

AN INDUSTRY BRIEF FROM INSTITUTE@PRECISION

Innovation, Personalization & The Future of Oncology

How AI Is Transforming Cancer Care

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Artificial intelligence (AI) is no longer just a buzzword in healthcare—it's becoming a powerful tool in the fight against cancer. From improving early detection to streamlining administrative tasks, AI is helping clinicians deliver smarter, faster, and more personalized care. AI is proving to be a game-changer in oncology, where complexity and precision are critical.

Why AI Matters in Oncology

Healthcare systems today face mounting challenges: workforce shortages, rising costs, and the growing demand for personalized treatment. AI and machine learning (ML) offer solutions that can help address these issues by enhancing diagnostic accuracy, reducing administrative burdens, and tailoring care to individual patients.

In oncology, AI is already making a significant impact—from identifying cancer earlier to optimizing clinical trials. Let's explore how.

Key Ways AI Is Improving Cancer Care

1. Early Detection and Risk Prediction

AI-powered imaging tools are helping radiologists detect cancers—like breast, cervical, and prostate—earlier and more accurately. These tools can analyze scans faster and sometimes spot patterns that human eyes might miss.

Predictive models also help identify patients at high risk of developing cancer, enabling earlier interventions and more targeted screening programs.

2. Smarter Diagnostics and Treatment Planning

AI enhances diagnostic imaging and pathology by increasing sensitivity and reducing time to diagnosis. It can also interpret complex genomic data, helping oncologists choose the most effective, personalized treatment plans.

ML models can even predict how a patient's cancer might progress or respond to treatment, allowing for more proactive and tailored care.

3. Reducing Administrative Burden

Doctors spend nearly half their clinic time on electronic health record (EHR) documentation. AI tools like ambient scribes can transcribe patient visits in real time, freeing up clinicians to focus more on patient care.

Other AI applications streamline prior authorizations, improve billing and coding accuracy, optimize scheduling, and generate suggested empathetic responses to patient inquiries, making healthcare delivery more efficient and less frustrating for both providers and patients.

4. Enhancing Patient Engagement

AI chatbots and virtual assistants are helping patients manage symptoms, understand their treatment plans, and know when to seek help. Remote patient monitoring tools track symptoms and medication adherence, alerting providers when intervention is needed.

AI can also identify non-medical barriers to care—such as mental health or socioeconomic challenges—and help connect patients with the right support.

5. Accelerating Drug Development

AI is accelerating clinical trial design and patient recruitment by analyzing large datasets to match the right patients with the right trials. It also helps identify new drug targets and biomarkers, making the drug development process faster and more precise.

Challenges to Overcome

Despite its promise, AI use in healthcare isn't without challenges. Bias in training data can lead to unequal outcomes, especially for underrepresented populations. Privacy concerns are also significant, as even anonymized data can sometimes be re-identified.

Many healthcare organizations lack the infrastructure to fully integrate AI, and high upfront costs can be a barrier—especially for smaller practices. Additionally, more regulatory oversight is needed to ensure AI tools are safe, effective, and trustworthy.

Improved accuracy in coding and billing will likely translate into payer perceptions of increased utilization and higher payments made to providers.

Strategic Steps for Success

To capitalize on the improved accuracy and granularity of claims data resulting from AI-driven billing and coding, manufacturers and payers can:

- 1. Plan for short-term payer financial pain.** As provider AI adoption increases, so will utilization, due to an increase in paid claims resulting from accurate coding and billing. Payer budgets will need to account for a potential near-term increase in payments.
- 2. Leverage product performance insights.** Manufacturers can refine product development and market access strategies, including assessing real-world performance of products across different patient populations and care settings, and identifying opportunities for product improvement or differentiation based on outcomes data.
- 3. Refine market segmentation strategies.** Manufacturers can use claims data to target providers and payers with tailored value propositions based on actual usage and outcomes.
- 4. Align product claims and reimbursement strategies with real-world evidence.** Manufacturers can engage with payers and regulators using robust data to support pricing and access.
- 5. Ready for greater utility of value-based care (VBC) contracting.** Manufacturers can develop evidence packages that support outcomes-based agreements, including using more accurate claims data to model risk and performance metrics.

Final Thoughts

Artificial intelligence is not just enhancing oncology, it's redefining it. From earlier detection and smarter diagnostics to streamlined operations and accelerated drug development, AI is helping clinicians and researchers push the boundaries of what is possible in cancer care. Yet, as with any transformative technology, success depends on thoughtful implementation, ethical oversight, and collaboration across the healthcare ecosystem.

For providers, payers, and manufacturers alike, the path forward lies in embracing AI not just as a tool, but as a strategic partner. By leveraging more accurate claims data, aligning with real-world evidence, and preparing for value-based care models, stakeholders can unlock new levels of efficiency, equity, and impact.

The future of oncology is intelligent, personalized, and data-driven—and it's already taking shape.

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