Insights: Clinician of the Future attitudes toward AI

Key Findings

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Introduction

> "The development of AI is as fundamental as the creation of the microprocessor, the personal computer, the Internet, and the mobile phone. It will change the way people work, learn, travel, get health care, and communicate with each other."

Bill Gates[1]

Generative artificial intelligence (GenAI) has entered the market at an unprecedented pace, with almost all clinicians aware of GenAI applications like ChatGPT, following their emergence in late 2022.

What is GenAI?

GenAI, short for generative artificial intelligence, refers to a category of artificial intelligence systems and models that have the ability to generate data, content, or other outputs that are similar to those created by humans. These AI systems are designed to produce new and original content rather than simply process or analyze existing data.[2]

As reported in Elsevier's *Clinician of the Future 2023* report, amid challenges like staff shortages, clinicians are keen to harness the potential of AI to ease their work burden.[3] GenAI has gained attention in healthcare for its potential to automate certain tasks, such as filling in forms or summarizing notes, thereby increasing efficiency and saving clinicians' time.

Patients are open to developments too: the Capgemini Research Institute found that 67% of consumers believed they could benefit from GenAI used for diagnosis and medical advice.[4]

The AI landscape is changing rapidly, as are the applications and their potential to impact the work and lives of clinicians. To ensure the technology has a positive impact on healthcare, it's important to monitor the views of those who could be using it.

In the research Insights 2024: Attitudes toward AI, we aimed to do this by surveying nearly 3,000 people working in research (including leaders and corporate researchers) and in health (clinicians) from around the world.

The results are detailed in the full report this *Key Findings* report focuses solely on the views of respondents working in health (clinicians).

The research examines the attitudes toward artificial intelligence (AI), including generative AI (GenAI), covering its attractiveness, perceived impact, the benefits to them and wider society, the degree of transparency to be comfortable using tools that capitalize on the technology, and the challenges they see with AI. It also looks at the current usage, and what respondents think would help them trust AI tools.

Online survey

Insights 2024:
Attitudes toward AI

When: December 2023 to February 2024
What: 15-minute online quantitative survey
Who: 2,999 respondents from 123 countries

Key Findings are based on 1,007 clinicians
(a subset of the 2,999 in the full report).

Results: Responses weighted by region and equally by doctors and nurses.
See main report for full details.

The Clinician of the Future – powered by AI?

In this *Key Findings* report, we reflect upon the impact AI will have enabling clinicians across the five future roles identified in previous *Clinician of the Future* reports.

The Future Clinician as a Partner for Health will work collaboratively with patients, who are informed, empowered members of their own care team.

The Future "Total Health" Clinician will help people stay healthy rather than waiting until they become ill, by focusing on preventive healthcare.

The Future Tech-Savvy Clinician will improve patient outcomes by using data and the latest digital health technologies, which are constantly evolving.

The Future Balanced Clinician will have a better work–life balance if staff shortages are addressed, helping avoid the burnout prevalent today.

The Future Accessible Clinician is aware of health inequities and works in a system that makes care more available to diverse populations.

Highlights

Awareness of certain AI tools is high, and clinicians have started using them, with expectations that usage will grow. Institutions have not yet clearly conveyed their AI usage restrictions, or their preparations for increased use of AI. Overall, doctors are more likely than nurses to have heard of and used AI for work.

95%
Of clinicians have heard of AI (including GenAI)
(Subsequent statistics exclude the 5% not familiar with AI)

84%
Have heard of ChatGPT, and 19% have used ChatGPT for work

50%
Have experimented with AI. 8% are very familiar with it and have used it a lot

26%
Have used AI for a specific work-related purpose

47%
Of clinicians who have yet to use AI tools say it's because of lack of time

Clinicians see great potential in AI to improve their work: they see potential benefits across multiple areas. They think it will help.

96%
Accelerate knowledge discovery

92%
Provide cost savings to institutions and businesses

88%
Increase work quality

85%
Free up time for higher value work

84%
Increase collaboration

Clinicians think AI will also...

71%
Have a transformative or significant impact on their area of work

Clinicians have concerns about AI and are cautious, particularly when it comes to its potential impact on patient outcomes.

83%
Of clinicians have at least some concerns about the ethical implications of AI usage in their area of work

Clinicians believe AI has the potential to...

93%
Be used for misinformation

82%
Make over reliant on AI to make clinical decisions

81%
Erode critical human thinking

Specific actions can help increase trust, and by taking and communicating them, providers of AI tools can increase users' comfort.

66%
Of clinicians who haven't used AI yet expect to use AI within two to five years

59%
Say training the model to be factually accurate, moral, and not harmful would strongly increase their trust in that tool

37%
Rank privacy being respected on user inputs in their top three factors that would increase their comfort using an AI tool.

Future use of trusted AI tools amongst those who believe AI can benefit clinical practice: likelihood of using a reliable and secure AI assistant to...

Assess symptoms and identify possibility of a disease/condition (e.g. provides confidence levels for diagnosis and recommends any confirmatory tests)
– 94% of clinicians

Chapter 1:

The current GenAI landscape

Explore clinicians' awareness, perceptions and usage of AI (including GenAI).

- 95% of clinicians have heard of AI (including GenAI) – subsequent statistics exclude the 5% not familiar with AI
- 50% have used AI (including GenAI); 26% have used it for work purposes
- 8% are very familiar with AI (including GenAI), and have used it a lot
- ChatGPT is by far the most well-known AI product (84%)
- 47% of those who have not used AI cite a lack of time as the reason
- 45% of those who have ethical concerns about AI cite as a top disadvantage that it is unable to replace human creativity, judgement and/or empathy

Clinicians face many challenges, including a lack of work–life balance due to staff shortages. AI has the potential to improve their work and lives. Most clinicians have heard of AI and specific GenAI tools, though only half have used the technology. Doctors are more familiar with and more likely to have used AI tools than are nurses. Sentiment is more positive than negative, and clinicians' main concerns are around the human aspects of AI usage.

Awareness of GenAI tools

While GenAI tools like ChatGPT gain prominence following unprecedented popularity at launch, awareness continues to grow across all sectors, including healthcare. Almost all (95%) clinicians have heard of AI, with awareness higher among doctors (97%) than nurses (94%). However, only 8% of clinicians have used AI a lot.

ChatGPT is by far the most well-known AI product, with 84% of clinicians globally being familiar with it. Doctors are significantly more familiar with ChatGPT than nurses are, at 90% and 77% familiarity respectively.

The next most familiar GenAI tool is Bard (38% overall), followed by Bing Chat (33%), MS Copilot (19%) and Gemini (17%). For these tools, doctors are more familiar with them than nurses are.

Perceptions of GenAI

Overall, clinicians have a mixed view of AI, with half (50%) of respondents able to see both the potential and the drawbacks to the technology. Doctors (39%) are significantly more likely to be positive about AI than are nurses (25%), considering it a welcome advancement. Nurses (22%) are more likely than doctors (11%) to report being unsure and needing to see how this develops before making a judgment. Educating healthcare professionals on how to use AI safely in a clinical setting could ease these concerns.

This pattern is reflected in clinicians' views on the potential impact of AI on their work. While doctors and nurses agree that the impact of AI will be transformative or significant, doctors are more likely to say so than are nurses, at 75% and 67% respectively.

Overall feelings toward AI (including GenAI)

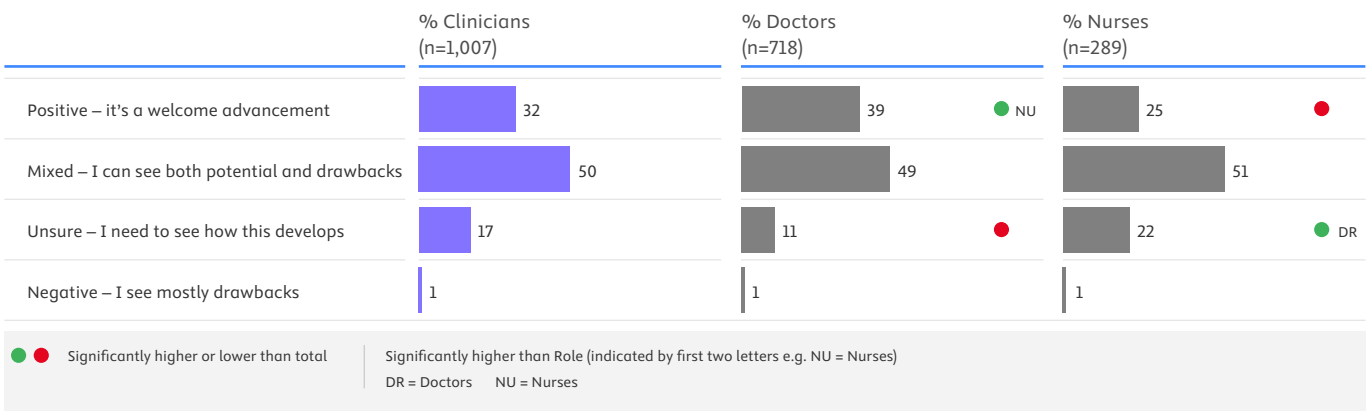


Fig 1. Question: What are your overall feelings about the impact of AI on your area of work?

GenAI in clinical practice

Of those familiar with AI, half (50%) of clinicians have used AI – 26% for a specific work-related purpose and 24% for a non-work purpose. About one in five (19%) clinicians have used ChatGPT for work.

The Future Tech-Savvy Clinician is getting familiar with AI and GenAI tools, preparing to use them to improve patient outcomes. However, 23% consider the lack of relevant expertise within their organization as a top-three disadvantage of AI, suggesting a need for training.

Usage differs between doctors and nurses. While AI usage for work is more likely among doctors (30%) than nurses (21%), usage for a non-work purpose is more likely among nurses (28%) than doctors (20%).

Time may play a role here: when asked why they have not yet used AI tools, almost half (47%) of clinicians say because of a lack of time. This is in line with findings from previous *Clinician of the Future* reports: in 2023, for example, clinicians worked on average 49 hours per week.[5] This leads to a vicious cycle – AI could help clinicians save time, but they don't have time to use it. Institutions can play a role in breaking this cycle to maximize the positive impact of the technology.

Other reasons given for not having used GenAI tools include lack of a subscription/login to such tools (28%), not having the right tools to meet their needs (23%), not knowing about such tools (19%) and having concerns about them (19%).

Usage of AI and context for usage

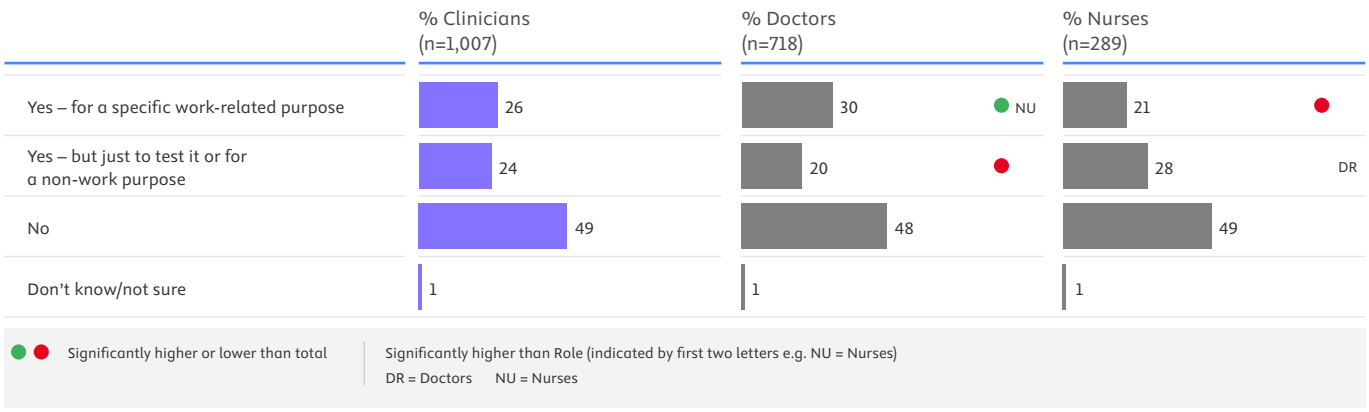


Fig 2. Question: Have you used an AI (including generative AI) product or an AI feature on a product you use regularly?

Chapter 2:

A future lens on AI

Discover clinicians' expectations, including the potential benefits and drawbacks of the technology.

- 96% of clinicians think AI will help accelerate knowledge discovery
- 92% think that AI will help provide cost savings to institutions and businesses
- 88% believe that AI will have an impact on increasing work quality
- 85% believe it will help free up time for higher value work
- 84% believe it will increase collaboration
- 66% of those not using AI expect to use AI in the next two to five years
- 86% expect generative AI to always be paired with human expertise
- 71% believe AI (including GenAI) will have a transformative or significant impact on their area of work

Most clinicians who are not yet using AI tools expect to do so in the near future, and they recognize the potential positive impacts and drawbacks of the technology. However, the clinician–patient relationship is crucial, and clinicians consider the human element – in terms of oversight, privacy and empathy – to be critical.

Perceived impact and benefits

"AI can empower a trained physician to consider wider differential diagnosis and management plan".

Doctor, UK, *Clinician of the Future 2023*[6]

Many factors affect sentiment around AI, including awareness and knowledge of the technology, experience using the tools and views around their potential impact, both positive and negative. In the current study, almost all (96%) clinicians think AI will accelerate knowledge discovery at least to some extent in the next two to five years.

Making time: 94% of clinicians say AI could increase their work efficiency, while 85% believe it could free up their time for higher value work. With 92% believing AI could provide cost savings to institutions and businesses, this could also indirectly impact their time, as it may contribute to solving ongoing staffing issues.

The Future Clinician as a Partner for Health will use AI in their collaborative work with patients – 84% believe AI will increase collaboration. Their empowered patients will also be impacted by AI, and AI providers can support them by overcoming hallucination and preventing misinformation.

Clinical work: 95% of clinicians see benefit in leveraging GenAI for clinical activities such as diagnoses and patient summaries. This is in line with the views clinicians shared in 2023, when 48% said they find it desirable to use generative AI to help them make clinical decisions.[7] In the current study, 84% of clinicians think AI will help increase collaboration.

Positive impact of AI in various areas over the next two to five years

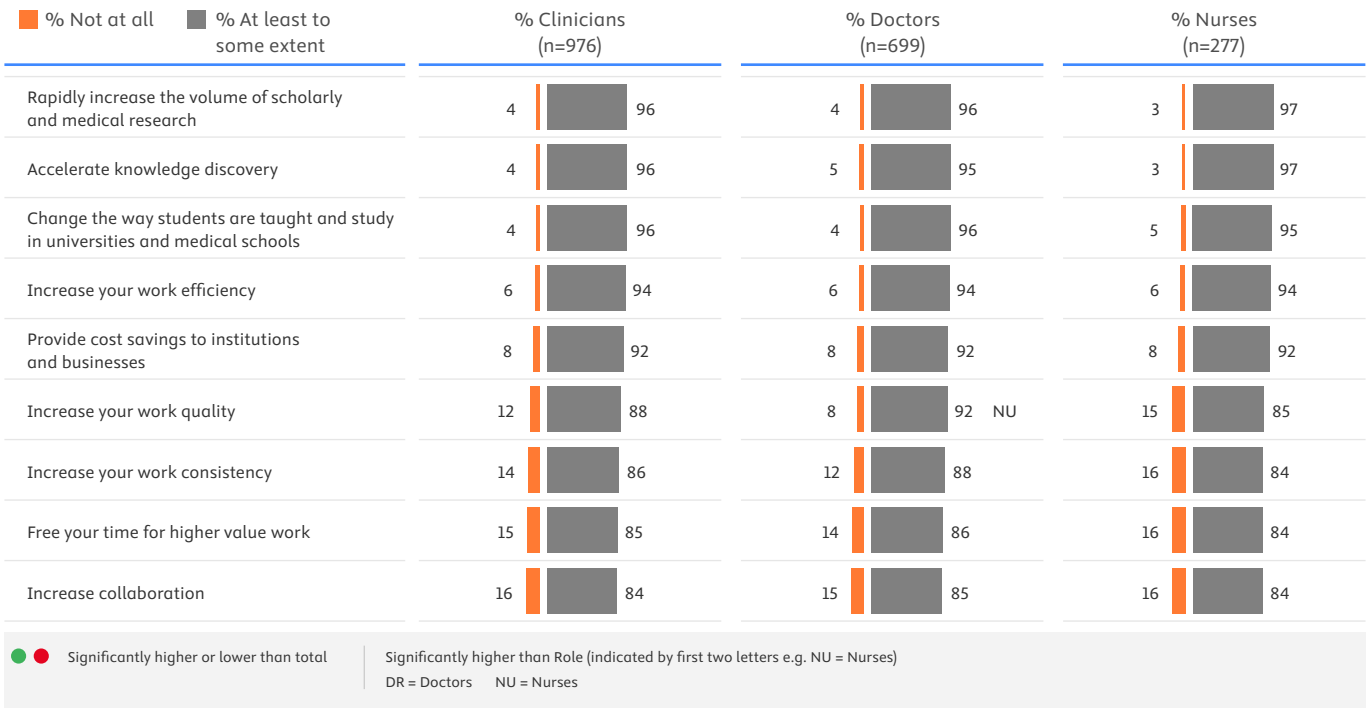
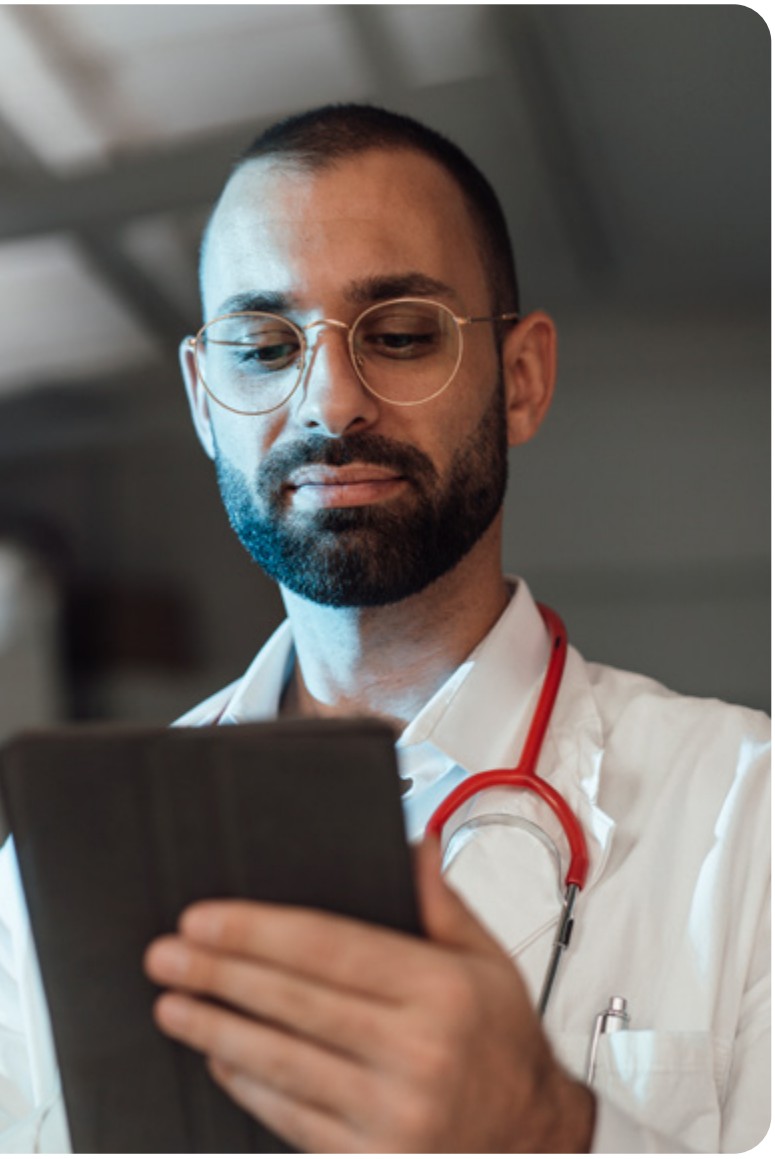


Fig 3. Question: Thinking about the impact AI will have on society and your work, to what extent do you think over the next 2 to 5 years it will...? A great extent, some extent, not at all.

Education: almost all (96%) of clinician respondents expect GenAI to change the way students are taught to some extent. Nearly all (97%) of clinicians see at least some benefit in GenAI for teaching and lecturing activities. This is in line with findings from *Clinician of the Future 2023*, in which 51% of clinicians considered the use of AI desirable for training medical students and 50% for training nurses.[8] Students reported similar sentiments, with 43% of respondents in the *Clinician of the Future Education Edition* saying their instructors welcome GenAI.[9]

The Future Balanced Clinician could benefit directly and indirectly from AI, freeing up their time and potentially addressing staff shortages, thereby helping avoid the burnout prevalent today. However, this benefit is currently out of reach for many, who lack time to explore AI tools.



Perceived drawbacks

While generally optimistic about the potential of AI, clinicians are also aware of the limitations of the technology and the need to implement AI in a carefully managed way to minimize any negative effects.

Most clinicians (88%) have at least some concerns about AI. Those with concerns were asked to identify the top 3 disadvantages from a list of 14 possible drawbacks. Whilst percentages for an item tend not to be high as selection is distributed, it allows for identification of the most notable drawbacks.

Protecting the clinician–patient relationship: clinicians see the inability of AI to replace human creativity, judgement and/or empathy as the main disadvantage, with 45% of respondents ranking this as a top-three disadvantage of the technology. Also in the top-three for some clinicians are the risk of AI homogenizing culture via its use of global models (18%), the potential for outputs to be discriminatory or biased (23%) and discrimination against non-native English speakers (7%).

The Future Accessible Clinician is aware of health inequities and keen to ensure the AI tools they use do not exacerbate the situation – for 23% of clinicians, a top-three disadvantage is the potential for AI outputs to be discriminatory or biased.

Regulation: Two-fifths (41%) of respondents cite the lack of regulation and governance as a top-three disadvantage of AI. Also ranked highly are the lack of accountability over the use of generative AI outputs (29%) and the lack of permission to use data or information AI tools are trained on (15%).

Accuracy: For 17% of clinicians, being too dependent on outdated data and/or information is a top-three disadvantage of GenAI. Similarly, 11% of clinicians consider hallucinations (i.e. when AI generates incorrect and/or nonsensical outputs) to be a major disadvantage.

Expectations

> "Clinical information is only one element of the clinical decision-making process, from assessment to diagnosis and treatment. Heuristic knowledge drives decision making, and this can be supported by artificial intelligence (AI) and machine learning prediction models."

Clinician of the Future Report 2022[10]

The Future "Total Health" Clinician will use AI as a tool to support their human-centered preventive healthcare work, helping people stay healthy rather than waiting until they become ill.

In the 2022 *Clinician of the Future Report*, over half (56%) expected to be making most of their decisions using clinical decision support tools that use AI in 10 years' time.[11]

Echoing those findings, 66% of clinician respondents who have yet to use GenAI tools expect to do so in the next two to five years. They have some expectations of AI tools now. The top expectation overall is that generative AI will always be paired with human expertise, with 86% of clinicians agreeing with this.

> "AI tools can help provide information and effective management and nursing work, but it cannot replace practical experience, interaction and communication with patients."

Nurse, China. *Clinician of the Future 2022* Report[7]

Institutions are also expecting the use of GenAI to increase – and a number are preparing for it. Actions institutions are taking are varied, the more common actions include building a plan or protocol to evaluate the purchase of tools that include AI (reported by 18% of clinicians), providing ethics courses (13%) and planning to acquire tools that include AI (12%).

However, it is worth nothing that almost half (44%) of clinicians are unaware of their institutions' plans. In addition to the time pressure likely contributing to this, it may indicate a lack of transparency on the part of institutions. As the awareness and usage of AI continues to grow, it will be important for institutions to communicate their policies and plans clearly.

Expectations of AI

Fig 4. Question: Thinking about the use of generative AI in your area of work, how much do you agree or disagree with the following either presently or in the near future? By near future, we mean in the next two to five years.

Chapter 3:

Shaping an AI-driven future

- 93% believe AI could be used for misinformation
- 85% are concerned AI will potentially cause critical errors or mishaps
- 82% of doctors believe physicians could to some extent become over-reliant on AI to make decisions
- 81% think it may to some extent erode human critical thinking
- 59% say training the model to be factually accurate, moral, and not harmful would strongly increase their trust in that tool
- Privacy being respected on the user side is ranked highest by clinicians for increasing their comfort in using an AI tool

Understanding not only their concerns, but the factors that build clinicians' trust in AI tools and their comfort using them can help technology developers create better tools and institutions maximize their benefit. Clinicians' current concerns, as noted in the previous chapter, largely revolve around security, privacy and accuracy, all directed toward protecting patient outcomes. Examining the extent of future challenges enables us to gauge the broader implications of the technology and helps guard against some of these concerns. Clinicians perceive AI as a supporting technology and are looking for good governance and accountability through human oversight.

Exploring clinicians' concerns

> "These tools are not yet based on scientific evidence, do not provide references, and are not yet reliable."

Survey respondent, doctor, Brazil

In *Clinician of the Future 2023*, a sizable minority, 28% of clinicians, said they find it undesirable for AI to be used in clinical decision-making tools in the future.[12] The results of the current survey reveal some of the main concerns clinicians have when it comes to using AI in their work. Understanding these concerns is an important step in developing tools with minimized risks.

Some of the biggest concerns are around misinformation and errors. Overall, 93% of clinicians believe to some extent that AI will be used for misinformation over the next two to five years. This is most likely to put pressure on the **Future Clinician as a Partner for Health**, as patients could be misled by information they access. Most clinicians (85%) are also worried about critical errors or mishaps (accidents) occurring.

A similar proportion (82%) of doctors think use of GenAI will mean physicians become over reliant on the technology to make clinical decisions. This concern was echoed in the *Clinician of the Future Education Edition*, in which more than half (56%) of students feared the negative effects AI can have on the medical community.[9]

Some concerns relate to the potential impact on patients, including by changing the way clinicians think and act. For example, over four in five (81%) clinicians think GenAI has the potential to erode human critical thinking skills. This is a particular issue in the context of education, especially as most clinicians (96%) believe that AI will have an impact on the way future doctors and nurses are educated.

Negative impact of AI in various areas over the next two to five years

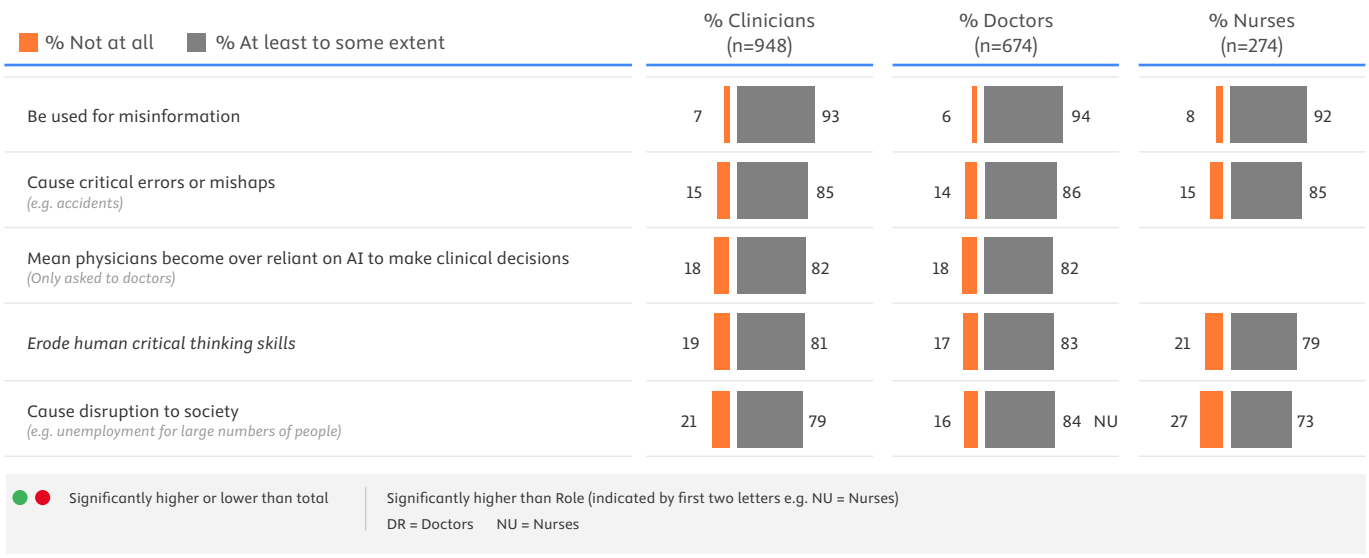


Fig 5. Question: Thinking about the impact AI will have on society and your work, to what extent do you think over the next 2 to 5 years it will...? Great extent, some extent, not at all.

Factors impacting trust in and comfort using GenAI tools

With clinicians' concerns in mind, knowing the factors that impact their trust in and comfort using AI tools can further help develop the technology. More than half (59%) of clinicians say training the model to be factually accurate, moral, and not harmful, and a similar proportion (58%) say only using high-quality peer-reviewed content to train the model would strongly increase their trust in that tool.

Some of the other factors respondents say would strongly increase their trust in GenAI tools relate to transparency and reliability. For example, AI tools citing references by default (57%), keeping the information input confidential (55%), abidance by any laws governing development and implementation (54%) and training the model for high coherency outputs (53%)..

We asked respondents to rank the top-three factors that would increase their comfort in using the tool.

People first: 37% rank privacy being respected on user inputs in their top three, and 29% that privacy is respected on outputs generated by the model. For 34% of clinicians, consideration of the real-world impact on people, such as layoffs, is a top-three factor, and 27% rank actions having been taken to prevent unfair bias.

Governance and accountability: 37% consider accountability through human oversight as a top-three comfort factor, while 35% rank robust governance on data and information used to train the model.

Actions for a GenAI-powered future

Based on the survey findings and secondary research, we recommend these actions for technology developers and healthcare institutions.

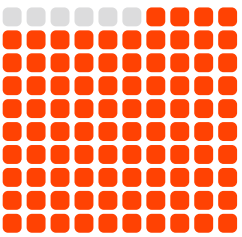
GenAI technology providers can:

- Enhance accuracy and reliability
- Increase transparency
- Strengthen safety and security
- Ensure the models are inclusive and incorporate diversity

Institutions employing clinicians can:

- Establish policies and plans and communicate them clearly
- Build governance and expertise
- Provide training and capacity
- Ensure access
- Use only trusted AI tools

Providing tools for specific use cases. A possible future use of trusted AI tools for those who believe AI would bring benefit to clinical practice.



94%

Assess symptoms and identify possibility of a disease/ condition (e.g. provides confidence levels for diagnosis and recommends any confirmatory tests 94% likely to use.

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Notes

For a detailed methodology, including sample bases by region/country, see the appendices of the main report.

https://tinyurl.com/attitudes-ai

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