



Opportunities and Challenges of AI in Cancer

More than 75 leaders and experts gathered at Deloitte's office in the fall of 2024 to discuss the current and future uses of artificial intelligence (AI) in cancer. They came from all corners of health care, including government, industry, technology, professional associations, and nonprofits.

The event was part of our [Federal Health AI Accelerator](#) series, which brings together leaders from health care and technology to explore how AI can help address disparities, accelerate discoveries, and improve public health. It featured two panels and five demonstrations showing the promises and pitfalls of using AI to fight cancer's toughest challenges. Participants discussed AI's ability to advance targeted therapies and personalized care and brainstormed the types of collaborations needed to achieve these goals.

Speakers included: **Jeff Allen** – President & CEO, Friends of Cancer Research; **Georges Benjamin** – Executive Director, American Public Health Association; **Vivien Bonazzi** – Deloitte; **Danielle Carnival** – Deputy Assistant to the President for the Cancer Moonshot; Deputy Director for Health Outcomes, Office of Science and Technology Policy, White House; **Rocco Casagrande** – Deloitte; **Lakshmi Grama** – Associate Director for Dissemination and Digital Communications, National Cancer Institute; **Roxanne Jensen** – Program Director, Outcomes Research Branch, Healthcare Delivery Research Program, National Cancer Institute; **Susan Kirsh** – Deputy Undersecretary for Health for Discovery, Education, and Affiliated Networks, Veterans Health Administration; **Beth Meagher** – Vice Chair – US Federal Health Sector Leader, Deloitte; and **Kapil Parakh** – Senior Medical Lead, Google.

Summarized below are the key points that emerged.

Promise of AI in cancer: Four opportunities*

- 1. Personalizing oncology treatment at a molecular level**
AI has the potential to speed the development of new, more precise cancer drugs. If properly harnessed, it could make targeting cancer cells based on an individual's unique molecular profile more efficient. One panelist raised the example of an AI-driven pathology tool that used pattern recognition to help reclassify a subset of breast cancer patients from HER2 to HER2-low, enabling those patients to access more tailored treatments.
- 2. Better understanding cancer risk**
AI can find patterns in large, unstructured data sets, helping us better understand cancer risk by revealing links between genetic markers, clinical history, and environmental factors. One panelist said that 80 percent of what affects health happens outside of a doctor's office. So, using AI to assess risk from a population perspective could improve prevention and diagnosis.
- 3. Speeding the translation of science into care**
For individuals living with cancer, time matters. Even the most revolutionary scientific discoveries must reach the clinic quickly to help patients suffering now. AI's ability to analyze multi-modal data lets scientists and practitioners learn faster. This speeds up diagnosis, prognosis, and treatment. One panelist highlighted the example of work with the National Cancer Institute (NCI) using AI to parse metabolic and genomic data to determine which patients would benefit most from using adjunctive radiotherapy after chemotherapy.

4. **Enabling more equitable access to decision-making tools**
Equitable use of AI has the potential to reduce disparities in cancer care by enabling patients and care providers anywhere to get the same level of information and guidance, regardless of who they are or where they live. For example, technology is already being incorporated into the workflow in some rural and underserved communities to enable the use of advanced clinical and decision-making tools.

Risks of AI in cancer: Four challenges*

1. **Building trust**

In the evolving relationship between humans and AI, trust is a crucial factor shaping provider and patient adoption. Though, as individuals, we may be comfortable using Chat GPT or other AI-driven tech, when it comes to our health, especially the highly individualized experience of living with cancer, urgency for new options and trust in new tools are often at odds with one another. The ability to clearly and transparently articulate the benefits of AI, backed up by real world data, will be essential in overcoming concerns about security and accuracy.

2. **Accounting for bias**

Panelists noted that new healthcare tech often creates unintended inequities and AI will likely be no different. This is why we must build in human oversight. It is critical to ensure that we don't substitute the judgment of machine learning for that of astute clinicians. For example, race and ethnicity have a significant impact on mortality risk in cancer. So, if the data used to train AI models lacks appropriate diversity, it may exacerbate medical bias. Panelists agreed the goal should be to use AI in a way that increases equity, not just avoids worsening it.

3. **Ensuring data accuracy and quality**

Accuracy is critical to establishing confidence in the use of AI in cancer. Applications and algorithms for analyzing health data—like medical imaging—are moving quickly, sometimes outpacing the standards that oversee them or limiting the ability to be replicated and scaled. Validation must be built in at the outset, in order to ensure accuracy in AI models, quality of data being used, and confidence that models are following the best available medical evidence.

4. **Preventing the spread of misinformation**

AI has the potential to revolutionize cancer care, but its misuse could lead to unintended consequences. We are all familiar with

the manipulation of AI to spread misinformation in news, politics, and social movements through the Internet and social media, and we need strategies and oversight to ensure that patients and providers can feel confident they are receiving right information from credible sources.

Future of AI in cancer: Three solutions*

Panelists and participants discussed various solutions to address the opportunities and challenges of AI in cancer, landing on education, oversight, and standard setting as the three most important elements to get right.

- **Education**, panelists proposed, is necessary to build understanding and increase trust. It should be provided to everyone involved—computer scientists, basic researchers, clinicians, and patients. Education should emphasize the value and safety of existing AI tools in cancer. It should also show, with data, how these tools help patients live healthier lives and clinicians provide more personalized care.
- **Human oversight**, meanwhile, was deemed essential to ensure that biases are not baked into AI tools as use cases expand. By exploring how technology is “thinking” and asking questions about who benefits and who gets overlooked, we can begin to actively narrow the diversity gap rather than risk expanding it.
- **Policy and technology standards**, finally, and most crucially, must be aligned early and often. Panelists said the most important partnership to get right is the partnership between policy developers and technology developers. If we're not having conversations and trying to understand what's happening in both worlds, things can get off track quickly. Without clear standards and pathways, AI will never reach its full potential to improve cancer prevention, treatment, and care.

The success of all these solutions hinges on effective collaboration. Stakeholders across the industry must continue to come together—with patients at the center—to drive progress. By articulating a clear vision and mission, and understanding the shared objectives and individual incentives of each partner, AI collaborations can help improve cancer outcomes for all.

*This event focused on cancer. But, many of the ideas discussed apply across all of health. The Deloitte [Federal Health AI Accelerator](#) will use these lessons to help leaders navigate the new generative AI landscape safely and efficiently.

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