AI in Oncology Market to Reach US$18.3 Bn by 2033 at 23.7% CAGR | Persistence Market Research

AI in oncology market is driven by rising cancer cases precision medicine demand advanced analytics and growing digital healthcare adoption worldwide.

LONDON, UNITED KINGDOM, March 2, 2026 /EINPresswire.com/ -- The AI in Oncology Market is projected to grow from US$ 4.1 Bn in 2026 to US$ 18.3 Bn by 2033, registering a robust CAGR of 23.7% during the forecast period. Historical growth from 2020 to 2025 stood at 22.0%, reflecting strong momentum driven by digital transformation in healthcare. Increasing cancer incidence, demand

AI in Oncology Market

for precision medicine, and advances in artificial intelligence technologies are reshaping oncology diagnostics and treatment pathways. North America currently leads the global landscape, while Asia-Pacific is emerging as the fastest-growing regional market due to expanding healthcare infrastructure and supportive government initiatives.

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Market Dynamics

Driver: Rising Cancer Prevalence and Early Diagnosis Demand

Cancer remains a leading global health challenge, with nearly 20 million new cases reported worldwide in 2022 and approximately 9.7 million deaths, according to the American Cancer Society. Projections suggest annual cases could reach 35 million by 2050, driven by aging populations and lifestyle-related risk factors. Early detection significantly improves survival outcomes; for instance, five-year survival rates for breast cancer exceed 99% when diagnosed at
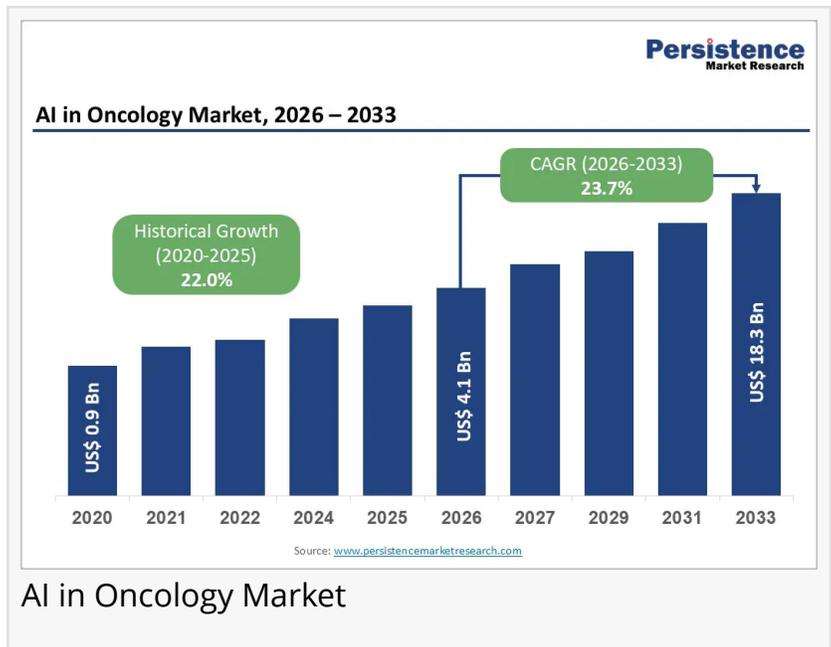
an early stage.

AI technologies are increasingly deployed to strengthen early screening and diagnosis. Advanced algorithms analyze mammograms, CT scans, pathology slides, and electronic health records to detect subtle patterns often missed by conventional assessment. Clinical pilot programs indicate AI-assisted tools can improve cancer detection rates by up to 8% in primary care settings. As healthcare systems aim to reduce late-stage diagnoses and treatment costs, demand for AI-powered oncology solutions continues to accelerate.

Restraints: High Implementation and Integration Costs

Despite strong growth prospects, adoption of AI in oncology faces financial and technical barriers. Deploying AI systems requires significant investment in software licensing, cloud computing infrastructure, cybersecurity, and clinician training. Integration with legacy electronic health record systems is complex due to fragmented and unstandardized data environments. Compliance with strict privacy frameworks such as the Health Insurance Portability and Accountability Act (HIPAA) and the General Data Protection Regulation (GDPR) further increases operational costs. These constraints particularly affect small and mid-sized healthcare providers, slowing widespread clinical adoption.

Opportunity: Predictive Oncology and Treatment Personalization

Predictive oncology represents a major opportunity within the AI in Oncology Market. Machine learning models analyze genomic data, imaging results, and patient histories to forecast disease progression and therapy response. Research suggests AI models can achieve up to 80% accuracy in predicting disease trajectories and enhance risk stratification beyond traditional clinical indicators. AI-supported treatment planning has demonstrated measurable benefits, including improved survival rates and optimized clinical trial matching. Initiatives such as the Cancer Moonshot promote integration of predictive analytics into personalized cancer care, reinforcing market expansion.

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Category-wise Analysis

By Component: Software Solutions Dominate

AI-powered software solutions account for 64.5% of the global market share in 2025. These platforms form the analytical backbone of oncology workflows, integrating machine learning, deep learning, and advanced analytics for diagnostic support and treatment optimization. Software tools can reduce diagnostic turnaround times by up to 30% while improving detection accuracy. Their scalability and compatibility with electronic health record systems enable

seamless deployment across hospital networks. Cloud-based models further enhance accessibility by lowering infrastructure requirements and enabling continuous AI model updates.

By Cancer Type: Breast Cancer Leads Adoption

Breast cancer represents the largest application segment due to high global incidence and strong emphasis on early detection. According to the World Health Organization, approximately 2.3 million new breast cancer cases were diagnosed worldwide in 2022. AI applications in mammography, MRI, and ultrasound imaging enhance screening accuracy and reduce radiologist workload. The substantial volume of imaging data generated in breast cancer programs creates ideal conditions for AI-driven analysis, supporting personalized therapy planning and consistent diagnostic outcomes.

Regional Insights

North America

North America holds 46.7% of the market share in 2025, supported by advanced healthcare infrastructure and early AI adoption. The United States benefits from widespread electronic health record implementation and strong regulatory guidance from agencies such as the FDA. Extensive R&D funding and collaboration between technology firms and cancer centers strengthen the region's leadership position.

Europe

Europe demonstrates steady growth driven by coordinated digital health strategies and supportive regulatory environments. Countries including Germany, the United Kingdom, and France are integrating AI into oncology diagnostics and treatment planning. Public funding and cross-border research collaborations further stimulate innovation in cancer analytics.

Asia-Pacific

Asia-Pacific is the fastest-growing region, fueled by rising cancer incidence, expanding hospital networks, and government-led digital health initiatives. Investments in oncology infrastructure across China, India, Japan, and South Korea are accelerating AI integration into screening and therapeutic workflows, resulting in a higher projected CAGR than mature markets.

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Competitive Landscape

The competitive environment features technology leaders and specialized healthcare AI firms focusing on scalable platforms, predictive analytics, and regulatory compliance. Companies such as IBM, GE HealthCare, NVIDIA Corporation, Roche Diagnostics, and Illumina Inc. are investing in AI-driven oncology platforms and strategic partnerships. Collaborations between software developers, research institutions, and hospitals are accelerating deployment and clinical validation. Continuous innovation in predictive modeling, workflow automation, and personalized treatment solutions is expected to sustain strong growth in the global AI in Oncology Market through 2033.

Global AI in Oncology Market Segmentation

By Component

Software Solutions
Hardware
Services

By Cancer Type

Breast Cancer
Lung Cancer
Prostate Cancer
Colorectal Cancer
Brain Tumour
Others

By Application

Chemotherapy
Immunotherapy
Radiotherapy
Others

By End User

Hospitals
Biopharmaceutical Companies
Academic and Research Centers
Others

By Region

North America

Europe
East Asia
South Asia & Oceania
Latin America
Middle East and Africa

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Targeted Cancer Therapies Market: The global targeted cancer therapies market is projected to grow from US$ 160.6 Bn in 2026 to US$ 280.0 Bn by 2033 at an 8.3% CAGR during 2026–2033.

Ambulatory Surgery Centers Market: The ambulatory surgery centers market is set to rise from US$88.40 Bn in 2025 to US$141.19 Bn by 2032, with a 5.8% CAGR, reflecting increasing healthcare demand.

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