PYMNTS INTELLIGENCE | AI-ID™ TRUTH, AT THE SOURCE

October 2023

Generative AI Can Elevate Health and Revolutionize Healthcare

Generative AI Tracker® Series

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Generative AI Tracker® Series

What's Inside

Acknowledgment

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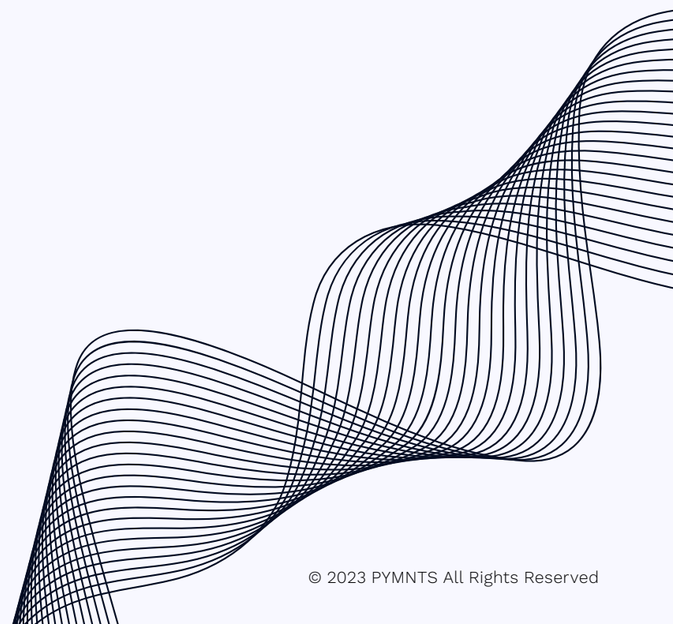


Background

AI Shifts into the Next (Generative) Gear in Healthcare

Artificial intelligence (AI) has been transforming health and medicine for several decades, whether through diagnostics, personalized medicine, data analytics or other innovations. The advent of generative AI is now reshaping drug discovery, diagnostics, clinical decisions and delivery of care.

Traditional healthcare companies — whether healthcare providers, payers, technology partners or pharmaceutical companies — recognize generative AI's potential. That potential can manifest in the form of faster drug discovery, more accurate diagnostic tools, improved clinical care and patient services, and so on. Each stakeholder is seeking ways to use the technology to their advantage. Medical professionals, patients and regulators are reacting to this new reality, pondering its implications — both promising and troubling — as well as yet-unanswered ethical questions.

11%

Share of physicians who use generative AI to aid in clinical decisions today

48%

Projected share of physicians who will likely use generative AI to aid in clinical decisions in 2–3 years

Background

Health tech and Big Tech join forces on generative AI solutions.

Today, traditional health IT and health-tech companies are partnering with tech giants such as Google, Amazon, Microsoft and Meta to bring their generative AI solutions to life. Leading health IT provider Epic's partnership with Microsoft to integrate generative AI into its electronic health record (EHR) software is a notable example.

The takeaway for both industry stakeholders and generative AI users is to watch investor actions. Sustained investor interest will drive the development of stronger, more effective use cases and lead to the emergence of numerous industry-specific generative AI applications in the years ahead. This trend mirrors the introduction of new technologies in previous decades.

Startups set the stage for generative AI in healthcare.

The generative AI market for healthcare is valued at more than $1 billion as of 2022, and it is projected to swell to almost $22 billion by 2032. Technology giants along with venture capitalists and private equity investors will play a significant role in that market as investors, partners and innovators.

These investments stand to benefit tech startups like Abridge, which is working to integrate its generative AI medical note-taking tool with Epic, a move that promises to streamline clinical workflows. Similarly, startup company Basys.ai secured $2.4 million in seed funding to advance its prior authorization tool, which leverages generative AI and deep learning to expedite the insurance preapproval process for medical procedures.

The generative AI market in healthcare is projected to grow at a compound annual growth rate (CAGR) of 35% through 2032.

$1.1B

Estimated global market for generative AI in healthcare in 2022

$22B

Projected global market for generative AI in healthcare in 2032

Background

Doctors and patients must have a say in shaping generative AI's role in clinical settings.

For every claim of generative AI's promise made by technology developers, there is often a fear of the unknown held by nearly everyone else, from medical professionals and patients to government officials.

Medical professionals can play a crucial role in demystifying that unknown, especially for their patients. As the experts in care, they have earned patients' trust through decades of experience and will be responsible for using generative AI in the clinical setting.

Patients also must be part of the equation because, after all, it is their health that is at stake. Their fears, comfort levels, trust and consent are factors in determining whether and to what extent generative AI should be involved in their treatment.

> **ChatGPT struggled with differential diagnosis, which is the meat and potatoes of medicine when a physician has to figure out what to do. That is important because it tells us where physicians are truly experts and adding the most value — in the early stages of patient care with little presenting information, when a list of possible diagnoses is needed.**

MARC SUCCI, MD
Associate chair of innovation and commercialization and strategic innovation leader

Mass General Brigham

Companies of Note

Generative AI Companies Stand Poised to Transform the Care Continuum

Healthcare-focused companies and startups are turning to generative AI innovations to tackle complex challenges related to drug discovery, diagnostic testing and patient care. They are securing investments, emerging from stealth mode and announcing new clients. In some instances, they are also being acquired, following a pattern commonly seen when a technology becomes more established.

An increasing number of companies are incorporating generative AI technology into their platforms with the goal of gaining a competitive advantage, discovering the next medical breakthrough or simply transforming patient care.

Recent examples span the globe: Hong Kong-based biotech Insilico Medicine has a platform that uses generative AI to expedite disease target identification and prediction of clinical trial outcomes. In addition, Swiss biotech Adaptyv Bio's platform leverages generative AI for protein engineering to optimize protein sequences.

Companies of Note

AI-assisted tools are making inroads in healthcare settings.

A small but growing number of companies are forming strategic partnerships and bringing AI solutions to the fields of drug discovery, diagnostics, patient care and claims management.

In August, Epic announced that it is working with Microsoft to support clinicians' access to clinical data such as medical notes and clinical coding. This announcement is part of a broader strategy that Epic is employing to bring generative AI into its electronic health records software. Around the same time, Epic also partnered with Abridge to integrate that company's note-taking service into its clinical documentation. This arrangement will provide clinicians with a real-time view of patient conversations.

Huma, a patient monitoring platform, will be using Google Cloud's generative AI to support its disease management platform. This advanced system captures vital signs, patient-reported data and biomarkers. Integrating generative AI gives Huma the ability to automate clinical summary reports, thereby streamlining patient communications and relieving clinicians from the burden of manual work.

Meanwhile, Tempus, a precision data management company, has introduced a generative AI-enabled clinical assistant. The goal is for the tool to support providers, offering them patient insights through a chat format.

Other examples are soon to follow. Among them is Google's Med-PaLM 2, a large language model (LLM) trained on medical data. The company recently announced that it plans to provide test access to this generative AI tool for select Google Cloud customers.

Innovation and Use Cases

Generative AI Boosts Medical Research and Drug Development

LLMs form the core of generative AI, providing researchers with unprecedented capacity to delve into existing research and connect more dots in mere minutes than would take a human an entire lifetime to achieve. In other words, generative AI can turbocharge the drug discovery and clinical trial process.

LLMs have a multitude of applications beyond drug discovery, promising to reshape other aspects of healthcare, such as patient interactions and care delivery. The U.S. Department of Health and Human Services (HHS) maintains a growing list of complex and detailed use cases that are either deployed or in development within the federal government. These AI applications serve various purposes, ranging from streamlining records management and conducting market surveillance to detecting opioids and tracking medication outcomes in patients.

Innovation and Use Cases

Generative AI can be a catalyst for accelerating drug discovery.

Industry studies show that the process of bringing a drug to market ranges from 12 to 18 years and can cost a staggering $2.6 billion. Most drugs, 90% in fact, fail to even make it to clinical trials. Generative AI platforms have the potential to change those metrics by expediting and improving the drug discovery process. If successful, these platforms could reduce the time and expense needed to develop new drugs and therapies.

Technology enablement — including the deployment of advanced AI — can boost revenues and reduce waste across the healthcare industry.

$250B–$300B

Estimated value created through technology enablement, including the deployment of advanced AI, in healthcare

50%–75%

Estimated percentage of manual tasks that could be eliminated by AI-enabled prior-authorization tools

Innovation and Use Cases

ROBERT C. GARRETT, FACHE
CEO

Hackensack Meridian *Health*

> **Generative AI has the potential to revolutionize how we deliver care, making it more efficient, personalized and effective.**

LLMs trained on healthcare lead to expanded applications and use cases beyond diagnostics and drug discovery.

Generative AI in healthcare is not limited to drug discovery and diagnostics. It is also shaping the patient and provider interactions behind the scenes. For example, Innovacer embeds privacy and regulatory measures into its models. London-based Medwise.ai teamed up with digital healthcare provider Babylon Health to equip clinicians with a customizable, industry-specific search platform that aims to boost decision-making confidence and enhance patient care.

Issues and Challenges

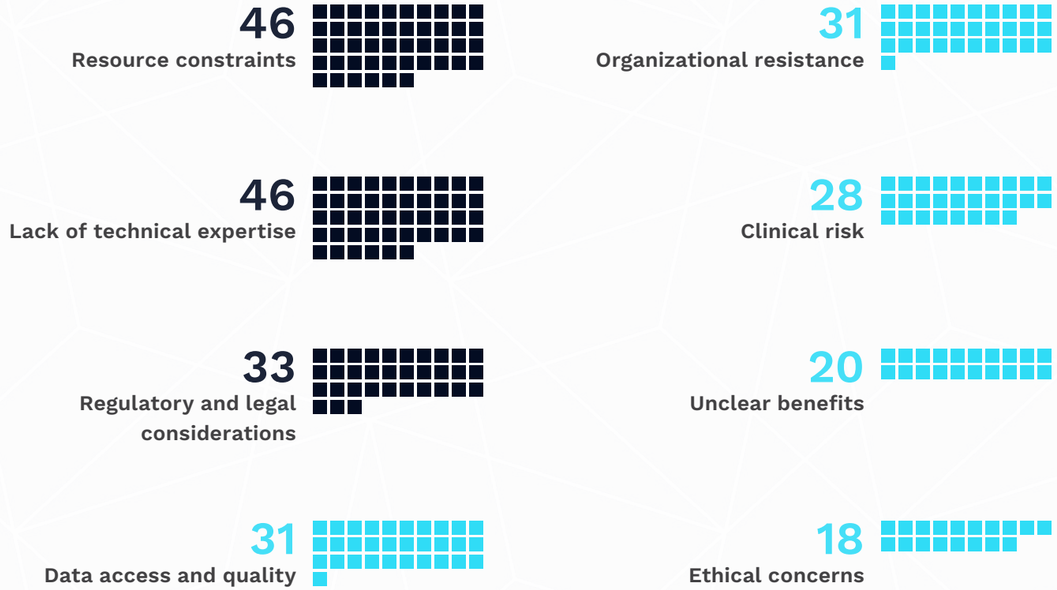
Generative AI's Technology Is Not Yet Fully Optimized for Healthcare

Generative AI faces many growing pains as it seeks its footing. In a recent survey, management consulting firm Bain & Company reveals that the main barriers to generative AI in healthcare are a lack of resources, expertise and regulation, with data access and quality and organizational resistance close behind. The recurring theme across industry studies is that generative AI in healthcare is nascent and needs time to prove its efficacy and to earn public trust.

A lack of resources, expertise and regulation are the biggest barriers to generative AI in healthcare.

What do you see as the biggest barriers to implementing generative AI at your health system?

NUMBER OF RESPONSES BY BARRIER



Source: Bain Health Systems Survey

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Issues and Challenges

Robust benchmarks will increase confidence.

MARC SUCCI, MD

Associate chair of innovation and commercialization and strategic innovation leader

Mass General Brigham

> **No real benchmarks exist, but we estimate [ChatGPT's] performance to be at the level of someone who has just graduated from medical school, such as an intern or resident. This tells us that LLMs … have the potential to be an augmenting tool for the practice of medicine and support clinical decision-making with impressive accuracy.**

The lesson for technology companies, pharmaceutical firms and healthcare providers considering generative AI in their strategies is that the technology is not yet fully optimized for healthcare. For generative AI to bear fruit, it needs investors, technology, resources, expertise, LLMs trained with healthcare-specific data, and robust guidelines. Ultimately, society needs to be ready for and comfortable with the involvement of generative AI in managing patient health and treatment.

The task ahead entails expanding resources and expertise, training models on healthcare-specific data and establishing robust benchmarks. In time, through multiple iterations, generative AI will sharpen its analysis. Developers will fine-tune the benchmarks and criteria used in their models, aligning them with emerging regulatory guidelines. The result will be improved accuracy in diagnoses and recommended treatments.

Issues and Challenges

Ethical guidelines and human readiness will shape generative AI use and governance.

Regulators are urged to move fast, but doing so too quickly could bring unintended consequences. The same caution applies to technology companies that are eager to earn a profit from their innovations. AI tools that gain FDA approval are setting a precedent for what will become commonplace in the future. The potential downside may be that ethical dilemmas will prompt companies and regulators to reconsider their positions.

According to a recent study, Americans have mixed feelings about the use of generative AI in their healthcare. While they are enthusiastic about the potential benefits, most Americans are hesitant to replace their medical professionals with this technology. These sentiments may shift over time as technology matures and regulatory guidelines become more robust.

Americans see the upsides of AI in their healthcare but need more time to become comfortable with the concept.

Share of Americans who would be uncomfortable with a provider relying on AI in their healthcare

Share of Americans who believe AI would deliver better outcomes for patients

Share of Americans who believe AI would help reduce mistakes

Share of Americans who believe using AI to diagnose diseases and suggest treatments would harm the patient-provider relationship

Policy and Regulation

With Blueprints Drafted, Regulation Is Still in the Works

Today's emerging guidelines and regulations will form the building blocks of tomorrow's generative AI governance. While it's important that all relevant stakeholders weigh in on new rules, a few companies have already taken steps by making voluntary commitments to responsible AI practices.

As regulators establish guidelines, they will need to strike the right balance between advocating for consumer privacy and championing innovation. They will have to determine whether existing regulatory bodies are equipped to govern a technology they may not fully understand. Similar considerations will apply to ethical issues like data privacy, transparency, responsible use, biases and so on.

Different regions of the world show varying degrees of enthusiasm and concern regarding generative AI's role in health and medicine. The larger the geographic region to be governed, the more complex the considerations that are likely to come to the fore, signaling several years — perhaps decades — before robust regulations are established.

Policy and Regulation

Plenty of voices exist; cohesion is another matter.

Many industry stakeholders, including proponents and critics, are making their voices heard in regulatory circles in Washington, D.C., hoping to influence regulation of generative AI. Alphabet, Microsoft and OpenAI have already offered their perspectives. Other stakeholders, such as medical professionals and consumers, must also be part of the conversation. The pace of global acceptance and readiness is already varied. European regulators tend to be more deliberate and thorough, proposing full human control over AI systems rather than automation. Medical professionals in China appear more receptive to generative AI than their counterparts in the U.K.

With so many different agendas to fulfill, developing a cohesive set of rules and standards will not be a simple task.

Openness to generative AI is more prevalent among more recently developed economies than more established ones.

53%

Share of clinicians in China optimistic about generative AI adoption in the next 2–3 years

42%

Share of clinicians in the U.S. optimistic about generative AI adoption in the next 2–3 years

34%

Share of clinicians in the U.K. optimistic about generative AI adoption in the next 2–3 years

Policy and Regulation

Too many (regulatory) cooks in the kitchen?

The technological, anthropological, medical and commercial aspects of generative AI's application in health and medicine are accompanied by regulatory considerations, involving various stakeholders on multiple fronts. For example, in the U.S., the FDA, HHS, and Federal Trade Commission (FTC) each wield specific federal oversight powers of AI usage in healthcare. State bodies will also have a say in how generative AI is used.

Globally, organizations such as the Alliance for Artificial Intelligence in Healthcare and the World Health Organization (WHO) also establish standards, policies and ethical guidelines concerning AI in healthcare.

Both the WHO and HHS have developed what may well serve as the blueprint for governing generative AI in healthcare. The WHO points to consistency in practices and practical considerations like transparency, inclusion, public engagement, expert supervision and rigorous evaluation. The HHS' Trustworthy AI Playbook from 2021 lists six key concerns for AI in healthcare: data privacy, impartiality and bias, transparency in algorithms, responsibility and accountability, data safety and security, and robust and reliable results.

Policy and Regulation

WHO provides guidance on core ethical principles in designing, developing and deploying AI for health

- **Protect autonomy.**
- **Promote human well-being, human safety and the public interest.**
- **Ensure transparency, explainability and intelligibility.**
- **Foster responsibility and accountability.**
- **Ensure inclusiveness and equity.**
- **Promote AI that is responsive and sustainable.**

It is too early to tell which entity or entities will have the authority to regulate generative AI in health and medicine. As the governance landscape gradually takes shape, there are no imminent deadlines. Therefore, healthcare providers and technology partners should review their existing policies and procedures to ensure they align to the guidance provided by organizations such as the WHO and HHS.

About

PYMNTS INTELLIGENCE

PYMNTS Intelligence is a leading global data and analytics platform that uses proprietary data and methods to provide actionable insights on what's now and what's next in payments, commerce and the digital economy. Its team of data scientists include leading economists, econometricians, survey experts, financial analysts and marketing scientists with deep experience in the application of data to the issues that define the future of the digital transformation of the global economy. This multilingual team has conducted original data collection and analysis in more than three dozen global markets for some of the world's leading publicly traded and privately held firms.

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