

November News | Generative AI Report for Healthcare | Unlocking the potential of generative AI for patients, practitioners and pharmaceutical companies

THE RISE OF GENERATIVE AI IN HEALTHCARE

While AI alone has already begun to improve disease diagnosis through rapid, advanced medical imaging analysis and other techniques, **generative AI** has the potential to transform clinical workflows and the way doctors work.

The AI in Healthcare Market is projected to grow from $14.6 billion in 2023 to $102.7 billion by 2032, growing at a CAGR of 47.6%. (MarketsandMarkets)

Venture capital firms have invested over $1.7 billion in generative AI solutions over the last three years, with AI-enabled drug discovery and AI software coding receiving the most funding. (Gartner)

It's predicted that by 2025, generative AI will be used by 50% of drug discovery and development initiatives. (Gartner)

"In healthcare, as in other industries, generative AI holds the transformative potential to liberate humans from repetitive tasks, allowing them to focus their efforts on higher-value activities and freeing up time to address more complex needs."

Paul de Balincourt, Director, Healthcare Data & AI Transformation at Artefact

Generative AI Report for healthcare
Unlocking the potential of generative AI for patients, practitioners and pharmaceutical companies

Using an **ecosystem-focused approach with the patient always at the center**, it categorizes the GenAI healthcare landscape into patient-facing actors and enablers and explores **GenAI use cases for each**.

Here are a few of the many ways generative AI benefits healthcare stakeholders:

Pharmaceutical companies can synthesize patient data generation for clinical trials, enable de novo biomolecule generation, and improve engagement assistants for sales reps.

Care providers use image enhancement and analysis for improved diagnosis and treatment planning, as well as to rapidly summarize vast quantities of medical information.

Researchers can scan a multitude of health and medical records to streamline the recruitment funnel and better identify appropriate candidates for clinical trials.

Public health agencies can analyze vast amounts of population data to detect early signs of outbreaks, monitor and predict the spread of pathogens, and identify sources of infection.

Concrete Generative AI use cases:
Applications and benefits in the healthcare sector

Several prominent categories of generative AI use cases are emerging, from data augmentation, insight generation, and biomolecule development, to content personalization, productivity and automation.

Use Case #1: Synthetic patient data generation to accelerate clinical trials

Target: Clinical trial investigators.

Accelerate patient recruitment to reduce time to phase III launch.

Virtually augment patient data with synthetic data on clinical features, genomics, treatment and outcomes; validate to assess fidelity and privacy preservability.

"Generative AI can reduce the time needed for the third phases of clinical trials, thanks to 'augmented cohorts' (i.e., virtual patients generated by AI) even though physician validation is required at every stage of the process."

Stéphanie Allassonnière, Professor and Vice-President, Valorisation and Industrial Partnerships at Université Paris Cité

Use Case #2: Healthcare professional (HCP) administrative assistant

Target: Members of medical, dental, pharmacy or nursing teams.

Make content from numerous sources (studies, clinical guidelines, research papers…) easier to memorize, use and share it with other HCPs.

Centralize content to make it searchable by a GenAI model; train the proper LLM to support identified prompts (i.e., summarization, source identification, medical questions…); validate to assess response accuracy, recommendation relevance, etc.

"In 2020, over 100,000 articles were published on a single pathology: COVID. Generative AI has the potential to relieve healthcare professionals who lack the time to keep up with the ever-expanding volume of scientific literature by providing them with generated summaries of publications."

Grégoire Pigné CEO & Oncologist and Radiation Therapist at PulseLife

The healthcare ecosystem: Gearing up to unlock the potential of generative AI

We can divide the ecosystem into four main groups of players:

Hyperscalers democratize generative AI and have already begun to create healthcare domain-specific models and services. **Med-Palm2 by Google, Microsoft BioGPT, HealthScribe by AWS**, and **NVIDIA BioNeMo** are just a few.

Startups such as **Nabla**, **Memora Health** and **Hippocratic AI** complement hyperscalers with innovative solutions to address more specific problems.

Pharmaceutical companies use generative AI to help develop POCs and accelerate drug discovery. Some collaborations to watch

are **Sanofi+Insilico Medicine**, **Pfizer+Iktos**, **Servier+Aqemia** and **AstraZeneca+Benevolent**.

Public domain stakeholders, including hospitals and research institutes. **Docaposte**, a French expert in sensible computing, recently announced the launch of its first sovereign LLM service with healthcare use cases.

Investors are also joining the GenAI revolution, funding high-impact projects:

"The challenge lies in integrating Generative AI into established companies that already have access to high-quality healthcare data, rather than investing in new startups."
Anne-Sophie Saint-Martin, Partner at Newfund Capital

"While most current projects are in the early stages of development, the combination of GenAI and quantum computing in drug discovery could not only lead to the creation of new treatments, but also to new advances that nature itself is not yet able to offer."
Florian Denis, Investment Director at Elaia

Limitations, challenges and opportunities of Gen AI in healthcare

Although GenAI holds the promise of revolutionizing the healthcare industry, it also brings significant risks and challenges. We highlight the most significant of these and explore potential mitigation strategies.

For example, to protect patient data without the need for anonymization, French start-up Sarus ensures no personal information is embedded in fine-tuned LLMs.

"LLMs tend to 'hallucinate' wrong responses. One way to mitigate this phenomenon is to automatically retrieve the documents in a knowledge base that are most likely to contain elements of the response and add them to the prompt so that the LLM has more context to give a correct answer."
Nicolas Grislain, Co-founder and Chief Scientific Officer at Sarus

Data accessibility also plays a pivotal role in providing the necessary input for generative AI models; likewise, data acculturation and training are indispensable to familiarize healthcare professionals with the use and potential associated risks of this technology.

"It is essential to frame the use of a Generative AI model with a usage convention and to ensure in-depth training for health professionals regarding its intrinsic constraints and vulnerabilities."

Jean-Marc Bereder, Artificial Intelligence Usage Specialist & Former Head of department at Nice University Hospital

Trust and control, a critical role in ensuring responsible, trustworthy AI

Many players are moving forward with high uncertainty about achievable performance, possible levels of industrialization, and as yet undefined regulatory constraints.

To overcome these challenges:

Humans must always be at the center of decision-making processes to exercise control and make informed decisions.

Humans must remain the primary beneficiaries of the productivity gains of GenAI applications in healthcare and patient management.

And human oversight must ensure that AI is harnessed for its capabilities to ensure.

"Over the long term, humans risk becoming overly reliant on generated documents, which could lead to a loss of comprehension and technical skills. Human decision-making must be preserved to prevent alienation caused by LLMs."

Vincent Vuiblet, Professor of Universities & Hospital Practitioner – CHU Reims, URCA; Director of the Institute for AI in Healthcare Reims Champagne Ardenne (I2AS)

Share this article

Contact Us