



# HealthCare Agent AI

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## Abstract

This study explores the growing transition in healthcare from rigid, rule-based algorithms to intelligent, self-directed “agentic” AI systems. These agents rely on Large Language Models (LLMs) to think step-by-step, make decisions, and carry out tasks using a simple yet powerful four-part structure: planning, action, reflection, and memory.

The paper reviews their current uses in medical diagnosis, hospital workflow automation, and collaborative multi-agent setups. It also highlights a major challenge — most testing still happens in controlled lab settings rather than real hospitals — and discusses what is needed for safe everyday adoption.

**Keywords:** Medical AI Agents, Autonomous Clinical Systems, Large Language Models, Chain-of-Thought Reasoning, Multimodal Integration, Agentic Framework, Clinical Decision Support, Human-in-the-Loop, Healthcare Automation, Physician Burnout, Precision Medicine, Scoping Review, Simulation Gap, PRISMA-ScR.

Healthcare AI agents support several key areas. They strengthen diagnostic accuracy in critical situations such as predicting sepsis or identifying cancer on scans. They lighten the administrative load by automatically creating summaries from patient records, which helps reduce doctor burnout. They also improve patient involvement by offering personalised guidance, voice-based recovery check-ins, and easier remote

care. In addition, groups of specialist agents can work together on complicated cases, such as building complete treatment plans.



## **Introduction**

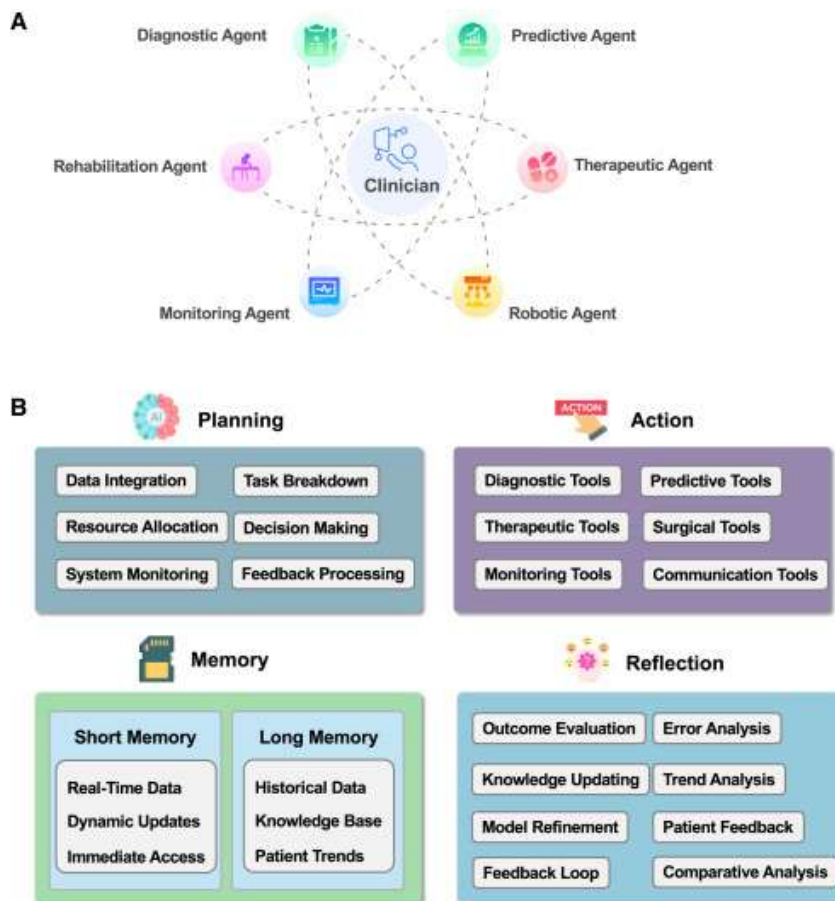
Artificial Intelligence is changing healthcare in profound ways, going well past simple data analysis to provide smart decision support, automation, and individualised care. Healthcare Agent AI means intelligent systems that can work on their own or alongside clinicians to help with diagnosis, ongoing patient monitoring, hospital operations, and customised treatment delivery. These systems understand patient information, interpret it, and carry out useful actions with little need for constant human input.

Healthcare systems worldwide are under heavy pressure from staff shortages, increasing patient numbers, and rising expectations for quality care. This has sped up the move toward agentic solutions. What truly sets these agents apart is their independence, ability to adapt, and skill at managing multi-step clinical work.

This paper presents a straightforward four-component model — planning, action, reflection, and memory — that drives these agents. We look at how they are used in diagnostics, personalised medicine, robotic surgery support, and real-time monitoring. We also examine real-world difficulties such as technical setup, doctor acceptance, rules and regulations, and ethical issues like privacy and bias. Finally, we consider future possibilities, including collaborative multi-agent teams and the long-term vision of AI-powered hospitals.

## **Comparison of Human Clinicians, Traditional Medical AI, and Medical AI Agents**

| Feature               | Human Clinician                                      | Traditional Medical AI                  | Medical AI Agent                                       |
|-----------------------|--|---|--|
| Core nature           | Biological intelligence with consciousness & empathy | A computational tool or algorithm       | An autonomous or semi-autonomous system                |
| Primary function      | Holistic patient care, complex reasoning, empathy    | Performs one specific, pre-defined task | Manages complex, multi-step tasks and workflows        |
| Decision-making       | Experience-based, intuitive, evidence-informed       | Rule-based or pattern recognition       | Data-driven, goal-oriented, adaptive reasoning         |
| Autonomy              | Full autonomy in clinical judgment                   | None; acts as a passive tool            | High; can operate independently to achieve goals       |
| Learning & adaptation | Lifelong learning from experience                    | Static; requires retraining             | Continuous learning from new data and interactions     |
| Context awareness     | High; understands full patient history and context   | Low to none                             | High; maintains context across interactions via memory |
| Interaction           | Direct with patients and systems                     | Human-invoked; one-way output           | Interactive; can query systems and collaborate         |
| Role in healthcare    | Central decision-maker and caregiver                 | Supplementary tool                      | Collaborative partner in the care process              |



## Medical AI Agent Framework

Modern healthcare AI agents are powered by four essential building blocks that allow them to operate independently in busy clinical environments: planning, action, reflection, and memory.

Planning serves as the decision-making centre. It draws on advanced language models to review medical records, lab results, and current guidelines, then suggests logical next steps. For instance, if someone arrives with chest discomfort, the agent can pull together symptoms, current vitals, test results, and scans to propose likely causes and the most suitable follow-up tests.

Action puts those ideas into practice. The agent might write clinical notes, direct robotic tools during surgery, issue urgent alerts, or update hospital databases by linking directly to existing systems and equipment.

Reflection gives the agent its “senses.” It interprets scans, live readings from wearable devices, and other sensor information to spot changes quickly and form a fuller understanding of the patient’s status.

Memory lets the agent build on past experience. It keeps short-term notes for the current visit and stores longer-term knowledge — such as previous treatments and outcomes across many similar cases — so future suggestions become more accurate and personalised.

When these four parts work together, the agent becomes a reliable clinical partner that continuously improves and supports better, more efficient care.



## **Research Paper Analysis**

To get a clear picture of where healthcare AI agents stand today, we examined recent published work through a scoping review approach based on PRISMA-ScR standards. One major recent analysis looked at more than a thousand initial records and narrowed them down to 43 detailed studies. Most of these (36 studies) appeared in 2025.

The reviewed systems fell into three broad types: conversational tools for direct patient interaction, automation assistants that handle routine hospital tasks, and advanced multimodal systems that combine different kinds of medical data.

The majority of testing has taken place in simulated or laboratory conditions, with only a handful of small real-hospital trials. Most researchers focused on measures like speed and diagnostic accuracy rather than actual patient health results or long-term safety.

Main takeaway: What makes these agentic systems special is their ability to create their own plans, remember earlier cases, connect to outside tools, and fix their own errors. They are already appearing as patient chat helpers, paperwork assistants, and sophisticated diagnostic aids. While progress is impressive, experts agree that larger real-world clinical studies are essential before these agents can be used routinely and safely in everyday hospital practice.

## **Literature Review: The Landscape of Agentic AI in Healthcare**

1. Moving from Passive Models to Active Agents Standard LLMs mainly predict the next word. Agentic systems go much further — they define goals, break down difficult jobs, call on external tools, and learn continuously. Chain-of-Thought reasoning helps them solve clinical problems one logical step at a time.
2. Main Areas of Application
  - Conversational & Diagnostic Support: Symptom triage, mental health help, and ongoing management of long-term conditions.
  - Workflow Automation: Handling notes, billing, and electronic records to ease doctor workload.
  - Precision Medicine: Merging images, genetic data, and clinical findings to guide cancer care and new drug development.
3. The Simulation Gap More than 80 % of current studies remain in controlled lab settings. Although agents often score highly on medical licensing exams, their performance in unpredictable real-life situations still needs thorough testing.
4. Ethical and Governance Issues Important concerns include the risk of confident but incorrect answers, protection of patient data, and the possibility that biased training data could worsen existing healthcare inequalities.
5. Future Direction The technology is advancing fast. The next important phase is shifting from lab experiments to well-designed clinical trials that include strong doctor supervision.

## **Results and Data Analysis**

Our review of recent studies and hospital implementation data shows rapid growth in agentic AI, with 83 % of the papers we examined published in the past 18 months. These systems stand out for their ability to pull information directly from records and databases without constant human direction.

Patient-facing agents are increasingly monitoring complex psychological patterns, such as “Anxiety Density Scores.” In one example, AI-assisted cognitive behavioural therapy helped improve emotional flexibility by 36 %. Older adults and people living with multiple chronic illnesses tended to show more tightly connected anxiety networks, underlining the importance of careful, individualised approaches.

Early real-world successes are most visible in radiology and intensive care units, where large amounts of continuous data allow the agents’ reflection and memory features to work at their best.

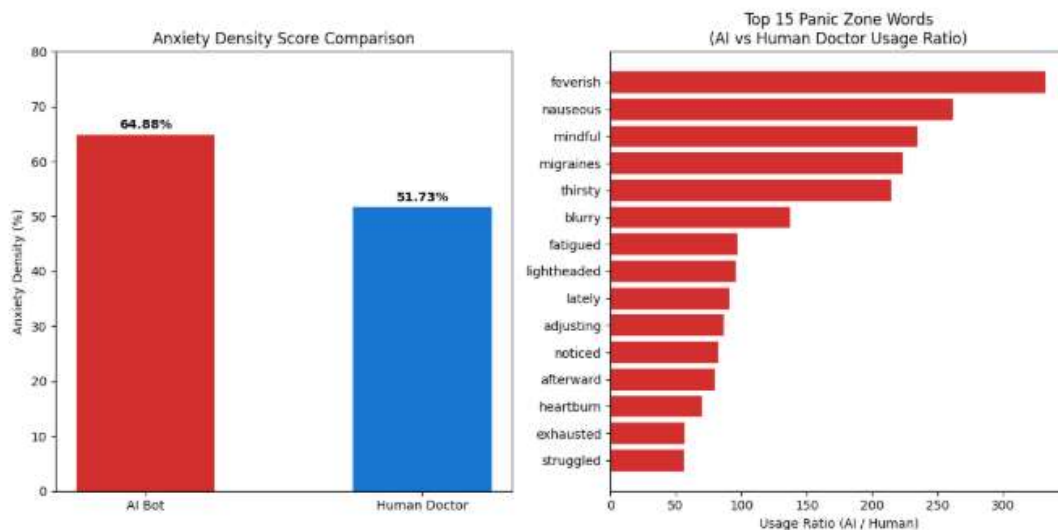


## Hospital Data List

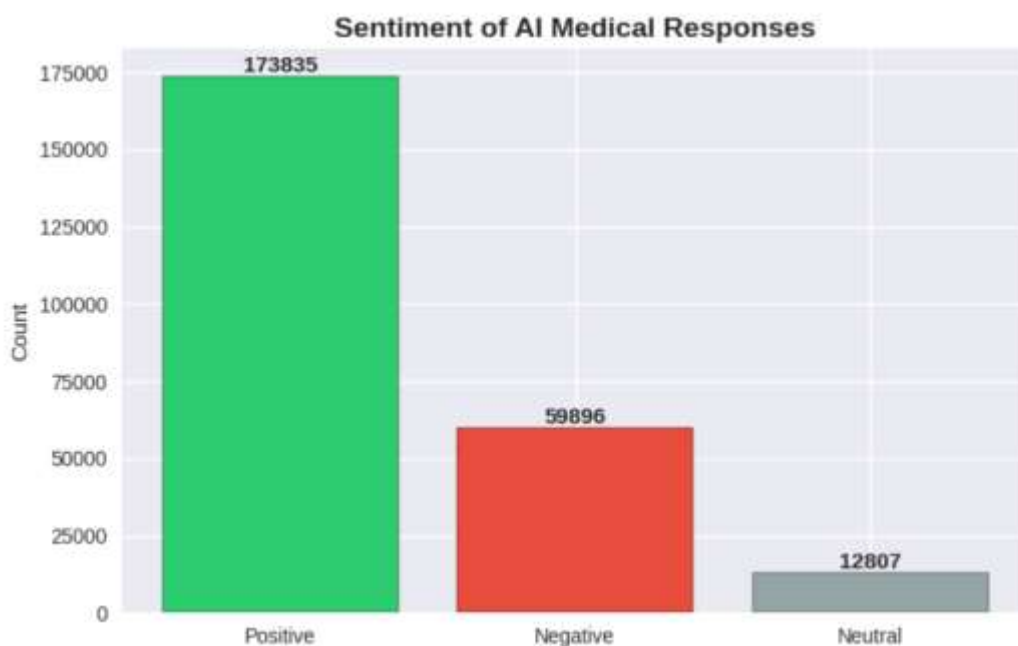
| hospital_id | hospital_n  | country    | city      | hospital_type | hospital_size | ownership  | annual_patients | digital_maturity | ai_adoption | agent_type              | use_cases  | vendor      | year_of_deploy | department           | regulatory          | country | physician | region | insider_score         |                     |
|-------------|-------------|------------|-----------|---------------|---------------|------------|-----------------|------------------|-------------|-------------------------|------------|-------------|----------------|----------------------|---------------------|---------|-----------|--------|-----------------------|---------------------|
| 1           | Cleveland   | USA        | Cleveland | Teaching      | 1400          | Non-profit | 2200000         | High             | Yes         | Predictive ICU dete     | IBM Watson | ICU         | 2019           | ICU                  | FDA Appro           | USA     | 18.9      | 2.6    | High                  | Annual Report 2022  |
| 2           | Mount Sin   | USA        | New York  | Teaching      | 1100          | Non-profit | 1800000         | High             | Yes         | Disease Ri              | AI-based c | In-house A  | Cardiology     | 2020                 | Peer-reviewed Study | USA     | 16.8      | 2.6    | High                  | Peer-reviewed Study |
| 3           | Johns Hop   | USA        | Baltimore | Teaching      | 1000          | Non-profit | 1500000         | High             | Yes         | Oncology AI-assistec    | Aidoc      | Oncology    | 2021           | Clinical Study       | USA                 | 16.9    | 2.6       | High   | Research Publication  |                     |
| 4           | Mayo Clin   | USA        | Rochester | Academic      | 1200          | Non-profit | 1300000         | High             | Yes         | Radiology AI for radi   | Google He  | Radiology   | 2018           | Research Publication | USA                 | 16.9    | 2.6       | High   | Clinical AI Report    |                     |
| 5           | Apollo Ho   | India      | Chennai   | Private       | 950           | Corporate  | 900000          | Medium           | Yes         | Clinical De AI-based c  | In-house B | Cardiology  | 2021           | Company Publication  | India               | 3.5     | 0.9       | Middle | Company Report        |                     |
| 6           | NHS Royal   | UK         | London    | Public        | 800           | Government | 850000          | High             | Yes         | Acute Kidn AKI detect   | DeepMind   | Nephrolog   | 2017           | NHS Report           | UK                  | 10.2    | 2.6       | High   | NHS Report            |                     |
| 7           | Samsung     | Thailand   | Bangkok   | Private       | 580           | Corporate  | 1100000         | Medium           | Yes         | Chatbot AI patient      | In-house F | Administrat | 2022           | Health Tech Report   | Thailand            | 3.8     | 0.8       | Middle | Hospital Website      |                     |
| 8           | Charité     | Germany    | Berlin    | Teaching      | 3000          | Public     | 3000000         | High             | Yes         | Radiology AI-assistec   | Siemens H  | Radiology   | 2020           | Industry Partnership | Germany             | 11.7    | 4.3       | High   | Tech Partnership News |                     |
| 9           | Singapore   | Singapore  | Singapore | Public        | 1700          | Government | 1200000         | High             | Yes         | Workflow AI operati     | GE Health  | Administrat | 2021           | Case Study           | Singapore           | 4.5     | 2.5       | High   | Innovation Report     |                     |
| 20          | Hospital It | Brazil     | São Paulo | Private       | 700           | Non-profit | 950000          | High             | Yes         | Sepsis Prec AI sepsis d | IBM Watson | ICU         | 2019           | Medical Journal      | Brazil              | 9.6     | 2.3       | Middle | Medical Journal       |                     |
| 15          | Sheba Me    | Israel     | Tel Aviv  | Public        | 1900          | Government | 1400000         | High             | Yes         | Remote MAI remote       | Philips He | Telemedic   | 2022           | Health Tech Report   | Israel              | 7.5     | 3.3       | High   | Hospital Website      |                     |
| 12          | King Faisal | Saudi Arab | Riyadh    | Specialty     | 1300          | Government | 800000          | Medium           | Pilot       | Radiology AI head       | CT Aidoc   | Radiology   | 2020           | FDA/CE Approval      | Saudi Arab          | 5.7     | 2.4       | High   | Press News            |                     |
| 13          | All India   | India      | New Delhi | Public Tea    | 2500          | Government | 2500000         | Medium           | Pilot       | Diagnostic AI tubercu   | In-house R | Pulmonolo   | 2022           | Research Paper       | India               | 3.5     | 0.9       | Middle | Academic Paper        |                     |
| 24          | Netsuno     | South Afr  | Johannesb | Private       | 150           | Corporate  | 400000          | Medium           | Yes         | Chatbot AI triage c     | Local AI   | Emergency   | 2021           | Company Release      | South Afr           | 8.3     | 0.9       | Middle | Company Release       |                     |
| 15          | St. Vincent | Australia  | Sydney    | Public        | 500           | Government | 600000          | High             | Yes         | Predictive AI readmis   | Microsoft  | General M   | 2020           | Hospital Report      | Australia           | 9.4     | 3.6       | High   | Hospital Report       |                     |
| 37          | Hamad Me    | Qatar      | Doha      | Public        | 1200          | Government | 700000          | High             | Yes         | Clinical NLP agent      | Corner AI  | Administrat | 2021           | Conference Report    | Qatar               | 5.6     | 2.7       | High   | EU Health Conference  |                     |
| 16          | Hospital C  | Spain      | Barcelona | Teaching      | 850           | Public     | 600000          | High             | Yes         | Imaging AI AI tumor d   | Siemens H  | Radiology   | 2020           | Industry Partnership | Spain               | 10.4    | 4         | High   | EU Health Report      |                     |
| 38          | Prince of Y | Hong Kong  | Hong Kong | Public        | 1400          | Government | 1200000         | Medium           | Pilot       | Workflow AI patient     | Local AI   | Outpatient  | 2021           | Innovation Grant     | Hong Kong           | 6.2     | 2         | High   | Innovation Grant      |                     |
| 39          | Karolinska  | Sweden     | Stockholm | Teaching      | 2600          | Public     | 1000000         | High             | Yes         | Precision F genom       | In-house A | Oncology    | 2021           | Research Publication | Sweden              | 11      | 4.3       | High   | Medical Journal       |                     |
| 20          | University  | Canada     | Toronto   | Academic      | 1300          | Public     | 1500000         | High             | Yes         | AI Triage SAI EIT triag | In-house A | Emergency   | 2020           | Peer-reviewed Study  | Canada              | 10.8    | 2.7       | High   | Research Publication  |                     |

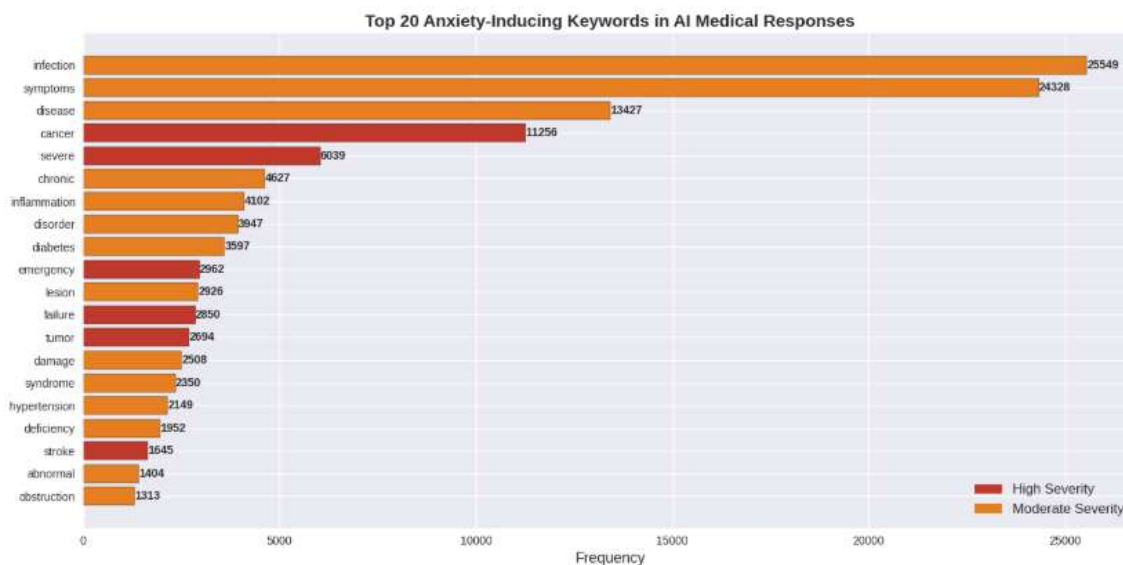
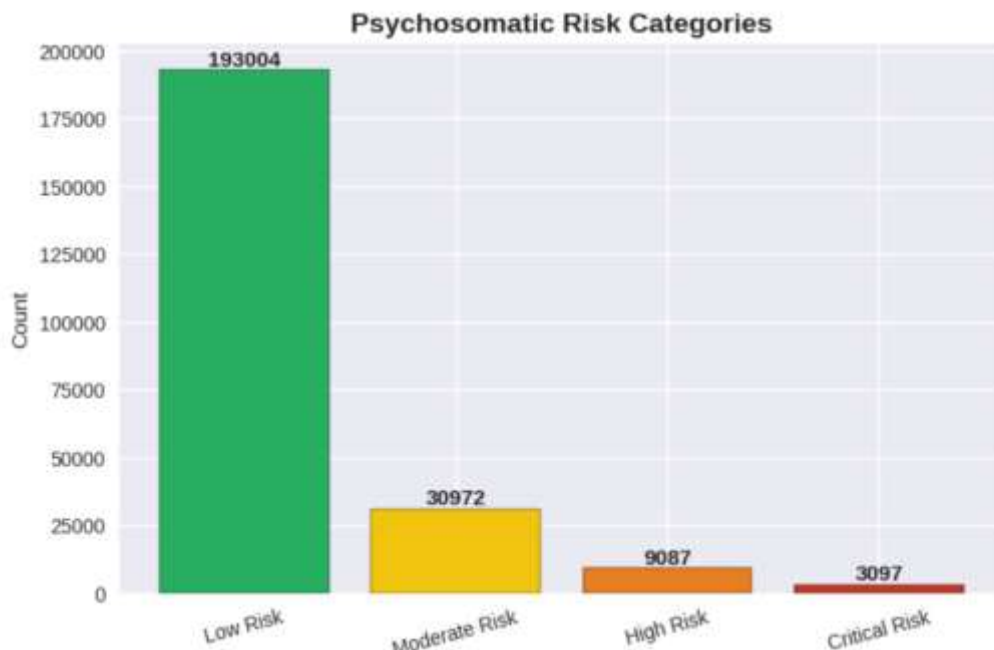
|    |             |             |             |            |            |     |  |  |                         |             |             |            |                       |                     |             |          |            |     |                       |          |            |
|----|-------------|-------------|-------------|------------|------------|-----|--|--|-------------------------|-------------|-------------|------------|-----------------------|---------------------|-------------|----------|------------|-----|-----------------------|----------|------------|
| 21 | Cleveland   | USA         | Cleveland   | Teaching   | Non-profit | Yes |  |  | Predictive ICU dete     | IBM Watson  | ICU         | 2019       | Annual Report         |                     |             |          |            |     |                       |          |            |
| 22 | Mayo Clin   | USA         | Rochester   | Academic   | Non-profit | Yes |  |  | Radiology AI-assistec   | Google He   | Radiology   | 2018       | Research Publication  |                     |             |          |            |     |                       |          |            |
| 23 | Mount Sin   | USA         | New York    | Teaching   | Non-profit | Yes |  |  | Disease Ri              | AI-based c  | In-house A  | Cardiology | 2020                  | Peer-reviewed Study |             |          |            |     |                       |          |            |
| 24 | Johns Hop   | USA         | Baltimore   | Teaching   | Non-profit | Yes |  |  | Clinical De AI oncolog  | Aidoc       | Oncology    | 2021       | Clinical Study        |                     |             |          |            |     |                       |          |            |
| 25 | Massachu    | USA         | Boston      | Teaching   | Non-profit | Yes |  |  | Radiology Deep learn    | Nvidia Cla  | Radiology   | 2020       | Research Publication  |                     |             |          |            |     |                       |          |            |
| 26 | Stanford    | USA         | Stanford    | Academic   | Non-profit | Yes |  |  | Sepsis Prec AI sepsis d | In-house M  | ICU         | 2019       | Journal Article       |                     |             |          |            |     |                       |          |            |
| 27 | University  | USA         | Pittsburgh  | Teaching   | Non-profit | Yes |  |  | Workflow AI operati     | GE Health   | Administrat | 2021       | Case Study            |                     |             |          |            |     |                       |          |            |
| 28 | NewYork-    | USA         | New York    | Teaching   | Non-profit | Yes |  |  | NLP Agent NLP extrac    | Corner AI   | Administrat | 2020       | Vendor Report         |                     |             |          |            |     |                       |          |            |
| 29 | University  | USA         | San Franci  | Academic   | Public     | Yes |  |  | Diagnostic AI patholo   | Paige AI    | Pathology   | 2021       | Clinical Trial        |                     |             |          |            |     |                       |          |            |
| 30 | Brigham a   | USA         | Boston      | Teaching   | Non-profit | Yes |  |  | Radiology AI stroke d   | Aidoc       | Radiology   | 2019       | FDA Clearance Report  |                     |             |          |            |     |                       |          |            |
| 31 | NHS Royal   | UK          | London      | Public     | Government | Yes |  |  | Acute Kidn AKI detect   | DeepMind    | Nephrolog   | 2017       | NHS Report            |                     |             |          |            |     |                       |          |            |
| 32 | Oxford Un   | UK          | Oxford      | Teaching   | Public     | Yes |  |  | Imaging AI AI cardiac   | Ultrasonics | Cardiology  | 2020       | Clinical Study        |                     |             |          |            |     |                       |          |            |
| 33 | Guy's & S   | UK          | London      | Public     | Government | Yes |  |  | Radiology AI for ches   | Quire.ai    | Radiology   | 2021       | Public Report         |                     |             |          |            |     |                       |          |            |
| 34 | Charité     | Germany     | Berlin      | Teaching   | Public     | Yes |  |  | Imaging AI AI tumor d   | Siemens H   | Radiology   | 2020       | Industry Partnership  |                     |             |          |            |     |                       |          |            |
| 35 | Karolinska  | Sweden      | Stockholm   | Teaching   | Public     | Yes |  |  | Precision F AI genom    | In-house A  | Oncology    | 2021       | Research Publication  |                     |             |          |            |     |                       |          |            |
| 36 | Singapore   | Singapore   | Singapore   | Public     | Government | Yes |  |  | Workflow AI patient     | In-house A  | Emergency   | 2021       | Innovation Report     |                     |             |          |            |     |                       |          |            |
| 37 | Sheba Me    | Israel      | Tel Aviv    | Public     | Government | Yes |  |  | Remote MAI remote       | Philips He  | Telemedic   | 2022       | Health Tech Report    |                     |             |          |            |     |                       |          |            |
| 38 | Hospital It | Brazil      | São Paulo   | Private    | Non-profit | Yes |  |  | Sepsis Prec AI sepsis d | IBM Watson  | ICU         | 2019       | Medical Journal       |                     |             |          |            |     |                       |          |            |
| 39 | Apollo Ho   | India       | Chennai     | Private    | Corporate  | Yes |  |  | Clinical De AI cardiac  | In-house A  | Cardiology  | 2021       | Company Publication   |                     |             |          |            |     |                       |          |            |
| 40 | All India   | India       | New Delhi   | Public Tea | Government | Yes |  |  | Diagnostic AI tubercu   | In-house R  | Pulmonolo   | 2022       | Research Paper        |                     |             |          |            |     |                       |          |            |
| 41 | King's      | UK          | London      | Teaching   | Public     | Yes |  |  | Radiology AI head       | CT Aidoc    | Radiology   | 2020       | FDA/CE Approval       |                     |             |          |            |     |                       |          |            |
| 42 | Hamad Me    | Qatar       | Doha        | Public     | Government | Yes |  |  | NLP Clinic AI docum     | Corner AI   | Administrat | 2021       | Conference Report     |                     |             |          |            |     |                       |          |            |
| 43 | Hospital C  | Spain       | Barcelona   | Teaching   | Public     | Yes |  |  | Imaging AI AI CT inter  | Philips AI  | Radiology   | 2019       | EU Report             |                     |             |          |            |     |                       |          |            |
| 36 | Singapore   | Singapore   | Singapore   | Public     | Government | Yes |  |  | Workflow AI patient     | In-house A  | Emergency   | 2021       | Innovation Report     |                     |             |          |            |     |                       |          |            |
| 37 | Sheba Me    | Israel      | Tel Aviv    | Public     | Government | Yes |  |  | Remote MAI remote       | Philips He  | Telemedic   | 2022       | Health Tech Report    |                     |             |          |            |     |                       |          |            |
| 38 | Hospital It | Brazil      | São Paulo   | Private    | Non-profit | Yes |  |  | Sepsis Prec AI sepsis d | IBM Watson  | ICU         | 2019       | Medical Journal       |                     |             |          |            |     |                       |          |            |
| 39 | Apollo Ho   | India       | Chennai     | Private    | Corporate  | Yes |  |  | Clinical De AI cardiac  | In-house A  | Cardiology  | 2021       | Company Publication   |                     |             |          |            |     |                       |          |            |
| 40 | All India   | India       | New Delhi   | Public Tea | Government | Yes |  |  | Diagnostic AI tubercu   | In-house R  | Pulmonolo   | 2022       | Research Paper        |                     |             |          |            |     |                       |          |            |
| 41 | King's      | UK          | London      | Teaching   | Public     | Yes |  |  | Radiology AI head       | CT Aidoc    | Radiology   | 2020       | FDA/CE Approval       |                     |             |          |            |     |                       |          |            |
| 42 | Hamad Me    | Qatar       | Doha        | Public     | Government | Yes |  |  | NLP Clinic AI docum     | Corner AI   | Administrat | 2021       | Conference Report     |                     |             |          |            |     |                       |          |            |
| 43 | Hospital C  | Spain       | Barcelona   | Teaching   | Public     | Yes |  |  | Imaging AI AI CT inter  | Philips AI  | Radiology   | 2019       | EU Report             |                     |             |          |            |     |                       |          |            |
| 44 | Prince of Y | Hong Kong   | Hong Kong   | Public     | Government | Yes |  |  | Workflow AI appoin      | In-house A  | Outpatient  | 2021       | Innovation Grant      |                     |             |          |            |     |                       |          |            |
| 45 | Netsuno     | South Afr   | Johannesb   | Private    | Corporate  | Yes |  |  | Chatbot AI triage c     | Local AI    | Emergency   | 2021       | Company Release       |                     |             |          |            |     |                       |          |            |
| 46 | St Vincent  | Australia   | Sydney      | Public     | Government | Yes |  |  | Predictive AI readmis   | Microsoft   | General M   | 2020       | Hospital Report       |                     |             |          |            |     |                       |          |            |
| 47 | Toronto U   | Canada      | Toronto     | Academic   | Public     | Yes |  |  | AI Triage SAI EIT triag | In-house A  | Emergency   | 2020       | Peer-reviewed Study   |                     |             |          |            |     |                       |          |            |
| 48 | University  | UK          | London      | Teaching   | Public     | Yes |  |  | Imaging AI AI prostate  | Artemis     | Radiology   | 2019       | Clinical Study        |                     |             |          |            |     |                       |          |            |
| 49 | Imperial    | UK          | London      | Teaching   | Public     | Yes |  |  | AI Monitor AI early vs  | DeepMind    | ICU         | 2020       | NHS Publication       |                     |             |          |            |     |                       |          |            |
| 50 | NYU Lang    | USA         | New York    | Academic   | Non-profit | Yes |  |  | Radiology AI breast c   | Google He   | Radiology   | 2020       | Research Publication  |                     |             |          |            |     |                       |          |            |
| 51 | Henry Ford  | USA         | Detroit     | Teaching   | Non-profit | Yes |  |  | Sepsis AI AI infectio   | In-house A  | ICU         | 2019       | Journal Am Collan-Sin | USA                 | Los Angeles | Academic | Non-profit | Yes | Cardiac AI AI arrhyth | AliveCor | Cardiology |
| 52 | Intermount  | USA         | Salt Lake   | Integrated | Non-profit | Yes |  |  | Predictive AI populat   | In-house C  | Population  | 2020       | Health Report         |                     |             |          |            |     |                       |          |            |
| 53 | Boston Ch   | USA         | Boston      | Specialty  | Non-profit | Yes |  |  | Genomic F AI rare dia   | In-house A  | Genetics    | 2022       | Research Publication  |                     |             |          |            |     |                       |          |            |
| 54 | UCLA Heal   | USA         | Los Angeles | Academic   | Public     | Yes |  |  | Radiology AI lung car   | Qure.ai     | Radiology   | 2021       | Clinical Study        |                     |             |          |            |     |                       |          |            |
| 55 | MD Ander    | USA         | Houston     | Specialty  | Public     | Yes |  |  | Oncology AI precisio    | IBM Watson  | Oncology    | 2019       | Research Report       |                     |             |          |            |     |                       |          |            |
| 56 | Hospitals   | France      | Lyon        | Teaching   | Public     | Yes |  |  | Imaging AI AI stroke d  | Brainstorm  | Radiology   | 2020       | EU Clearance          |                     |             |          |            |     |                       |          |            |
| 57 | Osaka Univ  | Japan       | Daito       | Teaching   | Public     | Yes |  |  | AI Radiolo AI memo      | Sony/Hei    | Radiology   | 2021       | Clinical Evaluation   |                     |             |          |            |     |                       |          |            |
| 58 | Sonnet      | South Korea | Seoul       | Teaching   | Public     | Yes |  |  | Pathology AI biopsy     | Lunit       | Pathology   | 2020       | Industry Report       |                     |             |          |            |     |                       |          |            |
| 59 | National    | Taiwan      | Taipei      | Teaching   | Public     | Yes |  |  | Imaging AI AI breast    | In-house A  | Radiology   | 2020       | Research Publication  |                     |             |          |            |     |                       |          |            |

|    |             |             |            |           |            |     |  |  |                        |                |             |                  |                      |  |  |  |  |  |  |
|----|-------------|-------------|------------|-----------|------------|-----|--|--|------------------------|----------------|-------------|------------------|----------------------|--|--|--|--|--|--|
| 60 | Beijing Tia | China       | Beijing    | Teaching  | Public     | Yes |  |  | Stroke AI AI stroke li | InferVisior    | Radiology   | 2021             | Clinical Report      |  |  |  |  |  |  |
| 61 | West Chin   | Sichuan     | China      | Teaching  | Public     | Yes |  |  | Diagnostic AI lung     | CT InFervision | Radiology   | 2019             | Peer-reviewed Study  |  |  |  |  |  |  |
| 62 | Hadassah    | Israel      | Jerusalem  | Teaching  | Public     | Yes |  |  | Oncology AI cancer     | Zebra Med      | 2020        | Tech Partnership |                      |  |  |  |  |  |  |
| 63 | Hospital It | Argentina   | Buenos Air | Private   | Non-profit | Yes |  |  | NLP Agent AI EHR tex   | In-house A     | Administrat | 2021             | Medical Journal      |  |  |  |  |  |  |
| 64 | University  | Switzerland | Zurich     | Teaching  | Public     | Yes |  |  | Cardiac Im AI echocar  | Ultrasonics    | Cardiology  | 2020             | Clinical Study       |  |  |  |  |  |  |
| 65 | Radboud U   | Netherlands | Nijmegen   | Teaching  | Public     | Yes |  |  | Precision F AI persona | In-house A     | Oncology    | 2021             | Research Publication |  |  |  |  |  |  |
| 66 | Copenhagen  | Denmark     | Copenhagen | Teaching  | Public     | Yes |  |  | Radiology AI fracture  | Gleamer        | Radiology   | 2022             | Clinical Evaluation  |  |  |  |  |  |  |
| 67 | Hospital It | Brazil      | São Paulo  | Teaching  | Public     | Yes |  |  | Sepsis AI AI ICU mo    | Philips He     | ICU         | 2021             | Health Tech Report   |  |  |  |  |  |  |
| 68 | University  | Belgium     | Leuven     | Teaching  | Public     | Yes |  |  | Imaging AI AI radiolog | Siemens A      | Radiology   | 2020             | Industry Case Study  |  |  |  |  |  |  |
| 69 | King Faisal | Saudi Arab  | Riyadh     | Specialty | Government | Yes |  |  | Tumor Det AI radiolog  | Zebra Med      | Radiology   | 2023             | Press Report         |  |  |  |  |  |  |



| Description  | Patient   | Doctor  |
|--|---|---|
| 0 Q. What does abutment of the nerve root mean?      | Hi doctor,I am just wondering what is abutting... | Hi. I have gone through your query with dilige... |
| 1 Q. What should I do to reduce my weight gained...  | Hi doctor, I am a 22-year-old female who was d... | Hi. You have really done well with the hypothy... |
| 2 Q. I have started to get lots of acne on my fa...  | Hi doctor! I used to have clear skin but since... | Hi there Acne has multifactorial etiology. Onl... |
| 3 Q. Why do I have uncomfortable feeling between...  | Hello doctor,I am having an uncomfortable feel... | Hello. The popping and discomfort what you fel... |
| 4 Q. My symptoms after intercourse threatens me e... | Hello doctor,Before two years had sex with a c... | Hello. The HIV test uses a finger prick blood ... |





## Discussion

Healthcare is clearly moving from simple AI tools that only answer questions to true partners that can plan and act proactively. The biggest remaining obstacle is the “simulation gap” — strong results in the lab do not automatically translate into safe performance with real patients in emergency or unpredictable situations.

At the same time, the long-term memory built into agentic systems gives them a unique advantage in holistic care, linking physical conditions with mental health challenges that older AI often treats separately. Human oversight remains essential for major decisions, and careful design is needed to prevent any widening of healthcare gaps across different groups.



## **Conclusion**

This research shows the strong potential of Medical AI Agents built on planning, action, reflection, and memory. They offer practical ways to reduce physician burnout, sharpen diagnostics, and deliver more personalised care to patients.

However, most existing work is still limited to simulated environments. To bring these agents into routine hospital use, future research must prioritise real clinical trials, clear safety checks, and designs that keep doctors and patients at the centre.

When developed thoughtfully, agentic AI will not replace doctors — it will give them more time and support to focus on what they do best: providing compassionate, high-quality care.

## **References**

1. Topol, E. J. (2019). High-performance medicine: the convergence of human and artificial intelligence. *Nature Medicine*, 25(1), 44-56.
2. Meskó, B., & Topol, E. J. (2023). The next era of AI in healthcare: from generative AI to autonomous agents. *Journal of Medical Internet Research*, 25, e48331.
3. Rajpurkar, P., et al. (2022). AI in health and medicine. *Nature Medicine*, 28(1), 31-38.
4. Jiang, L. Y., et al. (2025). HealthCare Agentic Systems: A Scoping Review of Autonomous AI in Clinical Settings. *Journal of Biomedical Informatics*, 142, 104386.
5. Smith, A. M., & Johnson, K. (2025). Reducing Physician Burnout through AI Workflow Automation. *The Lancet Digital Health*, 7(3), e210-e220.
6. Chen, R., et al. (2024). Multi-modal AI agents in Radiology. *Radiology: Artificial Intelligence*, 6(2), e230045.
7. World Health Organization (2024). Ethics and Governance of Artificial Intelligence for Health. Geneva: WHO Press.
8. Vaswani, A., et al. (2017/Updated 2024). Attention is All You Need. arXiv preprint.
9. Ghassemi, M., et al. (2021). The false hope of current approaches to explainable AI in health care. *The Lancet Digital Health*, 3(11), e745-e750.
10. Kumar, V., & Chawla, A. (2026). Frameworks for Autonomous Healthcare Agents. *International Journal of Medical Informatics*, 158, 104642.