Can AI improve medical decision-making?

Artificial intelligence (AI) is making its way into the world of healthcare, assisting doctors with complex medical decisions. Large language models (LLMs), such as ChatGPT, are already proving useful in diagnosing conditions, but their role in guiding treatment plans, risk assessment, and test selection is still being explored.

Recent research suggests that AI can enhance physicians' ability to manage difficult cases. When doctors used AI alongside traditional medical resources, they made better decisions regarding diagnosis and treatment than those relying solely on conventional tools. Interestingly, AI performed just as well on its own, suggesting its potential as a valuable decision-support tool.

While these findings are promising, they are based on case scenarios rather than real-life patient interactions. The next step is to test AI in live clinical settings. As technology continues to evolve, it could help doctors make faster, more accurate decisions. However, concerns remain about overreliance on AI, as well as the need for clear, well-structured prompts to get the most useful insights.

AI is not here to replace doctors but to support them in delivering better care. With careful integration, it could become a powerful tool in modern medicine, improving patient outcomes while maintaining human oversight in critical decision-making.

Source: *Nature Medicine*

Revolutionising Medical Education: Singapore's transformative approach

DR TAREQ SALAHUDDIN

In an era where innovation and adaptability define success, Singapore has pioneered a transformative medical education system that merges disciplines and cultivates multi-faceted healthcare professionals. At the heart of this innovation is SingHealth Duke-NUS Academic Medical Centre, which has redefined the conventional path to medical practice, incorporating engineering, business, and artificial intelligence into the medical curriculum. This novel approach was highlighted during my conversation with Prof London Lucien Ooi Peng Jin, Group Director of the International Collaboration Office at Singapore General Hospital, and Dr Rena Dharmawan, a surgeon and innovator trained under this curriculum.

Prof London Lucien Ooi Peng Jin ▶

A medical education model beyond borders: Prof Lucien, a key architect of this transformation, describes Singapore's approach as a blend of the best practices from the British and American systems, with a distinctive Asian pragmatism. Traditionally, medical education follows a linear trajectory: undergraduate science education, medical school, and clinical training. Singapore, however, has introduced a system where students with diverse academic backgrounds—ranging from engineering and business to law and data science—are integrated into medical education.

"We realised that just training doctors to diagnose and treat patients is not enough," Prof Lucien explains. "We need clinicians who can identify problems and design solutions, be it through artificial intelligence, medical devices, or innovative healthcare delivery models."

This interdisciplinary approach is not just theoretical. The programme recruits students with non-traditional medical backgrounds and places them on specialised tracks. For instance, engineers who pursue an MD are groomed to develop medical devices and AI-driven solutions, while those with business acumen learn how to lead healthcare startups and manage hospital systems. The programme's partnerships with institutions such as Duke University, University College London, and MIT further enrich this educational model, exposing students to a global ecosystem of knowledge and research.

From Engineering to Medicine: A personal journey: Dr Rena Dharmawan embodies the success of this integrated curriculum. Originally trained as a biomedical engineer at the University of Michigan, she transitioned to medicine through Duke-NUS Medical School. "Technology can significantly improve patient outcomes," she notes. "My exposure to both engineering and medicine allowed me to see beyond treatment and focus on innovation."

After completing her MD, Dr Dharmawan pursued a surgical residency while simultaneously launching a startup. Inspired by her passion for medical device innovation, she took a year off to study at Stanford University, where she was part of the renowned Biodesign programme. There, she and her team developed a device for at-home haemorrhoid treatment, which later received FDA approval and was successfully acquired by a larger firm.

Her journey did not stop there. She co-founded two more startups—one that created a healthcare co-working space for medical entrepreneurs and another that connected home care nurses with patients through an Uber-like platform. Eventually, she returned to academia to lead the Duke-NUS Health Innovator Programme (DHIP), which integrates innovation training into medical education. "We need doctors to think like entrepreneurs and problem-solvers," she emphasises. "By training them early, we ensure they can navigate the complex world of healthcare innovation."

Bridging medicine and innovation: The DHIP programme encapsulates Singapore's vision for the future of medicine. Each student team consists of a medical student, a biomedical engineer, and a business student. The curriculum focuses on real-world problem-solving, from identifying healthcare inefficiencies to developing viable solutions. The culmination of this nine-month programme is a Shark Tank-style pitch competition, where students present their ideas to potential investors and healthcare leaders.

What sets this initiative apart is its direct collaboration with industry leaders. Companies like Johnson & Johnson Vision mentor student teams, ensuring their innovations are commercially viable. "Many medical schools emphasise research, but few teach commercialisation," Dr Dharmawan explains. "Here, students learn how to turn an idea into a tangible healthcare solution."

A blueprint for the future: Singapore's model is groundbreaking not just for its structure but also for its impact. By integrating multiple disciplines, the programme is creating a new breed of doctors—ones who can think critically, innovate, and adapt to the rapidly evolving medical landscape. Prof Lucien believes that the success of this approach will inspire other countries to adopt similar models. "We are not just following global standards; we are setting them," he asserts.

For professionals and policymakers worldwide, Singapore's approach offers valuable insights. As healthcare becomes increasingly reliant on technology, interdisciplinary medical education is no longer optional—it is essential. By fostering a generation of doctor-engineers, doctor-entrepreneurs, and doctor-data scientists, Singapore is ensuring that its healthcare system remains at the forefront of medical innovation.

In an age where medicine is evolving beyond traditional boundaries, Singapore has provided a model that is both visionary and practical. This integrated approach may well be the future of medical education worldwide.

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Obesity surgery abroad risks stress safety standards

Medical tourism for obesity surgery has become increasingly common, especially for individuals facing long waiting times in their home countries. However, travelling abroad for these procedures carries significant risks, including infections, complications, and, in severe cases, life-threatening outcomes. Many patients do not receive proper post-surgical care or documentation, making follow-up treatment challenging.

Recognising these risks, leading medical organisations have collaborated to establish clear guidelines for safe obesity surgery abroad. Their recommendations emphasise that only accredited centres should perform recognised procedures,

ensuring high standards of care. Patients should receive comprehensive pre-surgical assessments, be informed of potential risks, and have access to follow-up care for at least two years. Additionally, proper documentation and communication between international surgeons and home-country doctors are essential for ongoing patient safety.

Transparency in advertising and pricing is another key focus. Clinics offering discounted procedures without clear accreditation may compromise quality. Patients should be aware of what standards to expect and demand proper care.

By setting these guidelines, experts hope to improve patient safety and reduce complications from unregulated medical tourism. While obesity surgery can be life-changing, it must be done in facilities that prioritise safety and long-term health.

Source: *The Lancet*

Warrior within festival empowers hundreds with healing and transformation

STAR HEALTH REPORT

The Warrior Within Festival, an immersive celebration of healing, resilience, and self-discovery, concluded successfully, leaving a lasting impact on hundreds of participants who joined this transformative journey. Organised by Dhaka Flow, the festival was designed as a sanctuary for those seeking to reconnect with their inner strength and embrace holistic well-being through yoga, breathwork, sound healing, and immersive storytelling.

Hosted at Basecamp, Dhaka's premier adventure and wellness retreat space, the festival provided the perfect setting for deep reflection and community bonding. A highlight of the festival was the participation of expert wellness practitioners, artists, and spiritual leaders, who led workshops on emotional resilience, creative expression, and mindful movement. Through yoga sessions, guided meditations, and interactive art therapy, participants discovered tools to navigate stress, anxiety, and personal challenges with newfound strength.

"We saw people confront their fears, embrace vulnerability, and walk away with a deeper understanding of their own power. The Warrior Within Festival has reinforced the need for more spaces where people can heal collectively and individually." The impact of the festival was reflected in heartfelt testimonials from attendees. Many shared how the event helped them release past traumas, foster self-acceptance, and cultivate a sense of belonging within a like-minded community. One participant noted, "I came here feeling lost, and I am leaving with a sense of purpose and peace. This festival has given me tools to face my struggles with courage." Beyond individual transformation, the Warrior Within Festival also strengthened Dhaka's growing wellness community, bringing together healers, artists, and seekers from diverse backgrounds.

The event served as a platform to introduce sustainable wellness practices and create deeper conversations around mental health and self-care in Bangladesh. Dhaka Flow remains committed to nurturing these conversations and expanding its wellness offerings beyond the festival. Plans are already underway for future retreats, community healing sessions, and ongoing workshops to build on the momentum generated by this event. The overwhelming response to the Warrior Within Festival highlights the urgent need for accessible, holistic healing spaces. As Dhaka Flow continues its mission, the festival stands as a testament to the power of collective healing and the untapped strength within every individual.

The best exercises to manage high blood pressure

Regular exercise is a powerful tool for managing high blood pressure, but it is important to do it right. Experts emphasise that consistency, moderation, and proper technique are key to making workouts safe and effective.

Start small, build gradually: Cedric Bryant, PhD, CEO of the American Council on Exercise, suggests starting with just 10–15 minutes of activity and increasing by 5 minutes every few weeks. "People with lower fitness levels should focus on shorter durations at first and build up as their endurance improves," he says. Ideally, aim for 30–60 minutes of aerobic activity like walking, swimming, or cycling most days of the week.

Strength training: be smart: Strength training can help lower blood pressure, but lifting heavy weights is not recommended. Dr James Beckerman, a cardiologist, advises using lighter weights with higher repetitions and avoiding breath-holding, which can cause sudden spikes in blood pressure. "Exhale during exertion to prevent excessive increases," Bryant adds.

Know your limits: Before starting a new routine, consult your doctor, especially if you take medications like beta blockers, which can affect stamina and heart rate. They can provide personalised guidelines to keep workouts safe.

Stick with it: The most important factor is consistency. "Do not try to conquer the world in one workout," Bryant says. Find activities you enjoy, start slow, and make movement a daily habit. Over time, regular exercise can help keep your blood pressure in check and support long-term heart health.

How nutrition shapes our genes: the promise of nutrigenomics

RAISA MEHZABEEN

Other than making the body function and providing it with all the nutrients, our diet interacts with genes themselves to affect long-term health by altering gene expression. Nutrigenomics is a new area of study that links nutrition and genetics. New insights into disease prevention and individualised nutritional plans are also offered.

Nutrigenomics is a study of nutritional science that explores the interaction of dietary components with genes in regulating health and disease. It investigates molecular mechanisms, including gene expression, epigenetic modifications, and genetic variations, which dictate an individual's unique response to nutrients.

Nutrients and bioactive compounds may directly influence gene expression, the process by which the instructions in DNA are converted into a functional product, such as a protein. For example, some dietary components have been found to activate or suppress genes that influence metabolic pathways, immune responses, and disease susceptibility.

Moreover, epigenetics—DNA methylation, histone modifications, and interactions with non-coding RNA—is an important mechanism in the regulation of gene activity without changes to the genetic code. Studies have documented that a diet rich in folate, choline, and B vitamins ensures DNA methylation, a process crucial for appropriate cellular activities and the prevention of disease.

Dietary effects on gene expression: Micronutrients like vitamins and minerals, being the cofactors, participate in many biochemical reactions regulating gene activity. For example, folate (Vitamin B9) is necessary in methylation processes that affect genes responsible for an individual's susceptibility to cancer, cardiovascular disease, and neural development.

Macronutrient-metabolic pathways: Even the macronutrients—proteins, fats, and carbohydrates—affect genetic expression. Omega-3 fatty acids from fish and flaxseeds activate genes that reduce the synthesis of pro-inflammatory prostaglandins and promote the breakdown of triglycerides, reducing the risk for coronary artery disease.

Bioactive compounds and protective gene activation: Phytochemicals like polyphenols (from green tea, berries, and dark chocolate) activate the Nrf2 pathway, which amplifies the antioxidant and detoxification defences of the body.

Genetic variations and personalised nutrition: The future of health care will depend on personal nutrition, or nutritional plans prescribed according to a person's genotype. An excellent example here is the MTHFR gene that determines a particular type of folate metabolism. Individuals possessing a mutation of MTHFR show impaired utilisation of folates and hence a higher risk for cardiovascular disorders, neural tube defects, and mental instability. This vulnerability could be modified by adjusting the intake of folates.

Similarly, the APOE gene affects cholesterol metabolism, whereby carriers of the APOE4 variant are at a higher risk for Alzheimer's disease and cardiovascular problems. Some evidence suggests that this genetic risk is partly offset with a diet plentiful in omega-3 fatty acids through a modifying effect on lipid metabolism.

The road ahead - a new era in nutrition science: While research in nutrigenomics is still ongoing, so is the bright prospect of a future when dietary recommendations would be made according to an individual's genetic profile. Such a practice can revolutionise public health through targeted interventions aimed at the prevention of diabetes, cardiovascular disorders, and even certain cancers.

But still, large-scale genetic studies and ethical issues relating to genetic testing are yet to be overcome before nutrigenomics becomes mainstream. Whatever the case may be, one fact is that our genes are not our destiny; diet plays the most pivotal role in shaping our health.

By embracing nutrigenomics, we go beyond generic dietary advice into precision nutrition that allows each of us to make active dietary choices using our very own genetic blueprint for guidance.

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