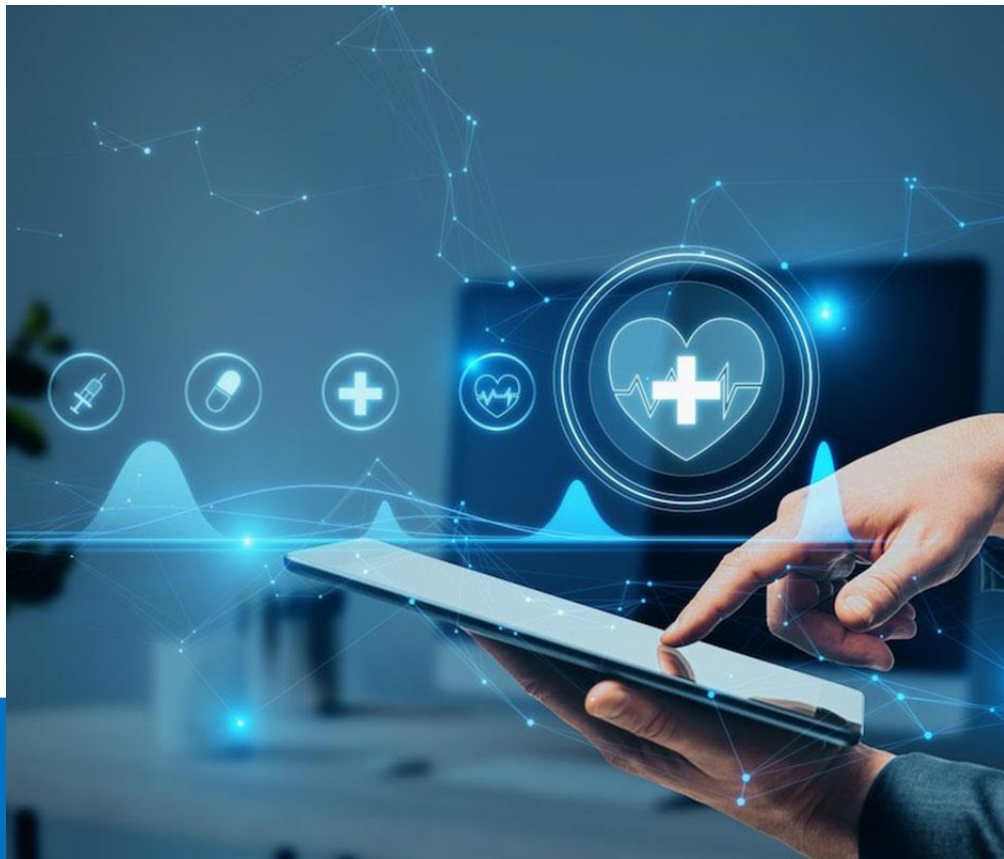# The Transformative Power of Autonomous Coding in Revenue Cycle Management

White Paper

In today's fast-paced and demanding healthcare industry, efficient revenue cycle management (RCM) is crucial for healthcare organizations to thrive. Manually coding data can be difficult and time-consuming, with a high risk of errors and limited resources. However, with the help of Artificial Intelligence (AI) and Machine Learning (ML), autonomous coding is transforming healthcare RCM. This shift brings about faster, more accurate, and more efficient medical coding while eliminating administrative burdens and reducing human error. Healthcare providers can leverage this innovative approach to manage their financial operations effectively. According to industry leaders, employing AI-driven coding processes brings many benefits, including significantly streamlining operations, reducing denials and missed charges, and bolstering critical decision-making capabilities.

In discussing the transformative power of autonomous coding in healthcare, we will share insights from Anil Reddy, a GeBBS Leader. He is a leading authority at GeBBS Healthcare Solutions, a healthcare coding company known for its innovative technologies. With extensive experience and a deep understanding of autonomous coding systems, Anil is at the forefront of this rapidly evolving field. In a recent interview, he shared his valuable perspectives on how autonomous coding is revolutionizing the healthcare industry, particularly regarding accuracy and efficiency. His insights, informed by practical experience and technical knowledge, offer an essential viewpoint for anyone seeking to comprehend this technology's full scope and impact.

Autonomous Coding: Decoding the Concept

The complexity of coding has led to increased coding-related denials and revenue loss. As a solution, the healthcare industry is gradually adopting automated coding solutions.

The first AI solution widely used in the healthcare industry was Computer-Assisted Coding (CAC). This AI-powered solution uses NLP to scan medical records for critical relevant terms to suggest codes applicable to the treatment or service. While it somewhat improves productivity, it can't replace the coder as the final code approver. The solution has brought numerous benefits but retains challenges such as system limitations and increased denials. When utilizing CACs, organizations must use templates, interfaces, and algorithms that support complete and specific code sets to ensure accurate coding.

Autonomous coding is a newer, fully automated technology that accurately codes medical charts in seconds without typically needing human intervention. Autonomous coding understands context and assigns codes only for charts it fully understands while flagging those that it doesn't for human review. It offers scalable coding without compromising accuracy to provide enormous productivity gains.

Anil Reddy, a GeBBS Leader, emphasizes the significant impact of this technology on reducing denial rates. He points out that the precision of autonomous coding minimizes errors, resulting in a substantial decrease in insurance claim denials. This streamlines the revenue cycle and yields healthcare providers significant cost and time savings. As Anil aptly puts it

"By ensuring greater accuracy in coding, we're not just improving efficiency; we're fundamentally changing the financial health of healthcare institutions."

Autonomous Coding and Computer-Assisted Coding: Compared

Autonomous Coding and CAC are two different coding approaches. While CAC uses NLP to scan medical records and suggest codes, it has limitations. Due to clinical language's subjective, abbreviated, and ambiguous nature, CAC may not always accurately represent patient encounters. Because of this, the codes suggested by CAC require validation by human coders, which limits CAC productivity gains.

Implementing CAC involves learning a new coding workflow, navigating complex software, and integrating it into the existing IT infrastructure. These challenges make the CAC implementation process time-consuming and challenging for healthcare providers and their staff.

In contrast, autonomous coding uses multiple AI subfields, including machine learning and deep learning to automate code assignment. Autonomous coding aims to match or exceed human coder accuracy, allowing autonomously coded charts to be sent without requiring additional validation from human coders.

Adherence to Coding Standards

Autonomous coding aims not just to meet coding standards but to excel at maintaining code accuracy. While older CAC platforms blend human expertise with technological support, autonomous coding relies on AI and machine learning to assign codes independently, undergoing thorough training on standard ICD-10 and CPT dictionaries. This training guarantees compliance with coding guidelines, maintaining the integrity of medical coding practices. Adhering to established standards is crucial in upholding excellence in medical coding. These systems meticulously analyze vast datasets, learn coding patterns, and continuously adapt to coding practices and guidelines, enhancing their accuracy over time.

Continuous Evaluation of Autonomous Coding: Ensuring Precision and Adaptability

Embracing Continuous Improvement and Adaptation

Continuous evaluation is a necessity in autonomous coding to maintain effectiveness. The continuous feedback loop between human coders and AI systems enhances efficiency and accuracy, enabling adaptability for handling an expanding range of medical specialties and chart types. The AI continually refines its learning process by assimilating data from various sources, improving accuracy and coding capabilities over time.

Unmatched Efficiency and Accuracy

Autonomous coding, powered by AI, brings a new level of precision to the medical coding field. AI systems leverage vast amounts of data to make accurate code assignments, significantly reducing the likelihood of errors or omissions. Ensuring accuracy is crucial in guaranteeing proper reimbursement and is vital in reducing the number of denials. AI substantially reduces the time and effort required for medical coding. This efficiency speeds up workflow, allowing healthcare organizations to streamline operations, focus on complex cases, and improve overall efficiency while freeing up resources for quality assurance tasks.

The Importance of Continuously Evaluating and Providing Feedback

The success of autonomous coding is highly dependent on the continuous evaluation and feedback mechanism. This process involves a collaborative effort between human expertise and AI technology and is vital to the system's advanced functionality. The AI component adjusts its approach based on continuous feedback and improves its capability to handle diverse medical scenarios. The system can process vast amounts of data quickly, which enables it to constantly improve its accuracy, expand its coding capabilities, and grow in confidence. This ongoing process of evaluation and adaptation is crucial for meeting the dynamic needs of healthcare coding and ensuring that autonomous coding systems remain relevant and effective.

Benefits of Autonomous Coding

Autonomous coding provides several benefits compared to both traditional manual coding and CAC for healthcare providers:

- ▶ **Elimination of Human Errors**: Autonomous coding helps to minimize the risk of human errors, minimizing missed opportunities for reimbursement and claims errors while preventing backlogs and delays.
- ▶ **Enhanced Role of Coders**: Redefines the role of coders, transitioning them from coding to auditing, elevating their function within their organization.
- ▶ **Improved Efficiency**: Can complete charts in just a few seconds and the entire coding process in minutes.
- ▶ **Increased Accuracy**: Can elevate accuracy to near-perfect levels, ensuring cleaner claims and reduced revenue losses.
- ▶ **Understanding of Limitations and Knowledge**: When issues arise beyond autonomous coding's capabilities or understanding, those charts are flagged for review by human coders.
- ▶ **Reduced Operational Costs**: Autonomous coding vendors typically charge per claim. This saves providers from being overstaffed with coders without a reasonable workload while always being able to scale up operations when providers experience increased code volume.
- ▶ **Speed and Scalability:** Autonomous systems process extensive medical data swiftly, expediting reimbursement processes and bolstering efficiency in large healthcare settings.
- ▶ **Continuous Learning:** These AI-driven systems continually evolve and adapt to changing coding requirements and standards, ensuring ongoing accuracy with minimal human intervention.
- ▶ **Resource Optimization:** By handling routine coding tasks, autonomous coding frees human coders to focus on intricate scenarios requiring their expertise.

As the healthcare industry continues to evolve, autonomous coding will play a significant role in improving the accuracy and efficiency of medical coding. These advantages of

autonomous coding are critical for enhancing healthcare RCM by minimizing human errors, optimizing productivity, and improving revenue rather than just reducing costs.

Healthcare Organizations and Autonomous Coding

The adoption of autonomous coding, while still in its early stages, is steadily gaining momentum. A survey conducted during the HFMA Annual Conference in 2023 revealed that while 60% of healthcare organizations were either currently using or planning to use autonomous coding, more than half (52%) of healthcare finance professionals were not entirely aware of what autonomous coding is, while more than a quarter of those surveyed did not trust autonomous coding processes. This indicates a significant knowledge and trust gap, highlighting the need for further education and awareness about autonomous coding and its potential benefits.

Integration with EHR and HIS

Integrating autonomous coding with Electronic Health Records (EHR) and Health Information Systems (HIS) is pivotal for enhancing healthcare workflows. Application Programming Interfaces (APIs) are central to this process, enabling efficient data exchange between systems. This integration allows autonomous coding tools to access and process patient charts and other pertinent data, returning accurate medical codes essential for billing.

Integrating EHR with autonomous coding tools is crucial for modern digital healthcare. Fully integrated systems enable clinicians to access comprehensive data, which can improve patient diagnosis and treatment. However, interoperability issues must be addressed to achieve real-time, data-driven insights at the point of care.

New standards, such as FHIR and SMART on FHIR, are improving the integration of health information: efficient exchange and real-time access to data help clinical decision-making.

Health systems must configure their EHR systems to use these tools effectively, making relevant information available and actionable in the clinical workflow.

These integrations are key to improving efficiency, accuracy, and patient-centered care in the rapidly evolving digital health landscape.

The integration of autonomous coding with EHR and HIS presents several challenges and opportunities:

▸ **Technological Advancements and Integration Challenges:** Autonomous coding relies on AI, ML, and NLP to analyze clinical documentation and extract data for coding. Handling the complexity and variability of medical documentation requires continuous refinement and training of automation models, including incorporating feedback from human coders to handle various scenarios.

▸ **Benefits and Workflows:** Adopting autonomous coding accelerates the revenue cycle by eliminating backlogs, delays, and errors common in manual coding. It improves coding accuracy over time through AI and ML algorithms that learn from past cases, reducing the risk of denials and lost reimbursements. Additionally, it enhances productivity, allowing healthcare providers to focus more on complex cases and quality assurance.

▸ **Interoperability and Data Standardization:** Integration with existing systems, especially EHRs, is crucial. Challenges arise due to variations in healthcare documentation styles and practices. Standardized documentation protocols and data quality initiatives are necessary to maximize the benefits of autonomous coding.

▸ **FHIR for Healthcare Interoperability:** Fast Healthcare Interoperability Resources (FHIR) is an innovation in healthcare interoperability, simplifying the implementation of coding engines by avoiding the need for custom reports or interfaces. FHIR enables real-time retrieval of clinical data, ensuring accuracy and completeness in coding.

▸ **Privacy and Security Considerations:** Autonomous coding deals with patient information, making privacy and security paramount. Robust data protection measures, including encryption and access controls, are vital. Regulations are necessary to protect patient confidentiality and mitigate risks associated with sensitive data handling.

While autonomous coding offers significant advancements in efficiency and accuracy to healthcare coding, its integration with EHR systems poses challenges such as handling complex medical documentation, standardizing data, and ensuring privacy and security.

Overcoming these challenges requires ongoing collaboration, technological innovation, and adherence to stringent security protocols. The full potential of autonomous coding in healthcare can be realized by addressing these aspects, thereby improving healthcare revenue cycle management and patient outcomes.

Financial and Operational Benefits

The benefits of autonomous coding in healthcare include cost savings, increased revenue, and reduced overhead. This technology-driven approach reduces costs by minimizing the need for human resources, especially in administrative tasks. It streamlines revenue cycle processes, helps to combat staffing shortages, mitigates labor-intensive tasks, and ensures consistent, error-free coding, which is crucial for effective revenue cycle management.

Increased Revenue

Autonomous coding can increase revenue due to reduced denial rates in claims processing. Accurate and efficient coding minimizes errors that cause claim denials, often resulting in healthcare revenue loss. The automation in claims management, including secondary billing and claims attachments, has been proven to impact ROI significantly. As a result, staff time is freed up for more complex tasks that require human oversight, and manual workflows are reduced. The automation ensures that tasks are completed consistently, reducing compliance risks and improving operational efficiencies.

Operational and Qualitative Benefits

The benefits of robotic process automation (RPA), a key component of autonomous coding, extend beyond mere cost reductions. RPA improves turnaround times, service levels, and capacity, facilitating a more unified consumer and caregiver experience. This technology enhances workflow accuracy, consistency, compliance, and risk management. By integrating bots into healthcare workflows, RPA ensures tasks are completed uniformly every time, increasing reliability and reducing risks. These benefits collectively contribute to the broader ROI of autonomous coding in healthcare, highlighting its potential to transform revenue cycle management significantly.

Autonomous coding in healthcare provides significant benefits and can contribute significantly to the organization's ROI:

Enhanced Accuracy and Efficiency: Autonomous medical coding, powered by AI and ML, drastically improves the accuracy and efficiency of the coding process. By analyzing and interpreting medical documentation, these advanced systems can generate accurate codes without human

intervention, minimizing errors and inconsistencies common in manual coding.

Independent Coding Decisions: The key difference between autonomous and automated medical coding lies in the level of human intervention. Autonomous coding independently assigns codes to medical data based on natural language understanding. In contrast, automated coding provides a shortlist of codes for human verification, reducing the need to search multiple sources.

Continuous Learning and Improvement: AI-powered medical coding systems continually learn and improve through real-time coding decisions. This ongoing adaptation enhances accuracy and efficiency over time, allowing healthcare organizations to streamline operations, reduce costs, and improve reimbursement cycles.

Reducing Coders' Burden: Autonomous coding automates manual coding tasks, allowing human coders to focus on quality assurance and complex cases, reducing their workload. This shift towards higher automation levels can revolutionize the medical coding landscape, improving healthcare outcomes and lowering costs.

Improved Margins and Patient Care: Automated medical coding significantly improves margins through enhanced accuracy, leading to fewer denied claims, rework, and partial reimbursements. Producing coding results swiftly accelerates the revenue cycle, improving cash flow and reducing accounts receivable days, easing the pressure on practices. Additionally, medical coding automation is often comparable to or less expensive than outsourcing, offering substantial savings.

Key Performance Indica tors (KPIs)

In autonomous coding, two critical Key Performance Indicators (KPIs) define its success: the Direct-To-Bill (DtB) and denial rates. An illustrative example from a recent interview with GeBBS Leader Anil Reddy sheds light on these metrics.

Consider a scenario where out of 1,000 charts processed by an autonomous coding system, 85% (850 charts) are completed and go directly to billing. This high DtB rate underscores the system's efficacy, echoing our earlier discussion on efficiency gains and reduced denials. The higher the DtB rate, the more pronounced the benefits in operational efficiency and reduced turnaround time. Additionally, of the 85% that went directly to billing, the proportion that gets rejected in the claim cycle – the denial rate – should be notably low. A low denial rate is imperative as it indicates the reliability and accuracy of the autonomous coding system.

If this rate is high, it suggests a deficiency in the system's performance. Therefore, these two KPIs, DtB rate and denial rate, are key in evaluating the success and acceptance of an autonomous coding implementation.

As exemplified by groups like Maverick Medical AI, real-world autonomous coding solutions boast an impressive 85% DtB rate, a stark leap from earlier technologies like CAC, which struggled to attain such efficiency. These AI-driven systems drastically cut down denial rates, achieving a remarkable 97% accuracy, thereby addressing a significant pain point in traditional coding processes. Effectively managing these KPIs is crucial; they reflect the proficiency and precision of the coding system and directly impact the financial sustainability and operational smoothness of healthcare organizations. Given the transformative potential of autonomous coding, special attention to coding productivity, accuracy, and workflow efficiency is vital in realizing these benefits.

Enhanced Physician Efficiency and Patient Care

Automated coding reduces the administrative burden on physicians, allowing them to focus more on patient care. This shift in focus not only improves the quality of care but also increases physician job satisfaction and retention. The automation identifies missing or incomplete information in medical documentation, prompting physicians for clarification, enhancing the quality and accuracy of medical codes.

Reduction in Coding Errors and Patient Harm

Coding errors can have significant financial and health implications for patients. Automated coding reduces the likelihood of such errors, thereby preventing potential patient harm and preserving the reputation of medical practices.

Autonomous coding in healthcare offers a multifaceted ROI, including financial benefits, improved patient care, and practice efficiency. It enhances accuracy, speeds up revenue cycles, and reduces physician administrative burden. Autonomous coding plays a critical role in promoting effective and patient-centered healthcare practices.

Overcoming Barriers to Adoption

Despite the promising potential of autonomous coding, several barriers exist before wide-scale adoption is commonplace in the healthcare industry. According to a KLAS report, when surveyed, the reasons revenue cycle managers listed for not adopting computer-assisted coding include ROI skepticism, budget constraints, organizational resistance to change, existing investments in coding software, the belief that coders perform functions beyond coding, and technological constraints.

A change in mindset, emphasizing the vast benefits, is necessary to overcome the obstacles to autonomous coding. The report highlights the advantages of automation, with 17% of respondents seeing a ROI from automating claims processes. Revenue cycle leaders plan to invest in autonomous coding and claims management automation. Cost remains an important consideration, and optimized operations are crucial to achieve effective automation outcomes.

Autonomous Coding – The Market Outlook

The market for autonomous coding is expected to grow from $35 billion in 2022 to $88 billion by 2030. This growth is driven by the labor-intensive nature of revenue cycle operations and the critical role of coding in reimbursement. Ongoing workforce shortages have made revenue cycle automation, including autonomous coding, a top priority for technology investment. Automating claims management processes can also lead to substantial cost savings for healthcare providers. The 2022 Index Report from the CAQH suggests that further automation could save nearly $25 billion annually. This is in addition to the $187 billion already saved through increased automation and streamlined processes.

The Transformative Impact of Autonomous Coding in Healthcare

Healthcare organizations have showcased the transformative impact of autonomous coding systems. Organizations have advanced the efficiency and accuracy of medical coding by integrating expert-guided AI with NLP. This approach has substantially reduced human resources, optimized costs, reduced coding errors, decreased claim denials, and streamlined revenue cycle management.

Similarly, adoption of intelligent automation, combining RPA, ML, OCR, and NLP, has digitized revenue cycle management, allowing staff to focus on high-value tasks. These examples underline how autonomous coding improves operational efficiency and enhances patient care by providing accurate and timely medical documentation, bridging the gap between clinical care and administrative processes.

Conclusion

Autonomous coding, driven by AI and ML, is transforming how healthcare providers manage their revenue cycle. This technology is paving the way for a future where precision and efficiency in coding become the norm, leading to better patient outcomes and a more streamlined healthcare system.

Despite the initial challenges of implementing autonomous coding, including resource management, ROI skepticism, and costs, this technology offers numerous benefits. It significantly reduces the time and effort required to assign medical codes, translating into improved efficiency and cost savings. Additionally, it can help ensure that medical codes are applied accurately and consistently, reducing the risk of errors.

Continuous evaluation is a critical component of autonomous coding involving a collaborative approach between AI and human coders. While AI is excellent at quickly processing large amounts of data, there are still cases where human expertise is required to ensure accuracy and adaptability. By combining the strengths of AI and human coders, healthcare providers can ensure that medical codes are assigned accurately and efficiently while also remaining adaptable to changing regulations and healthcare practices.

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Forward Thinking

Autonomous coding is poised to revolutionize revenue cycle management in healthcare. It has the potential to enhance patient care, streamline operations, and redefine medical coding standards in healthcare.

GeBBS Healthcare Solutions: Revolutionizing RCM Coding

GeBBS Healthcare Solutions is leading the way in providing cutting-edge autonomous solutions for healthcare providers' RCM coding challenges as the industry continues to evolve and adapt to these emerging technologies. As one of the largest offshore medical coding companies, GeBBS Healthcare offers advanced technologies such as iCode Assurance and iCode Workflow, which employ AI and NLP, significantly increasing medical coding accuracy and efficiency. By using iCode Assurance, you can access a dashboard, scorecards, and reporting system, which results in a 40% faster review time, a 30% increase in audit capacity, and 18% more identified HCC conditions. Additionally, GeBBS' Robotic Process Automation (RPA) technology automates repetitive tasks, further reducing operational costs and enhancing productivity in RCM.

Healthcare providers worldwide can leverage GeBBS' expertise to streamline operations, reduce denials, and enhance decision-making capabilities. As automation technology revolutionizes the industry, GeBBS' innovative solutions lead to a more efficient and effective healthcare system.

Discover more about GeBBS Healthcare Solutions' transformative impact on healthcare at gebbs.com.