IBM **Consulting**

Streamlining Revenue Cycle Management:

Outbound & Inbound Conversational AI in Healthcare

Drive AI today.

Table of contents

03
Executive Summary

04
The Catalyst for AI

05
Challenges in Contact Centers

06
The Solution

07
Conversational AI Impacts

08
What’s Next

Streamlining Revenue Cycle Management:

Outbound & Inbound Conversational AI in Healthcare

Drive AI today.

Executive summary

This paper explores the transformative potential of outbound and inbound conversational AI in healthcare revenue cycle management (RCM). The specific areas of focus include benefit verification and the prior authorization process. The Healthcare industry struggles with administrative burdens that impact operational efficiency and patient care. Traditional manual solutions are falling short of patients' expectations for care. The integration of conversational AI presents a transformational change leveraging natural language processing (NLP) and machine learning algorithms to automate processes and streamline the RCM workflow. Adopting conversational AI promises a shift in managing revenue cycles while delivering high quality patient care.

The Catalyst for Conversational AI

Six in ten insured adults reported encountering at least one issue using their health insurance coverage in the past year [1]. These issues include denied claims for expected care, difficulty locating in-network doctors or providers, and delays in care due to an insurer's prior authorization procedures. Although problems differ depending on the type of insurance, it is not a coincidence that in many of the issues noted below, at least one phone call is required either outbound to a payer or inbound from a provider-related entity. These calls are generally to a third party checking on claims, co-pays benefits status, and other validations.

Benefit verification and prior authorization processes within healthcare revenue cycle management have been notorious for their call times, labor consumption, and other inefficiencies. These processes involve extensive paperwork, phone calls, and back and forth communication among providers, payors, and patients. The multi-step exchange in information, exacerbated by the heavy administrative workload in overwhelmed call centers, creates an environment susceptible to human error, and employee dissatisfaction, leading to inaccuracies and delays. These types of challenges also fuel patient dissatisfaction stemming from frustration of uncertainty and turnaround times due to a lack of transparency and visibility in their coverage status.

In the Past Year	Total Insured Adults	Employer	Marketplace	Medicare	Medicaid
Their health insurance did not cover a prescribed drug and/or required a high copay	23%	22%	22%	27%	21%
Their health insurance did not pay for care they thought was covered	18%	21%	20%	10%	12%
Their health insurance denied or delayed prior approval for care	16%	15%	17%	11%	22%
They reached the limit on the number of visits or services their insurance would pay for	6%	6%	5%	5%	6%
Their insurance paid less than they expected	27%	35%	28%	15%	11%
Had any of these problems	58%	60%	56%	51%	58%
Any other type of problem	8%	8%	11%	6%	8%

Figure 1: Problems adults face with their health insurance [1].

So, how are healthcare companies able to reduce time spent on the phones for their agents, decrease turnaround call times, increase retention and employee satisfaction, significantly improve call quality and accuracy scores, and instill a sense of *renewed confidence* in their respective areas? A compelling answer is Conversational AI. Using Conversational AI, healthcare entities can now make interactive outbound calls to insurance companies, patients, or pharmacies to validate benefit verification, check for prior authorization, and complete other tasks while simultaneously Responding promptly and accurately to inbound inquiries regarding clarifying billing information, eligibility for financial assistance, and payment options. Electronic health records, including 270/271 transactions are widely available, but have not replaced the need for phone calls to confirm eligibility, authorizations, benefit accumulations, and more to a relevant third party. By implementing AI clients have been able to recognize an average of 40% cost and time savings and increase in productivity of over 100%.

Challenges in Healthcare Contact Centers

Contact centers, a cornerstone of the healthcare industry, face significant challenges in managing patient inquiries. These include handling patient billing, claims processing, prescription management, and more, all of which can impact operational efficiency, patient satisfaction, and outcomes. The integration of conversational AI presents a promising solution to these challenges.

Contact centers grapple with high call volumes and staffing shortages. The agents often require specialized knowledge of medical or insurance-related questions while coordinating communication across different channels to collect necessary information for calls. Additionally, the ongoing effects of the COVID-19 pandemic present unique obstacles concerning billing and coding, patient financial responsibility, and resource allocation [4] which persist to this day. Contact centers are missing the mark on fast processing times, customer satisfaction, and information accuracy. Regardless, people expect quick resolutions and precise information when interacting with contact centers. It is difficult to streamline these processes while maintaining patient satisfaction due to each patient's unique healthcare needs.

Revenue cycle management remains a highly complex and multi-step process for both providers and payers. From patient appointment scheduling, to claims, and patient payment, the journey of a full revenue cycle includes multiple touchpoints and interactions between systems, people, and processes.

The Healthcare Financial Management Associations (HFMA) conducted a survey in 2022 of chief financial officers and revenue cycle leaders, over three-quarters of respondents said denial management was their organization's most time-consuming task [2].

Providers are shifting towards automating more components of their revenue cycle; however, claims management and follow-up communication processes largely remain manual due to the complexity of workflows dependent on human management [3]. Human management can result in extended wait times, a decrease in the quality of information collected, and inconsistencies or variability in the collection of information between reps, ultimately impacting the patient. These challenges are only amplified by the complexity of conditions, services, and specialized treatments for patient populations. For example, variations in the administration of infusions or injections across different sites are dictated by major medical payers or PBMs.

Pain Points in Revenue Cycle Management

Benefit verification is one of the first steps in the payer interaction. It ensures a patient's insurance coverage and benefits before providing medical services. Efficient benefit investigations are advantageous for both patients waiting on necessary treatments, and providers who are incentivized for administering the treatment. As may be expected, there is mounting pressure to complete benefit investigations faster. This pressure is heightened each January, during re-verification, when high manual intervention and increased treatment delays occur.

Figure 2: Benefit Verification Statistic [7]

Prior authorization is often cited as one of the most time-consuming and laborious processes for revenue cycle management [5]. Prior authorization is extremely burdensome, with considerable operating overhead for physicians, members, and payers. In many cases, it can take a physician days or weeks to compile records required by the payer. From there it may take the payer days or weeks to action a request. Often this back-and-forth between the payer and provider leads to delays in treatment and even adverse events when patients are left in the dark about their eligibility for a service. IBM published *The Next Frontier for Prior Authorization* [6] last year which touches on strategies payers and providers can take to revolutionize this prior authorization. Increasing regulation from CMS is also placing more pressure on payers and providers to provide greater transparency for patients. CMS advocates for the advancement of prior authorization process in a publication of the *CMS Interoperability and Prior Authorization* final rule (CMS-0057-F); requiring payers to send prior authorization decisions within 72 hours for expedited requests and seven days for standard requests. Additionally, insurers are required to implement an electronic prior authorization API to combat administrative burden by automating the process [5].

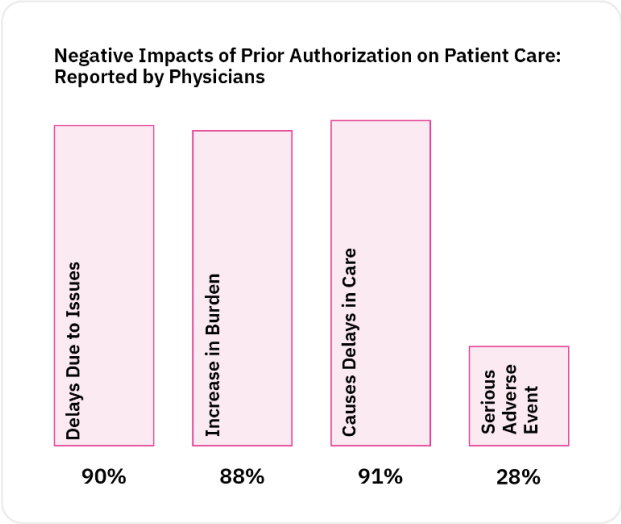

Figure 3: Prior Authorization Effects on Patient Care

The Solution

Clients are turning to technology to address gaps and challenges in revenue cycle management by utilizing conversational AI. These capabilities leverage the intelligence of a digital assistant to collect information that a provider or payer would need for conducting services. With the right training, AI and automation capabilities seamlessly blend automated digital services to augment human agents. Outbound and inbound conversational AI can be integrated into processes to fully automate workflows with human-in-the-loop oversight and feedback. Using these tools, providers spend less time on hold and more time improving the patient experience. With AI technology, IBM has been able to reduce contact center human agent handling by 15 - 40%.

Outbound Conversational AI

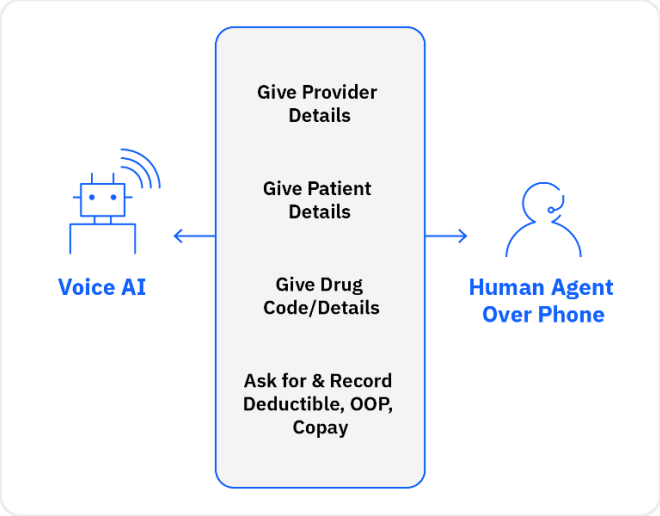

Figure 4: Outbound Conversational AI Solution – RX Example

In outbound conversational AI the digital assistant powered by conversational AI calls human agents; there is an exchange in provider, patient, and drug details, depending on the use case. Applying this approach to benefit verification includes automating standardized call types that can collect **over 150+ data points per call**, including plan details, network status, and coordination of benefits. Implementing outbound AI for prior authorization includes capturing requirements, approval status, associated details, and updates for specialty medications, procedures, and diagnostics across disease states and departments, such as Oncology, Immunology, and Neurology.

Inbound Conversational AI

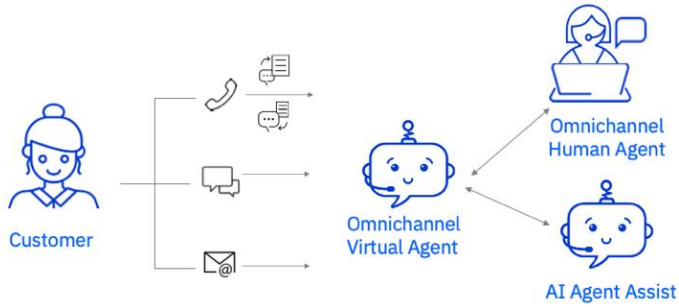

Figure 5: Inbound Conversational AI Solution

Conversational AI can also handle inbound requests, allowing customers, whether the customer is a patient or provider to initiate conversations with omnichannel virtual agents regarding billing information, check claim status, or request benefits verification. The virtual agent-enhanced conversational AI can auto-generate dialog flows from APIs, determine intent-based sentiment analysis recognition with large language models, respond with structured dialogs with generative responses, and analyze product descriptions. Virtual agents also have the capability to transfer customers to other AI agent assistants or human agents, depending on the scenario. However, there has been a **40% decrease in transfer rates** using conversational AI. Not only does AI improve the customer experience during inbound calls but the agent experience as well by automating key tasks, including the seamless summarization of chats and calls for after-call notes, generating accurate responses from a comprehensive knowledge base, and enabling intuitive conversational searches across documents.

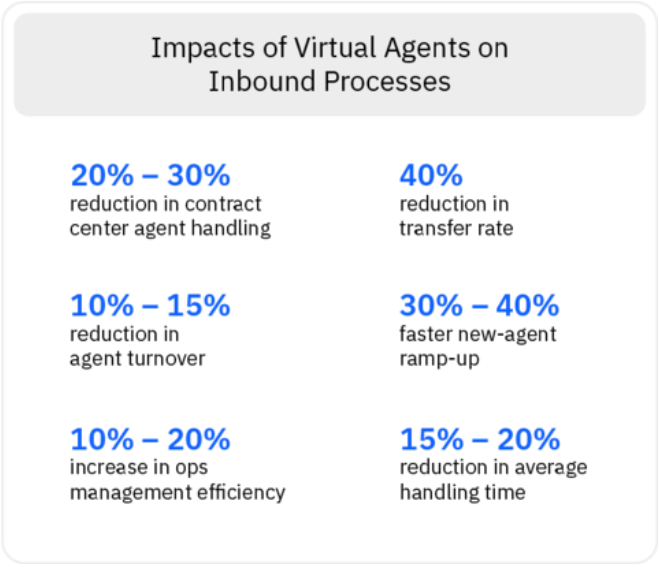

Figure 6: Inbound Calls ROI

Ultimately, AI streamlines workflows while enhancing the quality of support provided by agents, enabling healthcare organizations to address patient inquiries accurately and

resolve issues promptly, thereby decreasing the likelihood of misinformation and minimizing potential errors.

Considerations for Implementing Conversational AI

Adoption Strategy – To get the most impact from Conversational AI, an adoption strategy should be implemented to maximize the success and impact of the calls.

- **Payer Adoption**: To successfully reach and communicate with payer agents, the AI will need to navigate a wide variety of IVR systems. This training, combined with coordinating with the payer to allow their agents to accept calls from AI, is essential for maximizing ROI for outbound AI.
- **Human-Agent Adoption**: Agents should work in combination with AI to execute actions from integrated workflows, address the fallout of cases, or refine the feedback loop for continuous monitoring and improvements of the system.

Data-Driven Decision-Making – The most effective Conversational AI uses continuous monitoring to refine and tune AI models to improve performance. Tracking how well AI is able to successfully retrieve information back from payer representatives is critical for continuous improvement. Analytical dashboards and routine reviews of unsuccessful calls help measure and assess the longitudinal AI effectiveness. Decisions can be made to change the input data, processes and configuration of AI tools.

Implementation of Portal to track ROI – An online administrative portal is an effective tool to analyze AI interactions; track AI calls processed, time saved per handling call, and overall impact.

Flexible Architecture – A cloud-based, flexible architecture provides the ability to quickly scale up and down based on call demand.

API Integration. – APIs are used to accelerate the transfer of data to and from the virtual assistant. To place calls, the outbound AI first ingests information from the client source systems, e.g., the name and patient ID. Once the call has been completed the information it retrieved is consumed by the client's data systems. While these exchanges can be completed by spreadsheet or direct entry, building APIs improve the speed and accuracy of the data flow.

Conversational AI Impacts

Quality of Information

Traditionally, RCM functions utilize human agents or automated systems for prior authorization, benefit verification claims, and other repetitive and straightforward interactions. Conversational AI is better suited for these functions due to its natural language processing (NLP) capabilities. NLP allows the AI to be flexible and adaptable while maintaining a contextual understanding of the interaction.

Conversational AI ensures that each task adheres to a fixed set of standards and protocols, increasing the accuracy of patient or billing information and reducing the error margin or potential for follow-up conversation, which costs money. Additionally, conversational AI systems ensure that information is up to date by continuously integrating the latest data inputs. Policy or process changes that would have otherwise required training and transition can be made in a matter of minutes.

Looking ahead, we may expect significant reductions in denied claims. These decreases will take place by training the AI to analyze denied claim patterns to ensure certain claim types have accurate information to gain approval in the future.

Cost Optimization

Another advantage of this approach is a reduction of costs otherwise directed to in-house or temporary call center agent salaries, benefits, training, and overhead. Comparatively virtual agents have transaction-based pricing structure with a fixed price per interaction. Some tasks may entail multiple calls and conversations, including unsuccessful attempts to reach the receiver. The savings are accelerated when multiple attempts and hold times are considered since an AI cost structure differs from human agent pricing. If a human agent is on hold for an hour and then gets disconnected due to, for example, the payor operating hours, that agent's cost would still be incurred, and costs would continue to accrue until the task is complete. Whereas, in outbound conversational AI calls are charged on a task basis, not multiple attempts and conversations or the duration. This is particularly valuable during peak times during the enrollment period or early in the year when members are starting to use their benefits. Additionally, AI is easily scalable for volume spikes eliminating the need for additional staffing resources during peak times.

Time Savings

The implementation of conversational AI decreases time spent on repetitive communication and optimizes workflows for revenue cycle management processes. These capabilities provide real-time assistance that accelerate task completion and relieves backlog pressures on human agents. Deployment of IBM's Watson Assistant reduced annual inbound calls from providers by 18 million. AI systems always maintain peak capacity, ensuring consistent performance and productivity around the clock as they operate continuously. Outbound AI calls offer substantial savings in both cost and productivity,

leading to an 90% increase in number of calls made compared to manual agents. This efficiency improvement is particularly significant considering appropriately 60% of a medical billing professional's day is typically consumed by phone interactions with providers. By implementing AI in this method, clients recognize an 90% success rate for AI, and over triple productivity percentage gains.

Human Satisfaction
AI provides greater transaction flexibility. Patients benefit from seamless payment options and personalized communication tailored to their preferences, making the process more accessible and convenient. This flexibility allows patients to interact with the system at their convenience, using their preferred channels, which improves satisfaction and accessibility.

AI systems enable more personalized care by delivering accurate responses and recommendations based on individual patient histories and needs. This tailored approach ensure that patients receive relevant information and support, enhancing their overall healthcare experience. By streamlining communication, these systems lead to increased satisfaction, quality, and efficiency for healthcare providers, human agents, and patients alike.

By automating routine inquires and tasks, AI systems increase human agents job satisfaction to focus on higher-value activities, enhancing the quality of care delivered. Additionally, these AI systems have the potential to automatically identify eligibility for claims and provide quick responses, further optimizing the process. In the future, such advancements will continue to elevate the role of agents, enabling the, to engage in strategic tasks, ultimately leading to better overall outcomes within the healthcare ecosystem.

What's Next

The application of conversational AI to address multiple functions and use cases has proven to be remarkably successful. IBM's Watson Assistant has the potential to assist in every aspect of the payer process. As additional applications for conversational AI become established, co-assists with AI continue to develop.

Figure 7: AI capabilities

AI can actively listen to agents' voice conversations to determine intent and provide solution recommendations instantly on the agent's console or in a chat setting, responding on the agent's behalf based on the confidence threshold. For instance, explicitly relating outbound conversational AI applications to other areas of revenue cycle management. AI communicates with call center agents to identify and resolve issues with the next step of the action plan streamlining efficiency. Conversational AI can navigate appeal denials and ensure claims comply with regulations.

There are numerous opportunities to drive Conversational AI within the healthcare space for immediate cost optimization, process efficiencies, and patient, member, customer satisfaction. IBM continues to be at the forefront of driving innovative technologies and leveraging business, clinical, and other financial optimization strategies. Harness the power of AI so you can get back to focus on priority number one: delivering patient care.

About the Authors

Gillie McCreath
Business Process Optimization & AI Executive,
IBM Consulting
Gillie.McCreath@ibm.com

Christina Hitz
Associate Partner, IBM Consulting
chitz@us.ibm.com

Miranda Ripley
Consultant, IBM Consulting
miranda.ripley@ibm.com

Susie Petryna
Senior Managing Consultant, IBM Consulting
spetryn@us.ibm.com

1. "KFF Survey of Consumer Experiences with Health Insurance," KFF, 15 June 2023.
2. "Denials Management Most Time-Consuming Revenue Task," Akasa, 19 April 2023.
3. "The Future of Healthcare Revenue Cycle Management: Challenges and Opportunities," Forbes Business Council, 27 May 2022.
4. "How Covide-19 is Impacting the Healthcare Revenue Cycle," Tech Target, 10 March 2020.
5. "CMS Interoperability and Prior Authorization Final Rule CMS-0057-F," Center for Medicare & Medicaid Services, 16 January 2024.
6. "The Next Frontier for Prior Authorization," IBM, September 2023.
7. "A Decade of Progress," 2022 CAQH Index.

IBM Corporation
New Orchard Road
Armonk, NY 10504

Produced in the
United States of America
September 2024