

Future of Healthcare and Artificial Intelligence (AI): Practical Insights and Diverse Perspectives on AI in Healthcare Project Management¹

The Healers of Healthcare System: AI and Project Management in Healthcare²

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INTRODUCTION

AI is augmenting human expertise to provide real-time insights and decision-support tools, revolutionizing healthcare delivery and transforming how medical professionals diagnose, treat, and interact with patients. However, integrating AI into clinical ecosystems raises concerns about the technology's authenticity. Exploring the challenges and opportunities of incorporating AI into clinical medicine is essential to address these concerns.

While, at least as of now, there is limited experience with AI-enabled tools in day-to-day work, HCPs recognize the potential benefits of AI in improving patient outcomes and increasing efficiency. While highlighting the potential of AI as a tool, there are concerns about using it and the need for effective human-machine collaboration. The article provides diverse perspectives on AI in patient care settings from healthcare providers at the heart of delivering care. In addition to its value in understanding the expectations of this critical stakeholder group, the article contributes to improving our understanding of the project management requirements of projects related to AI in healthcare.

Let's discuss this with a group of healthcare providers (HCPs) to gain insight into their experiences and perspectives on AI-driven clinical practice, outlook on AI and project management, and food for AI.

¹ Editor's note: This series is by Dr. Deepa Bhide, a practicing pediatrician with additional experience in information technology and project management. Her 2023 series of articles introduced readers to a range of important issues related to programs, projects and PM in healthcare. In this new series, Dr. Bhide will interview experienced healthcare, IT and project professionals around the world to reflect on the impact of artificial intelligence on global healthcare. Learn more about Dr. Bhide in her author profile at the end of this article. To read previous works by Dr. Bhide, visit <https://pmworldlibrary.net/authors/dr-deepa-bhide/>

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Healthcare Providers – Key Stakeholders in AI in Healthcare

Excerpts of interviews with the following healthcare professionals:

Dr. Milind Pande MBBS, DO, FRCS, F.R.C.Ophth, Cert LRS, Founder & CEO
CustomLensAi - Consultant Ophthalmic Surgeon and Medical Director, UK

Sharvari Adams, DO Obstetrics and Gynecology, PGY-III, Cape Fear Valley Medical
Center, Fayetteville, North Carolina, USA

Mallika Sengupta, 4th-year medical student at King's College, London, and Darent
Valley Hospital, Dartford, Kent, UK.

Dr. Aniket R Desai, Consultant ICM, Fellow of CICM (College of Intensive Care
Medicine, Australia and New Zealand)

Dr. Milind Bhide, Pediatrician and Neonatologist, Hyderabad, India

Also, about 19 physicians from my clinical group spread across the globe

Q 1: What is your experience using AI in your practice (if/as relevant)?

Dr. Pande, an eminent Ophthalmologist, founder, and CEO of CustomLens Ai, said his venture focuses on making premium vision outcomes easier for cataract and refractive lens surgery. "Despite technological improvements, cost reduction, and millions of dollars and innumerable hours spent on training doctors, we are addressing an unmet need of lack of good, unaided vision outcomes after cataract surgery. We should have a beta product available in the first quarter of 2024, leading to a limited launch to specialist surgeons and aim for a full commercial launch in late 2024 or early 2025," he added.

Dr. Bhide, a Pediatrician, was part of a validation study during a chatbot installation in a 200-bed multi-specialty hospital. He was curious how the chatbot would support his and the hospital's mission.

"We had a lot to learn. The social and preventive care department at my institute had rolled out a tuberculosis screening program at the local community hospital, and it was an interesting project. I was surprised that the AI application integrated into the image readers could flag an abnormal X-ray within minutes. We were then asked to call these subjects back for further testing. I thought this was quick and neat," Mallika Sengupta, a medical school student, mentioned.

Summary: From the HCPs who responded, there was limited or nil experience in using AI-enabled tools in day-to-day work. They were undoubtedly aware of the technology and knew its promises to the world of patient care.

Q 2: What do you think of AI and the diagnostic decision-making process – the heart of a healthcare organization's value delivery to the stakeholders?

“The AI tool flagged abnormal X-rays, possibly suggestive of early tuberculosis, within minutes! The success of the screening project can largely be attributed to this tool. However, to be safe, we had to validate the results,” Mallika was excited to add.

“Utilizing AI to help triage patients before being seen by a provider, such as in a community setting, will aid in quick decision-making and taking the next steps, ultimately decreasing the wait times and increasing patient satisfaction. In case of a high load of patients in such settings, for instance, AI could make suggestions based on daily blood pressure measurements, glucose readings, etc. For example, is using AI to triage a patient there for a finger laceration urgent? Is it bleeding? Etc. I would hesitate to take this route for a complex diagnosis.” Sharvari mentioned.

Dr. Aniket, working in the critical care environment, mentioned, “Working in a dynamic, complex intensive care where approaches to assessment and management are not only different between healthcare systems, but also between different clinicians in the same department, there are inherent limitations to the AI application in the real world at this point.”

Summary: Clinical decision-making hinged on healthcare providers' experience, training, and expertise is the DNA of healthcare. This is the heart of the system that fuels the rest of the engine and, hence, needs careful handling. The HCPs unanimously stressed that AI systems offering insights MUST BE accurate and trustworthy. The diagnostic decision-making process is a complex multivariate data-dependent process only a human brain can execute. At this point, it's difficult for any machine to replicate it with the precision of the human brain. AI lacks the broader clinical picture required to make the diagnosis.

Q 3: Consider you are a part of a Healthcare AI project in a rural clinic. What is the key benefit of AI in this scenario?

“AI enablement of rural healthcare is a valuable project and the need of the hour. It's that space where technology has much to offer,” said Dr. Aniket.

“We can track vital signs and chronic conditions through AI-powered wearables, devices, or sensors, enabling proactive interventions and improved disease management. With more than 60 percent of India's population living in rural areas, the health outcomes such as infant mortality rate will improve if technology assists the physicians and nurses who work in rural areas” Dr. Bhide.

“Through AI-powered analysis of community health data and environmental factors, I expect AI to flag infectious diseases/epidemics for early detection and management. AI can assist in analyzing each new variant of COVID-19 discovered in a track-and-trace mode.” Mallika added.

“Telemedicine services have become increasingly popular in rural areas, allowing women to receive care from specialists remotely. Additionally, community health workers and midwives can play a crucial role in providing basic Gynecology and Obstetrics care in rural areas and can benefit from AI integration,” Sharvari added.

Summary: Concrete benefits will be realized only when the technology reaches the masses. Healthcare AI projects in rural areas face unique challenges related to access

to quality healthcare, shortage of healthcare workers, long travel distances, and inadequate infrastructure. Using AI, key focus areas to consider are early disease detection and remote patient monitoring, personalized health education/coaching, automated medication, and appointment reminders. AI-powered technologies are emerging as game-changers, bringing accessible and effective primary care closer to rural patients. More research and investment in this space is the need of the hour. Academia, government, and non-governmental organizations can form a collaborative force to revolutionize primary care in rural settings.

Q 4: A project works within larger systems, with its deliverables becoming part of these larger systems to realize the actual benefits. What are the critical considerations of AI integration projects in the overall healthcare system?

All: AI in healthcare is a project likely to succeed from adopting a formal project management methodology. AI integration can be seen as a program connected to related projects and processes to form a system thinking. AI integration must be integrated seamlessly into the day-to-day providers' workflow to succeed. Key project considerations are as follows.

- Problem definition and value delivery – what exactly do you plan to solve? Clinical? Non-clinical? Who are your stakeholders, etc?
- Risk management – what would be the impact of over-dependence on AI? Who would be held responsible for incorrect recommendations from the tool?
- Training – how and what training must be imparted to the stakeholders.
- Team – the composition of the team working on the project (includes representation from clinical, regulatory, data science, and technology domains). How involved is the clinical group?
- Change management - How can you plan seamless change management for those impacted?
- Cost – what is the available budget of the organization? Funding options, etc.

Summary: Healthcare AI is more of a portfolio with a strategic objective of improving efficiency in the patient care process. The benefit of AI to the beneficiary, the patient, depends on its use not just by the physician but also by all healthcare stakeholders, such as HCPs, pharmaceutical companies, medical device manufacturers, and medical insurance companies. It's essential that the whole system adopts the technology and works collaboratively. A formal portfolio or program management approach will be helpful to consider in these situations.

Q 5: What are some benefits and challenges of the Healthcare AI project and its intended value? What would be a realistic timeline for the benefits to reach HCPs and patients?

“AI has a lot to offer in Ophthalmology. I think of this as the “smartphone moment” in cataract surgery. AI-enabled products will allow surgeons in any setting to achieve better unaided vision outcomes without dealing with the complexity of refractive targeting calculations and IOL selection. They will lend clear, data-driven predictions of functional

vision after surgery. The patients will likely benefit from improved quality of life and better vision without spectacles.” Dr. Pande mentioned.

“I worry that AI might introduce more complexity and confusion into decision-making,” Dr. Bhide said.

"In critical care, we deal with a patient's life and time in microseconds. We don't have time to assess an AI recommendation and act. We will depend on our clinical expertise till we trust the tool. We are governed by quality measures as per the Australian Commission on Safety and Quality in Health Care (ACSQHC) that provides leadership to improve the safety and quality of health care at the national level," Dr. Aniket added.

There is also a generational attribute to adopting the technology, with Gen X and Gen Y HCPs quickly embracing the new tools and technologies.

“Our generation shares a comfort level with technology that the older generations probably don't. As medical students, we can leverage AI to transform our learning experience through AI-enabled tools. There is a risk of overreliance on AI tools and a loss of clinical acumen.” Mallika added.

Summary: AI in healthcare is still at a nascent stage. The adoption of AI varies with specialty and setting. For example, AI is more prevalent in medical devices and wearables versus a clinical office setting. AI's benefits to make healthcare more efficient, such as early and quicker diagnosis, automation of administrative tasks, improvement in communication and collaboration, predictive and personalized treatment plans, help in resource-poor settings, and so on, are well known. However, bias, hallucinations, ethical handling, and data privacy are the four critical concerns related to the use of AI. The group thought five to seven years would be a realistic timeline for the technology to impact the day-to-day work of the HCPs. AI has the potential to augment the capabilities and expertise of healthcare providers. By working alongside AI, physicians can make better decisions, provide better care, and improve the overall health of their patients. It will be time before we know if it's a magic pill or if we have opened Pandora's Box.

Q 6: Project team members with the relevant skills are critical to a project. Can AI be your trusted colleague in your mission – the digital team member? What would that collaboration look like?

“Stakeholder engagement is key to any project. I want to be involved throughout the tool's lifecycle, from conception to release, including testing, feedback loops, training, and more”, said Sharvari.

Summary: To bring trust in the technology that influences adoption and adaptation from the healthcare providers, there needs to be collaborative work (human-in-the-loop). A good collaboration will rest on the qualities that each group brings to the table. Empathy, compassion, critical thinking and judgment, ethical awareness, adaptability, and continuous learning would be needed from humans, along with transparency, explainability, accuracy, reliability, security, and privacy from the AI side. By harnessing the power of AI responsibly and ethically, it can become a trusted mentor, helping create a healthier future for everyone with personalized care, preventive measures, and accessible healthcare for all.

Q 7: Innovation is a part of a project, and team members should be motivated to be creative to deliver the project's value. If you were to design one application of AI in healthcare, which one would that be?

"That's a difficult question. I would look at AI as a "Health Oracle" akin to a futuristic medical crystal ball to analyze an individual's complete medical history, genetic data, and real-time health biomarkers with incredible precision to predict future health risks, personalize preventive interventions and treatment plans, and simulate the potential outcomes of various treatment options." – Dr. Bhide.

"I'd design an adaptive AI-powered personalized learning companion focusing on clinical reasoning and diagnosis, honing communication and patient interaction skills for medical education and promoting continuous learning," Mallika mentioned.

"I'd look at an AI tool and a project for a pre-hospital or community level, focusing on monitoring health, preventing chronic disease and complications towards bridging the healthcare gap, and empowering rural communities to better care for their health." - Dr. Aniket.

Q 8: Would you like to add additional thoughts on this topic?

"We are starting to understand the limits and boundaries relevant to applying AI in healthcare. The scope is changing by the day. As I say, using artificial intelligence takes a lot of natural intelligence." – Dr. Pande.

"With AI, we need to ensure we are not compromising on the value we as clinicians deliver to our patients. We must take ethically and morally correct actions as we leverage this technology. Lastly, "More projects must bring technology to the masses at the point of need," said Dr. Bhide.

"I am keen to work on an AI-enabled virtual patient?" – Mallika, the medical student, chuckled. "That will bring a revolution in the medical training," she added.

Summary: AI in healthcare, and in general, is taking up more prominence. This technology is not perfect and can provide inaccurate results. For AI to be integrated into healthcare, diagnostic tools, or patient monitoring, it must be universally applicable and produce accurate results. Bias and hallucinations can have a devastating impact on patients, and this is reflected in current regulatory standards for AI worldwide. Healthcare AI projects. As a powerful tool, AI needs more research for day-to-day use by HCPs.

Key Takeaways

Healthcare and AI are rapidly evolving fields with significant potential to intersect and revolutionize healthcare delivery. Every project is unique. Autonomy in delivering value differentiates AI projects from any other project in healthcare. A broad classification of the level of autonomy in medical AI is mentioned in the article "Approaching autonomy in medical artificial intelligence."

https://www.researchgate.net/publication/343845398_Approaching_autonomy_in_medical_artificial_intelligence.

According to the article, medical AI algorithms are typically classified as either assistive (non-autonomous; levels 1 and 2) or fully autonomous (levels 3, 4, and 5). The discussion highlights the changing scope and risks around autonomous AI and the legal liability.

Healthcare professionals are excited about the potential of AI while being cautious about its adverse side effects. Along with AI technology, project management in healthcare AI is in an evolutionary phase and, hence, complicated. Elusive scope definitions, industry pressure, regulatory challenges, stakeholder expectations, inherent technology imperfections, and similar risks dot the Healthcare AI project as of now. We will wait to see the evolution of this new entrant in the healthcare ecosystem to ensure positive patient care outcomes– the ultimate goal of healthcare.

Here are the key takeaways from the conversations with this group.

1. The HCPs are looking to embrace AI as a powerful and valuable tool and an ally in the patient care mission while maintaining a careful balance.
2. The HCPs are concerned about ethical handling, hallucinations, bias, and patient data security. A critical requirement for healthcare AI projects is to consider regulatory and compliance management of these tools.
3. Projects related to remote patient monitoring for proactive preventative care seem to be the most transformative benefit of AI to transform rural healthcare and, hence, poised for value delivery of the technology.
4. Lessons learned from similar projects, training, and quality assets must be developed for novice projects such as Healthcare AI.
5. A formal approach using program or project management is recommended to enhance the chances of success.

What would you like to hear from hospital administrators and leadership, the “movers and shakers” of a healthcare setup? Please let me know and stay tuned...

Disclaimer: The views and opinions expressed in this interview series are those of the speakers and do not necessarily reflect the views of any entities or associated parties. Proprietary names of AI applications have been avoided unless explicitly mentioned by the interviewees.

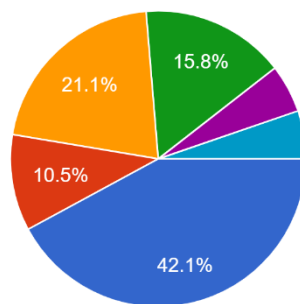
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Appendix

Other than the in-person and telephonic interviews, here are some analytics from Google Forms from 19 physician respondents.

Do you believe AI can assist you in making better clinical decisions?

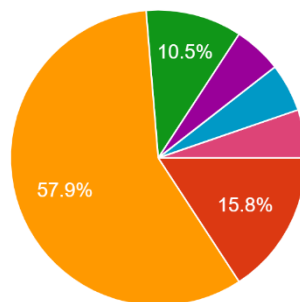
19 responses



- Yes, it can offer valuable insights from large data sets.
- No, ultimate clinical decisions should always be made by humans.
- Only if the AI system is perfectly accurate and trustworthy.
- AI might introduce more complexity and confusion into decision-making.
- Not sure
- Should be a tool to assist a cliniciann

How comfortable are you discussing AI-driven diagnoses with your patients?

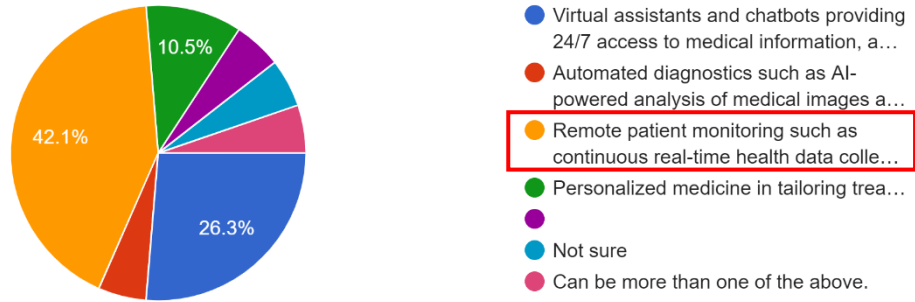
19 responses



- Very comfortable, it can enhance patient understanding.
- Somewhat comfortable, but I would need clear communication guidelines.
- Neutral, I would adapt my approach based on the patient's needs.
- Uncomfortable, AI results should not b...
- I do not use AI at present
- Not sure
- Already tell my patients if Computers...

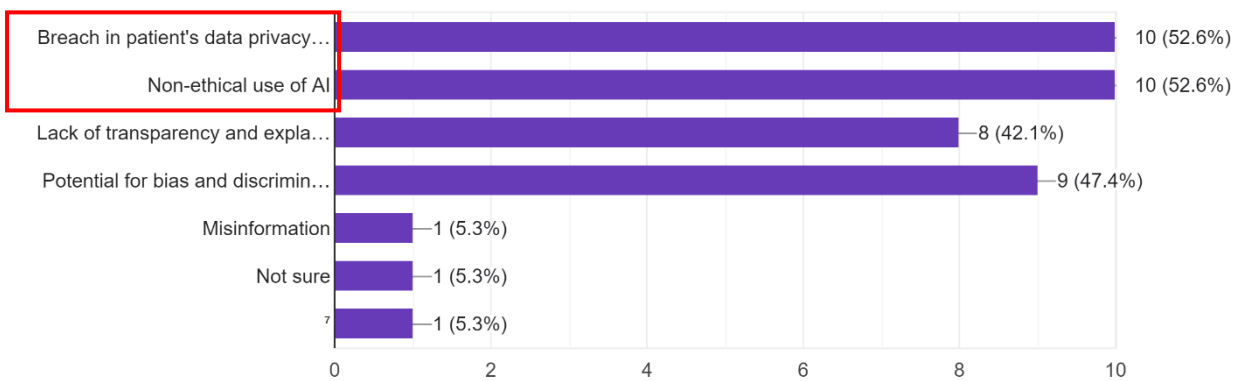
In your opinion, what has the potential to be the most transformative benefit of AI in healthcare, ultimately leading to better patient outcomes?

19 responses



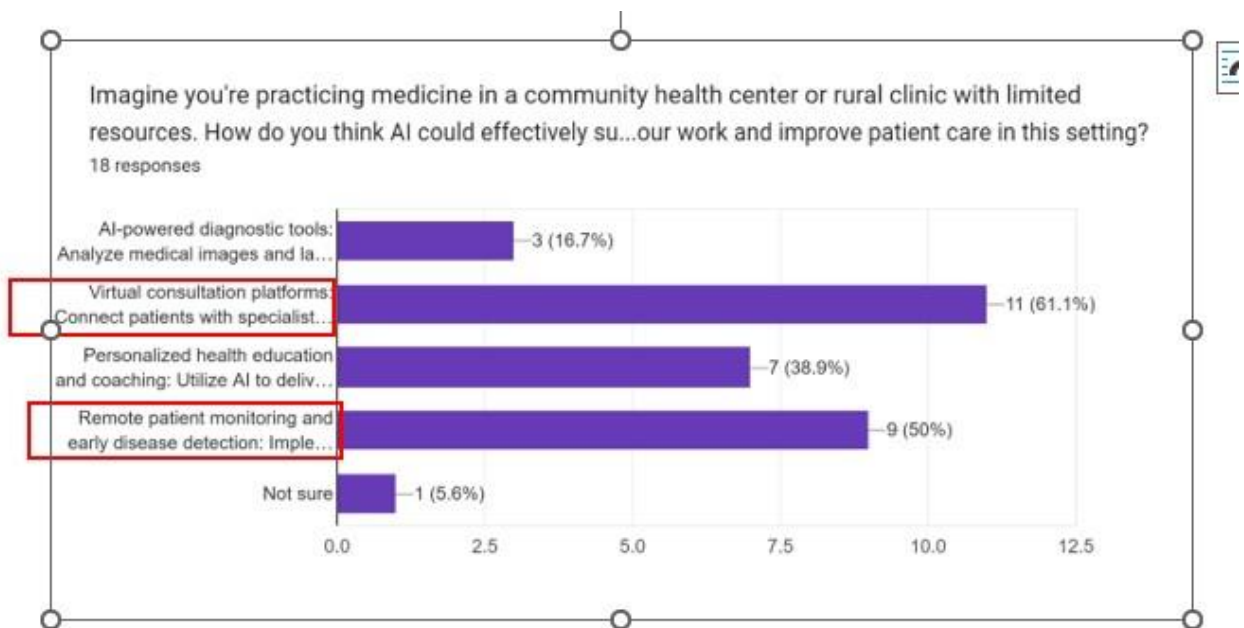
What in your opinion is/are the concern(s) around the use of AI in healthcare

19 responses



What type of training would you find most beneficial for understanding and using AI in your everyday practice?

19 responses



About the Author



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Dr. Deepa Bhide, MBBS, DCH, PMP, has over 20 years of professional experience where she has blended medical practice and research with IT and Project Management. She juggles consulting, training, and operations and is proficient in clinical medicine, project management, and healthcare information technology. Starting her career as a medical practitioner, she has worked with varied organizations before her current stint as director and clinical expert for Inventurus Knowledge Solutions.

Deepa's growing interest and work in these areas, born from her day-to-day patient interactions, helped her view Project Management as a backbone of progressive healthcare. Her paper on "Patient Care - A Project Management Perspective" has received global recognition and acclaim. With a physician background as a solid foundation to leverage IT/PM skills and knowledge, Deepa has blended her broad-based experience and learnings to present a unified, holistic, and wholesome view of Project Management and Healthcare, a cross-domain confluence. Through various webinars, events, talks, and writings across platforms, Deepa has been an evangelist in championing global project management during the COVID-19 pandemic.

A Gold medalist from Osmania University for standing First in the MBBS course, she pursued her DCH in Pediatrics and Child health. Deepa has served various roles in local and global Project Management Institute (PMI) regions. She remains actively engaged with PMI and has been a participant and speaker for various national and global meetings and online events.

Deepa lives in Hyderabad, India, and loves traveling, singing, and experimenting with global cuisine. She can be contacted at deepa.bhide@gmail.com.