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How Biomarkers and Digital Technologies Will Reshape Oncology Care in Asia by 2026

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The oncology landscape in Asia stands at a critical juncture. For years now, cancer care followed a reactive approach which included diagnosis, surgical intervention, and then chemotherapy administration. Then came the first wave of precision medicine with the introduction of targeted therapies and companion diagnostics. But the region is now entering a far more sophisticated era. In 2026, biomarker profiling, artificial intelligence (AI), and digital health technologies together hold the power to reshape cancer care across Asia.



Asia accounts for approximately 50 per cent of new global cancer cases. This has further put immense pressure on healthcare systems of major Asian economies such as China, Japan, India, along with emerging markets to improve outcomes while also managing costs.

Historically, companion diagnostics (CDx) were paired one-to-one with specific drugs. However, that model is no longer efficient due to the growth in the number of actionable mutations. The market reflects this shift towards broader testing. The Asia-Pacific Cancer Biomarkers Market, valued at approximately $4.9 billion in 2024, is projected to surge to $13 billion by 2026. This growth signals a move towards comprehensive genomic profiling (CGP).

More and more clinicians are moving towards analysing complex tumor mutational burdens (TMB) and microsatellite instability (MSI) to predict responses in immunotherapy. This is particularly important for a region like Asia, where distinct genetic profiles guide cancer care pathways. A good example of this distinction is the prevalence of EGFR mutations in non-small cell lung cancer (NSCLC) which is significantly higher in East Asian populations (up to 40 per cent) as compared to their western counterparts (up to 18 per cent). This necessitates development of region-specific biomarker strategies.

The Digital Revolution in Oncology Care

While biomarkers map the tumor, digital biomarkers are being used to map the patient. Digital biomarkers consist of the physiological and behavioral data that's collected via smart devices, and can play a crucial role in monitoring patient quality of life.

The digital biomarkers marker is poised to grow from $5.84 billion in 2025 to $24.88 billion in 2033. In oncology, this technology is helping bridge the gap between clinical visits. Going forward in 2026, it is estimated that more standard care protocols will incorporate wearable sensors to track vital signs and activity levels during chemotherapy, allowing oncologists to detect adverse events.

Besides digital biomarkers, artificial intelligence is expected to be the engine powering oncology in the coming future. AI algorithms are increasingly deployed to integrate disparate datasets - combining radiology images (radiomics) with pathology slides and genomic data to create a "digital twin" of the patient's cancer.

Countries such as Taiwan and Singapore are already moving forward in this sphere, feeding large-scale genomic databases into AI models to identify novel therapeutic targets. These AI systems are expected to play the role of assistants, helping oncologists navigate the complexity of variants of unknown significance, which is a common issue in Asian genetic populations.

Liquid Biopsy and Next-Generation Sequencing (NGS)

One of the most transformative leaps in oncology is the democratisation of Next-Generation Sequencing (NGS) and liquid biopsy. These act as replacement of invasive tissue biopsies which are often painful and risky. Since, liquid biopsy detects tumor DNA using blood samples, it solves the logical hurdles associated with traditional tissue biopsy.

Today, the homegrown Asian market is also offering innovative solutions. For instance, SPOT-MAS (Screening for the Presence of Tumor by Methylation and Size), an AI-powered multi-omics liquid biopsy technology is being used in countries such as Singapore, Vietnam, Hong Kong, Malaysia, and Thailand. Such tests analyse signatures such as DNA methylation patterns and present a better chance of early cancer detection as compared to traditional genome sequencing. In 2026, such multi-modal tests are expected to be routinely used in South East Asian countries for screening of high-risk populations.

Remote Monitoring and Telemedicine

A region as vast as Asia, consisting of vast stretches of islands as well as densely populated megacities, presents unique logistical challenges in cancer care. Telemedicine has helped address this challenge in part, evolving from a crisis response tool to a standard pillar of Oncology.

The remote patient monitoring market in APAC is expected to reach $2.48 billion by 2030. In 2026, it is expected that "virtual tumor boards" connecting local oncologists in rural Indonesia or the Philippines with experts in Singapore or Japan will be commonplace. Clinical trials conducted using hybrid modes are expected to enable patients to participate in global drug development studies without having to travel to metropolitan hubs, thereby increasing the diversity of data and speed of trials.

Challenges and Opportunities

Despite the optimistic outlook and significant technological progress, significant hurdles remain.

Regulatory Fragmentation – Unlike the European Union, Asia lacks a single regulatory body governing the tools of processes of different nations. Approval processes for new biomarkers and the tools used vary significantly between the likes of Japan's PMDA, China's NMPA, and other smaller regulatory agencies in South-East Asia. This hampers interoperability and slows cross-border innovation.

Infrastructure Disparities – Access to precision oncology varies between urban and rural regions. Besides this, the reimbursement of NGS testing and novel therapeutics poses a challenge for public health insurance schemes, especially in

developing nations.

Data Privacy – Any AI led process is dependent upon massive datasets. Hence, with an increase in the use of digital biomarkers and AI-led diagnostic procedures, concerns over genomic data sovereignty and cybersecurity are intensifying.

However, these challenges also present a golden opportunity for growth and innovation. Since Asia has a diverse genetic pool, it can be highly attractive for the pharmaceutical companies who are looking to validate their solutions for use in the global market. This is particularly relevant for cancer, as the Asian diaspora has a high prevalence of gastric, liver, and nasopharyngeal cancers.

Asia also has a high mobile penetration rate exceeding 100 per cent in nearly every market, with Hong Kong at 264 per cent, Singapore at 150 per cent, Taiwan at 145 per cent, Japan and South Korea at 140 per cent, and Malaysia at 130 per cent. This implies that there is a ready-made infrastructure for deploying digital health solutions at scale. Governments are also making precision medicine a strategic priority, with countries like China, Japan, and Singapore investing billions in national genomics initiatives and AI research centres. The rapidly growing middle class, especially in Southeast Asia, is now demanding better quality healthcare services, thereby creating fertile ground for advanced diagnostics and personalised treatments.

The Road to 2026

By 2026, oncology care in Asia will look markedly different from today. It will be less invasive, more data-driven, and increasingly decentralised. We are moving beyond the era of simple companion diagnostics into an age of continuous, comprehensive biological and digital profiling.

The convergence of a $13 billion biomarkers market, a booming NGS sector, and widespread adoption of remote monitoring creates a powerful ecosystem. For the patient in 2026, this means a cancer diagnosis is met not just with a drug, but with a personalised intelligence system. As Asian economies continue to invest in this infrastructure, the region is poised to transition from a follower to a global leader in precision oncology.

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