

Revolutionizing Value-Based Care Medicine Through Advanced Automation & Predictive Analytics in Revenue Cycle Management (RCM)

Hamid A. Khan, MD

American Microsurgical Orthoplastic Society, CMO Strategia Project Management, USA

Abstract:

Revenue Cycle Management (RCM) is the heartbeat of financial operations for healthcare institutions across the United States and without an efficacious process in place, these institutions cannot survive. For nearly a century, physicians throughout America have depended on insurance reimbursements as the primary mechanism for financial compensation. However, the landscape of healthcare reimbursement has undergone significant transformation over time and as reimbursements continue to decrease and the costs associated with running health care facilities continue to increase, there must be a solution for overcoming this imbalance.

This white paper delves into the pivotal role of RCM. From the inception of fee-for-service models to the modern-day shift towards value-based care, healthcare institutions and providers have grappled with adapting their revenue cycle strategies to align with evolving reimbursement paradigms. This transition from traditional fee-for-service to value-based care emphasizes the importance of delivering high-quality care efficiently. However, this is only half of the battle and ensuring that this can be done resourcefully by keeping costs under control is what necessitates a fundamental rethinking of revenue cycle management practices.

Furthermore, this paper reveals the success of advanced automation and predictive analytics, particularly with the integration of Jorie AI, in revolutionizing RCM processes. Jorie AI, with its sophisticated algorithms and machine learning capabilities is a true end-to-end technological solution that offers healthcare institutions and providers unparalleled insights into revenue cycle performance and practice, thus enabling proactive identification of revenue leakage, enhancements of revenue forecasting accuracy, and a complete streamlining of billing processes. As you will learn throughout this paper, when harnessing the power of Jorie AI, healthcare systems and providers can optimize revenue capture and mitigate financial risks, thereby overcoming the complexities of value-based reimbursement models with far greater agility and precision than ever before.

Through a comprehensive examination of the crossroads between value-based care, revenue cycle management, and technological innovation, this white paper offers insights into how healthcare organizations and providers are able to leverage advanced automation and predictive analytics, empowered by Jorie AI, to drive sustainable financial performance while delivering superior patient outcomes.

Key Words: Revenue Cycle Management (RCM); Artificial Intelligence (AI); Jorie AI; Advanced Automation; Value-based-care; Healthcare reimbursement; Predictive analytics

Abbreviations: (RCM); Revenue Cycle Management, (AI); Artificial Intelligence, (EHR); Electronic Health Records, (KPIs); Key Performance Indicators, (ASCs); Ambulatory Surgical Centers

I. Introduction

As medical treatments and diagnostic techniques continue to evolve, there is an undeniable link between these advancements and the need for technology that enables physicians and healthcare institutions to achieve greater returns from delivering advanced care. In today's dynamic healthcare setting, the transition from fee-for-service to value-based care has led to a fundamental shift in the approach of healthcare delivery and overall financial

management. The practice of value-based care medicine prioritizes improving patient outcomes while managing costs, highlighting the vital role of efficient Revenue Cycle Management (RCM) within healthcare institutions.¹ Jorie AI has pioneered a groundbreaking technology that streamlines this entire process from start to finish, liberating practitioners and healthcare organizations from reliance on outdated RCM methods. Instead, they can leverage state-of-

the-art RCM technology, saving time and ensuring that rightful revenue is accurately earned, claimed and in some instances, reclaimed.

Serving as a foundation of financial well-being, RCM is crucial for the economic stability of healthcare establishments, aiding in billing error reductions, cash flow supervision, and safeguarding revenue accuracy.^{2,3} However, several issues, including outdated RCM practices, can impede this process and hinder the rightful attainment of monetary returns.³⁻⁵ These obstacles are the very reason why Jorie AI was developed.

Jorie AI's role in RCM involves overseeing the entire spectrum of financial processes during a patient's experience, spanning from appointment scheduling to patient encounter to claim processing, documentation, and reimbursement, it is a true 'end-to-end' revenue cycle solution that can be implemented into any of the existing electronic health record (EHR) systems used today and is a technology dedicated to hospitals, physician groups, and ambulatory surgery centers (ASC's). Through the development of state-of-the-art AI platforms, bot technology and learned algorithms, Jorie AI combines administrative and clinical tasks for seamless streamline billing, enhanced revenue collection, and an overall reduction in financial losses.

Today, in an environment where reimbursement rates are increasingly tied to patient outcomes and quality of care, effective and reliable revenue management is vital for organizational sustainability and overall success. It is no longer enough to only conduct timely and accurate billing but there must be oversight which ensures that these payments are being paid out on time, in full, and not at risk for claw backs. Through the practice of utilizing state-of-the-

art RCM technology, there is not only assurance of fair compensation for services performed but also a clear enhancement in patient satisfaction via the reduction of billing discrepancies and delays.

In the face of the complexities inherent in modern day healthcare, Jorie AI has undergone the rigorous task of incorporating technological advancements such as Artificial Intelligence (AI) and predictive analytics to reshape the current landscape of RCM execution. Jorie AI-powered solutions influence machine learning algorithms to analyze extensive datasets, identify patterns, and forecast revenue trends. By automating routine tasks and providing actionable insights, Jorie AI empowers healthcare institutions to optimize revenue cycles, enhance operational efficiency, and bolster financial performance all while ensuring compliance and patient satisfaction are also being met.

As you will learn throughout this paper, predictive analytics, a subset of AI, further augments RCM by projecting revenue outcomes based on historical data and predictive modeling. By analyzing potential revenue holdups and investigating areas for improvement, predictive analytics allows for proactive decision-making and strategic resource allocation.⁶ This proactive approach not only maximizes the overall revenue potential, but it also mitigates revenue loss attributable to inefficiencies or missed opportunities. RCM stands as a basis of healthcare finance, safeguarding the financial health of organizations amidst the shift toward value-based care. As Jorie AI utilizes its proven and revolutionary artificial intelligence and predictive analytics continue to transform the healthcare landscape, the integration into RCM processes promises to drive efficiency, elevate revenue integrity, and ultimately enhance the delivery of unprecedented, high-quality patient care.

II. Understanding Revenue Cycle Management (RCM)

Revenue cycle management, more commonly referred to as 'RCM', serves as the heartbeat of financial operations in healthcare institutions. The entire concept ensures the efficient processing of patient services into revenue and encompasses a series of interconnected processes that are aimed at optimizing revenue capture while also minimizing billing delays and errors.^{2-5,7-9} However, traditional RCM practices face challenges such as rising costs, increasing regulatory complications, and the growing demand for transparency and patient engagement. Furthermore, challenges stemming from human error, particularly in data input during the submission and processing of billing codes and claims, have proven to pose significant risks to

reputation, compliance, time management and overall financial stability.⁴ To address these challenges and adapt to the changing healthcare framework, healthcare organizations are increasingly turning to technological solutions, particularly Artificial Intelligence (AI), to revolutionize RCM processes.

The revenue cycle in healthcare comprises several key components, each essential for the efficient management of financial operations. Jorie AI has developed and mapped out a proven 8-step method to clearly depict these components and ensure that all necessary aspects of this process are not being overlooked.

Key Components of The Revenue Cycle:

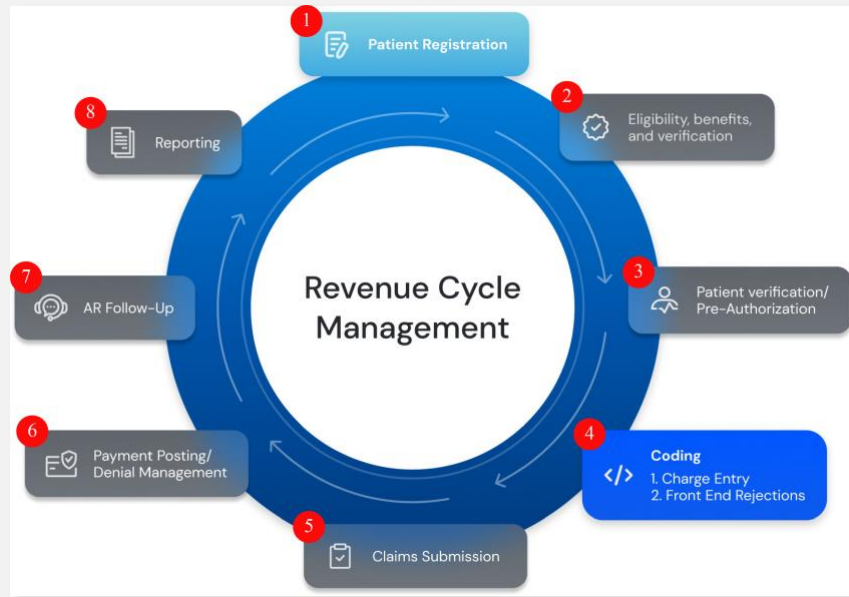


Figure 1: Jorie AI's 8-Step RCM process

1. Patient Registration: Jorie AI's revenue cycle begins with patient registration, where Jorie AI utilizes the appropriate patient demographic and insurance information to initiate the billing process.

2. Eligibility, Benefits and Verification: Jorie AI will automatically verify patients' insurance coverage and eligibility for services to ensure accurate billing and reimbursement.

3. Patient Verification/ Pre- Authorization: Jorie AI conducts an additional verification of patient demographic and insurance details. The technology then works to acquire pre-authorization of insurance approval prior to specific treatments, thus reducing claim denials and ensuring reimbursement.

4. Coding (Charge Entry & Front-End Rejections): Jorie AI uses its trained medical coding library to translate diagnoses, procedures, and services into universal alphanumeric codes for billing and reimbursement. This involves capturing and documenting all billable services provided to patients, including procedures, treatments, and supplies, while also ensuring the lowest likelihood for a rejection to be encountered based on the valid inputs that are submitted.

5. Claims Submission: Once services are documented and coded, Jorie AI will automatically ensure that claims are submitted to insurance payers for reimbursement.

6. Payment Posting/Denial Management: Payments received from insurance payers and patients are automatically recorded by Jorie AI and posted to the appropriate accounts. Denied claims are automatically investigated, appealed, and resubmitted to ensure maximum reimbursement.

7. AR Follow-Up: Jorie AI automatically flags unpaid claims, identifies reasons for denials or delayed payments and will help create solutions to resolve any outstanding balances.

8. Reporting: Jorie AI's reporting refers to the process of analyzing and presenting key financial and operational data within healthcare organizations. These reports provide critical insights into various aspects of the revenue cycle, including billing efficiency, payment trends, denial rates, reimbursement patterns and more. This allows for healthcare institutions to not only track performance metrics but also identify areas for improvement, allowing for these organizations to achieve the highest returns possible.

The illustration above not only outlines the components of RCM but also emphasizes how adopting outdated or improper RCM practices can inevitably lead to facing challenges. These challenges are crucial in distinguishing

financially successful physicians and healthcare organizations from their less successful counterparts, with the most commonly encountered barriers detailed below.

Commonly Encountered RCM Challenges

<u>RCM BARRIER</u>	<u>DESCRIPTION</u>
Manual Processes	Many RCM tasks, such as data entry, coding, and claims processing, are still performed manually, leading to errors, delays, and inefficiencies.
Billing Errors	Inaccurate coding, billing discrepancies, and incomplete documentation, all contribute to claim denials and revenue loss.
Rising Costs	Healthcare costs undoubtably continue to rise, putting immense pressure on healthcare organizations to maximize revenue while containing expenses.
Regulatory Complexity	Maintaining compliance with ever-changing healthcare regulations and payer requirements adds extra levels of complexity to outdated RCM processes.
Fragmented Systems	Legacy RCM systems and disparate data sources hinder interoperability and data exchange, making it extremely challenging to streamline processes and access actionable insights without implementing advanced technologies.

Recognizing these challenges, Jorie AI has effectively developed a complete end-to-end automated process that addresses and resolves traditional RCM practices which currently hinder revenue optimization and operational efficiency. True AI technology holds immense promise in transforming RCM processes and overcoming traditional

challenges and by leveraging machine learning algorithms, natural language processing, and predictive analytics, Jorie AI solutions are able to automate routine tasks, improve accuracy, and optimize revenue cycles. Key applications that are specific to Jorie AI in RCM have been provided in the following table.

Key Applications Specific to Jorie AI

<u>KEY APPLICATION</u>	<u>DESCRIPTION</u>
Automated Coding and Documentation	Jorie AI-powered coding solutions analyze clinical documentation to generate accurate codes, reducing coding errors and improving reimbursement.
Predictive Analytics	Jorie AI predictive analytics algorithms analyze historical data to forecast revenue trends, identify potential denials, and optimize resource allocation.
Claims Processing	Jorie AI algorithms automate claims processing, identify errors, and flag claims at risk of denial before submission, improving first-pass claim acceptance rates.
Denial Prediction and Prevention	Jorie AI bots analyze claim data to predict the likelihood of claim denials and proactively address issues to prevent denials from occurring.
Patient Engagement	Jorie AI-driven patient engagement platforms have the capabilities of personalizing billing communications and facilitate payment plans to improve patient satisfaction and collections.

As healthcare organizations attempt to navigate the evolving landscape of value-based care and increasing financial pressures, the transformation of RCM through AI technology is paramount. By streamlining processes, optimizing revenue capture, and enhancing operational efficiency, Jorie AI-powered RCM solutions have the proven potential to drive financial performance, improve both physician & patient outcomes, and ensure the long-term sustainability of healthcare organizations across all

specialties. At this point in time, embracing AI technology in RCM is a growing necessity for healthcare institutions seeking to thrive in the era of value-based care medicine.

The chart below offers a true side-by-side comparison of the major differences seen between the outdated manual practice of RCM and the revolutionary outcomes carried out by the Jorie AI platform.

Traditional RCM Practices VS. Jorie AI's Automated RCM Platform

Manual Process	Jorie AI RPA Platform
~ 10 claims per hour	~ 60 claims per hour
40 hours a week (unless overtime is being worked)	Works 24/7 – 365 days a year
Prone to human errors	~100% accuracy (based on the data provided to Jorie AI)
Requires several months of training	~ 4 weeks implementation
Employee turnover = Reeducating required	Knowledge embedded permanently
Difficult to multitask – locations/software	Ability to simultaneously work across all locations/systems

After assessing the major differences established in the chart above, there is an undeniable difference between the two methods for RCM practices. By utilizing Jorie AI, automated RCM practices offer a multitude of advantages over manual methods, significantly transforming the efficiency and effectiveness of financial operations within healthcare organizations. Of the many key benefits, one of the most advantageous is the reduction of errors inherent in manual data entry, coding, and claims processing. The Jorie AI automation process minimizes transcription mistakes while also ensuring compliance with coding regulations, thereby enhancing accuracy, and reducing the risk of claim denials or delays. Additionally, Jorie AI's automated RCM streamlines repetitive tasks, such as eligibility verification, claims submission, denial re-submissions and payment posting, further accelerating the organization's revenue cycle. By automating these processes, healthcare providers are able to allocate resources more efficiently and effectively so that staff productivity can be utilized in other aspects of the medical practice.

Furthermore, Jorie AI seamlessly integrates with any of the available electronic health record (EHR) systems, practice management software, and payer portals. This integration facilitates real-time exchange of patient information, treatment data, and billing details, eliminating time consuming and redundant data entry by staff. In addition to this, the automation expedites billing and coding processes at speeds that can never be matched by humans, ensuring prompt submission of claims to

payers. By automating charge capture and coding validation, healthcare organizations can accelerate reimbursements, ultimately improving cash flow.

As mentioned previously, the Jorie AI automated RCM platform also offers around the clock robust reporting and analytics capabilities, providing on-demand insights into key performance indicators (KPIs) such as denial rates, days in accounts receivable and collections efficiency. This aspect of real-time monitoring, as represented in the user dashboards that will be portrayed later in this paper, progressively identifies trends, pinpoints revenue leakages, and offers aid for the implementation of corrective actions to be taken swiftly. However, beyond all of this, the Jorie AI automation assists healthcare organizations with staying compliant as the evolving regulatory requirements and coding standards continue to change over time, this aspect of the technology is one that truly mitigates the risk of non-compliance penalties and audits that healthcare organizations often unintentionally encounter and dread.

Outside operational efficiency and regulatory compliance, Jorie AI automation enhances patient engagement by providing transparent billing processes, accurate cost estimates, and in some instances creates convenient payment options based on the provider's policies. By delivering clear and concise billing statements and facilitating electronic communication, Jorie AI cultivates trust and satisfaction among patients, ultimately improving the overall patient experience.

III. The Need For Predictive Analytics in RCM

After years of research and development, it is undeniably evident that the integration of predictive analytics emerges as an indispensable tool. Predominantly, predictive analytics plays a vital role in proactively identifying and mitigating revenue leakages and denials, a persistent challenge faced by healthcare providers across the country. By leveraging advanced algorithms and historical data, predictive analytics enables organizations to predict potential issues in the revenue cycle, thereby minimizing financial losses and optimizing revenue streams across the board.

Jorie AI promotes a paradigm shift towards heightened operational efficiency within healthcare institutions via predictive analytics and does so through predictive modeling and data-driven insights, enabling organizations to streamline administrative processes, allocate resources more effectively, and optimize workflows. Consequently, this not only strengthens the financial wellbeing of the healthcare organization, but it also develops a culture of operational excellence, ultimately enhancing overall performance, reliability, and reputation.

Beyond obvious financial benefits, predictive analytics holds the promise of significantly impacting patient experience and satisfaction. By analyzing patient data and behavior patterns, healthcare providers are able to deliver a more personalized practice of care, anticipate patient

needs, and preemptively address potential issues, thereby promoting a more patient-centric approach to positive healthcare delivery. This aspect not only develops greater trust and loyalty, but it also has the potential to contribute to improved health outcomes and long-term patient engagement, which is crucial for practitioners as many patients tend to jump from provider to provider due to a lack of trust and or satisfaction.

Furthermore, the integration of predictive analytics within RCM strategies helps to equip healthcare organizations with the ability to adapt to the ever-evolving regulatory landscape before it's too late. With healthcare regulations undergoing frequent revisions and updates, predictive analytics serves as the proactive tool in ensuring compliance and mitigating risks associated with non-compliance. Jorie AI has coded its technology to be able to continuously analyze regulatory trends and forecast potential impacts, allowing for organizations to tactically adjust their policies and procedures as required, thus maintaining regulatory adherence, and safeguarding financial integrity, sooner rather than later. As healthcare organizations across America try and navigate the complexities of today's modern healthcare biome, the strategic integration of Jorie AI emerges as a bedrock for driving sustainable growth and superior patient outcomes.

IV. Case Study

In this ever-evolving landscape of healthcare, efficient RCM remains imperative for the financial viability and operational success of healthcare organizations. Among these many institutions, one notable healthcare organization struggled with persistent challenges in optimizing their RCM processes. Despite numerous efforts, they struggled with escalating denials, claw backs, and mounting patient dissatisfaction, all of which posed significant obstacles to their financial well-being and overall operational efficiency.

Like most of their counterparts, healthcare organizations in general encounter several challenges in terms of RCM. These challenges significantly impact financial health and operational efficiency. Complexity in billing and reimbursement processes, compounded by evolving regulatory requirements and transitioning to value-based care models, poses a significant hurdle that continues to be witnessed. Manual RCM processes are error-prone and time-consuming and fragmented systems or interoperability issues further exacerbate inefficiencies, hindering data exchange and integration between EHRs and billing platforms.

Taking this into account and adding the endless burdens of rising patient financial responsibilities, complexities of billing information and navigating through collections, there are undeniable strains that arise between patient-provider relationships.

Overcoming these challenges requires the adaptation of efficient RCM practices, leveraging technology solutions, and implementing proactive strategies to optimize revenue capture and ensure financial sustainability within healthcare organizations.

The following case study embarks on a compelling exploration of the transformative journey undertaken by this very distinguished healthcare organization. While maintaining confidentiality, it is important to pay close attention to this institution's struggles and subsequent triumphs, shedding light on the catalytic role played by the integration of Jorie AI's cutting-edge technology in reshaping their RCM landscape. Through a strategic deployment of advanced automation and predictive analytics, this organization experienced a profound transformation in their financial performance, alongside noteworthy reductions in denials, claw backs, and patient discontent.

Client Dashboard

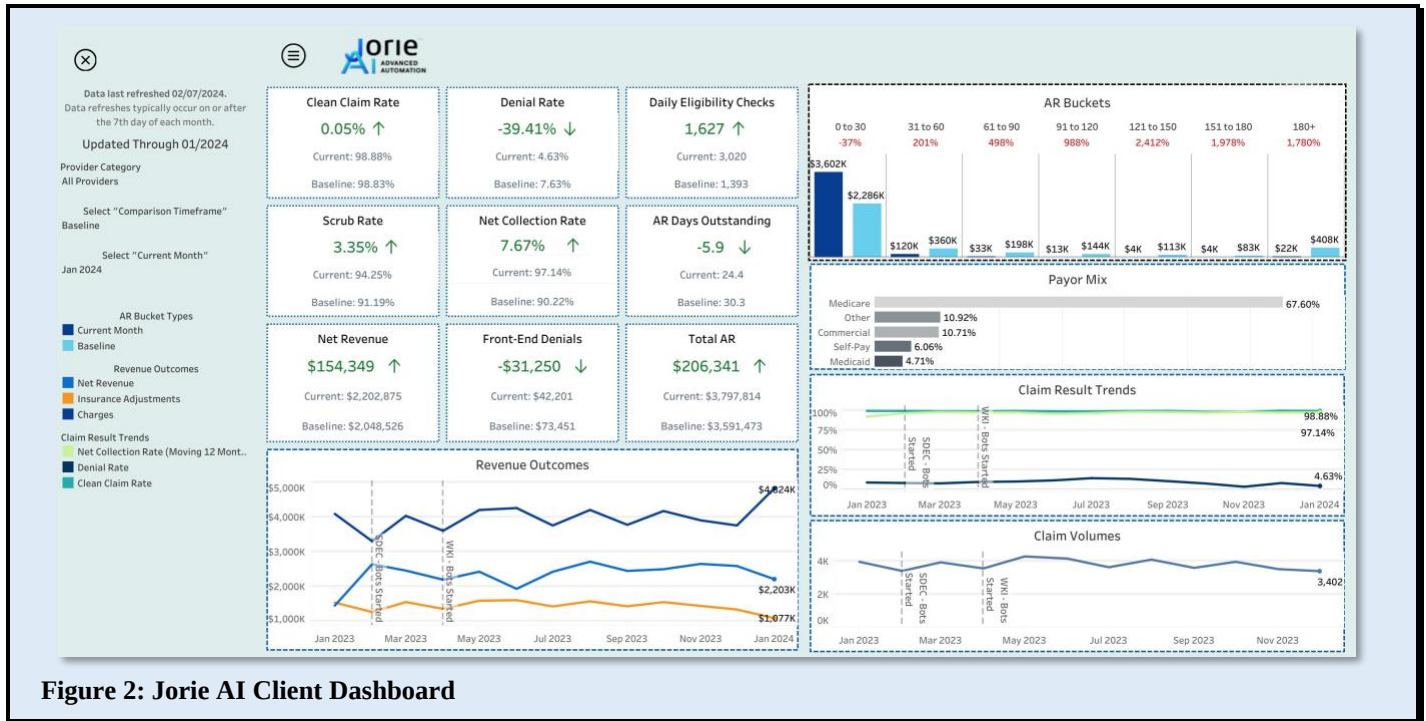


Figure 2: Jorie AI Client Dashboard

As a Jorie AI client, users have access to dashboards like the one depicted above in figure 2. These dashboards give real time data and cover all aspects of the 8-step RCM cycle that was previously described. The dashboard above is specific to claims, denials, eligibility, collections, net revenue and more. As you can see from the data that is

represented in the dashboard, this healthcare institution was able to benefit from Jorie AI in all aspects of RCM practice. Over the course of only one year, denial rates decreased by nearly 40 percent, all aspects of collected revenue saw increases (see image below) and daily eligibility checks increased by an amount that would otherwise be unattainable by humans in a typical practice setting.

Month-Year	Charges	Insurance Adjustments	Net Revenue
Jan-23	\$4,087,875	\$1,526,570	\$1,440,862
Feb-23	\$3,298,072	\$1,255,791	\$2,634,319
Feb-23	\$3,298,072	\$1,255,791	\$2,634,319
Mar-23	\$4,030,366	\$1,542,134	\$2,449,930
Apr-23	\$3,600,621	\$1,345,399	\$2,188,018
May-23	\$4,199,783	\$1,583,927	\$2,418,535
Jun-23	\$4,256,188	\$1,599,133	\$1,919,986
Jul-23	\$3,752,535	\$1,415,401	\$2,417,213
Aug-23	\$4,201,204	\$1,565,084	\$2,701,611
Sep-23	\$3,766,268	\$1,421,461	\$2,439,011
Oct-23	\$4,174,968	\$1,540,298	\$2,484,865
Nov-23	\$3,901,596	\$1,437,581	\$2,623,072
Dec-23	\$3,770,463	\$1,366,481	\$2,562,881

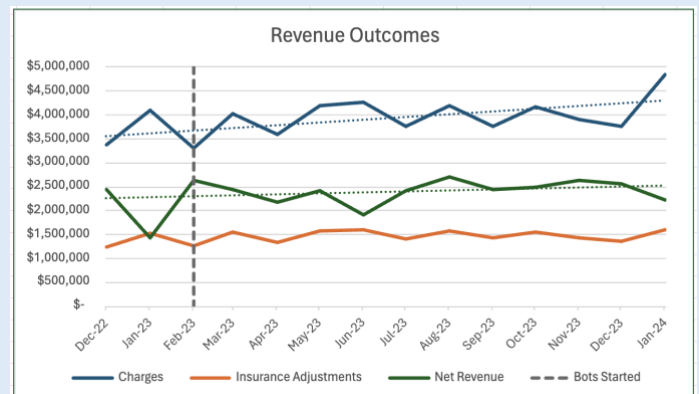


Figure 3: Annual Revenue Outcomes for Jorie Client

Figure 3 takes a closer look at net revenue over the course of a year and clearly portrays the need for automated RCM practices across healthcare institutions in America. By following the trend lines on the graph provided in figure 3, it's clear that as soon as the Jorie AI bots were implemented, positive changes began taking place. As this client continues to utilize Jorie AI, the platform will endlessly improve RCM outcomes, as it is learning from all data sets on a case-by-case basis and can take that

V. Conclusion

In conclusion, this exploration of automated RCM and the integration of predictive analytics underscores the transformative potential essential in adopting advanced technological solutions for healthcare organizations across America. Against the backdrop of value-based care, automated RCM and predictive analytics emerges as pivotal tools for the optimization of financial performance & enhancement of patient care and with Jorie AI's technology standing at the forefront of innovation, healthcare organizations are finally able to find relief with the burdens surrounding RCM and are now able to give patients the time, attention, and care that they deserve. Throughout this white paper, the intricacies of RCM, identification of key components and acknowledgment of the challenges characteristic of traditional practices have been identified and explored. The imperative for automated RCM processes and predictive analytics in RCM extends beyond mere optimization; it offers a strategic pathway towards addressing revenue inefficiencies, operational constrictions, and regulatory compliance.

As we contemplate the implementation of predictive analytics in RCM, a multitude of considerations arises, ranging from data governance to system integration. However, with Jorie AI's implementation and strategic planning, these challenges are continuously being answered effectively and efficiently.

Looking towards the future, the landscape of automated RCM practices and predictive analytics in RCM holds extreme promise for transformative change. Jorie AI's technology is poised to redefine industry standards and empower healthcare organizations to navigate the complexities of value-based care with ease and confidence.

As organizations embrace these RCM adaptations, they position themselves to be at the forefront of achieving superior financial stability, operational excellence and ultimately, overall improved patient outcomes.

information to make corrections along the way. One important concept to remember is that while many technologies claim to offer complete automated end-to-end RCM proficiencies, most are limited in their capabilities and are only able to offer a 'plug-in' into certain phases of the RCM process. Jorie AI is a true end-to-end automated RCM platform that has proven to outperform its competitors and has taken on health care systems of all sizes.

VI. References

1. Porter, Michael E. "Value-based health care delivery." *Annals of surgery* 248, no. 4 (2008): 503-509.
2. Crew M. Revenue cycle management, Part II. *J Med Pract Manage*. 2007 Jan-Feb;22(4):191-5. PMID: 17425014.
3. Giannangelo K, Fenton S. EHR's effect on the revenue cycle management Coding function. *J Healthc Inf Manag*. 2008 Winter;22(1):26-30. PMID: 19267004.
4. Hammer DC. The next generation of revenue cycle management. *Healthc Financ Manage*. 2007 Jul;61(7):48-57. PMID: 17687970
5. Rauscher S, Wheeler JR. Effective hospital revenue cycle management: is there a trade-off between the amount of patient revenue and the speed of revenue collection? *J Healthc Manag*. 2008 Nov-Dec;53(6):392-404; discussion 405-6. PMID: 19070334.
6. Pipe, Kenneth, and Bernadette Culkin. "An automated data-driven toolset for predictive analytics." In 7th IET Conference on railway condition monitoring 2016 (RCM 2016), pp. 1-7. IET, 2016.
7. Singh SR, Wheeler J. Hospital financial management: what is the link between revenue cycle management, profitability, and not-for-profit hospitals' ability to grow equity? *J Healthc Manag*. 2012 Sep-Oct;57(5):325-39; discussion 339-41. PMID: 23087995.
8. Dauer E, Lieser A, Ressemann A, Koprek S. Otolaryngology Business Finance 101: Revenue Cycle Management, Insurance Contract Negotiation, and Benchmarking. *Otolaryngol Clin North Am*. 2022 Feb;55(1):183-191. doi: 10.1016/j.otc.2021.07.019. PMID: 34823716.
9. Hess CT. Revenue cycle management checklist for wound care. *Adv Skin Wound Care*. 2014 Apr;27(4):192. doi: 10.1097/01.ASW.0000445271.84085.63. PMID: 24637654.