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Future Trends: The Next Frontier of AI Innovations in Medicaid Health Care Delivery

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1. Abstract

Although artificial intelligence is widely used in the healthcare sector, its proliferation in Medicaid services has been limited to less complex functions despite having many use cases for advanced roles. This limited use is attributed to regulatory uncertainties, funding constraints for tech initiatives, and fragmented data in Medicaid services. The good news is that the federal government and state governments have begun addressing these barriers. This paper discusses the current state of AI in Medicaid and future innovations when the aforementioned issues are addressed.

2. Keywords

Artificial Intelligence, Medicaid, Healthcare, Technology, Innovation.

3. Introduction

Artificial Intelligence has proliferated in virtually every aspect of Medicaid healthcare delivery. Today, nearly all state Medicaid services leverage AI to process applicants' eligibility, control Medicaid fraud, manage personalized service delivery, and mitigate payment challenges. However, while AI is considerably used in Medicaid healthcare delivery, it is still underutilized. Experts suggest that the adoption of AI in Medicaid programs is still in its infancy and is expected to grow in future.

4. The current state of AI in Medicaid Healthcare delivery

Artificial intelligence technologies have already made inroads in Medicaid healthcare delivery. However, most of these technologies are still in the piloting stages and are mostly deployed for less complex tasks [1]. Common applications of AI in Medicaid healthcare delivery include;

- *Fraud detection*: One of the leading applications of AI in Medicaid services is fraud and waste control. The technology can scan big data sets to reveal fraud patterns and misuse. AI's ability to cross-reference data from multiple sources enables it to reveal hidden fraud patterns. Other aptitudes, such as link analysis and robust unstructured data analysis capabilities, make it a potent tool in fraud and misuse detection.
- *Eligibility processing*: Medicaid services have installed AI-enabled tools for assessing Medicaid applications. These tools leverage data from public and private databases to determine candidates' eligibility.
- *Virtual assistants*: This is probably the most common application of AI in Medicaid healthcare delivery. Chatbots are widely used by these services to respond to inquiries and disseminate vital information to Medicaid beneficiaries. About 40 percent of Medicaid beneficiaries use chatbots [2].





- **Risk stratification**: This is one of the areas in which AI models are taking root. Medicaid service providers are increasingly leveraging models that can predict enrollees' potential health risks to enhance stratification accuracy.
- As aforementioned, AI is progressively being adopted in Medicaid programs, but it's still underutilized. Issues that must be addressed for AI to be fully leveraged include;
- **Data fragmentation**: AI is fueled by data. For advanced AI applications to be implemented, all databases and networks related to Medicaid operations must be interoperable, and the collected data must be complete.
- **Regulatory uncertainties**: Medicaid operates under stringent regulatory policies such as HIPAA and CMS reporting. It is always uncertain to determine how AI fits within these regulatory frameworks. Consequently, there is hesitation around full-scale deployment of AI models, especially in roles that involve clinical and eligibility decisions.
- *Funding and budget constraints*: State Medicaid programs run on a tight budget. Thus, they do not prioritize technological experimentation; instead, they focus on meeting urgent operational needs such as system compliance and enrollment support.

The good news is that both the federal government and state governments are working to alleviate these issues. For instance, the Centers for Medicare & Medicaid Services (CMS) is enforcing data interoperability through rules like the Interoperability and Patient Access Final Rule (2020), which mandates standardized APIs and FHIR (Fast Healthcare Interoperability Resources) for Medicaid data systems. CMS has also provided 90/10 Federal Financial Participation (FFP) funding to states for upgrading Medicaid enterprise systems. These findings can be used to implement AI technologies in Medicaid programs. States such as North Carolina, California, and New York are already piloting advanced AI capabilities in Medicaid programs. Other states such as Indiana, Utah, Colorado, and Massachusetts have set up Medicaid transformation units and centralized data platforms to integrate Medicaid, public health, and social service data to facilitate deployment of AI in Medicaid programs. These interventions will invigorate AI innovation in Medicaid healthcare delivery.

5. Future AI trends in Medicaid healthcare delivery

As the federal government and state governments create an enabling environment for the deployment of AI models in Medicaid, what are some of the innovations likely to be implemented in the near future? Areas expected to experience rapid AI integration are;

5.1. Predictive and preventive care

Predictive and preventive care is the next frontier in

Medicaid healthcare services. This capability will only be unlocked via the integration of cutting-edge AI models in Medicaid programs. Predictive models will allow advanced risk stratification, readmission prediction, and population health management. These models will be able to identify enrollees at high risk for specific conditions, facilitating proactive interventions and preventative care. Readmission prediction will allow targeted interventions like follow-up care and medication adherence support. By identifying care gaps in specific populations, AI will be vital for bridging care discrepancies in patient populations. Optimal use of predictive analytics in Medicaid services can reduce hospital admissions by 20 percent.

5.2. Care coordination

Usually, Medicaid beneficiaries receive care from multiple disjointed care providers. The lack of communication among providers impedes efficient care delivery. AI models can coordinate care across disjointed care providers. These technologies can be leveraged to create unified, actionable care plans that can be used across multiple care facilities. These tools can also help caregivers access patients' treatment histories from different providers. Deployment of NLP models in Medicaid healthcare delivery can help extract and summarize patient information from clinician notes and care documents, further enhancing care quality and coordination.

5.3. Intelligent virtual assistants

Virtual assistants are a common technology in healthcare. However, its use is limited to simple applications such as responding to basic inquiries. The future of AI in engagement is providing advanced services beyond mere inquiries. These tools will be able to assess patients and prescribe interventions autonomously, answer benefit-related questions, schedule appointments, and do follow-ups on patients. Use of these tools will reduce traffic to healthcare facilities and improve Medicaid beneficiaries' satisfaction.

5.4. Personalized Medicaid services

Personalized care is an emerging trend that will dominate healthcare delivery for many years to come. AI is a pivotal technology that will enable personalization of care plans for Medicaid beneficiaries. Through clustering and classification techniques, the technology will recommend customized care pathways for Medicaid beneficiaries and optimize the use of benefits based on predicted patient outcomes. The integration of precision medicine, genomics, and real-time health data in Medicaid databases will make hyper-personalized Medicaid services a reality.

5.5. Administrative functions

Administrative functions account for about 15 to 30 percent of Medicaid healthcare spending. Recent estimations indicate that about 50 percent of this spending is wasteful and is attributable to nonclinical functions that are repetitive in nature. Implementation of AI for administrative roles can cut administrative spending in Medicaid by \$200 to \$300 billion. Administrative functions that AI can comfortably perform are data analytics and reporting, eligibility, and redetermination, as well as some aspects of claims processing.

5.6. Advanced fraud detection and provider management

Current fraud detection tools are rule-based. AI promises to make fraud detection tools more dynamic and adaptive. Using big data, machine learning models can detect patterns



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and outliers that may reveal fraudulent claims and misuse. AI has the potential to be deployed in provider management, playing roles such as scanning documents and verifying licenses, assessing provider performance, and managing provider contracts.

Table 1. Advanced Al benefits in Medicald Services.

AI application	Use case in Medicaid	Benefit
Predictive analytics	Identifying high risk populations	20 percent reductions in hospitalizations
Fraud detection	Detecting improper billing and fraud	\$5 billion in potential annual savings
Personalized care	Tailored treatment plans	Improved outcomes and 10 percent fewer adverse reactions
Patient engagement	Chronic disease management	15 percent reduction in emergency room visits

6. Potential pitfalls

Despite the potential of AI models in Medicaid healthcare delivery, these technologies are susceptible to issues that must be addressed. Poorly implemented models may be vulnerable to algorithmic biases, which can be disastrous if introduced in government services. For instance, a biased facial recognition system may lock out some demographics from Medicaid access. Ethical issues and the inability to be empathetic are other issues that must be addressed when building AI models for Medicaid programs.

To ensure safe implementation of AI models in Medicaid services, these tools must be implemented through the initial, liberal use of human review. This will ensure the models are first supervised for any misconduct before being fully automated. It is also advisable these models are regularly audited, and their actions can be rolled back.

7. Conclusion

Although AI is a common technology in Medicaid services, its use is still limited to simple, repetitive tasks. Under exploitation of AI models in Medicaid is attributable to the fragmented nature of healthcare networks, regulatory uncertainties, and funding inadequacies for tech innovations. Mitigation of these barriers will unlock advanced use of AI in predictive and preventive care, administrative roles, fraud control, member engagement, and care coordination. However, as governments implement these technologies, they should be deployed as semi-autonomous initially, constantly audited, and their actions must be reversible. This will ensure these innovations are safe and guarantees better healthcare outcomes.

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