

# A Brighter Future for Healthcare with Generative AI.

Healthcare is a huge, complex market rife with inefficiency. But with Generative AI, healthcare providers now have a creative solution that can help them target large and immediate cost savings, in both the front and back-office operations, as well as front line medical care.

Generative AI – a subset of AI – has exploded in healthcare due to the exponential growth of medical data, a shortage of healthcare providers and technology advances such as cheap computing power and cloud data storage.

Healthcare providers can now implement Generative AI to bring down the costs of care, streamline administrative procedures and dramatically improve patient outcomes in a whole host of ways.

## What is Generative AI?

Generative AI tools, such as ChatGPT, Bard, and Google's Healthcare AI PaLM, have created more interest than either the launch of the iPhone or the World Wide Web, and in a much shorter time. It took ChatGPT less than 5 five days to get a million users and reached 100 million users just two months after launching.

A digital revolution was already underway. Now this has been turbocharged with the release of Generative AI. We no longer need just data or computer scientists to change the world. Generative AI can unlock growth and promote disruption in a complex and seemingly impregnable industry. It is a technology particularly well-suited to challenge the costs of service industries such as healthcare.

## Why is it causing such excitement?

Traditional AI performs a single or specific task, such as processing a customer churn model. In comparison, Generative AI is broad and can generate new images, music, speech, code, video, or text. It is a technology that people are excited to use, as it enables them to search, work, learn, and engage in a human-like way that is more productive and creative i.e., in natural language.

We are entering a new era of software and business where Generative AI's capabilities and applications are limited only by our imaginations. If you can think it and describe it, then Generative AI can (or will) be able to create it. The practical implications and applications of Generative AI are exciting the business world. It has immense potential to revolutionize any field where creativity and innovation are key – particularly healthcare.

## What are 8 AI use cases in healthcare?

# 1.

### Improving Patient Communication, Care and Engagement.

Conversational AI powered with ChatGPT has been proven to answer patient queries, provide information and offer support as well, if not better, than humans.<sup>1</sup> In fact, a study published in JAMA, comparing physician and artificial intelligence chatbot responses to patient questions, found that responses from ChatGPT were actually preferred to those given by a physician about 79% of the time and were rated significantly higher for both quality and empathy.<sup>2</sup>

# 2.

### Automating Workflows to Reduce Administrative Burden.

AI adds value by automating and augmenting the way healthcare staff complete administrative tasks. For example, Generative AI can not only draft email replies, or insurance approvals, but it can also schedule appointments. It can also summarize scientific text, and improve patient satisfaction and education by answering patient questions in a conversational manner. This can greatly reduce the administrative burden on healthcare staff so that they can focus on more important work that delivers better patient outcomes.

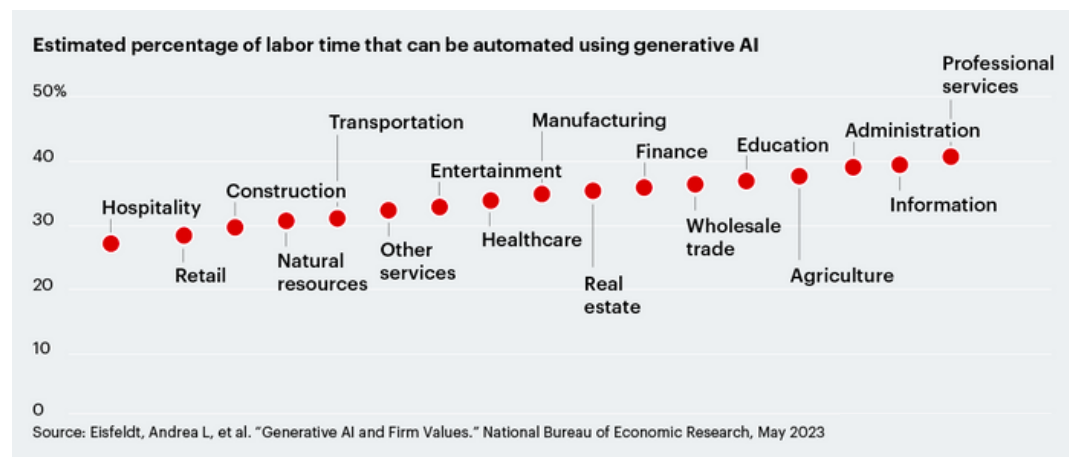


Diagram 1: An estimated 33% of labor time in healthcare and social assistance can be automated using Generative AI.

<sup>1</sup> <https://mededu.jmir.org/2023/1/e46939/>

<sup>2</sup> <https://jamanetwork.com/journals/jamainternalmedicine/article-abstract/2804309>

# 3.

## Real-Time Remote Patient Monitoring.

Wearable technologies such as FitBits and smartwatches are revolutionizing patient healthcare management by offering continuous health monitoring and real-time data transmission to healthcare providers. Such advancements in healthcare technology are pivotal, serving to mitigate the frequency of unnecessary hospital admissions and facilitating timely interventions.

By providing instantaneous alerts to both users and healthcare professionals upon the detection of potential health anomalies these sophisticated devices can help facilitate more immediate, informed and personalized medical responses. The integration of these AI-driven wearables is integral to optimizing healthcare outcomes that drive forward the delivery of patient-centered care.



# 4.

## Synthesize Clinical Documents or Research.

Generative AI can be used to organise and synthesize medical notes, clinical research, drug information or research papers.

## 5. Prior Treatment Authorization.

Prior authorization is an arduous task for physicians fraught with challenge. In 2021, physicians submitted more than 35 million prior authorization requests to Medicare Advantage payors, of which 2 million were denied.<sup>3</sup> Generative AI has been able to reduce the administrative burden on providers, patients and pharmaceutical companies by generating prior authorization forms with remarkable accuracy.

## 6. Enhancing Disease Diagnosis.

Physicians and healthcare providers can benefit significantly from the advent of Generative AI in diagnostics. For instance, AI can examine patient data, including medical history, genetic information, and lifestyle factors to predict the risk of developing conditions such as hypertension, cardiovascular disease, and diabetes.<sup>4</sup>

By analyzing vast amounts of data including medical records, diagnostic reports, past treatments as well as imaging such as MRI scans and x-rays, Generative AI can enhance clinicians ability to detect potential health risks and recommend further examinations or treatments when deemed necessary. For instance, healthcare providers can use AI to analyze complex genetic data of cancer patients with the aim to prescribe them the most targeted chemotherapy medications or suggesting specific forms of radiotherapy, immunotherapy, and other treatments.<sup>5</sup>



<sup>3</sup> <https://www.sequoiacap.com/article/generative-ai-for-healthcare-perspective/>

<sup>4</sup> <https://healthsnap.io/how-generative-ai-in-healthcare-will-impact-patient-outcomes/>

<sup>5</sup> <https://healthsnap.io/how-generative-ai-in-healthcare-will-impact-patient-outcomes/>

## 7. Revenue Cycle Management.

Generative AI has tremendous potential to refine and optimize Healthcare Revenue Cycle Management (RCM). For example, Generative AI can automate medical code generation from clinical notes, a crucial step in mitigating errors and ensuring billing precision. Furthermore, it possesses the capability to validate claims, verifying the accurateness of codes and confirming the absence of discrepancies before submission.

This level of detail enhances the overall integrity of the billing process, securing revenue and preventing potential revenue leakage through swift identification and alerts on fraudulent activities.

AI also paves the way for enriched patient communication. Generative AI can also craft personalized, coherent, and succinct letters and billing statements. Furthermore, Generative AI helps develop intricate risk assessments, identifying accounts prone to becoming bad debt, and instituting timely interventions. It can provide sophisticated revenue forecasting, grounded in historical data, facilitating informed financial decision making.



## 8. Detecting Billing Fraud.

Generative AI technologies can identify possible billing fraud and maintain precise medical coding. This application not only results in substantial cost efficiency for healthcare organizations, but also aids in pinpointing patterns suggestive of fraudulent claims, such as invoicing for services that were not performed or double billing, consequently reducing the risk associated with healthcare fraud.

## Are there concerns about Generative AI in healthcare?

Every technology comes with risk and Generative AI tools is no exception. For example, there may be biases and inequalities in the learning models that enable AI responses. Models that are trained by humans can include all the human vulnerabilities and unconscious biases that we are prone to.

Generative AI might also 'hallucinate'. What does that mean? Answers can be confabulated i.e. the generation of plausible-sounding but potentially inaccurate information, a characteristic of generative AI language models when they try to respond based on limited or incomplete knowledge. AI can also suffer from concerns about lack of quality data, including clinical data in training models and lack of transparency and explainability – known as the black box problem.

However, each challenge can be overcome.

For example, awareness and training of potential ethical, security and data quality bias issues can help model users better understand and mitigate bias. Regular auditing and monitoring for bias and fairness will also help.

To avoid Generative AI hallucinations, healthcare technology providers should construct narrow, healthcare industry specific Large Language Models (LLMs). Healthcare LLMs must undergo pre-training and fine-tuning with domain-specific healthcare industry data. Large language models trained on smaller, domain-specific datasets help make healthcare's generative AI applications more knowledgeable.

The fine-tuning process gives the model domain-specific knowledge, terminology, and context relevant to a particular industry. Once fine-tuned, industry-specific models can generate content, answer questions, or perform tasks related to that industry with higher accuracy, assistance, and relevance.

These concerns may seem daunting to some and may limit the adoption of AI-based solutions in a healthcare where they could potentially be valuable. Yet by placing a 'human-in-the-loop' (HITL), healthcare providers can check and validate Generative AI's recommendations before using them in their processes or decision making i.e., a human oversight function.



## Conclusions

Disruptive innovations in healthcare have historically been difficult, but Generative AI may just change that. Though there are challenges to be understood and overcome, AI can significantly improve healthcare and deliver better patient outcomes.

We are at the beginning of this AI power revolution, and we've only just begun to realize the potential benefits AI will bring. The future is unknown but it more extraordinary AI healthcare innovation is just around the corner. And that is very exciting.



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#### Information Sources:

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