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Clinician of the Future 2025

Discover mission-critical insights for the continuous advancement of healthcare

Advancing human progress together

Contents

Foreword

The pace of scientific and technological advances is reshaping healthcare like never before. But even against this backdrop, the speed at which artificial intelligence (AI) has been developed, introduced and applied into health systems has been nothing short of remarkable.

Alongside geopolitical trends, economic factors and pressures on the workforce, AI has contributed to the rapid evolution of the healthcare sector for every stakeholder committed to improving patient care. The debate has swiftly moved from “does AI have a role in healthcare?” to “how will AI’s impact grow in the years ahead?”

At Elsevier, we believe that by working together, we can shape human progress for the benefit of all. By listening to those treating patients every day and elevating their voices, we will be better informed about the future challenges clinicians may face and how best we can meet these challenges head on.

In our fourth annual *Clinician of the Future* report, we examine the views of over 2,000 clinicians on this emerging technology now here to stay.

I hope you enjoy reading our latest *Clinician of the Future* report. The wide-ranging views shared by global clinicians provide plenty of food for thought for everyone working in healthcare, and we would be delighted to hear from you with your reflections on the report and how best we can all support clinicians in the years ahead.

Sincerely,
Jan Herzhoff
President, Elsevier Health

Executive summary

The global healthcare landscape is defined by a series of related challenges. Rising costs lead to funding pressures and inequities in healthcare provision, while patient demand for more personalized care for their complex needs puts further stress on health systems. Two years after the global pandemic, clinicians continue to be under pressure and are being asked to do more with increasingly stretched resources.

Against this backdrop, the emergence of AI in healthcare has the potential to respond to many of these challenges.

As AI usage rises, it's vital that we understand clinicians' views and needs. Elsevier developed the *Clinician of the Future* series in 2022 to explore trends and changes that will impact the future of healthcare – and therefore shape the clinician of the future. AI has emerged as a key topic in our annual reports, and we dive deeper into the potential of AI in this 2025 edition along with other priority focus areas for clinicians: misinformation, the technology readiness gap, healthcare systems in crisis and more.

Technology has the potential to address some of the biggest challenges clinicians face today, from burnout to increasing patient demand, and will have a major impact on our clinicians of the future.

In this report, we share the views of clinicians around the world gathered through an extensive global survey on the state of healthcare today, the role of AI in transforming the industry and the future of healthcare.

Online survey
March to April 2025

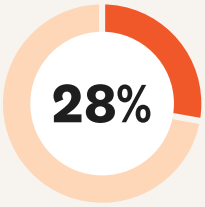
n = 2,206 clinicians
(1,781 doctors and 425 nurses)
from **109 countries**

To improve representativeness, we weighted responses geographically and to equally represent doctors and nurses in the clinician totals. See appendices for more detail.

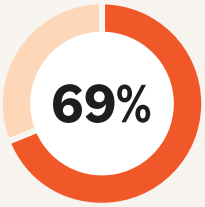
The current state of healthcare

Chapter 1:

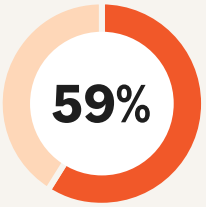
Clinicians today are busier than ever, and it's impacting the quality of care they can provide. Clinicians believe AI could contribute positively to solving their problems, but relatively few think their institutions are performing well in this area.



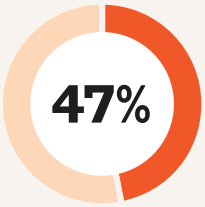
Over a quarter of clinicians think they don't have enough time to deliver quality care, with high patient volume as the most cited cause (by 74% of this group).



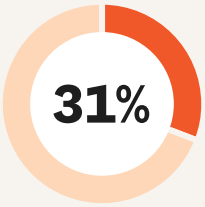
Over two-thirds of clinicians are seeing more patients now than two years ago.



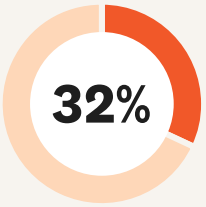
Six in ten clinicians say medical misinformation is hindering patient compliance with recommended treatments.



Almost half of clinicians say tiredness has impaired their ability to treat patients effectively.



Nearly a third of clinicians are considering leaving their role in the next couple of years despite notable clinician shortages globally, an improvement since 2023 (37%).



Only around a third of clinicians think their institutions perform well in providing digital tools, including AI. They also consider institutional performance lower for AI training (30%) and AI governance (29%). Meanwhile, 57% say guidance on how to use AI would increase their trust in it.

How AI is transforming healthcare

Chapter 2:

Usage of AI tools is increasing dramatically among clinicians, with 76% having used an AI tool, and nearly half for work purposes. They recognize many benefits that improve their own work and patient experiences, though AI use for any specific clinical activity remains relatively low. In some regions, particularly North America and Europe, there remains some hesitation around certain applications of AI. Clinicians want transparency, security and assurances on the quality of content in AI tools they can trust.

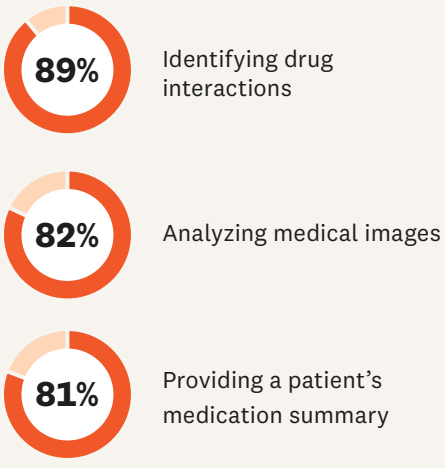
48% of clinicians have used an AI tool for work purposes – nearly double the 26% reported in 2024.

57% of clinicians currently perceive clinical AI tools as saving them time, empowering them (53%) and giving them more choice in how they care for patients (53%).

30% of clinicians are already using AI tools to identify drug interactions and 21% to analyze medical images. However, today only 16% are using AI tools to help make clinical decisions. This is despite an additional 48% of clinicians expressing a desire to use AI to help with clinical determinations.

There is a usage gap when it comes to the type of AI tool clinicians are using. Of those that use AI tools for work, 97% have used a generalist tool such as ChatGPT for work purposes. In comparison, 76% have used a clinical-specific AI tool.

Top ways clinicians use (or would like to use) AI tools in clinical practice include:



The future of healthcare

Chapter 3:

Clinicians are optimistic about the benefits AI will bring in the next two to three years. Building on the developments we have already seen in areas like medical imaging, clinicians see potential for AI to save them time, improve the diagnosis process and ultimately improve patient outcomes. Nearly two-fifths believe AI will lead to more patients self-diagnosing.

70% of clinicians predict in the next two to three years AI will save them time. They believe AI will have a positive impact in other areas, including enabling faster (58%) and more accurate (54%) diagnoses, and helping improve patient outcomes (55%).

41%
of clinicians think in the next two to three years, those who use AI will deliver a higher quality of care than those who don't.

56%
of clinicians think that AI will analyze all medical images to identify abnormalities in the next two to three years.

38%
think that most patients will self-diagnose with AI tools available online rather than see a clinician in the next two to three years.

Regional differences

In this global report, there are geographical differences in how clinicians perceive AI in healthcare and how they think it can be used in the future. We look at differences by broad regions, North America, South America, Asia Pacific, Europe, Middle East and Africa. We identify some notable differences by country below.

USA

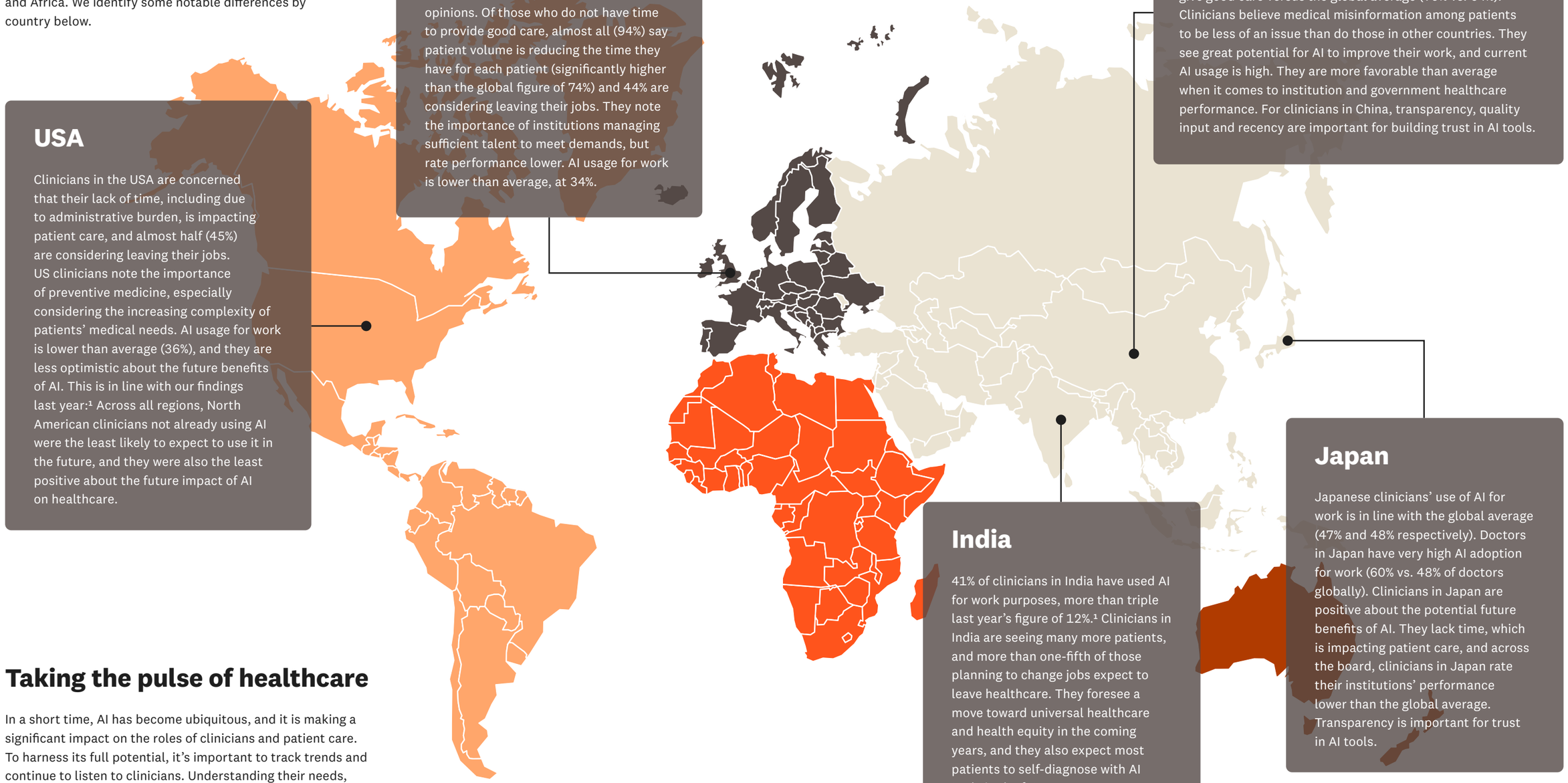
Clinicians in the USA are concerned that their lack of time, including due to administrative burden, is impacting patient care, and almost half (45%) are considering leaving their jobs. US clinicians note the importance of preventive medicine, especially considering the increasing complexity of patients' medical needs. AI usage for work is lower than average (36%), and they are less optimistic about the future benefits of AI. This is in line with our findings last year:[1] Across all regions, North American clinicians not already using AI were the least likely to expect to use it in the future, and they were also the least positive about the future impact of AI on healthcare.

UK

Clinicians in the UK are more skeptical than average about the potential benefits of AI, and they are less likely to use it to make clinical decisions and for second opinions. Of those who do not have time to provide good care, almost all (94%) say patient volume is reducing the time they have for each patient (significantly higher than the global figure of 74%) and 44% are considering leaving their jobs. They note the importance of institutions managing sufficient talent to meet demands, but rate performance lower. AI usage for work is lower than average, at 34%.

China

Compared to the global average, a greater proportion of clinicians in China are seeing more patients than two years ago (75% vs. 69%) and believe they have sufficient time to give good care versus the global average (79% vs. 64%). Clinicians believe medical misinformation among patients to be less of an issue than do those in other countries. They see great potential for AI to improve their work, and current AI usage is high. They are more favorable than average when it comes to institution and government healthcare performance. For clinicians in China, transparency, quality input and recency are important for building trust in AI tools.



India

41% of clinicians in India have used AI for work purposes, more than triple last year's figure of 12%.[1] Clinicians in India are seeing many more patients, and more than one-fifth of those planning to change jobs expect to leave healthcare. They foresee a move toward universal healthcare and health equity in the coming years, and they also expect most patients to self-diagnose with AI tools in the future.

Japan

Japanese clinicians' use of AI for work is in line with the global average (47% and 48% respectively). Doctors in Japan have very high AI adoption for work (60% vs. 48% of doctors globally). Clinicians in Japan are positive about the potential future benefits of AI. They lack time, which is impacting patient care, and across the board, clinicians in Japan rate their institutions' performance lower than the global average. Transparency is important for trust in AI tools.

Taking the pulse of healthcare

In a short time, AI has become ubiquitous, and it is making a significant impact on the roles of clinicians and patient care. To harness its full potential, it's important to track trends and continue to listen to clinicians. Understanding their needs, experiences, challenges, predictions and concerns can ensure that tomorrow's support systems, including AI tools, are shaped for clinicians' benefit.

https://www.elsevier.com/insights/clinician-of-the-future/2025
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Introduction

The healthcare landscape is dynamic, its evolution driven by factors including digital technology and artificial intelligence (AI), geopolitical shifts, economic changes and workforce fluctuations.

Far from being an emerging technology, AI is already transforming many industries, including healthcare.

Yet there are many things that have not changed in healthcare: clinicians are still under pressure and short on time. Clinician shortages continue to affect doctors and nurses around the world, and the World Health Organization (WHO) estimates a shortfall of 11 million health workers by 2030, mostly in low- and lower-middle income countries.[2]

The role of AI in tackling clinicians' challenges

Elsevier developed the *Clinician of the Future* series to explore trends and changes that will impact the future of healthcare – and therefore shape the clinician of the future.

We know from Elsevier's *Insights 2024: Attitudes toward AI* report that AI is changing the way patients and clinicians interact: a year ago, 71% of clinicians believed AI (including generative AI) will have a transformative or significant impact on their area of work.[1]

AI has the potential to do much more than it does today, and the McKinsey Health Institute (MHI) has identified that, via AI, "freeing up healthcare workers' time could create the equivalent of two million additional workers."[3] Indeed, this is one of the aims of Microsoft's recently unveiled 'AI Diagnostic Orchestrator.'[4]

Although healthcare is one of the top industries in terms of AI spend, this potential has not yet been reached.[5] Most healthcare workers expect AI to make a net positive contribution in the coming five years, and evidence suggests it's the leaders holding back that is limiting the potential of AI.

AI has emerged as a key topic in several *Clinician of the Future* reports, and we dive deeper into the potential of the technology in this 2025 report. We also examine the evolving challenges clinicians face, as well as looking at how clinicians view institutional priorities and performance.

We surveyed 2,206 clinicians (1,781 doctors and 425 nurses) from 109 countries between March and April 2025 (see appendix for full details on the methodology).

We asked them questions in three main areas, which we cover in this report's three chapters:

- **Chapter 1: The current state of healthcare**
  the challenges that are facing clinicians today
- **Chapter 2: How AI is transforming healthcare**
  clinician usage of AI and its impact
- **Chapter 3: The future of healthcare**
  expectations for the near future and the role of AI

This report shows the key findings from the study. Detailed findings can be found in the databook, where you can explore the results by doctors and nurses, and the views of clinicians by region and several key countries: Brazil, China, India, Japan, the UK and the USA.

We also reflect on the five clinician personas we have developed in previous reports, updating them with the latest survey results in mind.

The Future Clinician as a Partner for Health

will use AI to 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, using AI to provide personalized treatment.

The Future Tech-Savvy Clinician

will improve patient outcomes by using evidence-based AI technologies, which requires them to continuously learn.

The Future Balanced Clinician

will have a better work–life balance as staff shortages are partly addressed by AI, and they use AI tools to lighten their workload.

The Future Accessible Clinician

is aware of health inequities and uses AI tools to ensure patients have equitable access to healthcare.

Chapter 1: The current state of healthcare

Clinicians today are busier than ever, and it's impacting the quality of care they can provide.

Clinicians believe AI could contribute positively to solving their problems, but relatively few think their institutions are performing well in this area.

Key insights:

- Over a quarter (28%) of clinicians admit they don't have enough time to deliver quality care, with high patient volume as the most cited cause (by 74% of this group).
- 69% of clinicians are seeing more patients now than they were two years ago.
- 59% of clinicians say medical misinformation is hindering patient compliance with recommended treatments.
- Almost half (47%) of clinicians say tiredness has impaired their ability to treat patients effectively.
- 31% of clinicians are considering leaving their role in the next couple of years despite notable clinician shortages globally; this is an improvement since 2023 (37%).
- Only 32% of clinicians agree that institutions are doing a good job of providing sufficient access to digital tools (including AI), while 30% say their institution is doing a good job of providing adequate AI training, and 29% believe their institution has effective AI governance. Meanwhile, 57% say guidance on how to use AI would increase their trust in it.

Clinicians are busy: they are seeing more patients than ever, and combined with factors like having too much administrative work, contending with increasingly complex cases and managing patient misinformation, this is leading to a lack of time.

AI has the potential to solve many of the challenges clinicians face today, including their time pressure. In 2024, Elsevier's *Clinician of the Future: Attitudes toward AI* report revealed that almost half of clinicians had not yet used AI for work due to a lack of time.[1] Healthcare institutions increasingly note the potential for AI to tackle the underlying problems, and according to the 2024 survey, some institutions had begun to take action. However, 44% of clinicians were unaware of how their institutions were preparing for AI usage.

The latest results reveal that clinicians perceive a gap between the level of priority their institutions should place on topics like addressing staff shortages and adopting AI and institutions' current performance in those areas. Clinicians are ready to embrace technology to tackle the challenges they face, and they're waiting for institutions to catch up.

Predicting clinician mobility

The World Health Organization (WHO) projects there will be a shortfall of 11 million healthcare workers by 2030.[2] Staff shortages have been a major concern for clinicians around the world since the first *Clinician of the Future* survey in 2022, when almost three-quarters predicted these shortages would continue in the future.[6]

Over one-third (37%) of clinicians in the 2023 report, conducted at the end of the pandemic, said they were planning to leave their role in the coming two to three years. Clinicians today are still feeling under pressure: in the current survey, 31% said they are considering leaving their role in the next couple of years. Clinicians in North America and Europe are most likely to be planning to leave their positions, at 46% and 43% respectively. Many of those leaving will stay in healthcare, changing role or location, but nearly half (45%) of those leaving intend to leave healthcare entirely, either by retiring (36%) or moving to a non-healthcare role (9%).

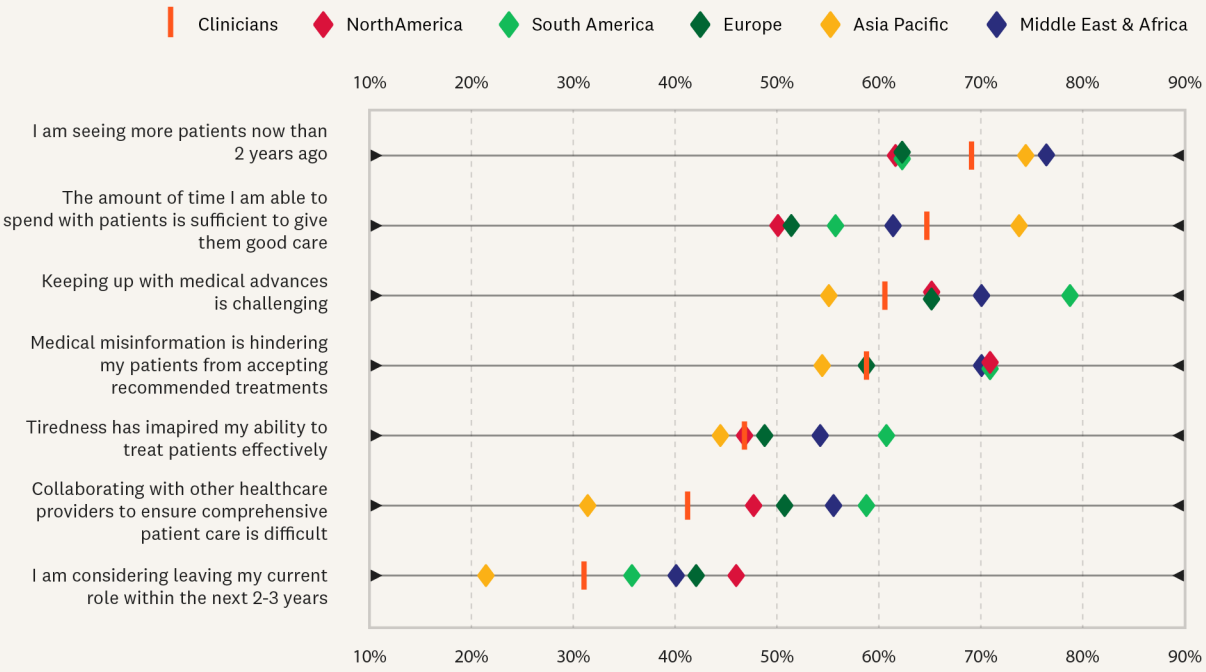
So many patients, so little time

In previous *Clinician of the Future* reports, we explored some of the drivers for clinicians leaving their roles, including burnout, changes to their roles and time pressure. The time crunch is a major concern for clinicians today, over a quarter (28%) of whom feel they do not have sufficient time to provide good care.

In the current survey, 69% of clinicians are seeing more patients now than they were two years ago. This is part of a pattern of increase in Elsevier's 2024 survey, physicians reported seeing 24 patients a day on average globally, up from 22 in 2023.[7]

High patient volume is impacting the amount of time clinicians have to see patients, and this is the leading challenge they identified in this year's survey: of those who do not have time to give patients good care, 74% globally, and as many as 94% in the UK, say high patient volumes reduce the time they have available for each patient. You can explore full results in the accompanying databook released with this report.

Challenges facing clinicians today



Question: To what extent do you agree or disagree with each of the following statements with regards to healthcare? % Agree. "Don't know / prefer not to say" answers are excluded from the responses.

Base: n= 2044 - 2192

Figure 1

Burned out and time poor

Taking these factors into account, it is unsurprising that clinicians are tired. Almost half (47%) say tiredness has impaired their ability to treat patients effectively.

However, for most (64%), the amount of time they able to spend with patients is sufficient to give them good care. This is an improvement compared to 2022 (51%) and 2023 (61%). Although still below the global average, the picture has improved drastically in Europe, increasing from 31% reporting having sufficient time to provide good care in 2022 to 52% today.

Why is this? As we have seen, the top challenge identified is high patient volume, but there are many other causes. For almost three-quarters (73%) of clinicians who don't have time to give patients good care, having to complete too much administration, such as updating health records, is a significant factor.

Empowered patients, growing challenges

Patients are changing, and their shifting perspectives and needs are impacting the care they receive. More than half (57%) of clinicians globally say the increasing complexity of patients' medical needs is a limiting factor for the time they have to provide care. Almost half (46%) of clinicians do not have enough time to explain complex medical conditions clearly, and 35% think they have insufficient time to ask all necessary diagnostic questions.

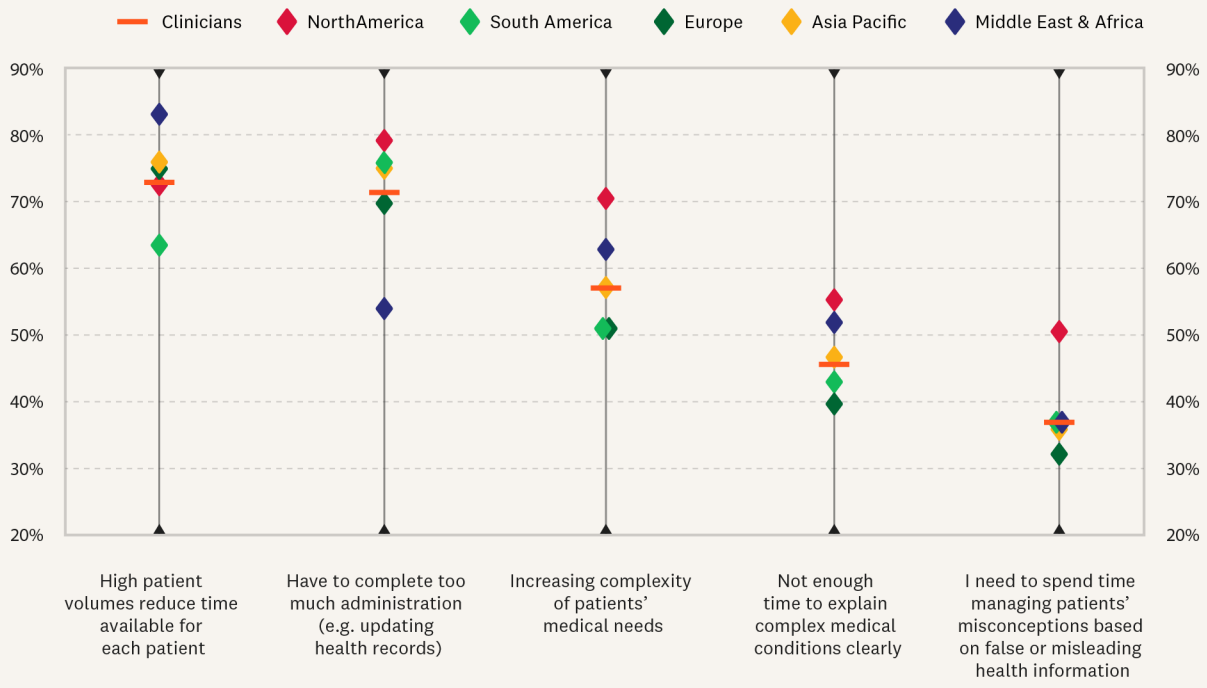
Empowered patients are a factor too. With the rise of information accessibility, including through generalist artificial intelligence (AI) tools like ChatGPT, patients are arriving at their appointments armed with assumptions and expectations that can prove challenging for clinicians. More than one-fifth (22%) of the clinicians whose care is impacted by lack of time say patients have numerous questions; this is more common in North America (34%).

While empowered patients are generally perceived positively, more than half (59%) of clinicians globally say medical misinformation is hindering their patients from accepting recommended treatments, rising to 71% in North and South America and 74% in the USA. This is less of a challenge for clinicians in Japan (29%) and China (45%). You can explore full results in the accompanying databook released with this report.

> *"AI should assist the clinician, but it is the clinician who must supervise it. In inexpert hands, it can lead to harassment by patients who believe they have a pathology."*
>
> **– Doctor, Europe**

This has an impact on the time they have for patients. Of the clinicians who do not have time to give patients good care, 38% report spending time managing those patients' misconceptions based on false or misleading health information.

Top five reasons why clinicians don't have enough time for quality care



Question: Why do you feel you don't have enough time to provide quality care to patients? % Selected.
Only asked to those who disagreed "the amount of time I am able to spend with patients is sufficient to give them good care".

Figure 2

Base: n= 607

Identifying performance gaps for institutions

One of the challenges clinicians say impact the time they have for patient care is that the digital tools they have to help diagnose patients are inadequate – this is true for a quarter of clinicians and 30% of nurses.

Providing access to digital tools (including AI) that support clinical decisions is an institutional priority for 56% of clinicians (and up to 68% in South America), yet only 32% say their institution's performance in this area is good or very good.

Similar priority–performance gaps are evident in connected areas, including providing guidance or training on the use of AI tools. Almost two-thirds (62%) of clinicians say this is a priority, while only 30% rate their institution's performance as good or very good. Ensuring a governance team is in place to manage AI shows this pattern too, at 55% versus 29%.

According to clinicians, institutions' priorities should be ensuring patient records are up to date (86%) and readily accessible (83%), though in both cases, 63% of clinicians say performance is good or very good.

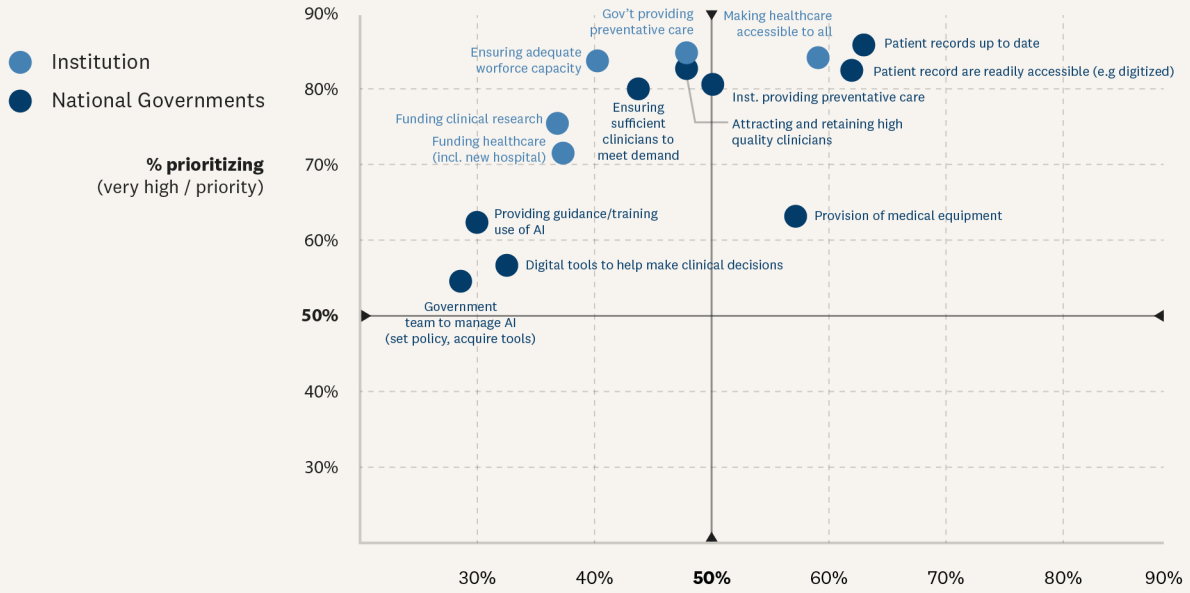
Clinicians are also keen for their institutions to address staff shortages, with 82% considering attracting and retaining high-quality clinicians a priority and 80% ensuring sufficient clinicians to meet patient demand, rising to 95% in the UK in both cases. However, less than half of clinicians (48% and 43% respectively) think their institutions are performing well in these areas.

National governments play a role in improving the working environment

According to most clinicians, their national governments should prioritize providing preventative care (85%), though only 48% say their performance is good or very good in this area. Other governmental priorities include making healthcare accessible to all (84%) and ensuring adequate workforce capacity (83%), again with good performance noted by fewer clinicians (59% and 40%).

Against this backdrop, clinicians are increasingly turning to AI to overcome these challenges and expect this trend to continue in the years ahead.

Clinicians' views of priorities and performance



Question: Please indicate the current priority you believe should be attached to the following challenges... 1 is very low priority, 5 is very high priority and the midpoint 3 is neutral. (Y axis)

Question: Please indicate how well your organisation or national government is performing on the following challenges. Performance... 1 is very poor, 5 is very good and the midpoint 3 is neutral. (X axis)

"Don't know / prefer not to say" answers are excluded from the responses.

Base: n= 2091 - 2186

Figure 3

> *"If AI can offload some of my mental load in clinical decision making for complex cases, then that can help me save time to consider multiple options more quickly. Additionally, if AI could offload a lot of my documentation burden, then it would make my job a lot more tolerable. Documentation is probably the single thing I hate most about my job."*
>
> **– Doctor, North America**

Chapter 2: How AI is transforming healthcare

The use of AI tools is increasing dramatically among clinicians, with 76% having used an AI tool, and nearly half for work purposes. They recognize many benefits that improve their own work and patient experiences, though AI use for any specific activity in a clinical setting remains relatively low. In some regions, particularly North America and Europe, there remains some hesitation around certain applications of AI. Clinicians want transparency, security and assurances on the quality of content in AI tools they can trust.

Key insights:

- 48% of clinicians have used an AI tool for work purposes – nearly double the 26% reported in 2024.
- Clinicians currently perceive clinical AI tools as saving them time (57%), empowering them (53%) and giving them more choice (53%).
- 30% of clinicians are already using AI tools to identify drug interactions and 21% to analyze medical images. However, today only 16% are using AI tools to help make clinical decisions. This is despite an additional 48% of clinicians expressing a desire to use AI to help with clinical determinations.
- There is a usage gap when it comes to the type of AI tool clinicians are using. Of those that use AI tools for work, 97% have used a generalist tool such as ChatGPT for work purposes. In comparison, 76% (of those who use AI tools for work) have used a clinical-specific AI tool.
- Top ways clinicians use and would like to use AI tools in clinical practice include:
  - Identifying drug interactions (89%)
  - Analyzing medical images (82%)
  - Providing a patient's medication summary (81%)

AI has become a standard part of our lives and work, and its use has increased substantially in the past year, including in healthcare. AI technology can read medical images, enable faster and earlier diagnoses, support patients and lighten clinicians' administrative load.[8]

Just one year since Elsevier's *Clinician of the Future: Attitudes toward AI* report, clinicians' use of AI for work has almost doubled. The potential benefits of AI in healthcare are well documented, and clinicians see many positive impacts of the technology.

Their institutions do too: according to a survey by McKinsey & Company, 85% of healthcare leaders were exploring or had already adopted generative AI capabilities by late 2024.[9] However, institutional barriers such as under preparedness and insufficient budget come together with a lack of skill and concerns about the technology to prevent many clinicians from accessing the benefits of AI.

In previous *Clinician of the Future* reports, clinicians shared their concerns about using AI. For example, in the 2024 survey, 93% of clinicians believed AI could be used for misinformation and 85% were concerned that AI could cause critical errors or mishaps.[1] Despite this, two-thirds (66%) of those not yet using AI said they expected to do so in the next two to five years. This happened faster than they might have imagined: the proportion of clinicians using AI for work has already doubled.

AI is part of the clinician's toolkit

The use of AI tools has increased dramatically in the past year: 48% of clinicians globally report using AI tools for work purposes, up from 26% in 2024.[1] Significantly more clinicians in Asia Pacific (56%) and China (71%) specifically are using AI for work, while usage is lower in the US (36%) and the UK (34%). You can explore full results in the accompanying databook released with this report.

Of the 48% of clinicians who use AI for work, nearly all (97%) have used a generalist AI tool, such as OpenAI's ChatGPT or Google's Gemini (formerly Bard). Usage of these tools has increased in the past year: in 2024, only 8% of clinicians used AI tools frequently (saying they used AI a lot); in the current survey, 50% use these tools frequently (41%) or always (9%).

In comparison, 76% of those who have used AI for work have used a clinical-specific AI tool. Only 18% use them frequently and 4% always.

Increase in AI usage for work on last year

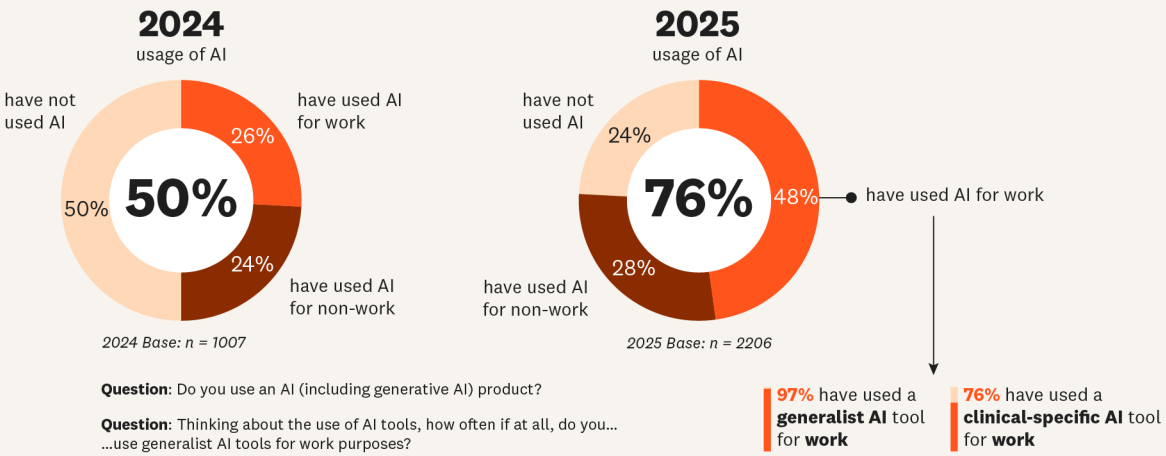


Figure 4

Time-saving technology that empowers clinicians

When asked in 2024 what impact they expected AI to have in the future, 71% of clinicians said it would have a transformative or significant impact on their area of work, and 85% expected it to help free up time for higher value work. Additionally, in 2024, 95% of clinicians believed the assistance of AI would bring benefit to clinical activities.[1] This expectation is reflected in the current survey.

As we saw in chapter 1, clinicians are short on time. It is therefore important to note that over half (57%) already perceive AI tools developed to support clinical decision-making as time-saving. Nurses (61%) are more likely than doctors (53%) to agree.

Interestingly, clinicians in Japan, who are among those least likely to agree they have sufficient time to provide good patient care, are more likely than average to believe AI saves them time, at 66%.

Over half (53%) of clinicians globally perceive AI tools developed to support clinical decision-making as empowering them, while 53% see them as giving them more choice, and 40% see them as increasing their autonomy. However, a substantial minority (24%) see such AI tools as reducing autonomy and 20% believe AI devalues them. While half (49%) say they perceive clinical-specific AI tools as giving them useful answers, one-fifth think the answers are unhelpful and over a quarter unreliable.

Across all these areas, clinicians in North America are less positive and those in Asia Pacific more positive. Only 30% of clinicians in North America say AI empowers them, compared to 61% in Asia Pacific. Only 25% of North American clinicians say AI gives them more choice, while 29% believe it restricts choice, and only 36% think it provides useful answers.

Current perceptions of how AI tools impact clinicians

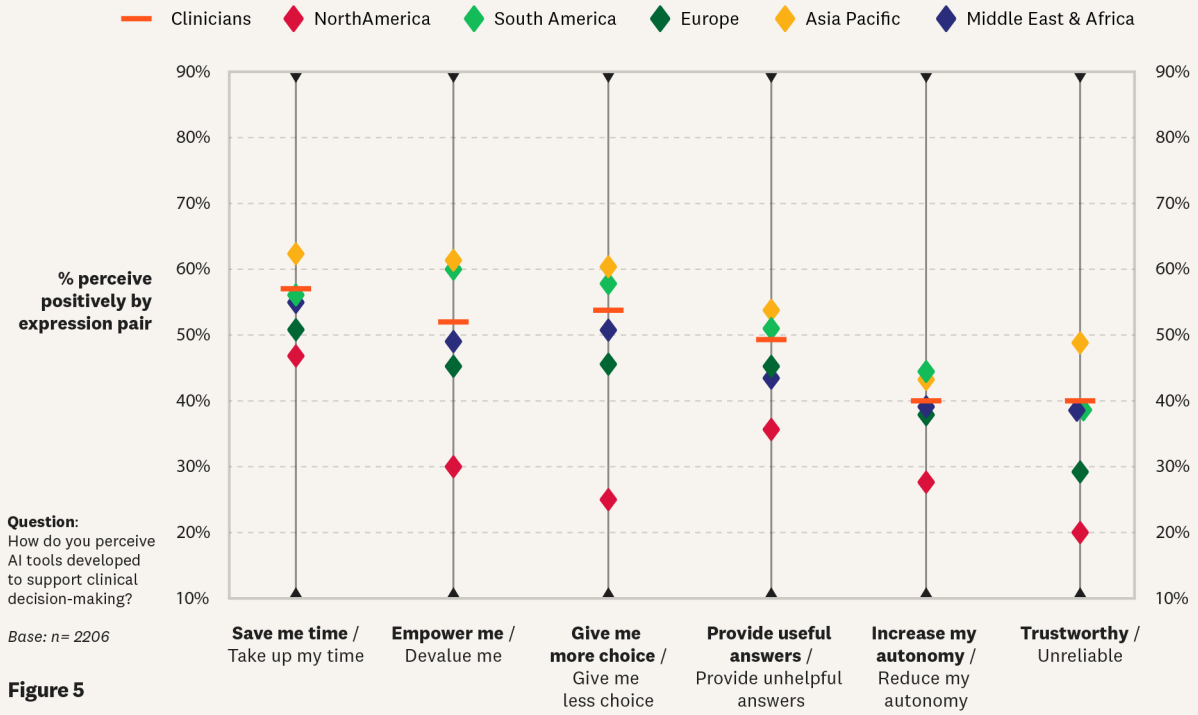


Figure 5

Current and future uses of AI

Clinicians' current and desired use of AI spans a range of tasks, from demanding clinical applications, like identifying drug interactions and analyzing medical images, to more administrative ones, such as writing patient letters.

Clinical diagnostic support uses

Almost one in three clinicians (30%) are already using AI to identify drug interactions, and a further 59% would like to use it for this purpose (see figure 6). Of those already using AI in this way, 15% use a clinical-specific tool. One-fifth (20%) are already using AI to provide a patient's medication summary, and a further 62% would like to do so.

One in five (21%) are already using AI to analyze medical images (such as x-rays, MRIs and CT scans), and a further 60% would like to use it for this purpose. Globally, 16% of clinicians are using a clinical-specific AI tool for this purpose.

Clinicians are also positive about using AI to provide a multiple disciplinary overview for complex cases, with 21% already using it for this purpose and 57% saying they would like to.

Many clinicians shared positive comments about the potential for AI tools to support accurate diagnoses and clinical decisions, noting that AI can identify patterns and provide evidence-based recommendations, especially in complex or ambiguous cases. Connected to this is the potential for AI to have a positive impact on the quality of patient care, including through personalization, and contribute to better patient health outcomes.

However, the survey suggests that, overall, clinicians are less positive about using AI for a second opinion or making clinical decisions. While 22% are already using AI to provide a second opinion on a complex case, 27% would not like to use it for this purpose, rising to 29% of nurses. Similarly, 16% of clinicians are already using AI to make clinical decisions, while 37% would not like to use it for this purpose.

> *"AI should provide the information I need to make good decisions. I don't believe I should abrogate responsibility for clinical assessment to AI – I need to keep authority over the final outcomes."* **– Doctor, APAC**

Clinicians are less enthusiastic about the use of AI for a second opinion in North America, where 42% would not want to use it for this purpose, and in Europe (37%), particularly the UK (45%). This pattern applies to the use of AI to help with clinical decision-making: 49% of clinicians in North America, 46% in Europe and 53% in the UK would not like to use AI for this purpose. Only 11% of clinicians in Europe are currently using AI to support making clinical decisions. Yet there remains a desire: 48% of clinicians would like to use AI to help with clinical decisions.

> *"I believe clinical AI tools will improve patient outcomes by analyzing large data sets quickly, enabling earlier intervention and more accurate diagnoses. AI can also personalize treatment plans by processing genetic and medical data, improving care quality. Additionally, by automating routine tasks, AI will save clinicians time, allowing them to focus on more complex aspects of patient care. Over the next two to three years, these tools will become more integrated into clinical practice, enhancing efficiency and accuracy in diagnosis and treatment."* **– Doctor, Europe**

Administrative uses

Writing patient letters is the second most common application of AI technology, with 23% of clinicians already using AI for this purpose and 55% saying they would like to. One in 10 use a clinical-specific AI tool for this most use a generalist AI tool.

A similar proportion (22%) already use AI to write clinical notes, with 11% using a clinical-specific tool, and 55% would like to use AI for this purpose.

Addressing another administration-related time burden, 17% of clinicians are using an AI tool to write pre-authorizations (for payers), with 8% using a clinical-specific AI tool for this.

The biggest impacts clinicians mention in their comments are time and efficiency gains; this aligns with their current and future use of AI tools for administrative work. They expect AI to free up time for patient care by streamlining clinical workflows, reducing paperwork and automating their more routine tasks.

How clinicians use and would like to use AI tools in clinical practice

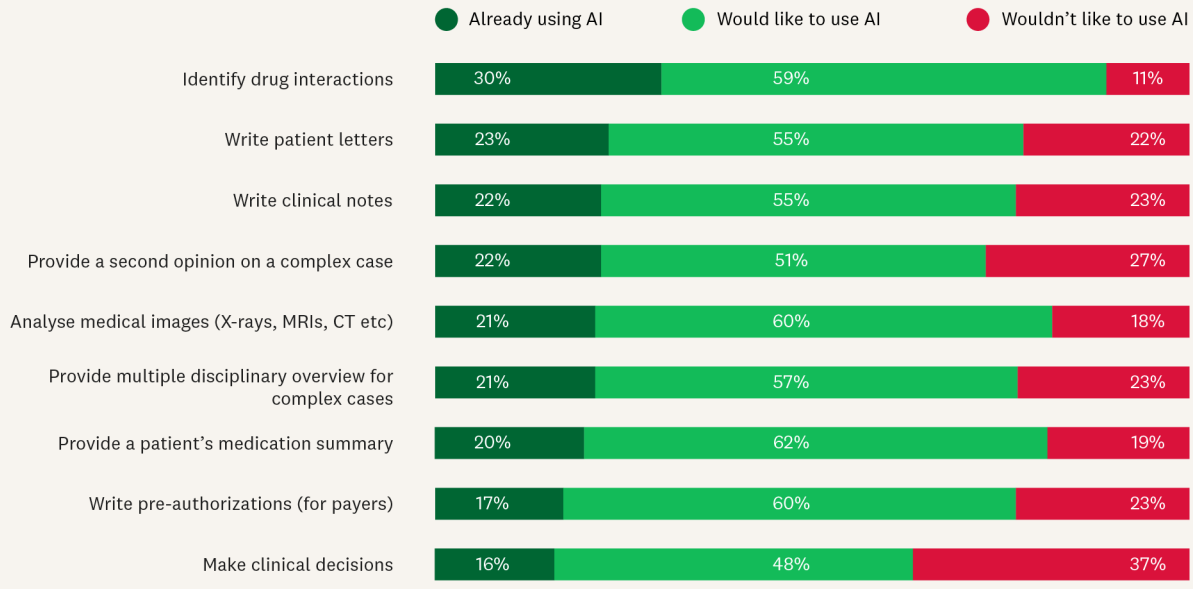


Figure 6

Base: n= 2024

Question: Are you using an AI tool in your clinical setting to help with the following tasks? If not, would you like to? "Don't know / not applicable" answers are excluded from the responses.

Building trust in AI tools

Throughout the survey comments, clinicians highlight the conditions under which AI could be most beneficial: if it is checked by humans, if it is based on reliable sources, and, if it can be trusted, AI could transform their work.

Trust remains a challenge when it comes to clinicians' AI use. As noted in the previous chapter, clinicians report that institutions could be doing a better job at providing support for AI use, and crucially, managing governance of AI. Part of good governance is ensuring that AI content is based on reliable, trusted sources.

Globally, 40% of clinicians believe AI tools developed to support clinical decision-making are trustworthy, with nurses (47%) more likely than doctors (32%) to agree with this. Again, clinicians in North America (20%) are less positive than those in Asia Pacific (49%) when it comes to perceptions of AI being trustworthy.

> *".. it seems a little naive to think that AI... will be the creative innovative force to improve quality in human outcomes... particularly when there's an epistemic reference bias that exists across the literature at large... Without acknowledging this, AI tools may save time but are also just as likely to replicate and scale the worst practices in patient care before getting to the best."*
>
> **– Doctor, North America**

What would increase clinicians' confidence in a clinical AI tool?

One of the major themes that came through in the comments clinicians shared in the survey is that AI is a tool that can assist clinicians in their work, not a tool that makes decisions without intervention.

> *"AI does not replace clinical judgment; it is merely a tool that should facilitate care processes, but it should not be the one that makes decisions about a life."*
>
> **– Doctor, South America**

> *"I believe that AI tools should contribute to professionals' decision-making, however, professionals must be aware that the final decision will be made by them, together with their patients, so professionals must be prepared to use AI as a tool that will assist in their work, not a tool that will do their work."*
>
> **– Nurse, South America**

As such, clinicians need to be able to fact check and verify the reliability of the information they get via AI tools, and this requires transparency. Globally, 68% of clinicians say automatically citing references would increase their trust in clinical-specific AI tools in our 2025 survey.

The next biggest factor for increasing confidence in a clinical-specific AI tool is that it ensures the confidentiality of input data, with 65% of clinicians agreeing globally, and up to 81% in the UK. This was also reflected in *Elsevier's Insights 2024: Attitudes toward AI* report, where privacy being respected on the user side was ranked highest (joint with human oversight and an up-to-date model) by clinicians for increasing their comfort in using an AI tool.[1]

Almost two-thirds (65%) of clinicians want AI tools to be trained on high-quality peer-reviewed content, with doctors (70%) more likely to require this to increase trust than nurses (60%). Most (63%) also consider an AI being trained for factual accuracy, morality and safety a trust factor. Agreement is highest among clinicians in the USA (75%) and UK (81%). For over half (56%), eliminating bias in training data is a factor for building trust, and 64% say utilizing the latest resources would build trust.

Outputs being evaluated is also a vital aspect: 61% agree that outputs being regularly reviewed by independent clinical experts would build their trust in an AI tool, with doctors (68%) more likely than nurses (53%) to agree. Clinicians also consider guidance being provided for using outputs in a clinical setting (57%) and delivering coherent clinical outputs in complex situations (56%) important for building trust.

Other factors for increasing trust in a clinical-specific AI tool include that the tool integrates with electronic health records to incorporate a patient's medical history (60%), that there is clear accountability for provided information (59%) and that the tool abides by laws governing development and implementation (57%).

> *"The 'black box' aspect of a lot of AIs makes it unsuitable for application within healthcare. Some AI engines have been known to invent references, leaving an MD in the position of having to not only review the recommendations, but specifically run down references to check for accuracy."* **– Doctor, North America**

Approaches that would increase trust in AI tools

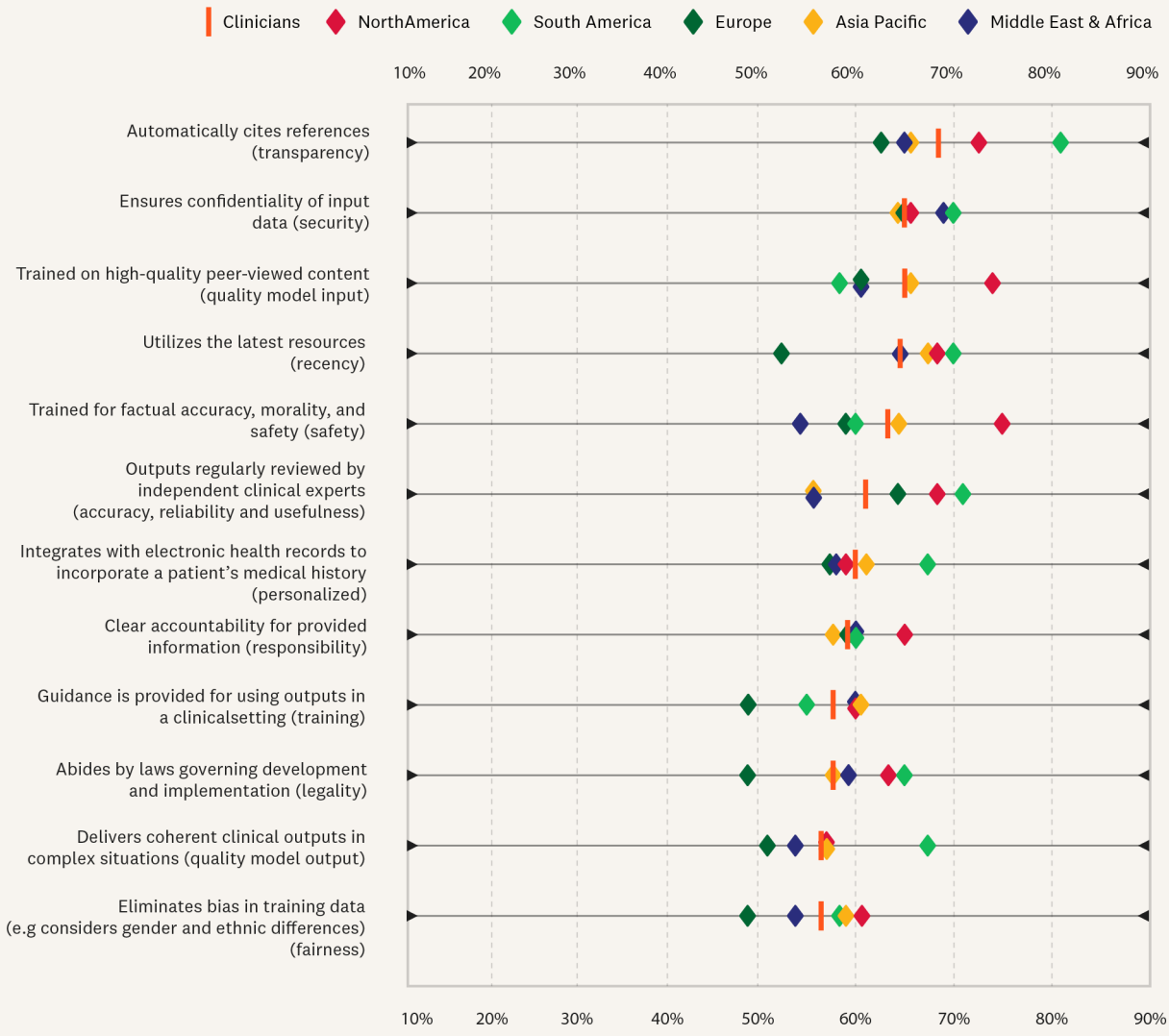


Figure 7 **Question**: Which of the following approaches would increase your trust in a clinical-specific AI tool? % Selected. *Base: n= 2206*

Chapter 3: The future of healthcare

Clinicians are optimistic about the benefits AI will bring in the next two to three years. Building on the developments we have already seen in areas like medical imaging, clinicians see potential for AI to save them time, improve the diagnosis process, and ultimately improve patient outcomes. A substantial proportion believe AI will lead to more patients self-diagnosing.

Key insights:

- Clinicians predict AI will have a positive impact in many areas, including saving them time (70%), enabling faster (58%) and more accurate (54%) diagnoses and helping improve patient outcomes (55%) in the next two to three years.
- 41% of clinicians think in the next two to three years, those who use AI will deliver a higher quality of care, compared to 27% who disagree.
- 56% of clinicians think that AI will analyze all medical images to identify abnormalities in the next two to three years.
- 38% think that most patients will self-diagnose with AI tools available online rather than see a clinician in the next two to three years.

As we saw in Chapter 2, AI tools are in widespread use today, so it is less challenging for clinicians to imagine the impact AI could have in the future than a year ago. However, concerns remain about the technology, and the way it is developed and implemented will ultimately determine who uses it, how it impacts their work and the benefit it brings.

In our 2025 survey, clinicians are optimistic about the benefits AI will bring in the years to come: they foresee AI saving them time, enhancing patient care and improving outcomes. However, some clinicians shared concerns in their comments, covering issues raised in previous reports, such as bias, misinformation, hallucinations, opacity and lack of training.

Many of the comments focused on roles: AI should act as an assistant, leaving the clinician in control. As one doctor from Asia Pacific said, “Clinical eye and AI will combine together.”

“It will help to obtain a diagnosis with greater precision and speed, however, many professionals are missing the main point, which is humanized care for the patient.” **– Nurse, South America**

The AI-assisted future clinicians see is driven by their own medical knowledge and interpersonal skills. They see the potential for AI to iron out the creases in their roles and sharpen their ability to tap into evidence that supports better diagnosis and treatment. And in this scenario, human-centered medicine still leads.

> *"AI is not a clinician. A clinician is someone who performs a physical examination and that is a skill acquired and honed through practice. The big risk with AI is that physical examination will become another lost art."*
>
> **– Doctor, North America**

AI-enabled care: clinicians' view of their future

In the survey, clinicians shared their expectations of healthcare in the coming two to three years. While many foresee a more equitable, accessible healthcare system, with lower hospitalization rates and more home care, opinion is split, and agreement varies greatly depending on location.

Higher costs, new locations

More than half (53%) of clinicians globally expect healthcare costs to be higher (in real terms) in the future, with clinicians in North America (74%) and Europe (63%) more likely to agree and those in Asia Pacific (42%) less so.

Clinicians expect the location of care to shift, with 51% agreeing hospital stays will be shorter, 41% expecting hospitalization rates to be lower and nearly a third (31%) believing most healthcare will be delivered in the patient's home.

Better access, less control

According to 51% of clinicians, everyone will be able to easily access healthcare in the future, with more nurses (59%) than doctors (43%) agreeing.

A similar pattern is evident in predictions of equitable care: 50% of clinicians globally foresee this, and more nurses (62%) than doctors (39%) agree.

Empowered patients

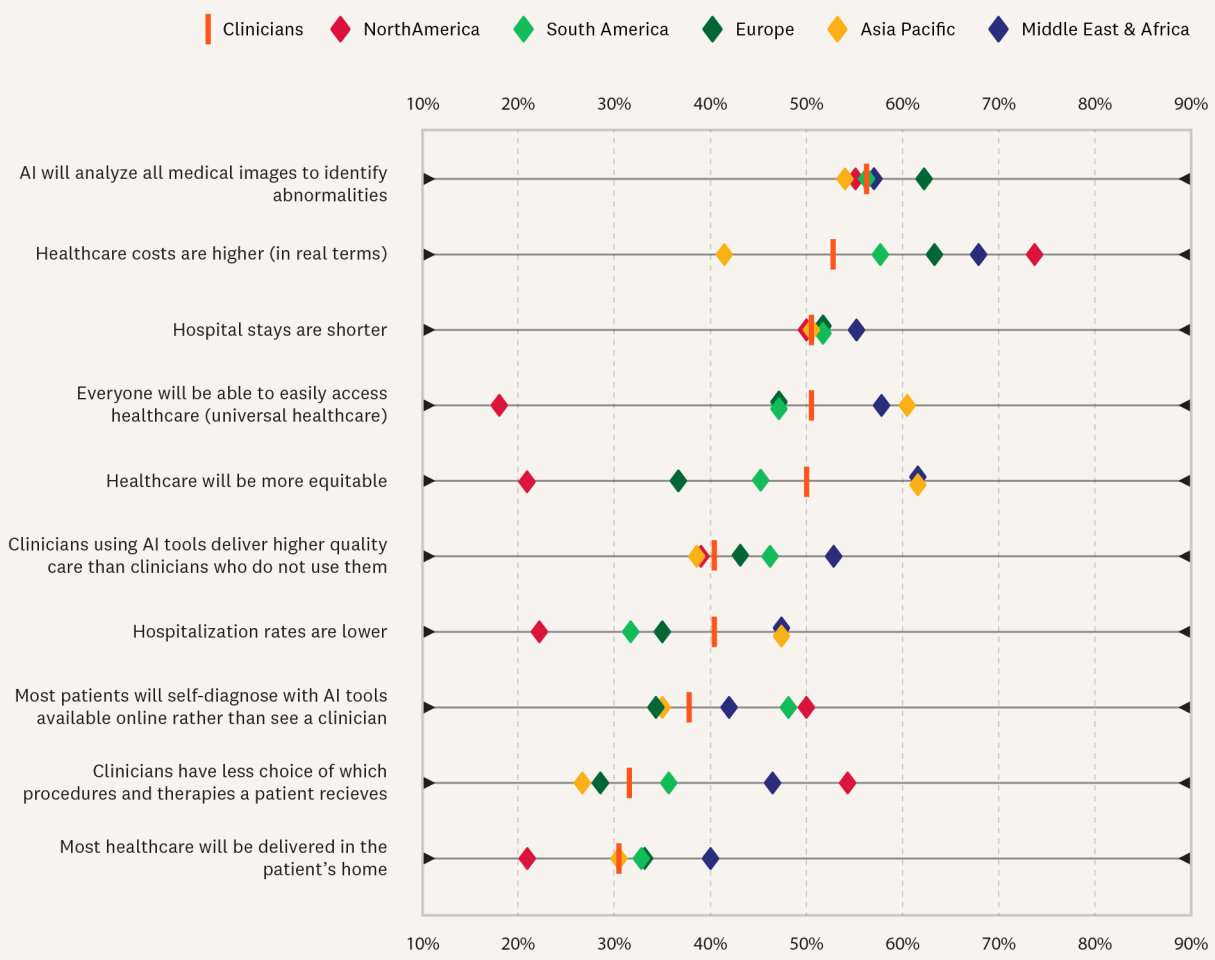
Opinion is split as to whether most patients will self-diagnose with AI tools available online rather than seeing a clinician: 38% agree and 39% disagree. Clinicians in the USA (51%), Brazil (54%) and India (52%) are most likely to agree that most patients will. Only a third of clinicians believe they will have less choice when it comes to which procedures and therapies a patient will receive; this is higher in the USA, where 57% think they will have less choice.

AI-assisted care

Given that analyzing medical images is a top use case of AI among clinicians, it is unsurprising that more than half expect this use to increase: 56% agree that AI will analyze all medical images to identify abnormalities in the next two to three years.

Clinicians believe AI will positively impact the quality of care they deliver: 41% of clinicians, increasing to 47% of doctors, predict that clinicians using AI tools will deliver higher quality care than clinicians who do not use them, while 27% disagree. Opinion is split fairly evenly in the UK, where 29% of clinicians agree and 28% disagree.

How healthcare will change in the next two to three years



Question: For each of the following statements, to what extent do you agree or disagree? Thinking about healthcare within the primary country that you are likely to work in 2-3 years' time. % Agree. "Don't know / prefer not to say" answers are excluded from the responses.

Figure 8

Base: n= 2091 - 2120

Predicting future benefits of AI

Clinicians believe clinical AI tools will save them time, speed up diagnosis, enable more accurate diagnosis and improve patient outcomes. Overall, clinicians in North America and Europe are less positive about the future impact of AI tools compared to those in Asia Pacific, reflecting perceptions of current benefits as well as usage patterns.

> *"We Neurosurgeons are probably the most technology dependent and AI platforms have already started transforming clinical practice... We have no other option other than adopting AI in all neurosurgery activity."*
>
> **– Doctor, APAC**

Saving time

The biggest benefit clinicians predict in the next two to three years is that AI will save them time: 70% globally agree. Those in North America (60%), particularly the USA (58%) and in Europe (63%) are less likely to agree, while those in the Middle East and Africa (76%) and Asia Pacific (70%), particularly China (77%), are more likely to agree. You can explore full results in the accompanying databook released with this report.

Most clinicians (58%) expect AI will enable them to make a diagnosis more quickly. Again, clinicians in China are more optimistic about this (75%) while those in North America (43%) and Europe (44%) are less so.

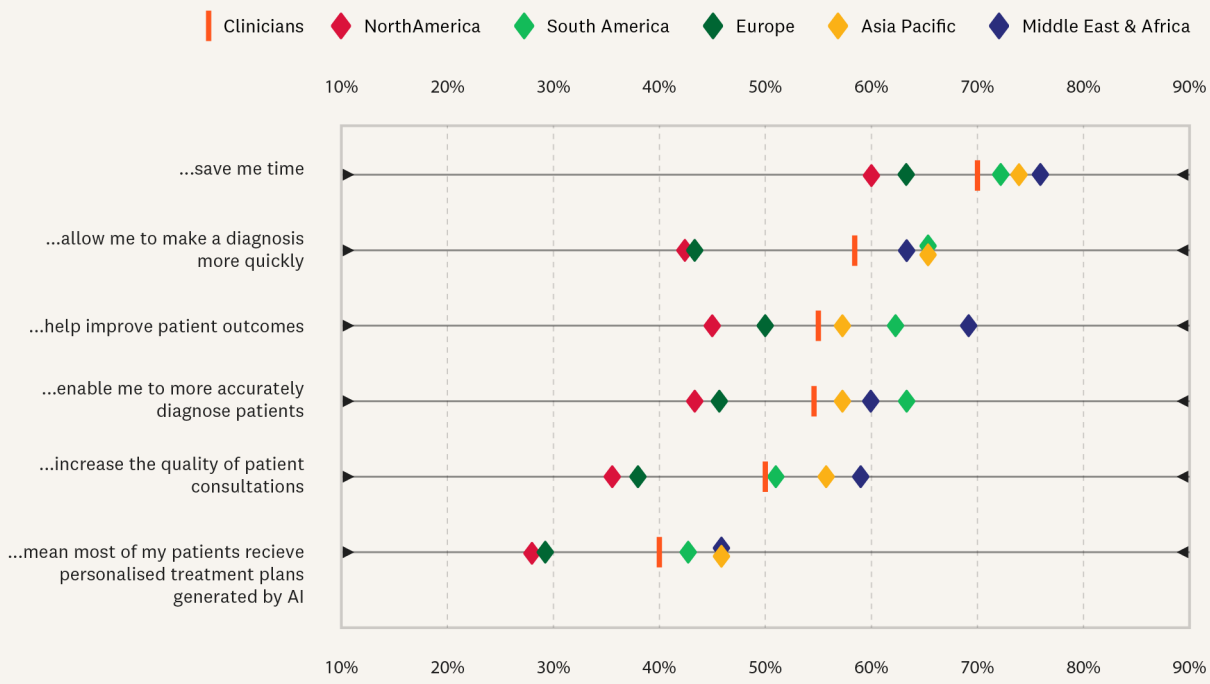
Improving patient care and outcomes

AI is not just about saving time; more than half (55%) of clinicians foresee AI having a positive impact on patients, including through more accurate diagnosis – globally, 54% expect AI will enable them to more accurately diagnose patients.

Half (50%) of clinicians globally believe AI tools will increase the quality of patient consultations. Many clinicians also expect care to be improved through personalization: 40% believe most of their patients will receive personalized treatment plans generated by AI in the future.

Impact of AI tools in the next two to three years

I believe clinical AI tools will...



Question: Thinking specifically about clinical AI tools, what impact do you think they will have in the next 2-3 years. % Selected.

Base: n= 2206

Figure 9

Building an AI-powered future for healthcare

In order to unlock the benefits clinicians expect to see in the future, institutions, governments, technology providers, patients and clinicians themselves all play a role in increasing trust in AI. Importantly, institutions will need to address the challenges they currently face in the use of AI.[10]

AI technology providers:

- Ensure transparency, privacy, security and accountability
- Use high-quality, reliable sources as input
- Work with experts to validate outputs and improve accuracy

Healthcare institutions:

- Provide access to reliable, trusted clinical AI tools
- Offer AI training and support for clinicians
- Set up a robust governance structure for AI

Clinicians:

- Share their views on what they need in an AI tool
- Ask their institutions for training and support
- Report experiences to AI developers

The Future Clinician as a Partner for Health

Supported by AI, the clinician of the future will have more time with patients thanks to efficiencies in administration. Their empowered patients will arrive armed with AI-generated information, and the clinician will share their expertise to overcome any misinformation. They will provide fast, accurate diagnoses and use AI to analyze medical images. Using AI, the clinician will provide personalized treatment for patients, leading to better outcomes.

The Future "Total Health" Clinician

The clinician of the future will work in a more preventive-led system, and AI will help them work with patients to monitor their health and identify any causes for concern. AI tools will support the clinician in various aspects of their work, including patient communication and clinical decision-making, enabling them to accurately analyze complex situations.

The Future Tech-Savvy Clinician

Armed with AI tools and the skills and knowledge to use them, the clinician of the future will use their tech skills to find efficiencies in different aspects of their role, including administrative tasks, patient communication, diagnosis and clinical decision-making. AI will provide the evidence they need to create optimal treatment plans and help them monitor progress.

The Future Balanced Clinician

AI tools will help the clinician of the future free up valuable time, reducing the pressure on them in an increasingly busy role. Using AI, the clinician can carry out their administrative work faster and have sufficient time to provide good patient care, while maintaining a healthy work–life balance. Beyond their own role, AI will help alleviate pressure throughout the system, reducing the negative impact of staff shortages.

The Future Accessible Clinician

The clinician of the future will make sure the human touch is not lost as the use of AI increases in their practice. They will recognize the importance of human-led AI technology, and they will focus on ensuring their patients have sufficient direct contact with them, in addition to the AI-powered chatbots that improve patients' access to care.

Conclusion

Clinicians are facing a range of challenges in today's healthcare setting: a growing number of patients, increasing administrative load and more complex cases put clinicians under pressure. What's more, empowered patients are using generalist AI tools to gather their own information before appointments, adding potential misinformation into the mix.

Armed with clinical AI tools they can trust, clinicians are able to find efficiencies that free up more time for patient care. They can access a vast amount of information in a few clicks, enabling them to maintain oversight of complex medical cases and develop personalized treatment plans that benefit patients and improve outcomes.

Yet not everyone is doing this. Why? AI developers and institutions have work to do when it comes to further establishing trust, providing training and creating the optimal conditions to reap the benefits of this technology.

Elsevier's role

As global leader in advanced information and decision support, Elsevier helps to drive science and healthcare forward, to advance human progress.

For more than a decade, Elsevier has been using AI and machine learning technologies responsibly in our products combined with our unparalleled peer-reviewed content, extensive data sets, and sophisticated analytics to help researchers, clinicians and educators discover, advance and apply trusted knowledge.

Whatever future we head towards, it is clear that AI will play a role. The aim of this study was to understand the AI landscape from the point of view of clinicians, in the context of the challenges they face and how AI tools might play a role in providing solutions. With these insights, we at Elsevier, together with the institutions we support, are better prepared to utilize AI to help advance knowledge and healthcare.

As the use of AI grows, parallel with developments in the technology, areas of opportunity and concern are likely to continue evolving. We will continue to monitor clinicians' views and behavior to meet their needs with responsible AI tools that support clinical research and clinical decisions.

Appendices

Methodology

Who we surveyed

Respondents were a sample of clinicians (doctors and nurses in primary and secondary care) from a variety of sources, including:

- Clinicians who had published recently – these individuals were randomly selected from a database of published authors across health titles (including journals and books) from various publishers.
- Clinicians on a third-party panel provided by Jasper Colin (voluntary sign up).
- Users of Elsevier solutions aimed at doctors and nurses (including ClinicalKey) and as well as sourced from Elsevier's marketing databases.

10-15-minute online survey
March to April 2025

n = 2,206 clinicians
(1,781 doctors and 425 nurses)
from **109 countries**

To improve representativeness, we weighted responses geographically and to equally represent doctors and nurses in the clinician totals.

Participants were recruited using an email invitation containing a link to the online survey. To qualify, participants had to be practicing as a doctor (resident/fellow/physician), a nurse (midwife/nursing practitioner) or a physician assistant/associate at the time of fieldwork.

In total, there were 2,206 surveys completed by clinicians across a range of geographies. Please refer to the appendix 'Sample bases by region/country' (pages 30 & 32) for a more detailed breakdown.

Results

We weighted the results based on Pharma Factbook population figures for clinicians by region, ensuring representation from the key countries we have highlighted in this report, and to equally represent doctors and nurses in the clinician totals. Base sizes shown in the report are unweighted.

Despite the weighting, the study is not without limitations due to self-selection, non-response biases and the lower response rates typical for online surveys of this nature. Therefore, there will be some non-sampling error associated with this study, as we cannot be sure responses accurately represent the views of the population for a given country or region. Statistical differences shown in this report should be interpreted within this context, and while showing notable difference between groups, results are not necessarily generalizable to a whole country.

Given the non-probability sampling methods, these tests are indicative.

Sample bases by region/country

	Doctor or Physician Assistant/Associate	Nurse (Midwife/Nursing Practitioner)	Total
Asia Pacific	**990**	**180**	**1170**
Afghanistan	2		2
Australia	29	29	58
Bangladesh	5		5
Cambodia	2		2
China	421	60	481
Hong Kong	3		3
India	257	35	292
Indonesia	19	8	27
Japan	137	33	170
Macau		1	1
Malaysia	8		8
Mongolia	1		1
Myanmar	2		2
Nepal	14	1	15
New Zealand	3	3	6
Pakistan	34	1	35
Philippines	3	4	7
Singapore	5	2	7
South Korea	12		12
Sri Lanka	1		1
Taiwan	11		11
Thailand	16	3	19
Vietnam	5		5
Europe	**358**	**81**	**439**
Austria	9	1	10
Belarus	1		1
Belgium	9		9
Bosnia and Herzegovina	2		2
Bulgaria	5		5
Croatia	4		4
Cyprus		1	1
Denmark	4	3	7
Estonia	2		2
Finland	3		3
France	11	3	14
Georgia	1		1
Germany	25	13	38
Greece	10	1	11

	Doctor or Physician Assistant/Associate	Nurse (Midwife/Nursing Practitioner)	Total
Hungary	3		3
Iceland	1		1
Ireland	6	1	7
Italy	46	6	52
Kazakhstan	2		2
Kyrgyzstan	1		1
Latvia	1		1
Luxembourg	1		1
Netherlands	11	1	12
Norway	3	1	4
Poland	10		10
Portugal	10	2	12
Romania	5		5
Russia	14		14
Serbia	2		2
Slovakia	2		2
Slovenia	3		3
Spain	31	14	45
Sweden	14	1	15
Switzerland	10	1	11
Turkey	11		11
Ukraine	5	1	6
United Kingdom	78	31	109
Uzbekistan	2		2
Latin America	**132**	**32**	**164**
Argentina	11	1	12
Brazil	85	23	108
Chile	6	1	7
Colombia	8		8
Costa Rica	1	1	2
Cuba	2		2
Ecuador	2		2
Guatemala	1		1
Haiti	1		1
Jamaica	1		1
Mexico	12	2	14
Panama	1		1
Peru	1	2	3
United States Virgin Islands		1	1
Venezuela		1	1

Middle East and Africa	**109**	**38**	**147**
Algeria	1		1
Angola		1	1
Bahrain	1		1
Burkina Faso	1		1
Burundi	1		1
Côte d'Ivoire	1		1
Egypt	8	1	9
Ethiopia	6	3	9
Ghana		1	1
Iran	23	7	30
Iraq	5		5
Israel	11	1	12
Jordan	2		2
Kenya	1	2	3
Kuwait	1		1
Malawi		2	2
Morocco	2		2
Nigeria	17	3	20
Qatar	2	1	3
Saudi Arabia	4	7	11
Somalia	1		1
South Africa	3	2	5
Sudan	1		1
Syria	1	1	2
Tanzania	3		3
Togo	1		1
Uganda	6		6
United Arab Emirates	4	3	7
Yemen	1		1
Zambia		3	3
Zimbabwe	1		1
North America	**176**	**92**	**268**
Canada	16	5	21
United States of America	160	87	247
Prefer not to say country	**16**	**2**	**18**
Grand Total	**1,781**	**425**	**2,206**

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References

[1]*Insights 2024: Attitudes toward AI*. Elsevier. July 2024.
https://tinyurl.com/attitudes-ai

[2]Health Workforce. WHO.
https://www.who.int/health-topics/health-workforce#tab=tab_1

[3]Heartbeat of health: Reimagining the healthcare workforce of the future.
McKinsey Health Institute. 14 May 2025.
https://www.mckinsey.com/mhi/our-insights/heartbeat-of-health-reimagining-the-healthcare-workforce-of-the-future

[4]"Microsoft claims AI diagnostic tool can outperform doctors." Financial Times. 30 June 2025.
https://www.ft.com/content/149296b9-41b6-4fba-b72c-c72502d01800

[5]Superagency in the workplace: Empowering people to unlock AI's full potential.
McKinsey. 28 January 2025.
https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/superagency-in-the-workplace-empowering-people-to-unlock-ais-full-potential-at-work

[6]*Clinician of the Future Report 2022*. Elsevier. 2022. P73.
https://www.elsevier.com/connect/clinician-of-the-future

[7]Credibility, convenience and connection: Exploring why physicians are online. Elsevier. July 2024. https://www.elsevier.com/about/press-releases/why-do-todays-physicians-prefer-to-find-information-online

[8]6 ways AI is transforming healthcare. World Economic Forum. 14 March 2025.
https://www.weforum.org/stories/2025/03/ai-transforming-global-health/

[9]Generative AI in healthcare: Current trends and future outlook. McKinsey & Company.
26 March 2025. https://www.mckinsey.com/industries/healthcare/our-insights/generative-ai-in-healthcare-current-trends-and-future-outlook

[10]Artificial Intelligence in healthcare. European Commission.
https://health.ec.europa.eu/ehealth-digital-health-and-care/artificial-intelligence-healthcare_en

For further information go to: https://www.elsevier.com/insights/clinician-of-the-future/2025

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