comp 2> **envisions GenAI-powered virtual agents** managing **routine billing inquiries** across channels, freeing staff to focus on higher-value, complex tasks |
| *Middle office* | **Charge Capture & Coding** | • <Comp 2> deployed its **first LLM application** using **Azure OpenAI** to **automate physician coding quality** reviews by analyzing documentation and **predicting accurate** E/M billing codes | • <Comp 2> is **advancing AI** to **enhance clinical documentation**, **charge capture**, and **DRG integrity** to optimize revenue recovery and strengthen provider financial sustainability |
| | **Health Information Management** | • <Comp 2> leverages Iodine's **AI-powered AwareCDI** platform to elevate documentation specificity, completeness, and accuracy—**enabling optimized billing** and reimbursement at scale | • Utilize **LLM-enhanced generative AI** to improve Clinical Documentation Improvement by **suggesting real-time clarifications** |
| *Back-end* | **Claims Submission** | • <Comp 2> leverages **ML, NLP** and **generative models** across its claims submission lifecycle to **automate edits, predict denials,** and accelerate **reimbursements** | • Integrating **generative AI** into **claims workflows** to enable **intelligent claim submission**—auto-**generating and editing claims** with enhanced speed and accuracy |
| | **Denials Management** | • <Comp 2's> **GenAI**-powered **clinical appeal tools automate** medical record review and **draft appeal letters**, reducing manual prep time from ~60 to ~15 minutes and **accelerating denial resolution** | • Through its internal lab, <Comp 2> is developing **autonomous AI agents** that can **overturn authorization denials** on the back end and proactively prevent them on the front end with minimal human intervention |
| | **A/R Follow-Up & Collections** | • <Comp 2> leverages **AI to analyze account-level data**, summarize key A/R insights – **enabling informed action** on outstanding receivables | • Leverage **LLM-powered agents** to **automate payer follow-ups** by **analyzing requirements** and **executing workflows** via APIs, portals, or calls |

## Commentary

*"We have started to deploy **generative AI** solutions and tools live in production in a few targeted areas, including **physician coding quality**, **payer follow-up** and enhancement of **revenue integrity** rule productivity… We believe we are **ideally positioned to leverage and apply GenAI** across revenue management, and we intend to lead this evolution."*

**- CEO, <Comp 2> (2023)**

*"We are creating **autonomous AI agents** that can, for example, overturn authorization denials on the back end… The intelligence that's powering that authorization on the back end certainly can be used on the front end."*

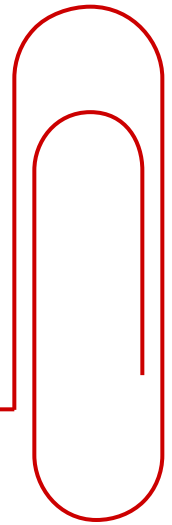
**- Sr. Vice President, <Comp 2> (2024)**

*"We remain focused on the opportunities ahead of us in 4 key areas: number one, **delivering value** for our existing customers; two, **expanding our market** position with new customers, including Providence and other **new modular wins**; three, operating discipline and execution; and four, **automation through technology**"*

**- Executive VP, CFO & Treasurer, <Comp 2> (2024)**

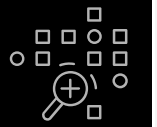
Source: Lit. search; Bain analysis

# Appendix



# Summary perspectives on front-end evolution

PRELIMINARY

| | SUMMARY PERSPECTIVES |
|---|---|
| **AI impact on workflows**  | • **GenAI is likely to have the biggest impact on patient registration** where processes today are largely manual and **NLP chatbots** can create leverage by coordinating scheduling, intaking patient information, and obtaining consents – significantly reducing the need for manual interactions (e.g., phone calls)<br>• GenAI's ability to **incorporate context and process unstructured data** can increase accuracy and productivity across front-office workflows including benefits & eligibility verification and referral and authorization mgmt. (e.g., ingesting latest payer guidelines to recommend if medical necessity review is required for a procedure)<br>• Although GenAI can improve agent efficiency, **provider sensitivity** on direct interactions with patients and **complexity of edge cases** (e.g., multiple insurances, workers compensation) **will require human agents to remain in the loop** |
| **Provider themes**  | • **Providers see opportunities for GenAI to streamline patient interactions**, such as scheduling, registration, and eligibility verification. They believe that conversational AI and RPA (Robotic Process Automation) could enhance these processes by reducing wait times and minimizing human intervention<br>• **Providers expect an incremental impact to front office activities** (vs. transformational) and believe GenAI can bring some efficiencies to front-office tasks (like patient registration and eligibility verification), but there will continue to be a need for human interaction across workflow steps<br>• While some providers handle front-office tasks internally, others, namely **smaller providers**, are **open to automation tools** that might enhance workflow efficiency with limited in-house resources |
| **Competitor dynamics**  | • **Some risk from tech-adjacent players** improving upstream activities that would reduce the value of E2E RCM solutions<br>• However, an **RCM workforce capable of handling complex scenarios and ensuring that patients can get their questions answered promptly will remain valuable** and limit competitor impact; tech adjacent solutions are emerging, but capabilities are still maturing<br>• In addition, **providers express sensitivity around eliminating options for patient human interactions**, acknowledging the healthcare process and insurance specifically can be highly confusing and frustrating for patients |

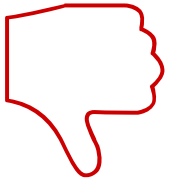
# **Eligibility & Prior Authorization |** Although GenAI represents significant potential for prior auth automation, impact will be limited by payer dynamics

PRELIMINARY

## PA creates diverse challenges; GenAI can help improve cost, provider experience, and patient outcomes

**Ineffective initial treatment**

**Additional office visits**



**Poorer clinical outcomes**

- In addition to being a significant resource burden, PA also leads to **ineffective initial treatments, additional office visits, and poorer clinical outcomes**
- GenAI-enabled automation can **help address these pain points,** increasing the number of patients treated and boosting clinician and patient experience, in addition to generating productivity savings
- GenAI can significantly improve the PA process by:
  - **Automated triggering of PA requests** and identification of required documentation
  - **Extraction of data** from insurance cards or other algorithm-driven data processing tasks
  - **Learning from additional data**, getting smarter and more efficient over time
  - **Notification of prior auth approval and automated documentation** in patient records

**Beyond cost savings, GenAI can reduce care delays, increase treatment rates, and improve clinical outcomes**

## Providers believe there is opportunity for GenAI impact, but it is limited by payer behavior and systems

- Providers believe that there is **significant opportunity in prior authorizations** for GenAI by automating the PA request and submitting it to the payers with necessary documentation
- However, payers request that submission of clinical **documentation to support the prior authorization request is communicated manually** through phone, fax, or email
- Without payer systems adapting to innovation on the provider's side, providers believe the **impact of GenAI will be limited**

*"**I think the impact of GenAI on prior authorization will be limited by payer processes.** For example, MRIs and PET scans are high dollar imaging costs, so typically payers want clinical information to approve these, but they have no means for you to provide that clinical information other than calling them."*

*"Payers manage their medical loss ratio by intervening pre-service to ensure the service ordered is appropriate. Payer would rather physical therapy because it comes at a reduced cost vs. MRI. When an MRI is ordered, the provider has to ask permission. **More and more orders require prior auth** as payers try to manage expenses."*

Source: Lit. search; Market participant interviews

# Eligibility & Prior Authorization | Solutions with AI offerings

PRELIMINARY

## Overview

- Many software solutions have been focusing on leveraging AI to offer eligibility & prior authorization, **esp. as eligibility & prior auth. grow increasingly important for providers**
  - Eligibility & prior authorization are one of the main drivers of denials, and as denial rates increase, accurate verification likely critical
- Example players include:
  - **<Competitor 28>:** Uses AI to pre-check medications against patient plans and history, incl. automated calling to payers
  - **<Competitor 29>:** Leverage AI and RPA to reduce repetitive work for prior authorization and eligibility verifications
  - **<Competitor 30>:** Use proprietary GenAI model to automate rule extraction to automate prior auth
  - **<Competitor 31>:** Auto fills and submits from existing prior authorization systems/tools

***Example players – not exhaustive:***

***Example logos***

## <Competitor 24>

- **Overview:** <Competitor 24> is considered a **leading provider** of RCM, esp. within the **eligibility & prior authorization** category
- **Investors/Financing:** **Subsidiary of <X>**, a data analytics & consumer credit reporting company
- **AI Use Case:** Via their **Insurance Eligibility Verification and Prior Authorizations** solutions, <Competitor 24>:
  - **Auto-verifies patient's coverage**
  - Scans data from **900 payer websites and verify coverage in real-time**
  - Leverage **database of national payer auth. requirements, which dynamically updates via AI**
  - **Auto-fills payer data and guides users** through prior authorization workflows
  - Uses AI to **determine appropriate payer connection type for submissions**
- **Advertised results:** One of their clients, **Providence Health found $30M in coverage and reduced denial rates** with automated eligibility checks

## <Competitor 22>

- **Overview:** Founded in 2018, <Competitor 22> offers GenAI solutions for healthcare RCM
- **Investors:** Raised $60M in Series B round in 2021 led by *xyz*
- **AI Use Case:** <Comp 22> **Authorization Management** solution powers prior auth with GenAI:
  - **Authorization Advisor:** GenAI assistant that assists specialists with authorization submissions by extracting key information from the EHR, curating clinical documentation, generating evidence-based justifications, and populating patient details
  - **Authorization Automation:** GenAI tool that determines if prior authorization is required, gathers info, reviews and attaches clinical documents, submits request, and checks/documents status
- **Advertised results:** <Competitor 18> cites that their Authorization Management solution led to a **22% reduction in auth work queue volume** at Montage Health

Source: Lit. search; Market participant interviews; Company websites; Press releases

# Potential for EHRs to dis-intermediate some outsourced front-office activities

FRONT OFFICE

PRELIMINARY

## EHRs are investing in developing AI capabilities that may moderately decrease the need for traditional RCM vendors in FO

- **Opportunity to augment front office** with several GenAI/LLM applications (e.g., leveraging conversational AI to reduce manual intervention in patient registration and predictive analytics to optimize prior auth and eligibility)
- **Some EHRs have begun to explore developing AI functionality** that expands on existing automation; differentially benefiting from established integration with provider front office workflows
- **Service providers already leverage a degree of automation** / AI in the front office for patient access, Experian predicting patient payment); some are building out incremental GenAI/LLM capabilities but they are more augmentation vs. transformation
- **Relatively fewer next-gen solutions have emerged** vs. middle and back office areas like coding and denial management
- **Overall, risk of competitive disruption** in front-office workflows is low-moderate, with the **most meaningful from <Comp 27>**, as they improve upstream functionality that could potentially reduce reliance on third party RCM vendors

## Tech-led E2E e.g.: <Comp 8> leverages AI to reduce delays & enhance efficiency

**Prior authorization**

**<Competitor 8>**

**Technology**

*AI automates prior authorization requests, reducing the workload for front-office teams and improving turnaround time (>30% reduction in process time)*

**Integration with EHRs**

*Real-time integration with EHRs enables prior authorization management directly within the patient record, enhancing data flow and minimizing workflow disruptions*

## Commentary

*"**<Comp 27> is building out capabilities** to reduce the manual workflow to be more automated and organic within the EHR. It will make a large impact on the front-end side with sophisticated eligibility verification. This might **eat into what we currently spend with outsourced vendors".***

Director, Revenue Transformation Strategy, Provider ##

*"In front office, prior authorization is one of the top reasons for clinical denials on the back end, **many vendors are focusing their efforts on building prior authorization cycles**. This is one of the reasons Optum bought Change Healthcare"*

Former COO, Provider ##

# ***Examples:*** Services competitors have developed some workflow tools that reduce the degree of human intervention required across key activities

FRONT OFFICE

/NON-EXHAUSTIVE /PRELIMINARY

| | Vendor | Workflow applications |
|---|---|---|
| Services competitors | **Competitor 2** | • **Patient registration:** <Comp 2> Platform is an AI-driven solution designed to streamline patient access providing patients with a digital self-service experience that includes booking, registration, and payment, using AI to reduce errors<br>• **Benefits & Eligibility Verification**: <Comp 2> GenAI models interpret complex payer documents to provide real-time insights on patient eligibility and coverage details, enabling front-office staff to accurately inform patients of co-pays and deductibles at intake<br>• **Referral & Authorization Management**: <Comp 2> uses predictive GenAI to analyze historical data, flagging cases that likely need prior authorization and reducing denials by highlighting cases for proactive review |
| | **Competitor 24** | • **Patient Registration**: Uses GenAI to validate demographic data, identifying potential registration errors that can disrupt downstream workflows. This proactive checking reduces the need for follow-up corrections and increases data accuracy from the start<br>• **Benefits & Eligibility Verification**: Using financial clearance solutions, Experian applies GenAI to combine payer data with patient credit history, giving accurate, predictive out-of-pocket cost estimates and enabling informed discussions with patients about their financial commitment |
| | **Competitor 13** | • **Patient Registration**: Uses GenAI to automatically parse and verify demographic data during intake, ensuring patient profiles are accurate, minimizing errors that impact benefits verification downstream<br>• **Benefits & Eligibility Verification**: Leveraging NLP through AWS; reads payer policies and provides summary of coverage details, making complex eligibility determinations more accurate and reducing manual errors |
| | **Competitor 25** | • **Benefits & Eligibility Verification**: Platform applies GenAI to predict financial responsibility based on historical data, allowing staff to inform patients about estimated costs and benefits coverage upfront<br>• **Referral & Authorization Management**: Platform also uses predictive analytics to flag cases likely to encounter authorization issues, reducing denials and automating portions of the PA process based on historical patterns |
| | **Competitor 26** | • **Benefits & Eligibility Verification**: Using 'Clearance Authorization' and 'InterQual AutoReview', Optum applies GenAI for real-time eligibility checks and out-of-pocket cost estimates, integrating payer rules directly with clinical data to help verify and inform patients of their financial responsibility upfront<br>• **Referral & Authorization Management**: 'Smart Authorization' platform uses NLP to automate prior authorization submissions, extracting clinical information from patient records and submitting requests while keeping track of statuses, minimizing need for human intervention |

Source: Market participant insights; lit search

# **Middle office:** Summary

PRELIMINARY

| | SUMMARY PERSPECTIVES |
|---|---|
| **AI impact on workflow** | • Across the RCM workflow, GenAI will have the **greatest impact on middle-office activities**. Today, several steps are still relatively manual, and tools (e.g., RPA bots, AI/ML models) are only effective on simple claims versus moderate / complex claims where contextual knowledge and judgement are required to perform tasks<br>• In particular, **charge capture and coding are expected to be most impacted** with the ability to **process unstructured data** (e.g., pdfs, conversations, charts, etc.) reducing the need to build highly specific AI/ML models while increasing the accuracy and scope of coding suggestions (particularly for low to moderate complexity claims); claims submission process is relatively automated today<br>• While GenAI-enabled tooling will **increase the efficiency and accuracy** of claim managers (e.g., identifying billable services, assigning codes), impact will continue to be strongest amongst low-medium complexity claims; more sophisticated claim types (e.g., cardiac) will still require significant agent involvement to sense check results |
| **Provider themes** | • **Expect coding to be most impacted** by advancements in GenAI with the opportunity to improve coding accuracy and augment agent processes, particularly with 'co-pilot' tools that will improve accuracy and efficiency<br>• **Plan to continue outsourcing middle office activities** with most recognizing that these processes are too complex to build in-house; some providers (e.g., Vanderbilt) evaluated moving these activities internally but were not able to leverage their data successfully<br>• **Anticipate benefits to be realized over the next 3-5yrs**, recognizing the potential of the technology but appreciating the time and investment required to train models and conviction needed to support deployment given criticality to revenue capture |
| **Competitor dynamics** | • Emerging solutions have largely **focused on addressing the limited scope and accuracy** of current computer assisted coding **(CAC) solutions**; despite some innovation in their underlying tech vs. E2E players, their offerings remain narrow in scope with limited traction<br>• **RCM players have invested to build out CAC capabilities**, either internally or through acquisition, aware that coding efficiency and accuracy is key to their value proposition; some EHR solutions have also started building coding suggestion tools to streamline and improve accuracy across the RCM workflow<br>• While large provider networks acknowledge the innovative capabilities of emerging solutions, the challenge of switching coding providers, need for both software and service solutions, and risks across revenue capture / liability have **dissuaded large networks from broadly embracing emerging solutions** |

# GenAI expected to have the largest impact on coding and charge capture

MIDDLE OFFICE

PRELIMINARY

## Charge capture

- Historical automation focused on **facilitating information gathering** and **workflow management** for claim managers
- **Advancements in GenAI can expand accuracy** with unstructured data
  - E.g., Identify relevant procedures, missing services, or auditing work using clinical note context, expediting charge capture process and improving claim manager efficiency
- **Impact limited by complexity** of procedures that require human-in-the-loop context and validation
  - Completeness of clinical note data is also a common barrier but can be addressed with CDI agent deployment

*"Today, RPA tools will search through the clinical notes and files searching for procedure names. For each name they find, they will pull in the appropriate data from the charge master. This is **great for simple claims, but complex claims can have suggested or uncompleted procedures** which will be pulled in by the bot and require human intervention to filter out. **GenAI tools will have better comprehension** of the context and this can **improve some of the errors** and also **tackle more difficult procedures**"*

Former VP - Operations and Transformation Management, Competitor ##

## Coding & CDI

- Today, **coding assistants facilitate coding of simple claim;** complex claims are mostly manual
  - Simple claims: Outpatient, individual procedures, etc.
  - Complex claims: Inpatient, multiple procedures with unclear diagnosis, services across hospital departments, etc.
- **Scope of coding assistants can be enhanced** w/GenAI with better accuracy and completeness in recommending codes
- While GenAI may **augment agent productivity**, its **impact** will be limited by **sensitivity around coding** errors (direct tie to revenue)
  - Vendors and providers will be careful in how they apply this technology and agent intervention expected to remain key

*"Coding assistants have been slowly getting integrated into the coding process. **They are quite good for simple claims, but really struggle when the claims complexity increases.** Today we manually handle 100% of complex claims. You can think of complex procedures as stories, you need to interpret context to be able to understand what is going on"*

Former Senior Director, Denial Prevention, Management and Revenue Control, Competitor ##

*"While coding assistants have been improving, **providers are still very sensitive to coding errors as it directly impacts their revenue**. I think humans will remain in the loop at least in the near-future"*

Former VP of Global Sales, Competitor ##

## Claims submission

- **RPA largely automates the claims submission** process today (e.g., 837 files sent directly to appropriate payer based on information in the claim)
- Information populated during charge capture and coding steps is **electronically routed** to clearinghouses to finalize audit and send to payers
- **Incremental impact of GenAI likely limited** given the high degree of RPA automation that already exists today; also a relatively smaller portion of the middle office workflow

*"**Claims submission is highly automated today.** Since clearinghouses started appearing in 2016, it became much easier for us to send the claim to them and see if their automated rule-based checks spot anything. After that, it's automatically routed to the right payer based on the information included in the claim"*

Former Associate Operations Manager, Competitor ##

*"Given how much of the claims process is automated today, **there is limited room for GenAI to come in and improve the process**...Claims submission is largely hands off"*

Former VP Operations, Competitor ##

Source: Market participant interviews; Bain analysis

# **Coding | AI-driven changes:** Gen AI impact on coding varies by service type and complexity of treatment

High | Moderate | Low | PRELIMINARY

| Vector | Type | Description | GenAI Impact (near-term) | Commentary |
|---|---|---|---|---|
| By Complexity – Service Type | **Outpatient** | Includes coding for lower-complexity outpatient services like primary care visits, specialists' consultations, lab testing, etc. | • **Moderate scope for autonomous coding in simple services** (like doctor visits and standard medical procedures); however more complex procedures (like outpatient surgery) and changing coding guidelines pose a challenge on automation<br>• **Opportunity for services vendor to increase agent productivity via automation** and share cost benefits with customers | *"With coding, AI is huge as a use case. We're already seeing that with the less complex cases [like] lab, pathology tests, etc."*<br>Senior Director of Revenue Cycle, Revenue Integrity, Customer ## |
| By Complexity – Service Type | **Inpatient (IPD)** | Includes coding for higher-complexity inpatient services like medical care, surgical services, nursing care, diagnostic services, specialized care units | • **Low scope for automation driven by high complexity**; Higher complexity in coding for IPD (vs OPD) driven by higher clinical severity, longer duration of stay & complex coding guidelines for IPD | *"Today, there are a lot of good deep learning models so coding can be done for almost all specialties, but there will still be specific modalities, procedures that will need manual support – the last mile help."*<br>Vice President, Commercial Operations, Competitor ## |
| By Complexity – Therapeutic Area | **Simple TAs** | Includes coding for low complexity treatments like dermatology, psychiatry, pediatrics, general medicine, radiology, etc. | • **High scope for autonomous coding**; Coding requirements and guidelines for simple TAs like radiology is well-defined with lower clinical complexity<br>• **Opportunity for services vendor to increase agent productivity via automation** and share cost benefits with customers | *"Radiology is a great example for an AI use case. There are already many automated coding cases for it, and it's also the most common so can really use AI for that."*<br>Executive, Competitor ## |
| By Complexity – Therapeutic Area | **Complex TAs** | Includes coding for mid to high complexity TAs like orthopedics, cardiovascular, neurology, cancer / oncology, etc. | • **Low scope for autonomous coding driven by high complexity**; Complexity driven by 1) intricacy of procedures (coding complex surgeries req. detail on surgical approach, devices/implants used, anatomical sites involved etc.), and 2) range of ICD-11 codes applicable to each TAs (>500 ICD codes mapped to TAs like cancer, neurology vs <50 codes for dermatology, pediatrics) | *"There still remain complex cases that require manual intervention, like neurology or oncology. It's not common and so there's less for these models to train on."*<br>Vice President, Commercial Operations, Competitor ## |

Source: Secondary research; Market participant interviews; Bain analysis

# **Coding |** Solutions with AI offerings

PRELIMINARY

## Overview

- Medical coding has seen significant innovation in recent years as it is considered to be **one of the most resource intensive parts of the RCM workflow**
- ML and AI can accurately analyze clinical documents to automatically suggest and/or **autonomously code patient encounters reducing (and in some cases, eliminating) human error and workload** in this process
- Example players include:
  - **<Competitor 22>:** Developed an advanced AI model called "Read, Attend, and Code (RAC)" for autonomous medical coding of clinical notes
  - **<Competitor 23>:** Developed proprietary AI engine can automatically read and understand clinical notes to accurately assign medical codes with minimal human intervention; utilizes NLP models and deep learning architectures

***Example players – not exhaustive:***

***Example logos***

## <Competitor 20>

- **Overview:** Founded in 2015, <Competitor 20> is an AI-powered medical coding automation platform
- **Investors:** Major investors include *xyz*
- **AI Use Case:** Leverages AI and NLP to review provider notes and patient charts to assign appropriate CPT, ICD-10 and other codes with a high level of accuracy and efficiency; the platform also leverages AI to audit codes and flag potential denials / underpayments and also auto-submits bills
- **Advertised results:** <Competitor 20> set a benchmark by achieving greater than 95% live coding for emergency medicine encounters; this performance is 2-3x higher than that of any other automation vendor, making them the only vendor that can autonomously code nearly every emergency department chart

## <Competitor 21>

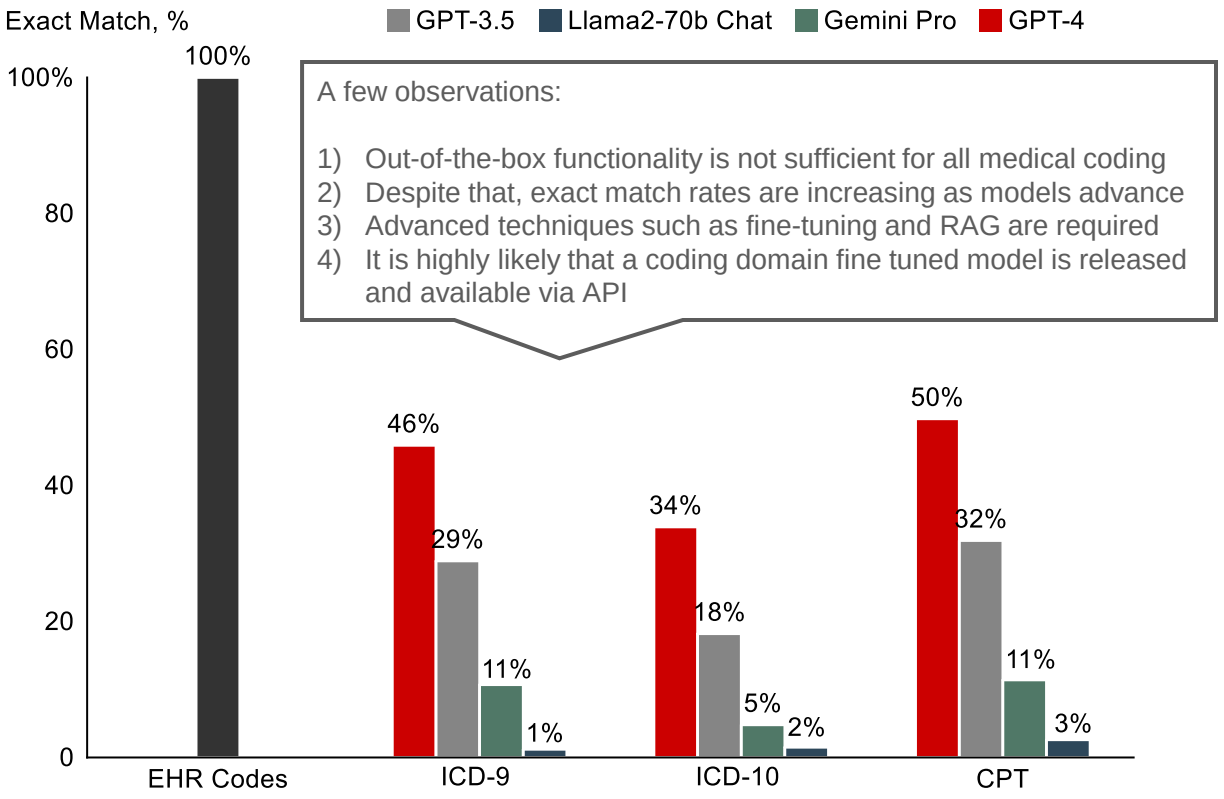
- **Overview:** Founded in 2019, <Competitor 21> is an AI-powered autonomous medical coding platform
- **Investors:** Major investors include *xyz*
- **AI Use Case:** <Competitor 21> uses a combination of ML, deep learning, and NLP to autonomously code patient encounters across various specialties like radiology, pathology, GI, surgery, etc.; the platform continuously learns from and acts upon clinical evidence in EHRs to improve coding accuracy and efficiency over time
- **Advertised results:** On average, providers utilizing the <Competitor 21> platform experience a 60% reduction in coding costs, 70% reduction in claims denials, a 5-week acceleration in time to cash, and improvements in provider satisfaction, quality and compliance, according to the company

Source: Lit. search; Market participant interviews; Company websites; Press releases

# **Coding |** A recent study benchmarking medical code querying showed LLMs like GPT-3.5, GPT-4, Gemini Pro and Llama2-70b Chat are highly error prone

PRELIMINARY

## LLMs are highly error prone and offer ~50% accuracy at best today with GPT-4 having the highest exact match rate




## Commentary

- Study was conducted by faculty and experts at the Icahn School of Medicine at Mount Sinai and Tel Aviv University
- The study extracted **12 months of unique ICD-9, ICD-10, and CPT codes from the Mount Sinai Health System EHR**
- Each LLM was provided with a code description and **prompted to generate a billing code to determine exact match accuracy**
- **GPT-4 had the highest exact match rate (ICD-9: ~46%, ICD-10: ~34%, and CPT: ~50%)** while all models generated CPT and ICD-9-CM codes more accurately than ICD-10-CM codes
- The study noted that despite struggling with exact code generation, the **models often generated codes that were correct or at least conceptually similar to the correct codes**
- The study concludes that although current base LLMs alone are poorly suited for medical code mapping and have an unacceptable lack of precision, **there is an opportunity to mitigate this with fine-tuning, tool use, or retrieval augmented generation (RAG)**

Source: Soroush, Ali, et al. "Large Language Models Are Poor Medical Coders — Benchmarking of Medical Code Querying." NEJM AI, vol. 1, no. 1, 2024

# Emerging competitors are leveraging AI/GenAI to improve CAC platforms

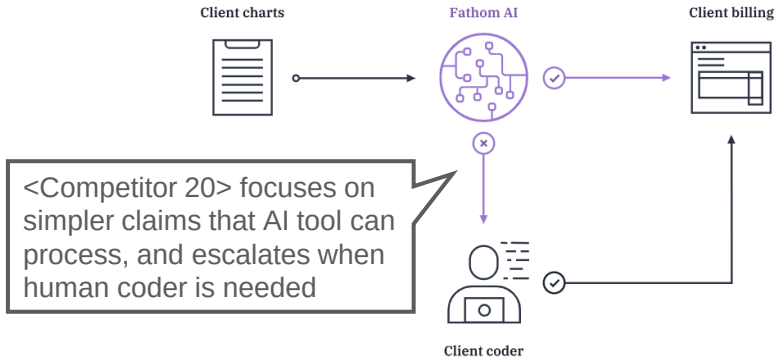
MIDDLE OFFICE

PRELIMINARY

## Despite several emerging tech solutions entering the market, there is limited risk of disruption to traditional RCM in the short-term

- Opportunity to augment middle office primarily in **improving current computer assisted coding (CAC)** tools given current effectiveness is limited to simpler claims
- **AI / GenAI has enabled new point solutions** to emerge improving upon CAC functionality (e.g., <Competitor 20> AI coding platform)
- Traditional RCM companies have started investing in CAC capabilities through:
  - **Development of CAC capabilities in house**
  - **Acquiring new to world competitors**
- Although some point solutions improve upon existing CAC functionality, scope is very narrow and there has been relatively limited traction
  - **Providers are unwilling to risk a potential decrease in coding quality** to trial new solutions
  - **Limited effectiveness of CAC on complex claims** as human intervention is still required and a portion of claims is still routed to traditional RCM players w/offshore comparative advantage
  - **Difficulty of engaging multiple vendors** in middle office as vendors need to be tied into EHR systems (requiring cost and effort) and must interface directly with providers to clarify any ambiguities
- While risk to traditional RCM players remains low, provider expectations on coding efficiency is likely to increase with potential to disrupt unit economics; **investment in CAC capabilities is becoming tables takes for traditional RCM players**

## Example: <Comp 20> AI coding platform




## Commentary

*"There are a lot of startups entering the computer assisted coding space. Everyday I hear of solutions claiming new functionality. For now,* ***large hospital systems continue to look to global RCM players as they require end-to-end support*** *and don't want piecemeal solutions. However,* ***if the large RCM companies don't invest, providers might change their approach.****"*

Former VP Operations, Competitor ##

***"Its expensive and time consuming for a hospital network to switch their RCM provider****. RCM providers are usually tied in directly to a hospital's EHR and integrated into operations.* ***However, if a hospital feels they are not getting the coding accuracy or efficiency*** *they seek, it* ***could trigger*** *them to explore other options."*

Former VP of Global Sales, Competitor ##

Source: Market participant interviews; Literature search

# ***Examples:*** Traditional players are investing to build out internal automated coding capabilities enabled by AI / ML to stay competitive

MIDDLE OFFICE

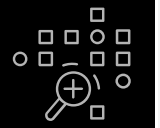
/NON-EXHAUSTIVE /PRELIMINARY

| | Competitor | Workflow applications |
|---|---|---|
| Services competitors | **Competitor 2** | • ***Coding prediction/assistance**:* LLM product (in partnership with Microsoft's Azure Studio), analyzes medical records and predicts physician E/M codes<br>– Current use case is QA, checking against manual coding. Product plans to become a code-assist program, providing physicians with real time coding suggestions<br>• ***Charge capture:*** Solution translates recorded transcription and clinical notes into billing statement for coding review |
| | **Competitor 12** | • ***Coding:*** Workflow platform uses NLP and ML to automate the coding process, assigning codes automatically and scanning manual code reports for errors. It also has an assist functionality that helps with risk adjustment and HEDIS initiatives |
| | **Competitor 19** | • ***Coding**:* Natural language computer-assisted coding provides recommendations that produce higher industry scores. Pinpoints coding risk areas and errors in documentation<br>• ***Claims submission:*** Micro segmentation routes claims with high-risk encounters for further review to prevent denials |
| | **Competitor 3** | • ***Coding:*** Natural language processing extracts info from clinical notes for automated coding of simple claims<br>• ***Claims submission*****:** ML models analyze which scenarios would present coding or charge issues, then accounts are shortlisted / prioritized based on probability of error for review |

Source: Literature search; Market participant interviews

# **Back-office:** Summary

PRELIMINARY

| | SUMMARY PERSPECTIVES |
|---|---|
| **AI impact on workflow**  | • Relative to middle office, **back-office workflows are more automated** with rules-based automation, workflow assistance, and revenue intelligence tools; agent involvement is still required for higher knowledge tasks such as denial investigation and payment follow-ups<br>• Among back-office activities, **GenAI is expected to have the greatest impact on denials and underpayment mgmt. and A/R mgmt.** given its ability to interpret context to better customize its recommendations and improve the accuracy of suggested next steps<br>• GenAI can also unlock **agentic co-pilots such as GenAI powered, bot-led outbound calls** which will be a big step forward vs. todays manual, agent-led process; Agentic co-pilots will be able to take action (e.g., make a call) automatously when there is high-fidelity in next-step recs, reducing agent time on repetitive actions |
| **Provider themes**  | • **Providers agree the biggest GenAI opportunities are in denial mgmt. and A/R mgmt.** believing that automation can significantly streamline appeals, expedite follow-ups, and reduce manual documentation work<br>• **Most see increased value in outsourcing back office** given GenAI led improvements; they expect outsourced vendors to develop their tools faster / better and believe they have limited capabilities to develop this function in-house. However, providers are more open to trying point solutions (vs. middle office)<br>• **High expectations to negotiate savings** with most expecting 26-50% of savings to be passed on; providers anticipate that GenAI-enabled efficiencies should lead to direct cost reductions, especially with contingency-based pricing models common in back office |
| **Competitor dynamics**  | • Traditional RCM companies have focused on **integrating point automation into their back-end processes** to eliminate repetitive, manual tasks and increase agent efficiency; investment has enabled payment posting and patient billing to be largely automated, while impact to denial mgmt. and A/R mgmt. is starting to be seen<br>• Emerging solutions have largely focused on creating point solutions in **denial and underpayment management** and **A/R management**, areas where there is most opportunity with current tech; given the direct impact on providers bottom-line, **provider groups have shown some interest in trailing** these solutions |

# Impact of GenAI largest in document generation and assisted decision-making tools

BACK OFFICE

PRELIMINARY

## Denial and underpay. mgmt.

- Today **focused on agent recommendations** leveraging historical data
- Denial investigation is **still relatively manual**
- Opportunity to **augment productivity** with enhanced recommendations and agentic co-pilots

*"While current appeal templates are a helpful starting point, the denial investigation is still manual. You have to justify the necessity of a procedure and **its a lot of work to write up a one-page appeal** explaining the rationale and including all the necessary facts."*

Former Senior Director, Denial Prevention, Management and Revenue Control, Competitor ##

## Payments posting

## Patient billing

- **Highly automated processes today,** leveraging technologies like OCR and RPA to correctly route payments and generate patient bills
- **EHR systems typically support automation** by linking the RCM directly with the EHR, improving the flow of data across different systems
- **Incremental impact of GenAI likely to be limited**; some opportunity to augment documentation activities with generated summaries of appeal results and payment transactions

*"Both payment posting and patient billing is highly automated today. Usually, a large RCM is working for a large hospital group which almost always has a EHR system like EPIC. **RCMs can then link their work into the EHR to facilitate payment posting and patient billing directly through the application.** RCMs also have tools that can do this if the client doesn't have an EHR, however, for these large groups its really rare"*

Former VP - Operations and Transformation Management, Competitor ##

*"I don't see GenAI having much of an impact in payment posting. In patient billing it could potentially save you time when contacting a patient ahead of charging them, however, most of that process is also automated."*

Former VP Operations, Competitor ##

## A/R mgmt.

## Collections and bad debts

- Existing automation tools focused on **workflow assistance** and **revenue intelligence** / analytics to inform A/R efforts
- **Agent involvement still required** for follow-up execution (e.g., payer status calls) and human judgement required in complex activities (e.g., back-and-forth with patient)
- GenAI-enabled impact focused on **augmentation tools** (e.g., automating payer claim status calls) and **assisted decision making** (e.g., recommended next steps based on claim context)

*"We've **primarily been focused on workflow automation** in A/R management but there's more opportunity to support agents in **prioritization**, **follow-ups,** and **decision making** especially with advancements in generative AI. Currently, propensity to pay tools provide data to agents, however, turning this data into a specific recommendation and better yet, a draft of the next step could help an agent quickly take action with better data and tools in front of them"*

Former Associate Operations Manager, Competitor ##

*"There is opportunity for GenAI to facilitate A/R mgmt. **The better you can analyze data to understand if a patient is going to pay, the better you can focus your efforts**. Humans will still be required for judgement calls like write-off recommendations, but tools can help increase efficiency."*

Former VP of Global Sales, Competitor ##

Source: Market participant interviews; Bain analysis

# **Denials |** Solutions with AI offerings

PRELIMINARY

## Overview

- There has been **increasing investment into innovative tech solutions** automating denials management
- **Players have mainly been leveraging traditional AI and ML** (vs. GenAI) to analyze denial causes, predict and flag at-risk claims, and generate appeal letters
- Example players include:
  - **<Competitor 17> :** Leveraging ML to proactively manage denial management process, incl. cause analysis, patterns tracking, ML-based fixes
  - **<Competitor 9>:** Partnering with Omega to automate 1st level of appeals with LLMs

***Example players – not exhaustive:***

***Example logos***

## <Competitor 8>

- **Overview:** Founded in 2017, <Competitor 8> is a cloud-based RCM software provider
- **Investors:** Major investors include *xyz*
- **AI Use Case:** <Competitor 8> **leverages AI to track and triage denials**; specifically, their Denial + Appeal Manager tool:
  - **Uses AI and predictive analytics to prioritize denials** likely to result in payment and routes to correct team
  - **Leverages AI to auto-generates and submit appeal packages**
  - **Tracks appeals** and proofs of delivery
  - Uses **advanced analytics + root-cause reporting** to support decision-making and denial prevention
- **Results:** Bayada (home health care provider) saw a **72% decrease in denial rates and a 51% drop in average days to payer receipt**, **saved 40 minutes per appeal**, and **recovered $3.7M in 12 months** after using <Competitor 8>'s denial mgmt. software
- **Other examples of notable AI investments:** Recently collaborated with Google to deploy GenAI to simplify payments

## <Competitor 18>

- **Overview:** <Competitor 18> offers cloud-based software across a variety of healthcare services
- **Investors:** They were taken private in 2021 by an **equity consortium led** *xyz*
- **AI Use Case:** Via their **Claims Management Pro and Claims Management Medicare Pro** solution, <Competitor 18>:
  - **Uses AI to identify patterns and root causes**
  - **Automates workflows for audit responses, appeal submissions**, and ADR tracking
  - **Intelligently auto-routes denied claims** to a work queue with correction guidance to minimize days-to-submission
  - Offers a **'click-to-fix' function** to automate claims correction
- **Results:** <Competitor 18> cites that their Management Pro solutions have led to **a 15% increase in collections and 70% increase in workflow efficiency**
- **Other examples of notable AI investments:** Recently partnered with AWS to improve health plan risk score accuracy using AI and ML

Source: Lit. search; Market participant interviews; Company websites; Press releases

# Technology-led solutions are targeting Denials and A/R mgmt., but to date have shown minimal tech advantage vs. service-led RCM vendors

BACK OFFICE

PRELIMINARY

## Tech-led solutions have more potential to disrupt traditional RCM activities as it is easier and less risky to try new solutions

- Today, back-end workflows are **relatively standardized**; degree of automation is not a point of differentiation among traditional RCM players (most already using RPA, etc.,)
- Tech-led players have focused on building out **AI/GenAI native point solutions** that differentiate on specific workflow capabilities
  - **Denial and underpayment management:** AI assisted appeal generation and payer negotiations, automated tracking of submitted appeals
  - **A/R management:** Improved propensity to pay models through unstructured data ingestion, personalized patient outreach, payment timeline prediction
- Service led RCM companies have also been investing in back-end tech to keep up, but some argue tech-led solutions are marginally better in context-specific tasks given their differentiated focus
- Overall, risk of competitive disruption in back-end workflows is higher vs middle office:
  - **Easier to redirect claims**, particularly in A/R management where activities are largely independent
  - **Lower risk to experiment** with point solutions and cost to integrate a vendor is lower
- However, **tech-led solutions are not developed enough to present a meaningful share risk** to traditional RCM vendors, who have remained vigilant of new-to-market capabilities and are investing to keep up

## *Ex:* <Competitor 5> is tech-led vendor developing GenAI enabled point solutions

**Low Balance Resolution service**

**<Competitor 5>**

**Technology**

*ML automates 60% of account activity, reducing work for human team*

**Risk**

*Repeatable process, with clear audit trail*

**Contract Modeling & Recovery Scoring**

*Prioritizes efforts on highest ROI opportunities*

## Commentary

*"For A/R management, **providers are more accepting of point solutions since they can route specific claims towards vendors**. For example, if a vendor is very efficient at collecting small claims, providers may route those claims to that vendor."*

Former VP Operations, Competitor ##

*"The majority of efforts in back-end are trying to pick off opportunities to **improve the denial management and A/R process**. Other portions of the process have been largely automated so the opportunities there are smaller. If you can improve the appeal process or more efficiently collect outstanding A/R balances, **provider groups will be interested as it directly hits their bottom line**."*

Former VP of Global Sales, Competitor ##

Source: Market participant interviews; Literature search

# ***Examples:*** Tech-led competitors have focused on building solutions that augment specific workflow capabilities

BACK OFFICE

/NON-EXHAUSTIVE /PRELIMINARY

| | | Description | Workflow applications |
|---|---|---|---|
| Adjacent / tech competitors | **Competitor 9** | • A healthcare technology company specializing in RCM solutions for front-end and back-end processes (e.g., patient registration, billing, payments, and financial processes) | • ***Denials Management****:* Part of an AI enabled suite, Contract mgmt. and claims submission, which touts an AI backed claim scrubbing software; audits for errors and validates patient information as well as flags predicted potential denials |
| | **Competitor 8** | • Healthcare technology provider leveraging AI to improve efficiency, automate processes, and enhance decision-making across the revenue cycle, from front-end to back-end | • ***Denial and Underpayment Management***: Uses AI to streamline denial management by automating the identification of denial patterns to forecast underpayments and generating tailored appeal letters<br>• ***Patient Billing***: Uses NLP to personalize billing statements and payment reminders |
| | **Competitor 14** | • Patient engagement and billing platform that streamlines payment communication. | • ***Patient Billing***: Uses AI to customize patient billing communication based on patient history and behavior, automates payment reminders, and optimizes billing touchpoints for higher engagement and faster payments |
| | **Competitor 15** | • AI-driven platform for payer transparency and financial operations. | • ***A/R Management and Payment Reconciliation***: AI identifies payer behavior patterns, predicts payment timelines, and improves payer negotiation strategies to streamline payment reconciliation and optimize collections |
| Emerging tech enabled solutions | **Competitor 16** | • Conversational AI for automating administrative workflows in healthcare | • ***Denial and underpayment mgmt. & A/R mgmt***: Automates payer follow-ups and manages routine claim inquiries through conversational AI |

Source: Market participant interviews; Literature search

# <Competitor 2> leverages Gen AI across its various RCM offerings including patient registration, medical coding, claims & denial management, and AR

COMPETITOR PROFILE | END-TO-END | PRELIMINARY

## Company overview

| | |
|---|---|
| **Description** | <Competitor 2> provides end-to-end, technology-enabled RCM and related advisory services for U.S. hospitals, health-systems, physician-groups and other care facilities |
| **Revenue** | $2.25 B (2013) |
| **Employees** | ~30K |
| **Location** | Murray, UT |
| **Ownership** | PE Owned |
| **Key offerings** | **Delivers end-to-end solutions** encompassing every stage of the healthcare revenue cycle. Its core services include:<br>• **Patient Access:** Pre-registration and insurance verification, financial clearance<br>• **Mid-Cycle (Clinical & Coding):** Charge capture and medical coding of clinical services, as well as clinical documentation improvement and coding management<br>• **Billing & Claims:** Submission of claims, billing and follow-up with payers (insurance) to secure reimbursements<br>• **Payment Recovery:** Underpayment identification/recovery and denials management<br>• **Related Solutions:** Offers related RCM technology and consulting, including physician advisory services, reimbursement optimization, and patient experience tools |

Source: Company website, Market participant insights, Lit. search

## Key GenAI/AI functionalities and products

| Module | Feature | Description / Impact |
|---|---|---|
| **Patient Registration** | Patient Intake, access & verification | • Exploring **LLM-based assistants for scheduling and patient registration**. Competitor's roadmap includes **generative AI in call centers and scheduling to streamline patient access**.<br>• **Patient registration:** <Competitor 2> Platform is an AI-driven solution designed to streamline patient access providing patients with a digital self-service experience, using AI to reduce errors<br>• **Benefits & Eligibility Verification**: <Competitor 2> GenAI models interpret complex payer documents to provide real-time insights on patient eligibility and coverage details<br>• **Referral & Authorization Management**: <Competitor 2> uses predictive GenAI to analyze historical data, flagging cases that likely need prior authorization and reducing denials by highlighting cases |
| **Charge capture and Coding** | Medical Coding & Documentation | • Built an application **using Azure OpenAI to analyze physicians' documentation and predict billing codes** (E/M levels), **automating the coding review process**. This improves coding accuracy (compared to limited manual sampling), improving compliance and coding quality |
| **Claims management** | Claims & Payer Follow-Up | • Deployed GenAI solutions summarizing account histories and **status by reading through claim notes and prior interactions** helping grasp each claim's situation and next steps<br>• Exploring more of the routine follow-up actions (checking status, sending info, etc.), accelerating the claims resolution cycle. |
| **Denials management** | Intelligent denial resolution | • Through its partnership, <Competitor 2> is developing **AI solutions to reengineer denials management**. Generative AI can assist in formulating effective appeal letters, identifying denial trends, and automating the correction/resubmission of claims. This improves recovery of denied or underpaid claims with minimal manual intervention |
| | AI-assisted Appeals Engine | • **Using Gen AI to Streamline appeals process** by summarizing the patient medical records and preparing a detailed appeals report, reducing clinician processing time for appeals and faster cash collection |
| **Payments posting, accounts receivable follow-up, and collections** | Accounts Receivable (AR) & Revenue Integrity | • Leverages AI **to analyze large volumes of open accounts and highlight key information or anomalies**. An AI-based summarization bot reviews account data and **produces concise synopses of account notes and AR events**, saving specialists time on each account. Additionally, <Competitor 2> is applying GenAI to enhance its revenue integrity rules, by quickly spotting patterns or errors across accounts |

# <Competitor 4> aims to harness <Company 1> and <Company 2> agentic AI capabilities to automate RCM steps

| AI/ GenAI presence | Low | Low-medium | Medium | Medium-high | High |
|---|---|---|---|---|---|

/ BASED ON PRODUCT RELEASES / PRELIMINARY

| RCM process step | Access | <Company 1> | <Company 2> |
|---|---|---|---|
| **Patient Access & Engagement** | Scheduling and registration run by tech-enabled staff through the Nebula platform, yet still no dedicated conversational-AI front-end for patients | Company currently not active in these early patient-access workflows, instead devoting resources farther downstream | No patient-facing application; intelligent-automation suite intentionally begins later in the claim lifecycle |
| **Eligibility & Prior-Authorization** | Blend of trained staff plus Nebula virtual agents electronically verifies coverage details and proactively secures prior authorizations | The product does not address eligibility or auth | EVA & PAULA software robots fully automate eligibility checks and prior-auth requests; a voice-bot enhancement is slated for 2025 |
| **Patient Financial Engagement** | Traditional mailed/e-statement billing, live call-centre support, and payment-plan set-up, but no AI self-pay portal | No modules touching patient financial conversations or payment workflows | Platform offers no direct patient-payment front end; strategy is to minimize downstream balances through upstream accuracy |
| **Charge Capture & Coding** | Echo autonomous-coding engine suggests CPT/ICD codes while certified coders audit and override when exceptions arise | <Company 1> AI reviews 100 % of charts pre-bill and adds overlooked diagnoses using roughly 2,200 codified clinical rules | CODY digital worker assists and progressively automates code assignment, reporting a 98 % coding-error reduction across pilots |
| **HIM / Clinical Documentation Integrity** | Spotlight ML engine guides CDI and revenue-integrity teams to documentation gaps and severity-of-illness escalations | The same <Company 1> engine functions as a continuous “safety net” for CDI, catching missed specificity | No standalone HIM module |
| **Claims Management & Submission** | Nebula bots prepare, scrub, and e-submit ≈ 70 % of claims, with Overwatch QA yielding 99 % header-field accuracy. | No standalone module | CAM agent constructs, scrubs, and transmits claims autonomously; early adopters cite a 99 % first-pass yield. |
| **Denials & Complex Claims** | Hybrid model: unattended bots fix routine technical denials while clinician experts craft evidence-heavy appeals | <Company 1> drafts physician-backed appeal letters in minutes, sharply reducing manual prep time. | DAN agent triages, corrects, and resubmits denials; voice-AI pilot contacts payers directly, lowering preventable denials by 75% |
| **Payment Posting / Remittance** | EchoPay OCR/ML ingests EOBs and ERAs, posting > 85 % of transactions automatically at 99 %+ field-level accuracy | No remit-processing module | PHIL agent posts remittances with claimed 100% precision, enabling near-real-time cash application and reconciliation. |
| **Accounts-Receivable Follow-Up** | Global AR workforce augmented by status-check bots that shrink aging buckets and clear backlog faster than human-only teams | No direct follow-up module | Digital agents auto-check claim status, generate follow-ups, and predictive analytics flag at-risk receivables |
| **Patient Collections** | In-house staff handle payment plans, charity screening, and agency hand-off | No patient-collections module | Platform focused on preventing collections events; consequently, no dedicated collections tool is provided |

Source: Company website, Lit. search