POV

The Oncologist's Next Ally: Why Cancer Is Forging the Future of Clinical AI

A conversation about artificial intelligence (AI) in medicine today is a conversation about noise. Amid the hype, real, tangible progress is being made. While foundational work in diagnostic specialties, such as radiology and pathology, has proven that AI can master pattern recognition, the frontier has now shifted to the complex reality of clinical decision-making.

In this arena, two specialties are leading the charge: **cardiology and oncology**.

Cardiology has already landed a significant win with the integration of FFR-CT—an AI-powered tool for mapping blood flow—directly into major clinical guidelines. It's a landmark achievement, but it is not the whole story. The true test, **the real crucible for AI's clinical future, lies in oncology**.

> The sheer complexity, the crushing data load and the desperate race against time inherent in cancer care create a set of demands that no other specialty faces so acutely. It is here that a new partnership between physician and machine will be defined.

The Crucible: Where Need Defines the Future

The reason for oncology's central role is simple: the gap between the data we have and the answers we need is a chasm measured in lives. While a cardiologist may use AI to optimize a known pathway, an oncologist confronts a biological storm where the path itself is often unknown.

A Battle Against the Clock

In too many cancers, time is the one resource we cannot afford to waste. The window for effective action is brutally short, and the decisions are staggering.

- Think about glioblastoma, with its 12-to-18-month median survival. The choice between surgery, radiation and novel drug combinations is a maze. An AI assistant that can synthesize a patient's unique genomic profile against the entire universe of published data in minutes isn't just an efficiency tool; it's a strategic necessity.

- Or consider pancreatic cancer, the silent killer. An AI tool that could continuously monitor EMR data not for a single red flag, but for a faint constellation of signals—minor weight loss, a subtle shift in lab values—could predict risk years before a human clinician would. **This represents the shift from reactive to truly predictive medicine**.

- Finally, acute myeloid leukemia (AML) is a medical emergency where the right initial treatment is everything. An AI solution that can instantly analyze molecular data to classify the disease and match it to the optimal therapy doesn't just save time; it reshapes the entire standard of care from day one.

Taming the Data Deluge

Beyond time is the challenge of complexity. Today's oncologist is drowning in data: genomics, proteomics, pathology, imaging and a flood of new clinical trials. Human cognition has its limits.

The value of an AI assistant, then, is not merely to present this data but to synthesize it. Its purpose is to find the signal in the noise, the critical mutation, the obscure trial, the novel combination that unlocks a new path forward for a patient.

The Roadmap: The Pace of Adoption

This future won't arrive overnight. It will be a phased rollout, a strategic evolution. First, in the next 1-3 years, we'll see the rise of the "Workflow Assistant." These will be AI-powered automation tools that master administrative tasks, summarize records and streamline clinical trial matching. They will attack the friction in the system.

Then, over the next 3-7 years, the "Clinical Insights Engine" will emerge. This is the next leap: strategic decision support. These systems will analyze complex biological data to generate novel hypotheses and suggest new therapeutic strategies, moving from a tool that answers questions to one that helps us ask better ones.

The Evolution of Governance

The development of these powerful tools will force an evolution in governance that is as complex as the AI itself. Today's frameworks, like the ELCAP (ESMO guidance on the use of large language models in clinical practice), are essential, principle-based starting points. Confirming this trajectory, ESMO has now taken the critical next step, publishing its first-ever guidance on the specific validation requirements for AI-based biomarkers (EBAI). This signals the necessary shift toward creating the detailed, enforceable rules of the road that widespread adoption will require.

The future of governance will continue to move beyond high-level principles to tackle gritty, practical challenges. Leadership must be a coalition, with medical societies like ASCO, ASH, EHA and ESMO defining clinical best practices, while regulatory bodies like the FDA expand their Software as a Medical Device (SaMD) framework to address adaptive, learning algorithms. But their work must go further. We need to see consensus on several key fronts:

- **Data Standardization:** AI is only as good as the data it's trained on. Right now, healthcare data is a mess of siloed, incompatible formats. Governance will require mandating standards for data interoperability, ensuring that an algorithm trained at one institution can be safely and effectively validated at another.

- **Transparency and the "Black Box" Problem:** How does a physician trust a recommendation from an algorithm whose inner workings are opaque? The push for "explainable AI" (XAI) will become a regulatory and ethical necessity. Clinicians will need to see why AI made a certain recommendation, understanding the key data points that influenced its conclusion.

- **Liability and Accountability:** When an AI-assisted decision leads to a poor outcome, who is responsible? Is it the physician who accepted the recommendation, the hospital that deployed the tool or the developer who wrote the code? Clear legal and ethical frameworks for assigning liability will be one of the most contentious but critical hurdles to widespread adoption.

- **Post-Market Surveillance:** Unlike a traditional medical device, AI models can change or "drift" over time as they are exposed to new data. Governance will require robust systems for real-world monitoring, ensuring that AI's performance and equity do not degrade after it has been deployed, protecting against the amplification of hidden biases.

> The goal is to strike a difficult balance: creating a regulatory environment that protects patient safety without stifling the rapid innovation that oncology so desperately needs.

The Human Element: An Irreplaceable Role

This vision of a powerful AI partner inevitably raises the question of the oncologist's future role. The reality is that the "human-in-the-loop" or better yet, "human directed" model isn't a temporary phase; it's the destination. What will change is the division of labor.

AI's role is to be an infallible assistant. Its function is purely objective: process data, recognize patterns and generate an unbiased list of evidence-based options, relentlessly and without fatigue.

The oncologist's role, in turn, evolves to become the wise counselor. Freed from the crushing weight of data synthesis, their focus shifts to what is uniquely human: **taking AI's pristine logic and filtering it through the lens of experience, empathy and a deep understanding of the patient's values.**

AI can calculate probabilities; it cannot sit with a family and help them navigate hope and fear. That responsibility is, and must always be, human.

A New Horizon

The story of AI in medicine will have many chapters, but its most defining one will be written in the crucible of cancer care. The immense pressures of this field are the very forces that will drive the most meaningful innovation.

The goal isn't to build an artificial oncologist; it's to empower the human one with a partner equal to the challenge. In doing so, we will do more than just transform a medical specialty. **We will create more time, more options and more hope for patients**.

Why EVERSANA?

The partnership between oncologists and AI assistants presents a critical human challenge, not just a technical one. Integrating AI successfully demands a sophisticated understanding of the entire oncology ecosystem, making a strategic partner like EVERSANA Oncology® indispensable. We bridge this gap by translating AI's power into a trusted narrative for all stakeholders and creating the communication and educational frameworks that drive adoption. This ensures that the promise of AI is fully realized by oncologists, ultimately transforming the future of cancer care.

Author

Barry Vucsko
SVP, Strategic Development, EVERSANA INTOUCH
barry.vucsko@eversana.com