NTU Singapore Advances Early Cancer Detection and Screening

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Dr. Michael Lee – Health Editor May 13, 2026

The window for successful cancer intervention is often measured in months or even weeks, yet the current diagnostic paradigm remains largely reactive. The launch of the Research Institute for Cancer Prevention, Screening and Early Detection (RISE) marks a strategic shift toward a proactive, risk-stratified model of oncology designed to catch malignancies before they reach symptomatic stages.

Key Clinical Takeaways:

- NCCS is initiating a clinical trial to evaluate Multi-Cancer Early Detection (MCED) tests for individuals with hereditary syndromes or pre-malignant conditions.
- The CRAnE study, led by LKCMedicine at NTU Singapore, targets the intersection of metabolic dysfunction—such as diabetes and hypertension—and increased cancer risk.
- The initiative aligns with WHO data indicating that up to 40% of new cancer cases are linked to preventable causes, shifting the focus toward personalized prevention.

For decades, the standard of care for cancer screening has relied on organ-specific modalities—mammograms for breast cancer, colonoscopies for colorectal cancer, and low-dose CT scans for lung cancer. While effective, these tools often miss non-targeted malignancies or fail

to account for the systemic biological drivers that increase an individual's overall susceptibility. The clinical gap is evident: many patients are diagnosed only after the pathogenesis has progressed to an advanced stage, significantly increasing morbidity and reducing the efficacy of curative interventions.

The Shift Toward Multi-Cancer Early Detection (MCED)

The clinical trial led by the National Cancer Centre Singapore (NCCS) addresses a critical limitation in current screening: the lack of a comprehensive "catch-all" diagnostic. MCED tests, often utilizing liquid biopsy technology to detect circulating tumor DNA (ctDNA) or epigenetic markers in the blood, offer the potential to identify multiple cancer types from a single sample. However, the medical community remains cautious due to limited evidence regarding their ability to improve overall population health outcomes.

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The NCCS trial focuses specifically on high-risk cohorts—those with hereditary cancer syndromes or pre-malignant conditions. By concentrating on these elevated-risk populations, researchers aim to determine if MCEDs can realistically move the needle on survival rates. For individuals navigating the complexities of hereditary risk, it is often necessary to work with certified genetic counselors to interpret these markers and develop a lifelong surveillance strategy.

> "The promise of multi-cancer early detection lies not in replacing existing screenings, but in providing a systemic safety net that identifies malignancies in organs where no standard screening currently exists."

This research is funded and executed through the joint leadership of NCCS and Nanyang Technological University (NTU) Singapore, emphasizing a collaborative approach between clinical practice and academic research to validate these emerging technologies.

Metabolic Dysfunction and the CRAnE Study

While the MCED trial focuses on genetic and pre-malignant risk, the Cancer Risk Assessments and Early detection (CRAnE) study led by the Lee Kong Chian School of Medicine (LKCMedicine) tackles the epidemiological link between metabolic health and oncogenesis. Metabolic dysfunction—characterized by diabetes, excess body fat, high cholesterol, or hypertension—creates a systemic environment conducive to cancer growth, particularly in the lungs, breasts, and colon.

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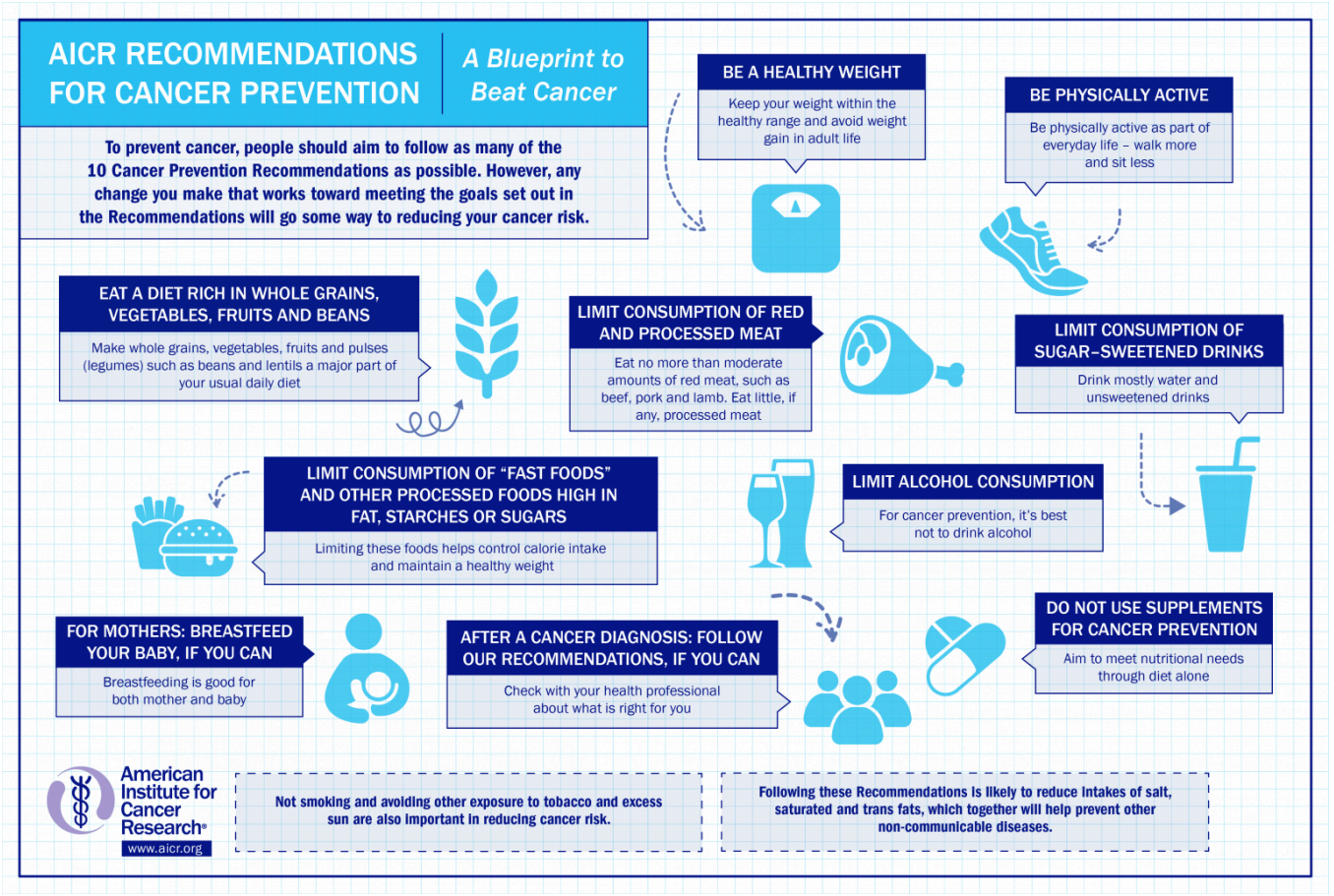
NTU Singapore scientists devise ‘Trojan horse’ approach to kill cancer cells without using drugs

The CRAnE study aims to integrate multi-cancer risk assessment methods directly into primary care. The goal is to move away from “one-size-fits-all” screening schedules and instead tailor prevention advice based on an individual’s metabolic profile. This precision approach ensures that patients undergo the most relevant tests based on their specific biological vulnerabilities, reducing unnecessary procedures while increasing the detection rate of high-probability cancers.

Patients managing chronic metabolic conditions often require a multidisciplinary approach to mitigate long-term risks. Coordinating care between specialized endocrinologists and primary care physicians is essential to manage the systemic inflammation and insulin resistance that can drive malignant transformation.

Addressing the Preventable Burden of Cancer

The urgency of these studies is underscored by global data from the World Health Organisation (WHO) and its International Agency for Research on Cancer. Their analysis reveals that up to 4 in 10 new cancer cases in 2022 were linked to preventable causes, including tobacco use, alcohol consumption, physical inactivity, and high body mass index. This suggests that a significant portion of the global cancer burden is not a matter of chance, but a result of modifiable risk factors.



Addressing the Preventable Burden of Cancer

By focusing on metabolic dysfunction and high-risk hereditary markers, the RISE institute is targeting the root causes of cancer morbidity. The integration of these studies into the broader healthcare infrastructure could redefine how primary care providers triage patients. Instead of waiting for a patient to reach a certain age for a screening, clinicians may soon use metabolic and genetic signatures to trigger early intervention.

As these technologies move toward clinical integration, the role of the specialist becomes even more critical. The transition from a general screening result to a definitive diagnosis requires the expertise of board-certified oncologists who can navigate the nuances of early-stage intervention and personalized treatment plans.

The Future of Precision Oncology

The trajectory of cancer care is moving decisively toward “precision prevention.” The work being done by NCCS and NTU Singapore suggests a future where screening is a dynamic process, evolving in real-time with a patient’s health data. If the MCED trials prove feasible for integration into at-risk populations, we may see a drastic reduction in late-stage diagnoses, shifting the oncology landscape from salvage therapy to early cure.

The success of the CRAnE and MCED initiatives will depend on the rigorous validation of these tests against existing standards of care to ensure they do not lead to over-diagnosis or unnecessary psychological distress. However, the movement toward a risk-stratified,

biologically informed screening model is the only viable path to reducing the global incidence of advanced-stage malignancies.

For those seeking to understand their own risk profile or explore the latest in early detection, consulting with vetted medical professionals through our directory ensures access to clinicians who are current with these emerging scientific breakthroughs.

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