Strategic adoption trends for automation across the revenue cycle

Amy Raymond

Vice President of Revenue Cycle Operations, AKASA, USA

Amy Raymond is a revenue cycle leader with more than 20 years of experience in healthcare. As head of revenue cycle operations at AKASA, she leads a remote team of healthcare revenue cycle management (RCM) experts located across the country. Raymond was most recently the senior director for programme management in technology implementations at the Advisory Board, where she managed large-scale RCM implementations. She has overseen numerous revenue cycle teams — for health systems large and small — in different settings and specialities. With an interdisciplinary studies degree in health sciences from the University of Texas at Dallas, Raymond's career has focused on leading RCM departments through process improvements and system implementations.

AKASA, 400 Oyster Point Blvd, South San Francisco, CA 94080, USA
Tel: +1 650 209 0358; E-mail: info@akasa.com

Abstract   While many healthcare organisations are automating portions of the revenue cycle today, there is significant variation in the breadth and depth of automation technology deployed. While robotic process automation (RPA) is helpful, it also has limitations that are easily addressed by more advanced technology, namely artificial intelligence (AI) and machine learning (ML). Identifying best practices for the strategic adoption of advanced revenue cycle automation can help organisations leverage lean processes that reduce the cost to collect, promote strategic customer service tactics and redeploy employees to higher-value tasks that improve the overall patient financial experience.

KEYWORDS: revenue cycle management, RCM, revenue cycle automation, artificial intelligence, machine learning, robotic process automation, patient financial experience

INTRODUCTION

Seventy-eight per cent of health systems currently automate their revenue cycle or are in the process of doing so.[1] In fact, automation is cited as the most-needed technology to improve revenue cycle management (RCM).[2] There is, however, significant variation in how healthcare organisations define and use automation in the RCM space. Without industry best practices, healthcare leaders run the risk of adopting a subpar solution that does not meet organisational needs and goals.

When it comes to automation, there are three types of technology to consider: RPA, RPA + AI and RPA + AI + human-in-the-loop. RPA requires you to programme a different bot for every different process. While it works for simple, discrete revenue cycle tasks, it fails when rules change or edge cases appear, like a payer updating its website. And there are always edge cases in the healthcare revenue cycle. More sophisticated RCM automation, on the other hand, leverages AI to provide additional intelligence for situations. It can accommodate outliers and complexities — when a form changes or a pop-up gets added.

The result?

Streamlined RCM workflows lead to the type of lean process improvement healthcare organisations need as they strive to contain

labour costs and reduce the cost to collect — while simultaneously improving the patient financial experience.

Nearly 70 per cent of hospitals and health systems use lean principles for business process improvement, and more than 60 per cent of these organisations also say they employ automation within the revenue cycle to reduce waste and improve efficiency.[3] Advanced RCM automation is by far the leanest approach, and it can be a game changer in today's dynamic healthcare environment.

In addition, as part of the Institute for Healthcare's Triple Aim,[4] healthcare organisations are tasked with reducing the per capita cost of healthcare, including administrative costs associated with RCM. This is not a small number. Billing- and insurance-related activities, for example, cost the US healthcare system approximately US$471 billion in 2012,[5] and that number has likely only increased in the last decade. RCM automation can help reduce these costs.

DEFINING IMPORTANT TERMINOLOGY FOR RCM AUTOMATION

As mentioned previously, an RCM automation strategy may include some combination of RPA, AI, ML or all of these. Although it is often advantageous to have options, it can also be frustrating, because it means healthcare leaders run the risk of implementing an automation solution that does not ultimately accomplish what they need. Sixty per cent of hospital financial leaders, for example, continue to mistakenly consider RPA as a form of AI, even though they are distinct and co-evolving technologies.[6] When RPA repeatedly fails, these leaders may not be prepared financially for fixing the technology.

As healthcare leaders explore ways to leverage true RCM automation, it is important to consider the pros and cons of each option and any hidden costs. Defining important terms helps leaders create a strategic automation approach based on each organisation's own unique needs and goals.

Consider the following three definitions:

- **RPA:** A bot-based form of automation capable of handling linear tasks. Fifty per cent of US healthcare providers will invest in RPA by 2023.[7]
- **AI:** Computer systems that can perform tasks that typically require human intelligence, such as visual perception, speech recognition, decision-making and translation between languages.
- **ML:** A subfield of AI that studies the ability to improve performance based on experience. While ML shares many similarities with AI, it differs because its systems can improve and get modified when exposed to more data. In other words, it can teach itself. The more data available for training the ML algorithms, the better.

When thinking about RPA versus AI- and ML-driven automation, it is helpful to focus on these three crucial differences:

Use cases

RPA is limited to discrete tasks and repetitive processes that never change. For example, an organisation may want to use RPA to copy a patient's Social Security number into multiple fields within the electronic health record (EHR), so that a registrar does not need to retype it. Organisations can also use RPA for tasks like prior authorisation and claim status checks. One caveat, however, is that RPA does not adjust to and learn from continuously changing payer and patient environments. Likewise, organisations can use RPA to download remittance files and upload them into the EHR; however, it cannot correctly decipher or infer payments and adjustments if not explicitly listed on the

remit (things like organisation process and policies that may apply to cash application/ posting), check for any adjustments or finalise the batch. Advanced automation can do all of this — and more. Organisations can use AI and ML to automate most revenue cycle tasks, including highly complex and dynamic workflows.

Build, integrate and deploy
It can take more than a year to build and deploy an RPA bot for one discrete task. In addition, RPA requires a person–heavy deployment to create and update software bots. For every US$1 spent on RPA technology, an additional US$3.41 is spent on costly consultants and support services to maintain that technology.[8] Consultants must programme every step a bot takes, and if something changes, the bot breaks. This is problematic and costly considering how often payers update plans, forms and requirements. In some cases, payer portal changes can break the bot. In addition, EHRs frequently make upgrades without notice, again necessitating the need for bot reprogramming.

Advanced RCM automation performs all tasks within existing systems, relies on a fully remote deployment and can often go live in fewer than six months. In addition, with some RCM automation solutions, changes are noted early on, and organisations can adapt within a few hours. There is no need to submit a ticket and wait for days or weeks for an update.

When you work with an RCM partner that uses a machine-learning-based approach, the automation increases over time as the technology learns, gets smarter and operates more holistically. As the machine gets exposed to more data, its confidence levels increase and it takes on more edge cases and more payers, increasing its total output.

For example, AKASA was able to remove 71.3 per cent of claims from staff queues at a multistate health system in only

a few months. As it learnt the unique tasks of this health system, the algorithm took on more and more accounts with confidence. Building on that work, we then expanded to include more sophisticated workflows like financial clearance and denials management that ended up being an additional ten FTEs' worth of work.

Return on investment
With RPA, return on investment (ROI) diminishes over time owing to hidden costs associated with long–term maintenance. Advanced RCM automation, on the other hand, provides immediate and long-term value owing to its resilience against procedural, technical and regulatory changes.

In the aforementioned multistate health system that AKASA works with, automation has resulted in a US$30M yield increase and 13 per cent decreased days in A/R.

IDENTIFYING HOW RCM AUTOMATION BENEFITS HEALTHCARE ORGANISATIONS
RCM automation is not a new concept. In fact, RPA has been around since the early 2000s. For example, most, if not all, of today's healthcare organisations can automatically assign accounts in an ageing report to the correct work queue. Technically speaking, this is one form of automation, and many EHR vendors offer this capability. Organisations using this type of basic automation, however, have not been able to substantially improve efficiency or reduce headcount. Instead, the industry has gained only incremental improvements.

This leads us to one conclusion: RPA is not the end goal — it is a stepping stone to advanced RCM automation that can handle the entire workflow with very few exceptions that require human intervention. Some could argue that through continuous learning, RCM automation will eventually remove exception queues entirely.

This is the type of automation for which organisations should strive because organisations will derive the maximum benefit from it.

Consider the following seven reasons why healthcare organisations benefit from adopting advanced RCM automation that includes AI and a human–in–the–loop:

1. **Improved RCM staff retention.** Since the pandemic began, the US healthcare sector has lost nearly half a million workers (1 in 5 employees).[9] Advanced RCM automation prevents burnout associated with repetitive, mundane revenue cycle tasks. It also offsets challenges associated with unexpected spikes in patient volumes that can cause stress and anxiety for existing RCM staff. True automation should be able to flex with changing volumes.

2. **Enhanced patient engagement.** With advanced RCM automation, revenue cycle leaders can redeploy talent more effectively, focusing on RCM as a patient advocacy function, rather than as a reactive, back-end process. Automation frees up talent to take on new challenges and projects that require a human touch.

   For example, automating insurance verification gives registrars more opportunities to provide cost estimates in advance, helping protect patients from surprise medical bills. They can also supply financial resources to mitigate bankruptcies caused by medical bills, reduce the amount of debt patients harbour and connect patients with viable financing plans. Registrars are often the first individuals with whom patients interact at your organisation. Having sufficient emotional bandwidth and being able to respond appropriately to patients in their most extreme moments of vulnerability is critical. Advanced RCM automation makes this possible.

   In addition, consider the arduous process of obtaining prior authorisations.

Ninety-three per cent of physicians report care delays associated with prior authorisations, and 82 per cent say patients sometimes abandon treatment owing to the onerous process of obtaining prior authorisation.[10] Thirty-four per cent of physicians report that having to obtain prior authorisation has led to a serious adverse event for a patient in their care. Automating this process can positively affect patient care and outcomes and call attention to problematic cases that require immediate human intervention.

3. **Ensured business continuity.** With the onset of COVID-19, a large majority of RCM staff had to quickly shift to remote work. Advanced RCM automation helped maintain productivity standards throughout the transition. Forty-three per cent of organisations that plan for more work from home use automation to support these efforts.[11] With AI-based RCM automation, organisations have a set of work queues that always get done regardless of any challenges that remote staff face (eg connectivity issues, unanticipated time off due to COVID-19, childcare challenges and more).

4. **Reduced labour costs.** As you are aware, labour represents a significant portion of any healthcare organisation's overall operating expenses, and automation can help. For example, many organisations using automation in their revenue cycle may not need to fill positions as attrition occurs, or they do not need to add new RCM positions as patient volumes increase or as certain RCM tasks become more complex. On the flip side, they also do not need to lay staff off if patient volumes decrease.

   Think of automation as a team of virtual full-time employees (FTEs) — one that you can ramp up and down as your queues ebb and flow. With automation, you can do more work with less staff.

AKASA worked with a multistate health system with nearly US$1B net patient revenue (NPR). Within 18 months of the initial launch, our algorithm was completing more than 19,000 tasks or the equivalent of 19 FTEs' worth of work on a regular and ongoing basis. The leadership team opted not to lay off staff; instead, they deployed them to higher dollar and patient-facing tasks.

5. **Challenged staffing.** One in four healthcare finance leaders report needing to hire more than 20 employees to fully staff their revenue cycle departments.[12] Finding people to fill your openings is difficult right now. With the expansion of remote work, rising hourly wages and changing industries, your potential candidates have more options. And you may lose out. Automation can help fill in the hiring gap for your open recs.

6. **Targeted RCM efforts.** With AI-based automation comes the ability to work a broader set of accounts, allowing RCM teams to focus on targeted collection efforts (eg high-dollar denials) while simultaneously ensuring a greater level of consistency and accuracy. When organisations have an advanced RCM strategy, leaders do not need to make tough decisions on what to prioritise based on staffing constraints.

7. **Limited exposure of personal health information (PHI).** Traditional approaches to RCM are highly manual and require human access to PHI regularly. With advanced RCM automation, much of this information is never viewed by staff members, thereby limiting the 'surface area' for potential attacks.

GETTING STARTED WITH RCM AUTOMATION

When thinking about a strategy for implementing automation in your healthcare operations, it is easy to become overwhelmed. Organisations should not blindly engage an automation vendor without first considering areas where the organisation can obtain the highest ROI.

Start by taking a practical approach in the short term while being ambitious in the long term. Consider the following five critical questions:

1. **What are the immediate challenges that advanced RCM automation can address?** Based on an in-depth, data-driven analysis, AKASA recommends that healthcare leaders prioritise these four areas:
   - Insurance eligibility — AI and ML automatically check eligibility based on insurance card data input.
   - Prior authorisation — AI and ML automatically identify authorisation requirements, initiate authorisation via payer websites and check authorisation status.
   - Follow-up to no payer response and claim status — AI and ML complete follow-up, pull relevant information into the EHR and billing system, prioritise the need for escalation with the payer, and perform critical next steps to accelerate reimbursement.
   - Denial management — AI and ML automatically handle denials that do not need significant human decision-making and interaction, like documentation requests and adjustment processing where appropriate, so RCM staff can focus on more meaningful, higher revenue-generating activities.

As an example, AKASA worked with a large regional health system to automate claim status work. Because we were able to automate and triage more rapidly than human staff would, this organisation saw a 70 per cent decrease in timely filing write-offs in the first five months of deployment.

Some organisations may want to start with only one of these, instead of all four at once, to prove ROI. If that is the case, leaders should ask these questions to help define priority:

- Is there an area within your unique workflows that requires a significant number of staff? Be sure to examine each step in the process (eg denial management versus follow-up versus claim status).
- Is there an area that is typically understaffed, resulting in errors and omissions?
- Does your organisation continuously lose money owing to inconsistent processes? Might it benefit from automation to achieve and maintain consistency and accuracy? For example, if your organisation struggles with requests for additional documentation, it could consider using automation for claim status checks.

2. **What are the long-term business goals for implementing automation?** After an organisation has deployed automation fully in one or more important areas of the revenue cycle, the next step is to focus on expanding to other areas as part of a larger strategy to decrease the cost to collect and mitigate financial risk. Examples of areas ripe for disruption include claim/bill edits, price estimation and patient out-of-pocket responsibility, payment variances (including underpayments), medical necessity checks, charge reconciliation, coding, clinical documentation improvement, credit balance improvement and case management/utilisation review.

3. **What is the change management strategy in the short and long term?** With automation comes new opportunities for existing staff. This may seem obvious; however, in some organisations, staff continue to work as they did before automation. They may feel the need to redo tasks that are automated simply because they are accustomed to old workflows, or they may not trust automation to complete those tasks with accuracy. This redundant approach, however, defeats the purpose of automation. To prevent this from happening, managers must understand new workflows and responsibilities and communicate that information to their staff. What is the overall plan for integrating automation? How will it help the organisation? How will success be measured? And how will existing employees specifically fit into that plan?

Once an organisation implements automation, employees will likely be able to take on new tasks because of the time savings associated with having one or more virtual FTEs. Organisations with advanced automation based on AI and human-in-the-loop can often reduce the time it takes to complete certain tasks from minutes to seconds.[13]

For example, prior authorisation typically takes a staff member on average 12 minutes and 7 seconds, based on AKASA's internal benchmarking data. The right automation can reduce that time to mere seconds. This could be particularly helpful in physician practices where physicians and their staff spend an average of 13 hours each week on prior authorisations.[14] Two in five physicians have staff who work exclusively on prior authorisation. And physicians that do not have dedicated staff often have to carve out time from clinicians and other patient-facing roles in the office, like the front desk.

If organisations do not take the time to identify how they can maximise existing FTEs, they will not realise the full value of revenue cycle automation. In addition, they must incrementally revisit this question as the automation becomes more sophisticated and takes on an enlarged scope of work.

4. **How will the organisation create a clear governance structure?**

Governance structure is extremely important to the automation process because it establishes a path for decision-making in a mutually agreed upon way across the organisation. An established governance structure will support quick and effective decision-making, give the automation vendor clear expectations of who is in charge of the project, provide timely implementation, and ensure the project teams know their responsibilities and are held accountable.

The first step is to identify an executive sponsor, as well as a core project team and subject matter experts who are brought into the loop as needed.

The executive sponsor is less involved in the day-to-day work and more involved in helping remove obstacles that stand in the way of overall project success. They may be in charge of signing contracts and providing overall oversight on the project status and success. For example, this could be the VP of finance, VP of revenue cycle, or CFO.

The project team includes individuals who will propel the project forward. There should be a lead to keep everything organised, to make sure access is granted and data is provided, and to schedule forums for project interactions. Also to be included is a director-level business owner responsible for the success of the product and actual line-level implementation. A team should also be made up of leaders from other departments with input into the process because they either oversee a portion of the project or have to provide critical information and access (like IT). A subject matter expert at the analyst level should round out the team so that they can go deep into the steps to demo and validate the work during the build.

In large, integrated health systems it may also be necessary to create an executive-level steering committee to make sure goals and incentives are aligned across settings.

5. **How will the organisation set goals and track progress?**

As technology and automation continue to play a larger role in RCM, organisations can, and should, re-evaluate long-standing metrics for success. Measuring success is especially important as automation begins, as it is the only way to know if meaningful progress is being made. Having 5,000 things automated but a team that is simply checking or redoing the same work of that automation does you no good. Tracking progress helps you to see if automation and your team are working in tandem and not at odds with each other.

Proper measurement and tracking of progress mean adjusting key performance indicators (KPI). KPIs like productivity should be reconsidered and lowered. With automation knocking out claims status, for example, your people can work on successfully resolving complex denials in the back office or filling more patient-facing roles in the front end. This more challenging work will take longer to complete, and productivity will thus look different from the way it did before automation.

You will also want to look at queue counts as a form of productivity and efficiency. Too often revenue leaders focus on the granular activities, not the overall workflow. With automation in place, workflow efficiency as a whole should change, meaning queue counts should go down. Failing to see the wood for the trees is a sure-fire way to misjudge your department's efficiency post automation.

CHOOSING AN AUTOMATION VENDOR

As leaders look across a crowded field of automation technology vendors, they are left with the challenge of identifying a solution that brings meaningful and innovative AI and ML approaches to automation revenue cycle operations. Consider the following ten questions:

1. **How can the vendor support the organisation in its RCM strategy?** The vendor should have clearly outlined processes and project plans in place to support organisations as they implement mature RCM automation.

2. **How flexible is the vendor?** It should be able to take variables and outliers into account and build an ML and AI solution that can handle any scenario. It should also be able to shift priorities quickly. For example, during the COVID-19 pandemic, many organisations quickly realised they needed help with Medicare eligibility and the resulting claim edits. This was because very many patients came for vaccine appointments without their insurance cards or had not been to the health system since before 1 January 2020, when Medicare adopted a new format for member identification. Can the vendor scale and quickly adapt to these types of demands?

3. **What makes the vendor an expert in AI and ML?** For example, how many AI and ML experts does the vendor employ? Do these employees contribute to scientific, academic or peer-reviewed journals? Do they have master's degrees and PhDs? Does the vendor also employ experts with direct RCM experience, as well as consulting, technology, implementation and project management experience?

4. **What is the deployment process and timeline?** Can the solution be deployed remotely, or does it require on-site consultants? Will the vendor need to shadow your staff in person, or is there a remote option? Does the vendor implementation plan align with your own processes and what your organisation can support? The vendor should also set clear expectations on a timeline for implementation. There should be clear expectations of what is needed from your staff from a time perspective so that you can budget your resources appropriately.

5. **Is the solution purpose-built or general-purpose?** More specifically, was the solution intentionally designed from the ground up for healthcare revenue cycle options, or was it an add-on to other purposes, such as general corporate accounting and other back-office tasks? More than 90 per cent of CFOs and revenue cycle leaders nationwide say automation tools should be purpose-built for healthcare RCM.[15]

6. **Does the vendor offer pricing transparency?** Does the vendor have a clear attribution model so that the organisation can measure precisely how much the automation solution impacts certain metrics? Are there clear terms if the vendor fails to deliver?

7. **What are the vendor's security certifications and auditing procedures?** Priority should be given to solutions that are compliant with HITRUST and SOC2, as well as vendors that perform regular internal audits and engage third-party auditors as well. Do they already have vendor agreements and partnerships with the large EHRs?

8. **What type of maintenance is required?** Payers constantly update plans, claim forms, prior authorisation and other requirements. How will the solution adapt to these changes? Will it occur automatically, or will the organisation or vendor need to devote time, talent and financial resources to reprogramming bots and updating code? What downtime is estimated in these processes? Is there a service-level agreement (SLA) in place

for updates to the automation if needed? It is important to know upfront to avoid surprises that cause workflows to go unworked or a need to allocate other resources to avoid an impact on collections.

9. **What is the integration with the organisation's EHR?** How does the solution interact with the existing EHR and billing systems? How will upgrades or changes to the EHR impact your RCM automation solution? What type of notice does the vendor require? What is the SLA around these updates or estimated time to update the automation?

10. **How will the vendor ensure ongoing monitoring?** Will the vendor run routine quality checks to ensure the solution is performing as expected, or will that be the responsibility of the organisation's own RCM team and IT department? If it is run by the vendor, what percentage is reviewed, and what threshold of accuracy is acceptable?

CONCLUSION

Looking ahead, RCM automation will continue to expand in terms of the scope and complexity of tasks it can address. Likewise, healthcare organisations will pursue automation with more urgency and greater purpose. Financial leaders will increasingly distinguish between automation solutions that compromise and under-deliver versus those that truly enhance performance and efficiency. When implemented correctly, revenue cycle automation should reduce labour costs, increase accuracy and improve patient satisfaction and engagement. Organisations should take the time to identify which automation strategy works best and engage with vendors to understand what they have to offer.

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