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March - April 2025

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Prognosis

Personalised medicine reshapes oncology

Recent advances in oncology research indicate we are entering a new era of cancer treatment that blends cutting-edge technology with accessible, personalised treatments.

The transformation of cancer care across the Middle East and globally illustrates how scientific innovation can translate into meaningful patient outcomes when implemented through strategic partnerships.

As highlighted in this issue, the emergence of precision medicine has shifted the traditional one-size-fits-all approach to cancer treatment towards tailored therapies that address the unique biological fingerprint of each patient's disease. This shift reflects our growing understanding that cancer comprises over 200 distinct conditions, each requiring specific interventions.

Particularly noteworthy is how diverse technological innovations are reshaping cancer diagnostics and treatment. From repurposing Morpho butterfly wing nanostructures for enhanced tissue analysis to harnessing "cryptic peptides" from previously overlooked genomic regions as immunotherapy targets, researchers are finding solutions in unexpected places.

Beyond technological advancements, the transformation of cancer care requires strategic implementation. The expansion of CAR T-cell therapy in the Middle East exemplifies how advanced treatments can be made accessible through collaborative frameworks involving industry, healthcare providers, regulatory bodies, and patient advocates.

Central to this progress is the recognition that early detection dramatically improves outcomes. AI-powered imaging tools now detect patterns invisible to the human eye, while non-invasive diagnostics like liquid biopsies allow real-time monitoring of treatment efficacy.

As cancer incidence rises across the Middle East, with cases projected to double by 2040, these innovations arrive at a critical juncture. The path forward requires not only continued research but also sustainable infrastructure that ensures cutting-edge cancer care reaches those who need it most – transforming what was once a powerless diagnosis into a journey of hope.

Callan Emery
Editor
editor@MiddleEastHealth.com

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Publisher
Michael Hurst
Michael@MiddleEastHealth.com

Editor
Callan Emery
editor@MiddleEastHealth.com

Editorial Consultants
Dr Gamal Hammad, Dr Peter Moore, Harry Brewer

Middle East Editorial Office
PO Box 72280, Dubai, UAE
Telephone: (+9714) 391 4775
editor@MiddleEastHealth.com

Marketing Manager
Foehn Sarkar
Telephone: (+9714) 391 4775 ▮ Fax: (+9714) 391 4888
marketing@MiddleEastHealth.com

Subscription & Admin Manager
Savita Kapoor
Telephone: (+9714) 391 4775 ▮ Fax: (+9714) 391 4888
Savita@MiddleEastHealth.com

Advertising Sales
PO Box 72280, Dubai, UAE
marketing@MiddleEastHealth.com

Americas, France
Joy Sarkar
P O Box 72280, Building No.2
2nd Floor, Dubai Media City
Dubai, United Arab Emirates
Tel: +971 4 391 4775 Fax: +971 4 391 4888
Joy@MiddleEastHealth.com

Japan
Mr Katsuhiro Ishii
Ace Media Service Inc
12-6, 4-chome, Adachi-ku, Tokyo 121-0824, Japan
Tel: +81-3-5691-3335 ▮ Fax:+81-3-5691-3336
Email: amskatsu@dream.com

China
Miss Li Ying
Medic Time Development Ltd,
Flat 1907, Tower A, Haisong Building, Tairan 9th Road,
Futian District, Shenzhen, China 518048
Tel: +86-755-239 812 21 ▮ Fax: +86-755-239 812 33
Email: medic8@medictime.com

Taiwan
Larry Wang
Olympia Global Co Ltd
7F, No.35, Sec 3, Shenyang Rd, Taichung
Taiwan 40651 ▮ P O Box: 46-283 Taichung Taiwan 40799
Tel: +886- (4)-22429845 ▮ Fax:+886- (4)-23587689
Email: media.news@msa.hinet.net

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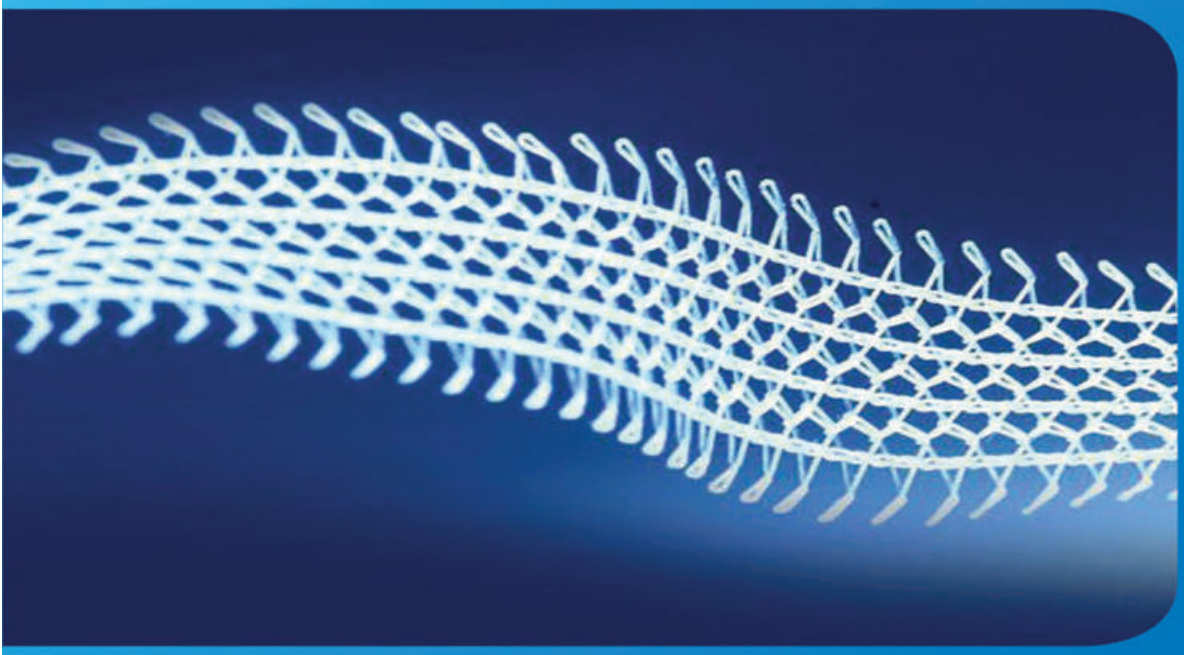

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Update from around the region

Dubai Healthcare City Authority forms strategic alliance with Al Jalila Foundation to strengthen medical advancement

A significant partnership has been established between Dubai Healthcare City Authority (DHCA) and Al Jalila Foundation aimed at advancing medical education, research and healthcare service development in the region. The collaboration, announced on 10 January 2025, creates a framework for joint initiatives designed to strengthen Dubai's position in the global healthcare landscape.

Research collaboration framework established

The strategic agreement outlines several key cooperation areas, including collaborative research programmes, knowledge exchange mechanisms, and coordinated initiatives to enhance regional healthcare services. As part of this partnership, DHCA will designate Al Jalila Foundation as its official 'Charity of Choice' and participate in fundraising activities supporting Dubai Health initiatives, notably including the Hamdan Bin Rashid Cancer Hospital development.

Issam Galadari, Chief Executive Officer of Dubai Healthcare City Authority, emphasised the significance of the partnership: "This partnership underscores our commitment to supporting Al Jalila's vital role in advancing medical education, research and innovation in Dubai. By collaborating on impactful initiatives and programmes, we are contributing to the foundation's mission of enhancing healthcare initiative and services."

Healthcare education advancement emphasised

A central element of the partnership focuses on supporting emerging healthcare professionals and enhancing medical education standards. The agreement aims to contribute directly to the development of a highly skilled healthcare workforce through structured charitable, volunteerism and humanitarian initiatives specifically designed for the healthcare sector.

Dr. Amer Al Zarooni, Chief Executive Officer of Al Jalila Foundation, highlighted the collaborative approach: "At Al Jalila Foundation, we believe that collaboration is key to advancing healthcare and shaping a healthier future. Through this partnership with Dubai Healthcare City Authority, we are strengthening our commitment to medical education and research in the healthcare sector. Together, we will drive impactful initiatives that develop our healthcare professionals, which contribute towards building a future-ready healthcare ecosystem that meets the evolving needs of our community."

Community healthcare initiatives included

The partnership includes practical elements targeted at community health improvement. Al Jalila Foundation will implement its 'Wellness on Wheels' mobile clinic services within the Dubai Healthcare City community and create structured volunteering opportunities for healthcare professionals.

This strategic alignment between DHCA and Al Jalila Foundation represents a coordinated approach to addressing Dubai's healthcare development priorities, aligning with the emirate's strategic vision for healthcare advancement.

The partnership builds upon both organisations' established roles in Dubai's healthcare sector. DHCA, as the governing body of Dubai Healthcare City free zone, was established in 2011 by His Highness Sheikh Mohammed Bin Rashid Al Maktoum to position Dubai as a leading global healthcare destination. Al Jalila Foundation, founded in 2013, functions as a global healthcare philanthropic organisation that leads Dubai Health's giving mission through integrated care, learning, and discovery initiatives.

The collaboration represents a systematic approach to healthcare development, addressing infrastructure, education, research and community health needs simultaneously through coordinated institutional cooperation. MEH

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M42 forms transplant partnership with Bahrain Royal Medical Services

M42, a global health technology organisation based in Abu Dhabi, has established a formal partnership with Bahrain's Royal Medical Services (RMS) to provide heart and lung transplantation services for Bahraini patients. The collaboration, formalised through a Memorandum of Understanding (MoU), aims to create a comprehensive care pathway spanning pre-operative assessment through to post-operative follow-up.

The agreement falls under Bahrain's National Program for Organ and Tissue Donation and Transplantation, known as "Hayat", and leverages the transplantation expertise of Cleveland Clinic Abu Dhabi, which operates as part of the M42 group.

Clinical capabilities demonstrate regional transplant advancement

Cleveland Clinic Abu Dhabi has emerged as a significant transplantation centre in the UAE, having completed over 774 transplant procedures since establishing its multi-organ transplant facility in 2017. The centre performed 241 transplants in 2024 alone, reflecting a substantial volume of complex surgical activity. The hospital has received official recognition from the Department of Health – Abu Dhabi (DoH) as a Centre of Excellence for Adult Cardiac Surgery.

His Excellency Brig. Gen. (Dr.) Shaikh Fahad bin Khalifa bin Salman Al Khalifa, Commander of Royal Medical Services, described the partnership as "a remarkable synergy between the Abu Dhabi Government and Bahrain," adding: "I am confident that M42's collective expertise, combined with our resources, will benefit countless people in need, enhancing healthcare outcomes and accessibility across the region."

Broader implications for regional healthcare development

The MoU was signed during the Arab Health Exhibition and Conferences by Shaikh Fahad and Hasan Jasem Al Nowais, M42 Managing Director and Group Chief Executive Officer and Chairman of Cleveland Clinic Abu Dhabi.

Al Nowais emphasised the strategic significance of the collaboration, stating: "In partnering with Bahrain's Royal Medical Services, we are together serving the people of the country with life-saving transplant procedures and personalised care, establishing a new benchmark for healthcare delivery in the region overall."

Beyond immediate clinical service provision, the partnership outlines several additional collaboration areas for future development. These include medical education programmes, clinical fellowships, advanced laboratory diagnostic services including genomics, joint research initiatives, and technology deployment to enhance care delivery.

M42 was formed in 2022 through the integration of G42 Healthcare and Mubadala Health, and now operates with 20,000 employees across more than 450 facilities in 26 countries. The organisation's portfolio includes Diaverum, Cleveland Clinic Abu Dhabi, Imperial College London Diabetes Centre and Moorfields Eye Hospital Abu Dhabi, among other healthcare providers.

This partnership reflects Abu Dhabi's strategic positioning as a healthcare hub with advanced organ transplantation capabilities, supported by appropriate infrastructure, clinical expertise, and healthcare facilities. The collaboration aims to improve access to complex tertiary care procedures for patients in Bahrain while strengthening clinical knowledge exchange between the two countries.

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JHAH establishes oncology centre of excellence to address rising cancer rates in GCC

Johns Hopkins Aramco Healthcare (JHAH) has opened a state-of-the-art Oncology Center of Excellence in Saudi Arabia, establishing a significant advancement in specialised cancer care for the Gulf Cooperation Council (GCC) region. The centre represents a strategic response to projections indicating cancer cases in the GCC will increase by over 140% between 2020 and 2040.

Addressing regional oncology challenges

The new facility combines Johns Hopkins Medicine's internationally recognised oncology expertise with Saudi Arabia's medical infrastructure to create a comprehensive cancer treatment hub. The centre specialises in three of the most prevalent cancers in the GCC region: breast, colorectal, and prostate cancers.

This development comes as part of the ongoing collaboration between Aramco and Johns Hopkins Medicine, now entering its second decade. The partnership aims to integrate global best practices with regionally-specific healthcare solutions tailored to the GCC's unique patient demographics and clinical needs.

Clinical capabilities and patient-centred approach

The Oncology Center of Excellence offers a full spectrum of cancer care services, including early detection programmes, precision diagnostics, advanced treatment modalities, and survivorship support. This comprehensive approach establishes a holistic model of care aligned with international oncology standards.

The facility employs evidence-based clinical protocols and cutting-edge technologies developed through Johns Hopkins Medicine's research and clinical practice in the United States. A multidisciplinary team of specialists oversees patient care, facilitating coordinated treatment planning and execution.

Dr. Michael Walsh, CEO of JHAH, emphasised the significance of the centre's opening: "The launch of the Oncology Center of Excellence marks a pivotal moment in our partnership with Johns Hopkins Medicine, demonstrating our shared commitment to advancing healthcare in Saudi Arabia and the wider GCC."

International collaboration driving regional excellence

The establishment of this specialised oncology centre represents a notable example of international healthcare collaboration producing regionally significant outcomes. By implementing protocols and technologies developed at Johns Hopkins Medicine, JHAH is creating localised access to world-class cancer care.

"This centre is a testament to the power of international collaboration in transforming healthcare delivery," Dr. Walsh noted. "By implementing evidence-based protocols and utilizing cutting-edge technologies developed by Johns Hopkins Medicine in the U.S., we are ensuring that patients across the GCC have access to world-class cancer care."

The centre's development aligns with broader healthcare transformation initiatives across the GCC region, where significant investments are being made to reduce dependence on international medical travel while establishing centres of excellence within the region.

By focusing on the specific oncological needs of GCC populations, the JHAH Oncology Center of Excellence aims to enhance clinical outcomes while contributing to the advancement of global oncology practices through research, education, and clinical innovation tailored to regional healthcare challenges.

Medcare expands medical centre network across UAE with AED 60 million investment

Medcare, the UAE's premium healthcare provider, is significantly expanding its medical centre network with a substantial AED 60 million investment to develop 10 new facilities over a two-year period. This strategic expansion responds to increasing patient volumes, with annual footfall growth of 28 percent demonstrating a clear shift in consumer preference towards accessible premium healthcare services.

Comprehensive clinical infrastructure enhances diagnostic capabilities

The new medical centres represent a substantial advancement beyond traditional general clinics, offering integrated diagnostic facilities including MRI services, specialty clinics and supporting subspecialty services under a unified clinical structure. Since implementing MRI capabilities last year, the centres have conducted over 500 MRI examinations in a two-month period, highlighting their critical diagnostic contribution to clinical service delivery.

"Medcare is transforming healthcare by adopting modern practices to create a seamless, patient-centered experience, delivered by highly skilled and experienced doctors," explained Dr. Shanila Laiju, Group CEO of Medcare Hospitals and Medical Centres. "From digital appointment booking to telemedicine and specialized services, Medcare Medical Centres

will continue to serve our patients and families with excellence in medical care, at par with international standards."

Strategic location planning optimises healthcare accessibility

The expansion initiative places new facilities in strategically selected neighbourhoods including Palm Jumeirah, Tilal Al Ghaf, Damac Hills and Al Furjan in Dubai, with additional sites in Sharjah's Al Zahia district. This geographic distribution model aims to minimise travel requirements for families seeking comprehensive healthcare services.

"The new medical centres will not only provide essential primary healthcare services like pediatrics and general medicine, but will also introduce specialized treatments tailored to the community's needs," noted Samer Hatoum, COO of Medcare Hospitals and Medical Centers. Specialised clinical services will include orthopaedics, sports medicine, rheumatology, endocrinology, pulmonology, diabetic retinopathy, dermatology, dental care, cardiology, neurology, and physiotherapy.

Digital health integration enhances service delivery model

The expansion coincides with increased implementation of digital health technologies to improve service accessibility. Telemedicine capabilities are being expanded to facilitate remote consultations and follow-up appointments, complementing the physical infrastructure development.

"The introduction of the new medical centres in emerging family-centric neighbourhoods of Dubai and Sharjah, aligns with Medcare's aim to make premium healthcare services easily accessible for families, while strengthening its presence in the UAE," said Ms. Alisha Moopen, Managing Director & Group CEO of Aster DM Healthcare.

Upon completion of the expansion programme, Medcare will operate 26 medical centres across Dubai and Sharjah, positioning it as the largest network of clinics in the premium healthcare sector in the region. This expansion complements the organisation's existing network of five multi-specialty hospitals.

Patient utilisation data demonstrates significant service demand, with Medcare Medical Centres treating over 400,000 patients in 2023, increasing to more than 500,000 in 2024 – representing a 20 percent annual growth rate. All Medcare facilities maintain Joint Commission International (JCI) accreditation, considered the international benchmark standard for healthcare quality and safety.

UK telehealth firm expands into Middle East with Saudi digital prehab contract

QuestPrehab, the London-based telehealth company, has secured its first contract in the Middle East, signing an agreement with Saudi Arabian tech company Zension Technologies Inc to provide digital prehabilitation services to its workforce.

Prehab innovation continues global trajectory

The partnership represents a significant step in QuestPrehab's international expansion strategy, following its entry into the Chinese healthcare market last year. The company is also engaged in preliminary discussions with hospitals across the Middle East region, signalling further growth potential.

Digital prehabilitation – a proactive healthcare approach focused on optimising patients' physical condition before surgery or medical treatment – has demonstrated measurable clinical benefits. Patients completing prehab programmes experience reduced hospital readmission rates, improved health-related quality of life, earlier return to work, and decreased dependency on social and primary care services.

Tara Rampal, CEO of QuestPrehab, highlighted the advantages of their digital delivery model: "By delivering services digitally, we address many of the challenges normally associated with prehab. Patients can participate from the comfort and safety of their own homes while hospitals don't need to provide (hard to find) rooms and staff. The model has been proven to work, is extremely cost effective and frees up hospital beds."

The collaboration with Zension Technologies, described as "a pioneer in the circular economy within the Middle East," aligns with QuestPrehab's goal of expanding its global footprint. The telehealth provider aims to focus on corporate health and digital healthcare solutions, positioning itself at the forefront of the growing prehabilitation sector.

Khalid Saiduddin, Founder and CEO of Zension Technologies Inc, emphasised the employee-centred benefits of the partnership: "We are excited about this collaboration, which aligns with our vision for progressive personnel strategies. By partnering with QuestPrehab, we are ensuring that our employees have access to top-tier healthcare services, empowering them to proactively manage their well-being and prepare for any medical challenges."

The Saudi contract follows QuestPrehab's established track record in the UK healthcare system, where it has provided prehabilitation services to more than 1,800 NHS oncology patients over the past three years. Additionally, the company has conducted a first-of-its-kind trial with NHS liver patients in the South-West of England.

Founded by Professor Tara Rampal, a consultant anaesthetist who trained at the Barts and the London School of Anaesthesia, QuestPrehab has developed a digital, scalable prehabilitation service validated through peer-reviewed research. The company's smartphone application has demonstrated both clinical efficacy and technical viability across hundreds of patient cases.

Zension Technologies, established in 2016 as a subscription e-commerce company for consumer technology, currently employs over 130 staff. The company has managed more than one million service subscriptions across 25 cities, reaching 70% of the GCC population and serving over 300,000 users, establishing itself as the largest device services platform in the Gulf Cooperation Council region.

As healthcare systems worldwide increasingly recognise the value of preventive strategies, the QuestPrehab-Zension partnership exemplifies how digital health technologies can transcend geographical boundaries to deliver proactive patient care solutions.

H5N1 virus threat prompts urgent call for pandemic preparedness

Scientists warn that H5N1's spread across species barriers demands immediate action to address vaccine development bottlenecks and strengthen global response systems

A team of prominent health experts has issued a stark warning about the potential pandemic threat posed by the H5N1 virus, which has already crossed species barriers to infect dairy cattle and caused sporadic human illnesses. Published in the 7 March 2025 issue of *Science*, the letter emphasises that although most human cases have been mild, H5N1 can cause severe disease and its ability to adapt to mammalian hosts requires urgent pandemic preparedness action.

The evolving threat

The H5N1 virus, primarily known as a bird flu pathogen, has demonstrated concerning adaptability by infecting dairy cattle and causing widespread exposure in agricultural settings. This cross-species movement significantly increases the risk of further adaptation that could potentially enable sustained human-to-human transmission.

"Given H5N1's potential to spread, urgent action is needed to address pandemic preparedness gaps," write the authors, led by Jesse L. Goodman from the Center on Medical Product Access, Safety and Stewardship at Georgetown University Medical Center.

The first H5N1-related human death in the United States, reported by the Louisiana Department of Health, underscores the virus's potential severity despite most cases presenting with mild symptoms.

Vaccine development constraints

One of the primary concerns highlighted by the experts is the significant limitation in rapid influenza vaccine development and deployment using currently approved technologies, particularly protein-based vaccines.

The authors identify several bottlenecks in the vaccine development pipeline, including:

"Vaccine availability is slowed by the time required to conduct immunogenicity and efficacy assessments and lot release and potency assays," the authors note. "Furthermore, many regulatory agencies lack the resources and capacity needed to quickly but robustly evaluate pandemic vaccines."

To address these constraints, the letter calls for enhanced collaboration between industry, governments, and regulators to accelerate development of new vaccine technologies, particularly mRNA-based vaccines and those using novel antigens. Modernising immunogenicity assessment tools and aligning regulatory pathways would further streamline the process.

Establishing coordinated response frameworks

Beyond technological solutions, the experts emphasise that successful pandemic preparedness requires clearly defined roles, responsibilities, and financing mechanisms across global, federal, state, and local authorities.

"Immunization and communications planning must be integrated and engage affected communities, and planning must transcend political divisions," they write, noting that these strategies should build upon lessons learned from seasonal influenza, COVID-19, and other outbreaks.

The authors call for comprehensive testing of pandemic response plans through transparent international collaboration, with countries sharing their strategies and forming global partnerships that incorporate various disease scenarios.

Three urgent priorities

The letter outlines three key initiatives that should be "urgently resourced and implemented":

1.) Development of rapidly scalable pandemic influenza vaccines, building on models such as Operation Warp Speed, with a funded global framework to ensure equitable access.

2.) A comprehensive communication programme supported by behavioural science to address vaccine concerns and rebuild public trust in health authorities.

3.) Thorough testing of pandemic response plans with international collaboration and information sharing.

Similar initiatives should also address ongoing agricultural outbreaks, which represent the current reservoir of the virus.

Financial and implementation considerations

The authors acknowledge that effective pandemic preparedness requires substantial investment but argue that these costs pale in comparison to the potential human and economic toll of an unprepared response.

"Enhancing readiness now can save lives and reduce societal and economic disruption if H5N1 or another outbreak becomes a pandemic," the authors conclude, emphasising that preparation must include consideration of both the pandemic's potential impacts and the effects of mitigation strategies on healthcare systems and supply chains.

The letter represents a unified call to action from experts across multiple disciplines, arguing that the window for effective preparation may be limited as H5N1 continues to evolve and spread across species barriers.

Reference:

Goodman, J. L., Baylor, N. W., Katz, R., Gostin, L. O., Bright, R. A., Lurie, N., & Gellin, B. G. (2025). Prepare now for a potential H5N1 pandemic. *Science*, 387(6738), 1047. https://doi.org/10.1126/science.adw3278

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Contact Info **Tina Wu**

+86 010 84556578 yiwen.wu@reedsinopharm.com

Global momentum builds against female genital mutilation as 2030 goals face urgent challenges

International partnership marks progress amid setbacks

A joint statement from leading UN health and human rights agencies has highlighted both progress and significant challenges in the global effort to eliminate female genital mutilation (FGM), describing it as "a violation of human rights that inflicts deep and lifelong physical, emotional and psychological scars on girls and women."

The statement, released on the International Day of Zero Tolerance for Female Genital Mutilation, emphasises that FGM currently affects more than 230 million girls and women worldwide, with an estimated 27 million more at risk by 2030 without intensified intervention.

The leadership of UNFPA, UNICEF and WHO collectively reaffirmed their commitment to ending this harmful practice through strengthened alliances and coordinated movements, responding to this year's theme: "Stepping up the pace: Strengthening alliances and building movements to end female genital mutilation."

Evidence of progress provides foundation for action

The UNFPA-UNICEF Joint Programme on the Elimination of Female Genital Mutilation, launched in 2008 in collaboration with WHO, has demonstrated measurable impact, providing prevention and protection services to nearly 7 million girls and women. Additionally, 48 million people have publicly declared abandonment of the practice, whilst mass media messaging has reached 220 million individuals.

Recent momentum has been particularly significant, with approximately 12,000 grassroots organisations and 112,000 community and frontline workers mobilising for change within the past two years alone. Success stories in countries like Kenya and Uganda demonstrate that community-led initiatives can effectively accelerate progress.

Challenges threaten fragile progress

Despite these achievements, significant concerns remain. Of 31 countries with national FGM prevalence data, only seven are on track to meet the Sustainable Development Goal of ending the practice by 2030. This stark assessment underscores the urgency for accelerated intervention.

The statement specifically notes concerning developments in The Gambia, where attempts to repeal the ban on FGM persist despite parliamentary rejection of an initial proposal last year. UN leaders warned that such efforts "could gravely undermine the rights, health and dignity of future generations of girls and women, jeopardising the tireless work over decades to change attitudes and mobilise communities."

Pathway to elimination requires intensified collaboration

The joint statement outlines a comprehensive approach to accelerate progress, calling for strengthened alliances among leaders, grassroots organisations, and sectors including health, education and social protection. Crucially, the strategy places girls and survivors at the centre of sustained advocacy and expanded social movements.

The UN leaders emphasise the need for greater accountability at all levels to ensure human rights commitments are upheld, alongside increased investment in scaling proven interventions. While acknowledging the support of current donors and partners, they invite broader participation in this critical work.

"We all have a role to play to ensure that every girl is protected and can live free from harm," the statement concludes. "Let's step up the pace and act with urgency. The time to end female genital mutilation is now."

For further information about the elimination efforts, the UNFPA-UNICEF Joint Programme document "Delivering the Global Promise" is available at: *https://www.unicef.org/media/119261/file/Delivering-the-Global-Promise.pdf*

WHO intensifies global "1 Dollar 1 World" crowdsourcing initiative

Grassroots campaign transforms into worldwide health solidarity movement

What began as a single staff member's initiative has evolved into a significant global health movement, with the World Health Organization (WHO) now formally amplifying the "1 Dollar 1 World" crowdsourcing campaign to enhance worldwide participation.

The campaign, which launched in early 2025, has already attracted nearly 5,000 contributors from more than 140 countries through the WHO Foundation platform. This remarkable engagement demonstrates substantial international commitment to collective health action.

Strategic funding diversification

This initiative represents a noteworthy shift in WHO's approach to resource mobilisation. For the first time, the organisation is systematically leveraging its extensive infrastructure – including 150 country offices – alongside the WHO Foundation's networks to amplify a grassroots fundraising movement.

The strategic pivot serves dual purposes: enhancing community involvement whilst simultaneously diversifying WHO's funding sources to support its current Investment Round. This approach recognises the potential of micro-donations at scale to complement traditional funding mechanisms.

"The power of the 1 Dollar, 1 World movement comes from the people. In particular, I would like to thank my colleague Tania Cernuschi for her inspiration to launch this initiative," said Dr Tedros Adhanom Ghebreyesus, WHO Director-General. "It shows that in times of crisis, people everywhere can unite and commit to protecting and promoting the health of others. WHO is proud to stand behind this initiative, which embodies the values of solidarity, action, innovation and hope."

Impact at country level

The campaign emphasises that all collected donations will support WHO's global health initiatives with particular focus on country-level implementation. This approach aligns with WHO's commitment to driving impact where resources are most needed, based on the collective decisions of its 194 Member States.

Tania Cernuschi, the WHO staff member who initiated the campaign, noted: "This campaign started with one person, but it belongs to all of us. It's proof that individuals can make a difference, and that together, we are stronger."

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Infrared Camera	
Resolution	: 256 x 192pixels
Image Frame Rate	: 25Hz
Focal Length	: 3.2mm
Field of View	: 56° x 42°
F#	: 1.1
Visual Camera	
Resolution	: 1280 x 720pixels
Focal Length	: 4.4mm
Environmental	
Operating Temperature	: 10 ~ 50°C
Storage Temperature	: -20 ~ 60°C
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Output	: mini USB
Size	: 80 x 80 x 14.2mm

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corresponds with increasing recognition that recent global health challenges – from pandemic responses to humanitarian crises – require coordinated international action. The campaign emphasises that health security is inherently interconnected across borders.

By focusing on micro-donations and social media engagement, the campaign creates accessible entry points for individuals to participate in global health solutions regardless of their professional background or financial capacity.

Participation mechanisms

The WHO has outlined three primary ways for individuals and organisations to engage with the movement:

Financial support through direct donations via the WHO Foundation portal at *bit.ly/3Dkzmih*, with emphasis that even minimal contributions are valuable.

Social media participation by posting photographs displaying an index finger to symbolise unity, accompanied by the hashtags #1Dollar1World and #HealthForAll, with links to the donation page.

Network amplification by encouraging colleagues, organisations and communities to join the movement, with supporting materials available through the campaign's communications toolkit at *https://new.express.adobe.com/webpage/nJ80M156vrKON*.

The initiative underscores WHO's increasing recognition that effective health solutions require multisectoral engagement beyond traditional health stakeholders. By creating a low-barrier entry point for participation, the campaign acknowledges that health advocacy can and should extend beyond professional healthcare contexts.

As global health challenges become increasingly complex, this initiative represents WHO's effort to build broader constituencies of support whilst reinforcing the fundamental principle that health is a universal right rather than a privilege accessible only to certain populations.

WHO introduces first global standard to prevent hearing loss among gamers

The World Health Organization (WHO) and International Telecommunication Union (ITU) have established the first global standard for safe listening in video gameplay and esports, addressing a significant gap in hearing protection guidelines for nearly 3 billion gamers worldwide.

Scientific basis for intervention

The new standard, released ahead of World Hearing Day 2025, responds to mounting evidence that prolonged exposure to loud sounds during gaming poses a substantial risk of permanent hearing loss. Children face particular vulnerability due to their lower sound tolerance thresholds and increasing engagement with gaming platforms.

"Everyone can take steps today to ensure good hearing health throughout their life," said Dr Jérôme Salomon, WHO Assistant Director-General for Universal Health Coverage, Communicable and Noncommunicable Diseases. "The WHO/ITU safe listening standard supports governments, manufacturers, civil society, and other stakeholders to foster safe listening environments, so that people of all ages can protect their ears and hearing, and even when playing video games, do not risk hearing loss."

Technical specifications target multiple platforms

The comprehensive framework provides distinct guidelines for both hardware manufacturers and software developers, creating an integrated approach to hearing protection across the gaming ecosystem.

For video gameplay devices—including consoles, mobile devices, personal computers, and headsets—the standard recommends implementing sound allowance tracking systems that measure cumulative exposure, safe listening notifications that predict when sound limits will be reached, intuitive volume controls, and automatic headphone safety modes that adjust volume when switching between headphones and loudspeakers.

Software recommendations include incorporating hearing loss risk warnings, implementing independent volume controls for different sound categories, adapting soundtracks with hearing safety considerations, and integrating headphone detection systems that automatically reduce volume when headphones are connected.

Regulatory collaboration

"As video gaming and esports continue to grow and gamers use a wider array of devices to access their content, safe listening standards are vital to help protect the hearing of users, especially children, from sounds which could damage their hearing," noted Seizo Onoe, Director of the Telecommunication Standardization Bureau at the International Telecommunication Union.

The standard emerges from WHO's Make Listening Safe initiative, which develops evidence-based guidelines to improve listening practices globally. Its development involved extensive consultation with experts from WHO, government agencies, industry representatives, consumers and civil society organisations.

Expanding global standards framework

This latest publication complements two previous safe listening standards: the H.870 WHO-ITU Global standard for personal audio devices and systems launched in 2019, and the WHO Global standard for safe listening in venues and events introduced in 2022 (subsequently adopted by ITU in 2024).

Together, these standards create a comprehensive framework addressing the primary contexts in which noise-induced hearing loss can occur, particularly among younger populations.

The collaborative approach between health and telecommunications authorities demonstrates an effective model for developing technical standards that protect public health while accommodating technological innovation in rapidly evolving entertainment sectors.

For further information on World Hearing Day 2025 and the Make Listening Safe initiative, visit: *https://www.who.int/campaigns/world-hearing-day/2025*

The full technical standard for safe listening in video gameplay and esports can be accessed at: *https://www.itu.int/rec/T-REC-H.872-202410-I/en*

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Cutting-edge 3D lung model propels respiratory medicine forward

A newly developed 3D lung model from University of Delaware researchers enables unprecedented evaluation of inhaled therapeutics and environmental exposures, addressing key challenges in respiratory medicine and toxicology.

Innovative approach to a persistent challenge

Respiratory diseases remain notoriously difficult to treat effectively, with inhalable medications showing promise but facing significant hurdles in optimising delivery to specific lung regions. The complex architecture of human lungs – branching from centimetre-sized airways to microscopic alveoli roughly 100 microns wide – creates a labyrinthine pathway for aerosol medications that has proven difficult to model accurately.

University of Delaware Centennial Associate Professor Catherine Fromen and her research team have developed an adaptable 3D lung model that represents a significant advance in respiratory research capabilities. Their work, published in the journal *Device* in February 2025, demonstrates a system that can replicate realistic breathing patterns whilst offering personalised evaluation of aerosol therapeutics under various conditions.

Unique dual-functionality design

What distinguishes this new model from existing technologies is its combination of two critical features: cyclic breathing motion that mimics natural lung function, and innovative lattice structures created through 3D printing that represent the entire volume and surface area of human lungs.

"There's nothing currently out there that has both of these features," explained Fromen, who holds joint appointments in chemical, biomolecular and biomedical engineering. "This means that we can look at the entire dosage of an inhaled medicine. We can look at exposure over time, and we can capture what happens when you inhale the medication and where the medicine deposits, as well as what gets exhaled as you breathe."

Rigorous testing methodology

The model enables researchers to track aerosol deposition throughout the respiratory system by incorporating fluorescent molecules into test solutions. After exposure, each of the model's 150 components is analysed to determine precisely where and in what concentration the aerosols have deposited.

"We wash each part and rinse away everything that deposits. The fluorescence is just a molecule in the solution. When it deposits, we know the concentration of that, so, when we rinse it out, we can measure how much fluorescence was recovered," Fromen said.

This detailed data allows the creation of comprehensive heat maps showing aerosol deposition patterns, which can be validated against clinical benchmarks.

Applications beyond pharmaceutical development

While the model currently replicates healthy lung function under normal breathing conditions, Fromen's team is working to expand its capabilities to simulate various respiratory diseases and conditions.

"An asthma attack, exercise, cystic fibrosis, chronic obstructive pulmonary disorder (COPD) – all those things are going to really affect where aerosols deposit. We want to make sure our model can capture those differences," Fromen noted.

Beyond pharmaceutical applications, the technology is already finding utility in environmental toxicology. A newly funded project with the Army Research Lab aims to understand environmental exposures – tracking particle penetration depth, quantities, and regional deposition patterns in the lungs.

The Delaware researchers have shared their design and methods in an open-source format to encourage adoption by other scientists, potentially fostering collaborations with clinicians providing patient profiles and pharmaceutical developers optimising treatment approaches.

The research team has submitted a patent application through the University of Delaware's Office of Economic Innovation and Partnerships.

Reference:

Fromen, C. A., et al. (2024). Adaptable 3D lung model for personalized evaluation of aerosol therapeutics under various breathing conditions. *Device*. https://doi.org/10.1016/j.device.2024.100514

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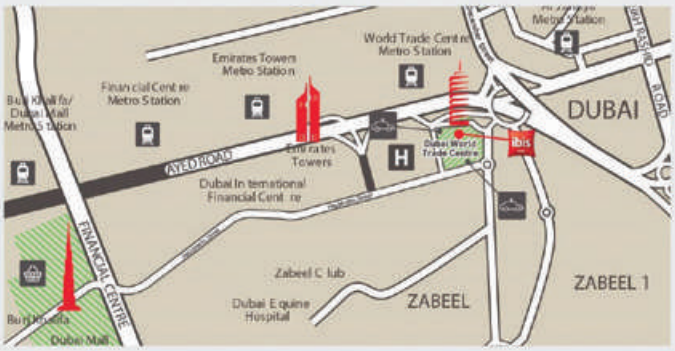

3D-printed knee implants achieve new milestone in strength and reliability

Chinese researchers develop world's first laser 3D-printed total knee implant with improved material consistency, offering potential advancements in personalized joint replacement technology.

Breakthrough in implant manufacturing

Researchers at Naton Biotechnology have achieved a significant advancement in the field of orthopaedic implants with the development of the world's first laser 3D-printed total knee implant. The innovation has recently received approval from China's National Medical Products Administration as an innovative medical device, marking an important milestone in the progression of personalized medical implants.

The research, published in the journal *Materials Futures* on 3 March 2025, focused on addressing critical inconsistencies in the mechanical properties of cobalt-chromium-molybdenum (CoCrMo) alloy implants manufactured using laser powder bed fusion (LPBF), a sophisticated 3D printing process.

The anisotropy challenge

The team, led by Professor Changhui Song from South China University of Technology and Professor Jia-Kuo Yu from Beijing Tsinghua Changgung Hospital, identified a fundamental challenge in 3D-printed metal implants: anisotropy – the tendency for materials to exhibit different properties depending on the direction of applied force.

This directional inconsistency arises from the layer-by-layer manufacturing process of LPBF, which involves extremely rapid cooling rates of approximately 10^5–10^5 K/s. Such rapid solidification creates columnar grain structures, potential porosity, and residual stress – all factors that contribute to non-uniform mechanical properties.

Previous research had typically evaluated LPBF-fabricated CoCrMo alloys in only a single direction, failing to account for the multidirectional stresses that implants experience within the human body. The team's mechanical testing revealed a dramatic disparity in the material's performance: samples stretched significantly more in one direction (19.1% elongation) compared to another (9.3% elongation) – a difference exceeding 100%.

This inconsistency poses significant implications for clinical applications, as implant failure could potentially lead to complications requiring revision surgery.

Innovative heat treatment solution

The research team developed a novel two-step heat treatment protocol that substantially improved the uniformity of the metal's microstructure and mechanical properties.

The process involves an initial solution treatment, heating the material to 1150°C for one hour followed by rapid water cooling. This restructures the uneven metal grains that form during the printing process. This is followed by an annealing step, where the material is reheated to 450°C for 30 minutes and then cooled again, further refining the grain structure and balancing material properties.

The results were remarkable. After treatment, the metal's strength and flexibility became nearly identical in all directions. Ultimate tensile strength measurements reached 906.1 MPa and 879.2 MPa in different orientations, while elongation values balanced at 20.2% and 17.9% – a significant improvement in consistency.

"This breakthrough provides key insights into how 3D printing affects metal implants and lays the foundation for better quality control in orthopaedic manufacturing," the researchers note in their publication.

Clinical implications

The advancement addresses a critical need in personalised medicine, particularly for joint replacement procedures. Custom-designed implants can potentially offer better fit, improved function, and reduced surgical time compared to standard off-the-shelf components.

The improved material consistency achieved through this research means that 3D-printed implants can now potentially offer greater reliability in clinical applications, with reduced risk of mechanical failure over time – a crucial consideration for components that must withstand decades of use in active patients.

For orthopaedic surgeons and patients alike, this development could represent a significant step forward in treatment options for complex joint reconstruction cases where standard implants may be suboptimal.

Future directions

Building on this success, the research team is now exploring additional surface treatments to further enhance the wear resistance and biocompatibility of these implants. Methods such as shot peening and ultrasonic peening could potentially improve fatigue resistance, helping implants withstand daily stresses over longer periods.

The researchers suggest these next-generation treatments could make 3D-printed joint implants even more durable and widely applicable in clinical settings, potentially expanding the range of patients who might benefit from customised joint replacement components.

This research represents a collaborative effort between academic institutions and industry, with Senior Engineer Renyao Li from Naton Biotechnology (Beijing) Co., Ltd participating alongside university researchers.

The advancement contributes to the growing field of medical-grade additive manufacturing, potentially benefiting patients requiring joint replacement by offering more durable, consistent implants tailored to individual anatomy. MEH

Reference:

Dai, L., Song, C., Fu, H., et. al. (2025). Recrystallization induced by heat treatment regulates the anisotropic behavior of CoCrMo alloys fabricated by laser powder bed fusion. *Materials Futures*. https://doi.org/10.1088/2752-5724/adb50a


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Scientists uncover brain's decision-making 'switchboard'

Neuroscientists have identified specific neural circuits in the midbrain that control whether animals persist with current activities, explore new options, or disengage entirely – findings with potential implications for various psychiatric conditions.

A groundbreaking study published in *Nature* on 5 March 2025 has revealed how a small brain region acts as a central switchboard for controlling fundamental behavioural strategies. Researchers at the Sainsbury Wellcome Centre at UCL have identified specific neural circuits in the midbrain that determine whether animals persevere with current goals, seek alternatives, or disengage completely.

The median raphe's triple role

The research team, led by Professor Sonja Hofer, focused on the median raphe nucleus (MRN) in mice, investigating how this brain region controls decision-making processes across both instinctive and learned behaviours.

Using sophisticated techniques including optogenetic manipulations, calcium imaging, and neural circuit tracing, the scientists discovered three distinct cell types within the MRN, each controlling a different behavioural strategy.

"We found that suppression of GABAergic neurons causes perseverance in a current or familiar goal; activation of glutamatergic neurons drives exploration of alternative options; and suppression of serotonergic neurons in the median raphe nucleus causes the animal to disengage," explained Mehran Ahmadlou, Senior Research Fellow and first author of the study.

The researchers observed these effects consistently across both innate and learned tasks, suggesting these neural mechanisms represent fundamental behavioural control systems.

Input signals shape decisions

Further investigation revealed that the median raphe receives crucial information from two additional brain regions – the lateral hypothalamus and the lateral habenula – which signal whether an experience is positive or negative. These inputs, in turn, influence whether an animal persists with its current goal or disengages.

"We were really surprised to find that the three main cell types in this small brain structure had three fundamentally different but complementary functions with such strong control over the animals' behaviour," said Professor Hofer.

Implications for psychiatric conditions

The discovery of these neural circuits may enhance understanding of several neuropsychiatric conditions. For instance, excessive perseverance and repetitive behaviours characterise both obsessive-compulsive disorder (OCD) and autism spectrum disorders, while pathological disengagement is a hallmark of major depressive disorder.

The research suggests that abnormal firing rates of specific median raphe cell types could contribute to certain aspects of these conditions. Professor Hofer noted: "It is possible that in some mental disorders specific median raphe neurons could have pathological firing rates. For example, very low activity of serotonergic neurons specifically in the median raphe nucleus could contribute to a depressive phenotype."

This insight is particularly relevant given that many effective treatments for depression target serotonin, though current medications are often non-specific and don't work for all patients.

Evolutionary conservation

The researchers emphasised that the need to balance perseverance, exploration, and disengagement is common across species, suggesting these neural circuits are likely evolutionarily conserved and subcortical.

This work could potentially lead to more targeted treatments for psychiatric disorders by providing a deeper understanding of the neural mechanisms underlying both healthy and pathological behavioural patterns.

The research was funded by the Sainsbury Wellcome Centre Core Grant from the Gatsby Charity Foundation and Wellcome, along with a European Research Council Starting Grant.

Reference:

Ahmadlou, M., et al. (2025). A subcortical switchboard for perseverative, exploratory, and disengaged states. *Nature*. https://doi.org/10.1038/s41586-025-08672-1

After 40 Years of Wellness, Technogym Launches Healthness

At the 25th Wellness Congress, in the presence of 2,000 people from 100 countries, Nerio Alessandri launched Healthness, the new vision that will revolutionize the future of wellness and prevention.

Forty years ago, in an industry characterized first by bodybuilding, then by fitness, Technogym launched a new concept: Wellness, which, capitalizing on the experience of fitness, generated a social opportunity, involving all stakeholders - governments, companies and citizens - in building a healthier and more active society. Since then, Technogym has continued to innovate relentlessly: from biomechanics, to digital, to artificial intelligence. Today Technogym is a Life Science company, able to offer *Precision Training* programs for every individual and need.

Over the years, Technogym has built an ecosystem that, as of today, connects 25 million users (out of a global community of 70 million people training with Technogym), industry operators, doctors, and trainers worldwide. Leveraging the company's years of investments in cutting- edge technologies and AI, Nerio Alessandri introduced the new vision of **Healthness**.

The ability to predict disease before it occurs will be the greatest revolution of our time. Healthness leverages Wellness and takes this vision even further by making health prevention programs tangible thanks to data and AI.

Scientific studies confirm that health is influenced by only 20-30% by genetics, while the remaining 70-80% depends on epigenetics (lifestyle). There are therefore no magic formulas to achieve Healthness: it requires training that targets muscular strength, cardiovascular endurance, balance, flexibility, and cognitive quality. Physical exercise is a true medicine (**Exercise Is Medicine**) and Healthness represents a preventative medicine to improve physical performance in the short term and guarantee healthy longevity in the long term.

Thanks to the trillions of data collected in 30 years on the **Mywellness Open Platform**, today with AI, Technogym is able to offer Healthness as products and services: **Technogym Checkup**, the new assessment station based on AI is able to analyze psycho-physical and cognitive parameters and automatically calculate *Precision Training* programs. The new AI-based **Biostrength** and **Biocardio** product ranges, connected to the Technogym Ecosystem, allow you to deliver *Precision Training* Programs automatically thanks to the **Technogym App**, to track data and adapt the program to progresses.

In practice, Healthness means Precision Wellness and thanks to data-driven customized programs it allows you to obtain results superior by approx. 30% in the same amount of time.

Healthness, in addition to helping people live longer in good health, represents a great business opportunity for fitness, sports, hospitality, corporate and medical operators and personal trainers to evolve their offering and create value through hyper-personalization.

- For more information, visit: *www.technogym.com*

Medical Taiwan 2025: A Gateway to Asia's Thriving Healthcare Market

Medical Taiwan 2025, organized by TAITRA, is set to take place from June 5 to 7, 2025, at the Taipei Nangang Exhibition Center Hall 2 (TaiNEX 2). As the region's premier medical and healthcare industry event, this year's theme, **"Innovating Wellness,"** reflects the exhibition's commitment to showcasing groundbreaking solutions in the healthcare and medical technology sectors.

Explore Taiwan's Leadership in Asia's Healthcare Market

As a global leader in medical innovation and a key player in Asia's thriving healthcare market, Taiwan offers unparalleled opportunities for international buyers seeking advanced solutions. Medical Taiwan 2025 will feature an extensive lineup of exhibition areas, including **Hospital Equipment and Consumables, Medical Components, Veterinary Supplies & Equipment, Community & Home Care, Assistive Devices and Orthotics, Vitality and Wellness, AI & Smart Medical, Telemedicine, Digital Health, and M-Novator (Startups).** This one-of-a-kind platform provides access to high-quality products and solutions tailored to meet the diverse needs of global medical and care markets.

Highlighting AI & Smart Medical and Startup Innovation

Taiwan's excellence in integrating cutting-edge technologies – such as AI, IoT, and big data – into healthcare applications has made the **AI & Smart Medical and M-Novator Startup** areas key highlights of the exhibition. These zones will present solutions addressing some of the most pressing global challenges, including aging populations, shortages of healthcare professionals, and rising medical costs.

Visitors can explore a wide range of innovations, from AI-powered diagnostic tools to integrated software-hardware systems designed for hospitals and home healthcare. Additionally, forums led by industry experts and tech leaders will provide insights into the transformative role of AI and intelligent medical devices, offering attendees a glimpse into the future of healthcare.

Meeting the Needs of a Super-Aged Society

With the world's aging population on the rise, the demand for long-term care solutions is greater than ever. The **Assistive Devices and Orthotics** area will showcase state-of-the-art innovations designed to enhance the quality of life for elderly populations while alleviating the burden on caregivers. This exhibit is a must-visit for buyers seeking advanced solutions for aging societies.

Capitalizing on the Growing Pet Economy

Medical Taiwan 2025 will also debut its **Veterinary Supplies & Equipment** area to cater to the rapidly expanding pet healthcare market. As pets become integral members of families worldwide, demand for high-quality veterinary products has soared. With the global pet industry projected to reach $350 billion by 2027, this new exhibition area will feature cutting-edge veterinary supplies, diagnostic tools, and assistive devices to meet the needs of this thriving market.

Facilitating Global Connections

Medical Taiwan 2025 delivers more than just a showcase of products. The event includes a series of one-on-one procurement meetings and networking sessions designed to connect buyers with leading manufacturers and innovators. These tailored matchmaking opportunities enable buyers to establish valuable partnerships aligned with their business goals.

Register Now for visit Medical Taiwan 2025 and Seize the Future of Healthcare

Medical Taiwan 2025 will be held from June 5 to June 7, 2025, at the Taipei Nangang Exhibition Center in Taiwan. Don't miss this premier healthcare event in the Asia-Pacific region. Join us to explore the latest developments in the Asian medical market and unlock unlimited business opportunities! MEH

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A New Era in Hemorrhoid Treatment: Painless, Non-Surgical Relief Now in the UAE

Cutting-Edge Innovation Now at Medcare Hospital Al Safa

At **Medcare Hospital Al Safa**, patients can now benefit from **Emborrhoid, a revolutionary, non-surgical procedure** that offers **fast, painless, and highly effective relief** – without the need for incisions, stitches, or hospital stay. This advanced vascular intervention represents a significant leap forward in proctological care, providing a **safe, minimally invasive alternative to traditional hemorrhoid treatments**.

Hemorrhoids are a common yet often distressing condition, affecting nearly 39% of the global population. Until now, treatment options were limited to conservative management or invasive surgery, often leading to painful recovery and long downtime. But that's about to change.

Understanding hemorrhoids: A common but complex condition

Hemorrhoids, also known as piles, are vascular cushions in the anal canal that assist in stool control. When these structures become swollen or inflamed, they lead to discomfort, rectal bleeding, and pain, disrupting daily life.

While internal hemorrhoids typically present with painless rectal bleeding, external hemorrhoids can cause considerable discomfort, particularly when affected by a blood clot (thrombosed).

Risk factors such as chronic constipation, prolonged sitting, pregnancy, obesity, and genetic predisposition contribute to the condition. While mild cases can be managed with lifestyle changes, advanced cases have historically required surgical intervention – a solution many patients fear due to pain, hospital stays, and lengthy recovery times.

But now, there's a **new, pain-free option – Emborrhoid**.

The Emborrhoid innovation: A game-changing approach

The Emborrhoid procedure represents a paradigm shift in hemorrhoid treatment methodology. This advanced technique utilises precision vascular intervention, targeting the root cause of hemorrhoidal disease through a minimally invasive approach that fundamentally transforms patient care.

The procedure's technological innovation lies in its use of a precise catheter-guided intervention. Through a tiny access point in a vein, specialists can precisely target the arteries supplying blood to the hemorrhoids. By controlling this blood flow, the procedure initiates a natural reduction process, causing the hemorrhoids to shrink gradually over time.

Crucially, this approach eliminates the need for surgical excision, stitches, or general anaesthesia – factors that traditionally contributed to patient anxiety and prolonged recovery periods.

Dr Khaldoun Ghareb, Specialist General Surgeon (Proctology)

Dr Saher Arour, Consultant Vascular Surgeon

Dr Vanesha Varik, Spcialist General & Laparoscopic Surgeon

Clinical advantages and patient benefits

The Emborrhoid procedure offers several significant advantages over conventional treatments:

- **No Surgery, No Pain** – No incisions, no stitches, no discomfort.
- **No Exposure of Private Areas** – A discreet, dignified procedure
- **No Hospital Stay** – Walk in, get treated, and return home the same day.
- **Quick & Minimally Invasive** – Just a small access, no general anaesthesia needed.
- **Fast Recovery** – No Downtime – Resume work and daily activities immediately.
- **Highly Effective & Long-Lasting** – Clinically proven to shrink hemorrhoids naturally and prevent recurrence.

Leading healthcare excellence

The introduction of this innovative procedure at Medcare Hospital Al Safa is in line with the institution's commitment to premium healthcare delivery. As part of Aster DM Healthcare, Medcare maintains Joint Commission International (JCI) accreditation across its facilities, representing the gold standard in global healthcare.

The experts behind Emborrhoid

This **groundbreaking procedure** is led by **Dr. Saher Arour**, Consultant Vascular Surgeon, alongside leading General Surgery specialists **Dr. Khaldoun Ghareb** and **Dr. Vanesha Varik**. Their **multidisciplinary expertise in minimally invasive procedures** ensures that every patient receives top-tier, personalized care from consultation to recovery.

The facility's state-of-the-art technology infrastructure and multicultural, multilingual medical team create an optimal environment for delivering this advanced treatment. Operating across multiple specialised facilities in the UAE, including dedicated hospitals for various specialties, Medcare has established itself as a leader in premium integrated health services.

For patients suffering from hemorrhoids, the Emborrhoid procedure represents a significant advancement in treatment options. It is offered exclusively at Medcare Al Safa.

The procedure combines the precision of modern medical technology with the comfort of minimally invasive care, offering a solution that effectively addresses both the physical and psychological aspects of hemorrhoid treatment while upholding Medcare's promise: "We'll Treat You Well." MEH

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Metabolomic profiling at Weill Cornell Medicine-Qatar reveals new pathways for precision cancer treatment

Dr. Anna Halama, Ph.D., Assistant Professor of Research in Physiology & Biophysics, Medical Education Division, Weill Cornell Medicine-Qatar, speaks to *Middle East Health* about her research and the potential for -omics approaches to improve healthcare outcomes for patients.

Dr. Halama joined Weill Cornell Medicine-Qatar (WCM-Q) as a postdoctoral fellow in 2013 shortly after she had gained her Ph.D. from the Technical University of Munich (TUM) in Germany, where she obtained in-depth knowledge and skills in the field of metabolomics. Since establishing her research lab in 2019, she has led a multidisciplinary team focused on metabolic dysregulations in complex diseases, particularly cancer. She is dedicated to advancing precision medicine through integrative omics approaches with special focus on the implementation of metabolomics into the clinical pipeline. In her study of breast cancer patients, Dr. Halama is aiming to assess tumor metabotypes and their role in resistance to standard of care treatment approaches. Her work has been supported by Qatar National Research Fund and published in leading journals such as *Nature Communications*, *Clinical & Experimental Metastasis*, and *Cancer Letters*, contributing to advancements in precision medicine and cancer metabolism. In addition to her research, Dr. Halama is passionate about educating the next generation of clinicians and scientists.

Middle East Health: Why has omics profiling emerged as such a promising and exciting area in biomedical research?

■ **Dr. Halama:** To give an analogy, moving from the traditional clinical chemistry method to an omics approach for blood tests will be like going from a very old camera with low resolution to a modern, high-resolution camera that can give us a far more precise, detailed and comprehensive picture of reality. For example, we do not yet have a good blood test to diagnose a disease like breast cancer, so we must rely on mammograms and biopsies, which take longer and can be more uncomfortable for patients. With genomics we can check for genetic mutations that are known to predispose people to breast cancer, but this does not allow us to check for the actual existence of a malignancy. However, if we can take a multiomics approach and discover reliable markers through a combination of genomics, transcriptomics and metabolomics it may be possible to develop a very useful and accurate blood test for breast cancer in the future. There is also the potential for gaining useful insights into disease state from other human samples, such as saliva or urine, which would be even less invasive and still more convenient, quick and less expensive. Such developments would be of great clinical significance and could potentially improve patient outcomes quite dramatically. The same can be said for other cancers if extensively studied.

MEH: Is diagnostics the main area for clinical applications of multiomics approaches?

■ **AH:** No, I would say it is an important area but by no means the only or even the main area for clinical applications. At the moment we are focusing very strongly on using metabolomics approaches to help us determine which cancer drugs work best for different types of breast cancer in various models. Metabolomics can therefore play a very important role in precision medicine as it can allow us to analyze in

Dr. Anna Halama, Ph.D., Assistant Professor of Research in Physiology & Biophysics, Medical Education Division, Weill Cornell Medicine-Qatar

great detail whether a particular drug is likely to be effective for an individual cancer type, or whether a different drug or combination of drugs would be better. However, there is also huge potential for the development of better diagnostic tools to catch malignancy or the threat of malignancy earlier.

MEH: What are the challenges with this type of research?

■ **AH:** Having just said that the traditional clinical chemistry testing approach does not provide us with enough data, perhaps the key challenge with omics approaches is that they provide researchers with very large amounts of data which are time-consuming and complex to interpret. At WCM-Q we have the advantage of having an excellent bioinformatics core which can support very data-heavy analytics work. This allows us to analyze larger populations and more datapoints, which will give us a richer understanding of the complex associations and interactions between particurlar molecules, proteins, and genes that indicate the presence of particular diseases.

MEH: What is the vision for the future in terms of the clinical experience for patients in the new era of multiomics?

■ **AH:** In an ideal world, it would be great if we had accurate and reliable non-invasive markers for many complex diseases. This would mean that we would not need to take any tissue and everything can be conducted from a sample of blood, saliva or even tears or sweat. With the current technologies, I don't see this happening now, but they are giving us a glimpse of a world in which this ideal situation might one day be possible. At the moment, the more realistic change is that we still need to take a tissue sample but that multiomics will allow us to provide more personalized medicine, rather than treating all patients with similar protocols. Doctors already use certain tests to group breast cancer patients based on the characteristics of their tumors, which helps decide the best treatment. However, these tests mainly look at specific genetic mutations or gene activity, which limits how precisely treatments can be tailored. Multiomics holds the potential to increase the number of molecule types we can screen for and therefore enhance the level of precision of treatments.

Omics profiling for complex diseases

Clinical chemistry assays, which are standard strategies for assessing physiological and pathological processes in the body, are often insufficient to define complex diseases such as cancer. Technological advancements have led to the development of a range of high-throughput measurement techniques that allow for an in-depth characterization of our genome (genomics), transcriptome (transcriptomics), protein levels (proteomics), and metabolite levels (metabolomics). Collectively, these technologies are referred to as "omics" and they are considered a very promising area for research because they can provide a far more comprehensive overview of human health than was previously possible.

MEH: What do you feel are the key areas for research in omics approaches,with regards to clinical applications?

■ **AH:** My view is that gaining a greater understanding of the metabolic characteristics of patients and cancers will be a particularly fruitful area. The metabolism in my view is playing a huge role because cancer can be understood as a metabolic disease; the cancer cells change their metabolisms completely to survive in different conditions, and they adapt their metabolism in order to metastasize or to survive in harsh conditions where there is limitation of oxygen or glucose and so on. So they are adapting. Ideally, we are going to be able to use multiomics to understand those adapatations and target them. This has implications for drug selection, drug design, as well as diagnostic testing. With advanced multiomics testing we might be able to quite accurately detect a predisposition for developing a disease, or factors which suggest development of a disease is imminent. In cancer, where early detection is obviously extremely crucial to overall outcomes, being able to predict malignancy by detecting specific changes that are occurring in a patient's metabolism before the actual malignancy even occurs would be an extremely powerful tool.

MEH: Please tell us a little more about your current research activities.

■ **AH:** At the moment my team focuses specifically on cancer and its dysregulated metabolism. We are aiming to identify potential therapeutic targets by leveraging omics technologies to characterize metabolic alterations in cancer, and, using *in vitro* models, we have been able to identify molecular pathways that contribute to drug resistance and the metastatic potential of cancer cells, which has been extremely encouraging. Currently, we are collaborating with clinicians from Hamad Medical Corporation to conduct an in-depth omics-based characterization of breast cancer patients – we believe that such precise molecular profiling could provide new insights into this complex disease, ultimately guiding more effective treatment strategies. So we feel very optimistic and energised about this particular area of research and its potential applications to improve healthcare outcomes. MEH

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Butterfly wings offer new approach to cancer tissue analysis

Researchers at the University of California San Diego have developed a novel technique using Morpho butterfly wing nanostructures to assess fibrosis in cancer biopsies, potentially improving diagnostic accessibility in resource-limited settings.

Cancer diagnosis relies heavily on accurate assessment of tissue samples, with fibrosis – the accumulation of fibrous tissue – serving as a key indicator of disease progression. Now, an innovative approach utilising structures found on butterfly wings could make this crucial diagnostic step more accessible worldwide.

David Baillot/UC San Diego Jacobs School of Engineering

UC San Diego researchers are using the light-manipulating micro- and nanostructures on Morpho butterfly wings to assess the level of fibrosis in cancer biopsy samples.

Background

Fibrosis represents a significant marker in cancer progression, with the extent of fibrous tissue accumulation often correlating with disease staging. Traditional diagnostic methods rely on chemical staining of biopsy samples, which can introduce subjectivity into interpretations. While advanced imaging techniques offer improved objectivity, they typically require expensive equipment that remains inaccessible to many healthcare facilities, particularly in resource-limited regions.

The research, published in the journal *Advanced Materials* on 15 January 2025, demonstrates how the micro- and nanostructures found on Morpho butterfly wings can be repurposed to enhance cancer tissue analysis using standard optical microscopes.

Methodology

The technique's elegance lies in its simplicity. By placing a cancer biopsy sample directly onto a section of Morpho butterfly wing and viewing it under a standard microscope, researchers can assess collagen fibre density and organisation – critical indicators of cancer staging.

"We can apply this technique using standard optical microscopes that clinics already have," said study senior author Lisa Poulikakos, a professor in the Department of Mechanical and Aerospace Engineering at the UC San Diego Jacobs School of Engineering. "And it's more objective and quantitative than what is currently available."

The inspiration for this approach came from Paula Kirya, a mechanical engineering graduate student and the study's first author, who had previously studied the optical properties of Morpho butterfly wings.

"I had been imaging butterfly wings, studying how they react to different environments," Kirya explained. "And when I saw what the lab was doing, I thought, 'The Morpho naturally has this property – why not use it?'"

Scientific principle

The technique exploits a natural phenomenon. The wing's micro- and nanostructures interact strongly with polarised light – light that propagates in a specific direction. Collagen fibres in tissue samples also interact with polarised light, but their signals are typically weak.

The researchers found that placing a biopsy sample above a Morpho butterfly wing segment amplifies these signals, making it easier to detect and analyse the density and arrangement of collagen fibres within the tissue.

To quantify these observations, the team developed a mathematical model based on Jones calculus, a method for analysing polarised light. This model correlates light intensity with collagen fibre density and organisation, providing an objective metric for assessing fibrosis.

Clinical validation

The research team tested their approach on human breast cancer biopsy samples, comparing the results with those obtained through conventional staining methods and advanced imaging techniques.

The samples were provided by study collaborators Jing Yang, a professor in the Departments of Pharmacology and Pediatrics at UC San Diego School of Medicine and co-leader of the Cancer Biology and Signaling Program at Moores Cancer Center, and Aida Mestre-Farrera, a postdoctoral scientist in Yang's group.

Results demonstrated comparable accuracy to these established methods, validating the butterfly wing technique as a viable alternative.

"Essentially, we're trying to expand on

these procedures with a stain-free alternative that requires nothing more than a standard optical microscope and a piece of a Morpho wing," said Kirya. "In many parts of the world, early cancer screening is a challenge because of resource limitations. If we can provide a simpler and more accessible tool, we can help more patients get diagnosed before their cancers reach aggressive stages."

Future applications

While the current research focused specifically on breast cancer samples, the technique's potential extends far beyond this single application. The researchers believe their method could be applied to various fibrotic diseases, offering a simpler and more cost-effective diagnostic approach across multiple medical conditions.

"We're excited to leverage this technique for all kinds of tissue diagnostics," said Poulikakos. "It was really surprising to see how well nature had already designed a solution via the Morpho butterfly wing and its natural micro- and nanostructures. Our work shows that nature has given us something that can help us image diseased tissues without the need for expensive fabrication facilities."

This research highlights a growing trend in biomimicry – the practice of emulating nature's designs and processes to solve human problems. In this case, the iridescent blue wings of the Morpho butterfly, which achieve their colour not through pigmentation but through complex light-manipulating structures, have provided a template for enhanced medical imaging.

For clinicians working in settings with limited resources, this approach could represent a significant advancement in diagnostic capabilities, potentially enabling earlier detection and intervention for cancer patients worldwide.

The technique's reliance on readily available equipment – standard optical microscopes – combined with the relatively simple addition of butterfly wing material, positions it as a practical solution for improving cancer diagnostics in diverse healthcare settings. MEH

Reference:

Kirya, P., Mestre-Farrera, A., Yang, J., et. al. (2025). Leveraging Optical Anisotropy of the Morpho Butterfly Wing for Quantitative, Stain-Free, and Contact-Free Assessment of Biological Tissue Microstructures. *Advanced Materials*, 37(3). https://doi.org/10.1002/adma.202407728

Cryptic peptides emerge as key immunotherapy target for ovarian cancer

Mayo Clinic researchers have discovered that previously overlooked "hidden" antigens could transform immunotherapy approaches for ovarian cancer treatment

A groundbreaking study from Mayo Clinic scientists has revealed that cryptic peptides – previously overlooked protein fragments hiding in regions of the genome considered "noncoding" – represent the dominant class of antigens in ovarian cancer and could be key to developing effective immunotherapies for this challenging malignancy.

The research, published in *Science Advances* on 19 February 2025, demonstrates that these cryptic antigens can trigger robust immune responses, potentially opening new avenues for treatment in a cancer type that has shown limited response to existing immunotherapies.

Cryptic antigens dominate the immunopeptidome

Ovarian cancer remains one of the deadliest gynaecological malignancies, with a five-year survival rate of less than 50%. While immunotherapies have revolutionised treatment for many cancers, ovarian cancer patients have seen limited benefit from current approaches.

"These findings underscore the need to look at alternate sources of target antigens for ovarian cancer," says Dr Marion R. Curtis, senior author of the study and immunologist at Mayo Clinic Comprehensive Cancer Center. "Discovering tumour-associated antigens that T cells recognise is crucial for the success of immunotherapeutic approaches in ovarian cancer, where the growth of cells that form in the ovaries multiply quickly and can invade and destroy healthy body tissue."

The research team used a proteogenomic approach – combining protein analysis with genomic sequencing – to identify peptides presented by HLA class I molecules on the surface of ovarian cancer cells. While conventional approaches have focused on identifying neoantigens (peptides containing mutations unique to cancer cells), previous research had shown these to be rare in ovarian cancer.

Instead, the team focused on cryptic peptides, which originate from genomic regions traditionally considered noncoding. These peptides, which constitute less than 1% of the total immunopeptidome, were found to outnumber all other classes of known tumour-associated antigens identified in the study.

"Despite comprising less than 1% of total peptides, cryptic peptides from noncoding transcripts emerged as the predominant antigen class when compared to the other major classes of known tumour-specific and tumour-associated antigens in OC samples," the authors write in their paper.

Immunogenic potential demonstrated

What makes this discovery particularly significant is the demonstrated ability of these cryptic peptides to activate T cells. Using patient-matched T cells, the researchers evaluated the antigenicity of 38 cryptic peptides from noncoding transcripts that were selectively upregulated in tumour tissue compared to adjacent normal tissue.

Remarkably, they found that approximately 70% of the cryptic peptides could

induce an increase in intracellular expression of interferon-gamma, and more than 50% could also induce TNF-alpha expression in autologous CD8 T cells. This demonstrates the potential of these peptides to stimulate an immune response against the cancer.

"Notably, nearly 70% of the prioritised cryptic peptides elicited T cell activation, as evidenced by increased 4-1BB and IFN-γ expression in autologous CD8+ T cells," the researchers report.

The team also generated HLA-A02:01 MHC class I tetramers for a subset of the HLA-A02:01-restricted peptides that exhibited immune reactivity and confirmed the presence of T cell clones reactive to cryptic peptides in patient samples.

Implications for broader cancer treatment

Dr Curtis explains that these findings could have far-reaching implications beyond ovarian cancer: "Our study demonstrates that cryptic peptides from noncoding transcripts constitute a dominant class of immunogenic antigens in ovarian cancer."

The researchers suggest in their discussion that "these findings may also have broader implications for other cancer types with low mutational burden, where neoantigens are rare." They note that there is a clear need for larger-scale studies to identify the abundance of cryptic antigen expression across different tumour types and understand how cryptic antigen burden may correlate with clinical responses to immunotherapy.

Potential for personalised vaccines

The discovery of these cryptic antigens could lead to new therapeutic approaches, particularly personalised cancer vaccines. The researchers highlight recent promising trials of neoantigen vaccines as a potential model for cryptic antigen-based treatments.

"Recent trials of neoantigen vaccines have shown promising results, making personalised cryptic antigen-based vaccines an appealing treatment strategy," the authors note. They point to successful studies of mRNA-based neoantigen vaccines that have shown effectiveness in preventing melanoma recurrence when combined with immune checkpoint inhibitors.

"Our study suggests that developing personalised antitumor vaccines targeting cryptic antigens in OC could be an effective therapeutic approach," they conclude.

Next steps in research

The next phase of research will involve preclinical testing and clinical trials to evaluate the safety and efficacy of new immunotherapies and vaccines targeting these cryptic antigens. The researchers also plan larger-scale studies to determine the prevalence of cryptic antigen expression across various tumour types.

Dr Curtis and her team believe that understanding how cryptic antigens are processed and presented could provide innovative strategies to enhance immune recognition. In the long term, these efforts could broaden the reach of immunotherapy, making it viable for a wider range of cancers that currently lack effective treatment options.

The discovery represents a significant paradigm shift in how scientists approach cancer immunotherapy, suggesting that effective targets for treatment may lie in previously unexplored regions of the genome. As immunotherapy continues to evolve, this research adds a promising new direction for developing treatments for one of the most challenging forms of cancer. MEH

Reference:

Raja, R., Mangalaparthi, K. K., Madugundu, A. K., et. al. (2025). Immunogenic cryptic peptides dominate the antigenic landscape of ovarian cancer. *Science Advances*, 11, eads7405. https://doi.org/10.1126/sciadv.ads7405

Rice-led research discovers focused ultrasound enhances cancer-killing effects of protein therapy

A groundbreaking mechanotherapy approach combining low-intensity focused ultrasound with TRAIL protein shows significant reduction in prostate cancer tumours through synergistic activation of cell death pathways.

A collaborative study led by researchers at Rice University and Vanderbilt University has demonstrated that combining a protein therapy called tumour necrosis factor related apoptosis-inducing ligand (TRAIL) with focused ultrasound (FUS) can significantly reduce tumour size in prostate cancer models. The research, published in the journal *Advanced Science* on 21 February 2025, represents the first evidence that low-intensity mechanical force combined with TRAIL can effectively treat cancers.

"There is urgent need to improve how we treat advanced and recurrent prostate cancer, which is the second-leading cause of death among men in the United States and is the most frequently diagnosed cancer in more than 100 countries," said study lead author Michael King, the E.D. Butcher Professor of Bioengineering at Rice University. "We have now found a safe, effective and noninvasive way to enhance the antitumor effects of a specific cancer drug (TRAIL), a promising finding which we are hopeful can soon be translated for clinical care."

The challenge with current cancer treatments

Current standard-of-care treatments for prostate cancer often come with severe adverse effects. High-intensity focused ultrasound (HIFU) therapies have gained attention for their ability to target tumour tissue specifically, but they can still cause unwanted side effects such as skin burns and urinary complications.

TRAIL protein specifically induces death in cancer cells while sparing healthy cells. However, despite promising labora-

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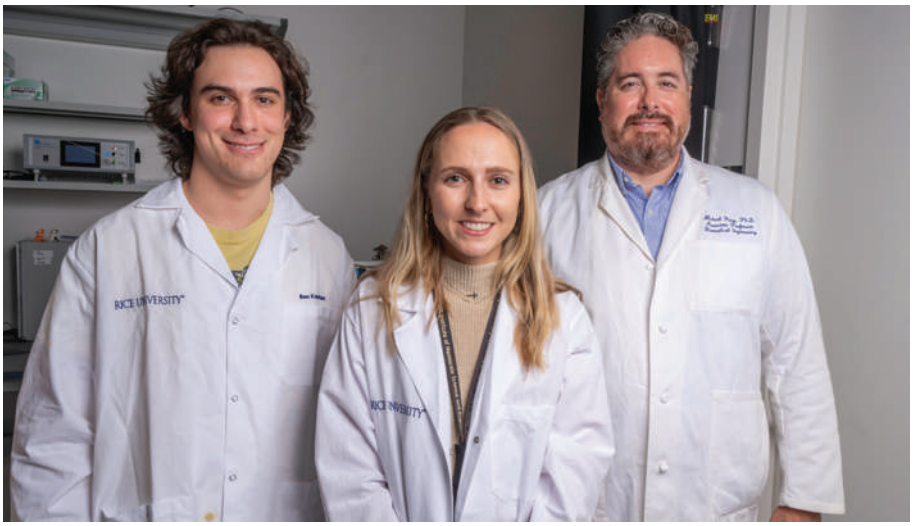

Photo by Gustavo Raskosky/Rice University

(from left) Benjamin Kaufman, Abigail Fabiano and Michael King

tory results, clinical trials with TRAIL have shown limited success due to its very short half-life in circulation (approximately 30 minutes).

"Previously, we had found certain mechanical forces like fluid shear stress could amplify the anticancer effects of TRAIL with an influx of calcium and activation of a protein called Piezo1 that triggered cell death," explained King. However, fluid shear stress is only present in circulatory and lymphatic systems, making it ineffective against solid tumours.

How focused ultrasound enhances TRAIL's cancer-killing effects

The researchers discovered that low-intensity focused ultrasound (LIFU) can mechanically activate Piezo1, a mechanosensitive ion channel that enhances TRAIL's cancer-killing abilities. This activation allows calcium to enter cancer cells, triggering the intrinsic apoptosis (cell death) pathway.

Using prostate cancer cell lines, graduate students Abigail Fabiano and Malachy Newman performed experiments to optimise the ultrasound parameters while ensuring nearby healthy cells remained unharmed. The team found that combination therapy of FUS and TRAIL was much more effective than either treatment alone.

"As the FUS pressure increased, the TRAIL-mediated apoptosis increased more notably in the PC3 cells in comparison to the LNCaP cells," the authors state in the paper. This is significant because PC3 cells represent a more advanced metastatic state of prostate cancer than LNCaP cells, suggesting the therapy could be effective against aggressive forms of the disease.

The researchers confirmed that the mechanism behind this enhanced effect involves Piezo1 activation by:

Demonstrating reduced effectiveness when they blocked calcium with chelating agents

Using pharmacological inhibitors of mechanosensitive ion channels

Conducting gene knockdown experiments targeting Piezo1

"These results exemplify that disruption of the mechanoactivation of Piezo1 affects the efficacy of this combination therapy to induce apoptosis," the authors note.

Impressive results in animal models

When tested in mouse models, the combination therapy significantly reduced tumour burden compared to either FUS or TRAIL alone. The researchers administered two treatments, six days apart, and monitored tumour growth for 62 days.

On day 62 post-tumour cell inoculation, the mean volume of tumours treated with the combination therapy was 529 ± 170 mm^3, significantly smaller than tumours treated with control or single treatments. Importantly, the researchers found no evidence of harmful thermal effects or damage to surrounding tissues.

"Overall, higher Piezo1 expression correlated with lower tumour burden in vivo, and decreased for the FUS condition," the authors report. "Considering that Piezo1 is elevated in PCa, this could indicate that the mechanical effects of FUS alone can both activate and potentially downregulate expression of Piezo1 over time."

The team also examined different time intervals between TRAIL injection and FUS exposure, finding that immediate application (0 hours) and 4-hour intervals produced the best results in reducing tumour growth.

Clinical translation potential

"This mechanotherapy offers a clinically translatable approach by utilizing widely available FUS technology, applicable to treat additional cancer types," the authors conclude. The approach has several advantages over existing therapies:

- It uses low-intensity FUS, avoiding thermal ablation and damage associated with higher-intensity treatments
- The therapy is noninvasive and precisely targeted
- It activates cancer cell death pathways while sparing healthy cells
- The mechanical index used was well below FDA safety limits

"Development of noninvasive, safe, and effective treatment options for PCa are sorely needed, considering the risk that other therapeutic options impose on the patient's quality of life," the authors state in their discussion. "The mechanotherapy presented here exemplifies how FUS can target tumours and enhance the pro-apoptotic effects of soluble TRAIL."

Future directions

The researchers suggest this approach could be combined with other cancer therapies or modified to treat different types of cancer. The technology is particularly promising because focused ultrasound equipment is already widely available in clinical settings.

"This foundational study provides crucial preclinical insights that can be used to develop a novel combination therapy for prostate cancer," said King. "Furthermore, it opens the doors to many new avenues for using mechanotherapy in medicine and has far-reaching implications in how FUS and other mechanical therapies can be combined with small-molecule protein therapy and other drugs to effectively treat various types of cancers with fewer adverse effects in the future."

The research team believes this mechanotherapy could be easily translated to examine success in treating other cancers, including those that are difficult to treat with conventional methods. MEH

Reference:

Fabiano, A.R., Newman, M.W., Dombroski, J.A., et. al. (2025). Applying Ultrasound to Mechanically and Noninvasively Sensitize Prostate Tumors to TRAIL-Mediated Apoptosis. *Advanced Science*, 2412995. https://doi.org/10.1002/advs.202412995

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The Ohio State University Comprehensive Cancer Center – Arthur G. James Cancer Hospital and Richard J. Solove Research Institute (OSUCCC – James *https://cancer.osu.edu*) is dedicated to creating a cancer-free world by integrating scientific research with excellence in education and patient-centered care – a strategy that leads to better methods of prevention, detection and treatment.

Ohio State has been designated a National Cancer Institute (NCI) Comprehensive Cancer Center for nearly 50 years and is one of only a few centers funded by the NCI to conduct phase I, II and III clinical trials on novel anticancer drugs provided by the NCI. In its last three formal reviews for five-year re-designation, the university's cancer program, embodied in the OSUCCC – James, has received the NCI's highest descriptor of "exceptional."

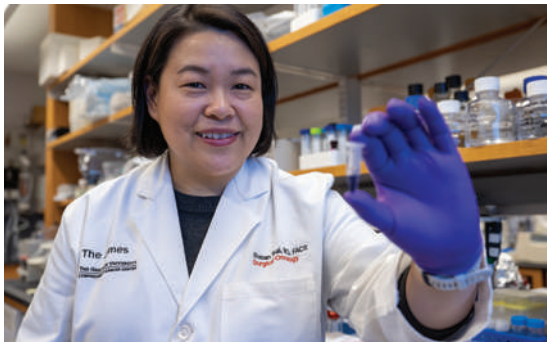
The OSUCCC – James has $140 million in active cancer-relevant research funding, and over $76 million of that total – more than half – comes from the NCI. In 2023 alone, Ohio State cancer researchers received 46 new research grants from the NCI.

Cancer research

The OSUCCC – James has over 320 full or introductory cancer researchers who collectively represent 12 of the 15 colleges at Ohio State. Each researcher is a member of one of five multidisciplinary research programs: Cancer Control; Leukemia and Hematologic Malignancies; Cancer Biology; Molecular Carcinogenesis and Chemoprevention; or Translational Therapeutics. In 2023, these researchers authored or co-authored 941 publications in peer-reviewed journals. In addition, OSUCCC – James researchers opened 140 clinical trials in 2023, bringing the total number of cancer clinical trials at Ohio State to approximately 650. These studies offer the latest cancer treatments, some of which are available nowhere else.

As the cancer program's 356-bed adult patient-care component, The James is the third-largest cancer hospital in the United States and one of the top cancer hospitals in the nation as ranked by *U.S. News & World Report*. With 21 floors and more than 1.1 million square feet, The James is a transformational facility that fosters collaboration and integration of cancer research and clinical care. Because early diagnosis is the key to successful cancer treatment, The James Cancer Diagnostic Center at the OSUCCC – James provides patients who may have cancer with direct, expedited access to diagnostic testing.

The OSUCCC – James since 2014 has enrolled nearly 70,000 patients in a Total Cancer Care® (TCC) protocol for voluntarily sharing de-identified clinical data that advances cancer research and personalizes cancer care. The TCC protocol has been adopted by all 19 member institutions across the United States that constitute the Oncology Research Information Exchange Network (ORIEN), a research collaboration co-founded and co-anchored by the OSUCCC – James and Moffit Cancer Center in Tampa, Florida. Through ORIEN, TCC-consented patients across the United States donate clinical data for research that helps scientists better understand cancer at the molecular level.



International reputation and global destination

Because of its international reputation for providing outstanding research-based cancer care, the OSUCCC – James is regarded as a global destination of choice, serving patients from all 50 U.S. states, three U.S territories and 90 other countries. The institution's Destination Medicine Global Health Care team <*https://cancer.osu.edu/destinationmedicine*> is dedicated to ensuring that distance and language are no obstacles to receiving the internationally recognized cancer care available at Ohio State. MEH

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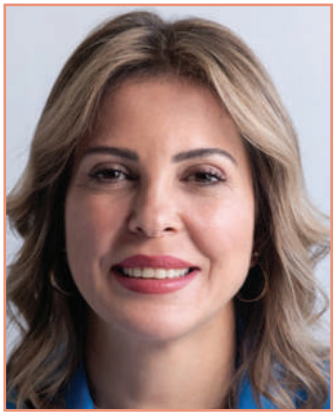
Scan to learn more about Ohio State's Destination Medicine Global Health Care program

The future of oncology in the Middle East



In this in-depth exploration, **Olfat Berro**, Area Head Middle East for Roche Pharmaceuticals, examines how technological innovations and strategic partnerships are transforming cancer care across the Middle East. Drawing on over 20 years of healthcare experience, Berro highlights the shift from standardized treatments to personalized medicine and outlines how collaborative efforts are creating more accessible, patient-centred oncology care systems throughout the region.

When I began my career in healthcare over 20 years ago, cancer was a diagnosis that often left patients and their families feeling powerless. Back then, most treatment options were limited and uniform – a one-size-fits-all approach that did little to address the complex, individual realities of those facing this disease. I remember hearing from patients on the weight of each diagnosis, the struggle to find any hope in a system that could only offer standardised treatments, and the overwhelming need for better solutions. Today, that story has drastically changed.

In my experience in the pharmaceutical industry, I have witnessed an extraordinary transformation. The emergence of technologies like artificial intelligence, precision diagnostics, and targeted as well as immune therapies has not only redefined what is possible in cancer care but also reshaped our entire approach.

From a traditional journey to a personalized one

Breakthroughs in science have turned what once could make us feel powerless into a journey of hope and possibility. This cancer journey is reflected in the shift from uniform treatment protocols to approaches that tailor care to the individual. We now recognise that cancer is not a single disease, but an umbrella term for over 200 distinct conditions – each with its own genetic and molecular fingerprint. This realisation has paved the way for personalised medicine, where treatments are customised to address the unique biology of each patient's tumour. In the Middle East, the impact of these innovations is particularly significant. In our region, where early detection has historically been a challenge due to varying levels of healthcare infrastructure, the promise of precision oncology offers a new hope. For instance, in breast cancer – a leading cause of mortality among women – the advancement of targeted therapies has dramatically improved survival rates. Similarly, in lung cancer, the use of molecular profiling enabled oncologists to choose treatments that are far more effective than traditional methods, significantly enhancing patient outcomes.

Harnessing technology and data for better cancer outcomes

Technological innovation is at the heart of this revolution. Artificial intelligence and data analytics are transforming every stage of cancer care – from early diagnosis to treatment optimisation and patient follow-up. AI-powered imaging tools, for example, are now capable of detecting patterns in scans that may be invisible to the human eye, allowing doctors to identify tumours at their earliest stage

and with greater accuracy. There has also been a shift towards non-invasive diagnostics with liquid biopsies, a simple blood test that can detect tiny traces of cancer-related biomarkers, which allow doctors to monitor cancer in real time, track how well a treatment is working, and even detect cancer before symptoms appear.

Beyond modern technology, data is playing a critical role in shaping the future of oncology. By harnessing vast amounts of real-world data from clinical trials, electronic health records, and patient registries, we are better equipped to understand treatment responses and refine therapeutic strategies. This data-driven approach means that every new breakthrough is not only a scientific achievement but also a step towards more efficient and effective patient care. In the Middle East, where timely access to care can significantly alter outcomes, these innovations are especially critical.

The importance of partnerships in the Middle East

Transforming cancer care is not just about innovation – it's about ensuring that breakthroughs reach the people who need them most. A truly sustainable healthcare system must provide timely access to cutting-edge treatments while strengthening its capacity to meet future challenges. This can only be achieved through collaboration.

Across the Middle East, Roche recognizes its role as a healthcare partner. Multi-sector collaborations with healthcare stakeholders are essential in supporting the entire patient journey – from raising awareness and ensuring early detection to harnessing data for personalised care, improving treatment access, and ultimately enhancing outcomes.

Now more than ever, working together is essential to create stronger, more resilient, and responsive health systems. The journey begins with public awareness. Empowering communities with knowledge about cancer prevention and early screening is the first step towards early intervention. By working closely with the Iraqi government to advance healthcare outcomes, one of our main priorities is increasing awareness for early detection and supporting community education for diseases like oncology. These initiatives help patients and their families understand the importance of regular check-ups.

By harnessing vast amounts of real-world data from clinical trials, electronic health records, and patient registries, we are better equipped to understand treatment responses and refine therapeutic strategies.

However, awareness alone is not enough – it must be backed by early detection tools and technologies. AI-driven screening solutions are playing a transformative role in identifying cancer at its earliest stages with remarkable precision. Collaborative projects with Microsoft & Lunit Global in Iraq and Egypt have introduced AI-driven screening tools that analyse mammograms with up to 96% accuracy – an innovation that significantly reduces late-stage diagnoses and enables timely, life-saving interventions.

Beyond detection, real-world data is redefining personalised care. By leveraging advanced analytics, healthcare professionals can refine treatment pathways, optimise resource allocation, and move beyond one-size-fits-all approaches. In Bahrain, collaboration with the National Health Regulatory Authorities (NHRA) is advancing clinical research and harnessing real-world data to strengthen pharmacovigilance and regulatory frameworks. These efforts are ensuring that treatments are not just innovative but also precisely tailored to individual patient needs, leading to better responses and improved quality of life.

Of course, even the most advanced treatments are meaningless if patients cannot access them. Ensuring availability and affordability is a cornerstone of sustainable healthcare. Strategic partnerships in our region have led to the development of funding models and infrastructure improvements that make cutting-edge treatments available to patients. Through our collaboration in Lebanon, tailored Patient Support Programs (PSPs) in oncology have helped thousands of patients access critical treatments, ensuring continuity of care. Early access initiatives are also bridging gaps, ensuring that patients benefit from the latest advancements in cancer therapy.

Ultimately, the future of oncology in the Middle East is a shared responsibility. When we work together with trust, common values, and a clear focus on long-term impact, every scientific breakthrough can be matched by the infrastructure and policies needed to deliver life-saving care. This collective effort ensures that every patient benefits from the highest standard of care.

Looking ahead: A call for collective action

In the Middle East, where healthcare landscapes are diverse and evolving rapidly, our mission is clear: to dismantle barriers and build resilient, patient-centred systems that make early detection and personalised treatments a reality for all. Every initiative – from pioneering screening programmes to integrating advanced diagnostics into everyday care – demonstrates our commitment to transforming cancer care from a challenging diagnosis into a journey of hope.

Our approach is grounded in collaboration. We know that when like-minded partners – governments, healthcare providers, and patient advocacy groups – join forces, the collective impact far exceeds what any one organization can achieve. I have witnessed how partnerships across the region have improved outcomes and created a future where innovative oncology solutions become the norm, not the exception. Together, by harnessing technology, nurturing partnerships, and keeping patients at the heart of every decision, we can build a future where cancer care is not only advanced and accessible but truly transformative for generations to come. MEH

The XProject, the Equity 2030 Alliance, and the Women-Centric Cancer Care approach

Female leadership in healthcare can accelerate changes towards equity. Here's an example: as a healthcare company, Roche has a long-standing history in women's health, pioneering diagnostics and treatments for conditions that primarily address women. However, that was not all. The company recognised the systemic blindness to the experiences and needs of women and decided to act. Teresa Graham, CEO of Roche Pharmaceuticals, was one of the driving forces for the XProject, an ongoing initiative aiming to close the gaps in women's health through partnerships, funding, and action to create better health outcomes for everyone.

The 'X' in XProject represents the female chromosome that has historically been overlooked. The project has grown into several initiatives spanning health, technology, and financing. One of the actions is the #MyStoryForChange campaign. Since its launch in early 2023, over 650 women from around the world have shared stories about their healthcare experiences, revealing the stark knowledge gaps in women's health as well as the discrimination and stigma that women often face.

To address this critical issue, the United Nations Population Fund (UNFPA) has launched the Equity 2030 Alliance < *https://www.unfpa.org/equity-2030-alliance* >, a pioneering global initiative aimed at achieving gender equity in science, technology and financing by 2030. Leaders from the private sector, academia and government are joining efforts to advance gender-inclusive solutions in health science and technology, as well as ensuring adequate financing of women-centric solutions and research.

The living testimonials from women of the #MyStoryforChange campaign were also vital in understanding why women-centric approaches to cancer care are so important. According to the Lancet Commission on Women, Power and Cancer <*bit.ly/3XFz9gi*>, cancer leads to premature death of 2.3 million women every year. A diverse group of stakeholders convened at the FemTechnology Summit and published a discussion paper, <*https://femtechnology.org/wp-content/uploads/2019/07/WCCC-Discussion-Paper.pdf*>, advocating the immediate need for Women-Centric Cancer Care (WCCC), which includes better access to screening, early detection, and treatment, and is vital to hopefully avert all of those deaths. MEH

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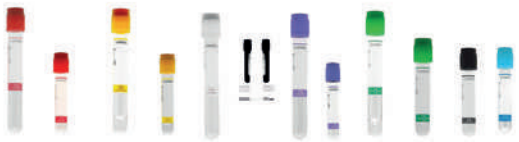

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Oneject Vacuum Collection Tube are made of unbreakble PET tube, butyl rubber stopper and polyethylene cap. All components of Vacuum Collection Tube systems improve patient's comfort, help safe and quality blood collection and also reliable test results.

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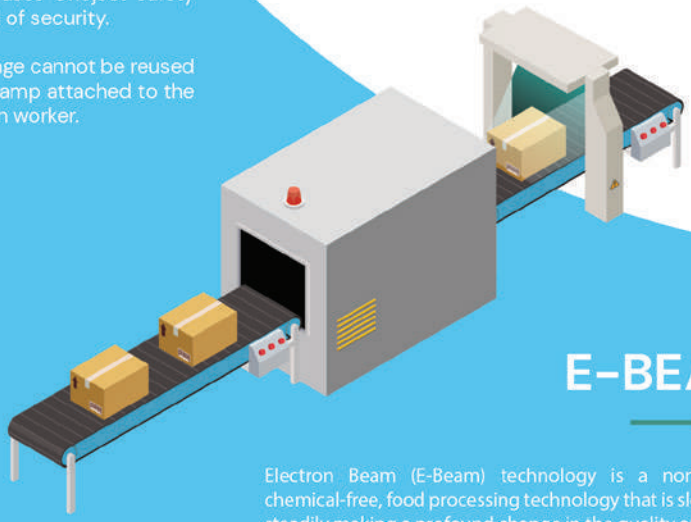
Safeject Disposable Syringe that uses Oneject Safety Needle so that it has a higher level of security.

After injection, the automatic syringe cannot be reused and the needle is closed with a stamp attached to the needle, so it will not hurt the health worker.



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Gilead and Kite Oncology's vision of transforming cancer care in the Middle East with CAR T-cell therapy

Kite Oncology, aquired by Gilead Sciences in 2017, is pioneering CAR-T cell therapy and addressing the rising cancer burden in the Middle East, where new cases are projected to double by 2040. With more than 25,000 patients treated globally across 455 centres, their engineered cell therapy offers promise for blood cancer patients through modification of immune system cells, potentially transforming regional oncology care through strategic partnerships and infrastructure development. *Middle East Health* speaks to **Diego Santoro**, General Manager and Head of International Kite, to find out about the company and their CAR T-cell therapy.

Diego Santoro

***Middle East Health*: Looking at cancer patients in the Middle East region, what do you consider to be the biggest unmet need for them, and can you elaborate on the resulting impact?**

■ **Diego Santoro:** Cancer incidence in the Middle East is on the rise. According to research, new cancer cases in the region are set to double by 2040, and we also know that blood cancer remains among five of the most common cancers in this region.

While the quality of care is high and circumstances differ in each country, delays in cancer detection and diagnosis are contributing factors to lower survival rates. This can mean that patients present at hospitals at advanced stages, by which time they have limited treatment options available to them

To change this status quo of poor prognosis, we need to work together with the healthcare systems to provide access to innovative treatments that can offer new hope to patients in the Middle East.

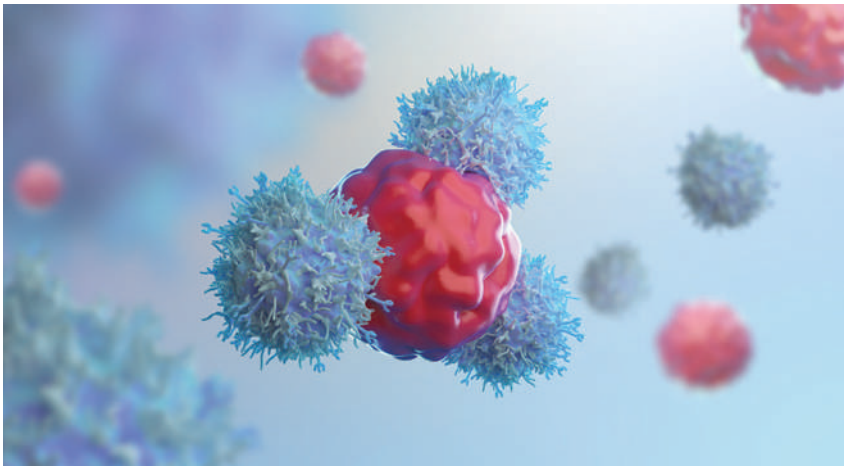
MEH: How does CAR T-cell therapy fit into this and how does it address the unmet patient need?

■ One of the most important medical breakthroughs to occur in decades is chimeric antigen receptor (CAR) T-cell therapy. It is an innovative and individualised one-time treatment that engineers a patient's white blood cells to harness their own immune system to treat certain kinds of blood cancers. The treatment has already demonstrated promising results in patients with the ability to induce complete response (no detectable cancer) and/or improved overall survival. If you look at Gilead and Kite Oncology's figures alone, more than 25,000 patients have been treated with our CAR T-cell therapies at more than 455 authorised treatment centres globally. Alongside hope for patients, CAR T-cell therapies also offer potential opportunities for health systems to be more effective and efficient in the treatment of blood cancers.

MEH: What is the status of access to innovative cancer therapies in the Middle East and are there any opportunities to expand this?

■ **DS:** Despite the long-term benefits of CAR T-cell therapies to both patients and health systems, only a fraction of eligible patients is receiving it due to barriers to access innovative therapies such as these. To address those barriers, there needs to be a broader understanding of CAR T-cell therapy and its value, which can enable healthcare stakeholders to create strategies that increase patient access. We recognise the Middle East's commitment to healthcare innovation and share this vision.

As experts and pioneers in cell therapy, Gilead and Kite Oncology's focus is on



bringing the benefits of cell therapy to patients in the region through investment in research and development projects which we believe can successfully meet their needs. To support this, we continue to work closely with relevant authorities across the Middle East.

MEH: Why is the Middle East region an important market for Gilead and Kite Oncology?

■ **DS:** The Middle East embodies healthcare innovation powered by an openness to embrace cutting-edge technologies. This attitude together with the real-time transformation of the healthcare sector not only improves patient outcomes, it also creates a model for other regions. It is this kind of nurturing ground that can break down the barriers to access and bring hope to patients.

MEH: What objectives does Gilead and Kite Oncology have for CAR T-cell therapy in the Middle East?

■ **DS:** With our strong international experience and our established best practices in innovative cell therapies, we are strongly positioned and committed to build knowledge and capacity with our partners in the Middle East.

We believe in strategic and collaborative partnerships, within the region's health and oncology ecosystem, to help build the capabilities, referrals, protocols and data processes so, together, we can lead a new frontier of cancer innovation.

We are committed to working closely with regulatory authorities to ensure eligible patients gain access to further treatment options to transform their prognosis and outcomes.

MEH: How is Gilead and Kite Oncology's experience of bringing advanced therapies to patients going to help regional stakeholders and decision makers?

■ **DS:** Gilead and Kite Oncology's CAR T-cell therapies are approved in more than 40 countries, including China, Japan and Singapore, with a network of more than 455 authorised treatment centres globally and growing. With this infrastructure that also supports Kite Oncology Middle East, we have the resources and experience to rapidly accelerate cell therapy research and development and drive continuous scientific and medical innovation. Additionally, as mentioned, we have the most patient experience of any CAR T-cell therapy company, with more than 25,000 patients treated through our clinical trials and commercial products.

An important success factor for us, alongside our extensive experience, is to support the local vision wherever we bring our therapies. In other words, we develop people in the region to take cancer innovation forward so we can truly support the regional countries' own health strategies.

MEH: How does Gilead and Kite Oncology envision working with different healthcare stakeholders in the region?

■ **DS:** We know that our ambitious goal of curing cancer cannot be achieved alone. Through key partnerships and collaborations in the region, we envision further building on our research and development efforts to ultimately change the outcomes for people living with difficult-to-treat blood cancers in the Middle East.

The time for transformative cancer care is now. Through stakeholder collaborations across every facet of the health system – regulators, industry, academia, providers, and advocates – we're ushering in a new era of cancer therapy in the Middle East. MEH

Climate change and healthcare: A $65 billion investment to save millions of lives

A strategic investment in climate-resilient healthcare solutions could avert 6.5 million deaths and prevent $5.8 trillion in economic losses by 2050

Climate change is rapidly emerging as the most significant public health crisis of our generation, with impacts far exceeding those of the COVID-19 pandemic. According to new research from the World Economic Forum and Oliver Wyman, climate-related events are projected to cause an additional 14.5 million deaths and cost the global economy $12.5 trillion by 2050. However, a coordinated strategic investment of $65 billion in prevention, diagnostics and treatment could potentially halve these devastating impacts.

The growing health emergency

The climate-health crisis is already unfolding before us. Drought in eastern Africa has affected more than 10 million people, while hurricanes in the southern United States have left hundreds dead and thousands homeless. Vector-borne diseases like dengue fever are appearing in unprecedented numbers beyond their usual geographic range, with cases now documented in Europe and North America.

Professor Shyam Bishen, Head of the Centre for Health and Healthcare at the World Economic Forum, emphasises the urgency: "Climate change is a health emergency. We are on track for a world that is more than 2°C warmer than today, resulting in increased frequency of climate events and longer-term changes such as saltwater intrusion from rising sea levels."

These climate-driven health impacts will disproportionately affect the most vulnerable. The Forum's research indicates mortality rates in Africa will be more than 20 times greater than in North and Central America and almost 14 times worse than in Europe. Asia is similarly disproportionately affected, with projected mortality rates more than 13 times worse than North and Central America.

Vector-borne diseases: Expanding threats

The relationship between climate change and vector-borne diseases is particularly alarming. Higher temperatures and altered precipitation patterns extend mosquito breeding seasons and geographic range, creating ideal conditions for disease transmission.

Malaria alone is projected to cost an additional $1 trillion and add 409 million disability-adjusted life years (DALYs) by 2050 due to climate change. In central Africa, malaria is expected to cost healthcare systems around $345 billion and add 151 million DALYs by mid-century. Even more economically developed regions are not immune – the United States recorded cases of domestic malaria transmission in 2023 for the first time in 20 years.

Dengue fever presents a similar threat. Asia will bear the heaviest burden, with 66,000 dengue-related deaths, 5.8 million DALYs, and healthcare costs soaring to $105 billion by 2050. Africa faces 28,000 deaths, 2.1 million DALYs, and economic costs of $13 billion in the same timeframe.

Mental health: The hidden impact

Climate events also pose significant mental health challenges. Acute disasters such as floods and storms expose individuals to traumatic experiences that can trigger post-traumatic stress disorder (PTSD), including loss of family members, homes, and livelihoods.

In South-East Asia, where floods are frequent and severe, these events are expected to cause $147 billion in PTSD-related healthcare expenses and 41 million DALYs by 2050. Globally, PTSD from climate events is projected to cost $397 billion and cause 85 million DALYs.

Generalised anxiety disorder (GAD) often develops in response to prolonged stress and uncertainty from climate events. The global impact is expected to reach $1.5 trillion and 378 million DALYs by 2050. In the western United States, GAD linked to wildfires is estimated to cost $709 billion, with 36 million DALYs.

Child health and nutrition under threat

Stunting in children, already a significant global health challenge affecting millions under five in less economically developed countries, will be further exacerbated by climate change as rising temperatures threaten food availability. By 2050, the global cost of stunted development is projected to be $1.8 trillion, impacting 887 million DALYs.

Regional disparities are stark. In the Mediterranean region, stunting is expected to lead to economic losses of $700 billion and affect 16 million DALYs. In West Africa and Southern Africa, it is projected to incur losses of $231 billion, affecting 727 million DALYs.

A strategic response: The $65 billion solution

The report identifies a pathway to avert nearly half of these projected health and economic impacts through strategic investments in

vaccines, medicines, medical devices, health technology and climate services.

"Our research demonstrates that a well-directed investment of $65 billion over the next five to eight years could significantly reduce the projected health and economic burden of climate change," explains Terry Stone, Global Leader of Health and Life Sciences at Oliver Wyman. "This amounts to less than 5% of normal annual R&D spending by the pharmaceutical industry."

These investments could potentially save 6.5 million lives, reduce global economic losses by $5.8 trillion, and prevent one billion disability-adjusted life years by 2050. The return on investment is compelling – up to four times in terms of avoided healthcare costs and up to 90 times in terms of total economic loss avoidance.

The report identifies 36 priority investments across prevention, diagnostics and treatment for eight climate-aggravated medical conditions: vector-borne diseases (malaria and dengue), mental health disorders (generalised anxiety disorder and PTSD), stunting, heat-related illnesses, hypertension and asthma.

For malaria, investments in adult vaccines, more effective paediatric vaccines, and treatments for multi-drug-resistant strains could prevent 44% of the projected health and economic burdens – saving 180 million DALYs, preventing $450 billion in economic losses, and averting 3.59 million deaths.

Similar potential exists for other conditions. Interventions targeting dengue fever could reduce global impact by 63%; mental health interventions could prevent 60% of PTSD and 58% of GAD impacts; and measures addressing stunting could mitigate outcomes by 45%, preventing 1.3 million deaths and saving over $753 billion in economic losses.

Overcoming investment barriers

Despite the clear return on investment, several roadblocks currently hinder development of new climate and health solutions. These include uncertain market demand, unpredictable regulation, complexity of climate-health data integration, limited cross-sector collaboration, and low public awareness.

Creating innovative funding mechanisms and harmonised global regulatory frameworks is essential. The success of the Orphan Drug Act in the United States provides a relevant example – this legislation transformed an unattractive investment area into a major growth sector through targeted incentives.

The climate crisis will demand global coordination on an even greater scale than was needed during the COVID-19 pandemic. The positive outcomes from the accelerated COVID-19 vaccine development demonstrate how regulators and industry can work together to reduce bureaucracy and expedite critical healthcare solutions.

Building resilient healthcare systems

As climate change introduces novel vulnerabilities to health systems, a comprehensive resilience framework is needed that encompasses both resistance (mitigation and adaptation) and recovery (first response and treatment).

Climate-resilient infrastructure – such as hospitals with heat regulation systems and storm-resistant designs – will be crucial. One in 12 hospitals worldwide may be forced to close due to extreme weather events by the end of the century.

Critically, addressing health equity issues is a prerequisite for successful delivery of climate-health interventions. The report emphasises that solutions must be tailored to local settings, with particular attention to vulnerable populations in less economically developed regions.

The path forward

The climate-health crisis represents both an unprecedented challenge and a transformative opportunity for the medical community. By mobilising strategic investments and fostering cross-sector collaboration, we have the potential to build more resilient, equitable healthcare systems while saving millions of lives.

Dr Fabrizio Tediosi of the Swiss Tropical and Public Health Institute, who contributed to the report, concludes: "The evidence is clear – climate change is the defining health threat of our century. But with coordinated action across life sciences, healthcare, government and civil society, we can substantially reduce its impact. The window for preventive action is narrowing, but it remains open."

The stark message from this research is that healthcare professionals must become advocates for climate action as a public health imperative. The health of future generations depends on the investments and policies we implement today. MEH

- This feature is based on the *World Economic Forum's January 2025* white paper "Healthcare in a Changing Climate: Investing in Resilient Solutions," produced in collaboration with Oliver Wyman. *https://www.weforum.org/publications/healthcare-in-a-changing-climate-investing-in-resilient-solutions/*

Greening the operating theatre: New review highlights strategies for sustainable perioperative care

A comprehensive review published in the *British Journal of Anaesthesia* outlines practical approaches to reduce the environmental impact of anaesthesia and surgery throughout the entire perioperative journey, with benefits for both patient care and planetary health.

Perioperative services are among the most resource-intensive healthcare activities, contributing significantly to healthcare's substantial environmental footprint. A new narrative review published in the *British Journal of Anaesthesia* provides a roadmap for reducing pollution and waste across the entire continuum of surgical care, from preoperative assessment through to postoperative recovery.

The review, authored by experts from the University of British Columbia, the National University of Singapore, and Yale School of Medicine, emphasises that healthcare providers have both the responsibility and opportunity to mitigate healthcare's environmental impact while simultaneously improving quality of care.

The paradox of healthcare pollution

Healthcare is responsible for 4.6% of global greenhouse gas emissions and a similar proportion of air pollutants, creating what the authors describe as a paradox: an industry dedicated to healing that simultaneously contributes to environmental degradation and associated health harms. Perioperative services are particularly resource-intensive, with operating theatres being among the most energy-demanding hospital areas.

Whilst acknowledging this challenge, the review offers hope: "Opportunities exist to mitigate pollution throughout the entire continuum of perioperative care," the authors write, "including those that occur upstream of the operating room in the process of patient selection and optimisation, delivery of anaesthesia and surgery, and the postoperative recovery period."

Preventing surgical illness

The authors emphasise that the most effective environmental strategy is preventing the need for surgery altogether. They highlight the role healthcare providers can play in both primary prevention and advocacy for systemic changes that address the root causes of surgical conditions.

"Many surgical conditions are avoidable through primary or secondary prevention strategies or good chronic disease management," the review states. Examples include healthcare professionals advocating for legislation and policies that minimise surgical illness, such as seatbelt laws, gun control measures, cycling infrastructure, and screening for intimate partner violence.

Appropriate care and shared decision-making

The review emphasises that high-quality surgical decision-making encompasses selecting the right operation, for the right patient, by the right provider, in the right place. This approach not only improves outcomes but also reduces unnecessary resource utilisation.

Shared decision-making is highlighted as particularly important. When patients are fully informed and engaged in decisions about their care, studies show that approximately 20% of elective procedures would be unwanted under circumstances of optimised decision-making. The authors note that decision support tools not only help avoid unwanted procedures and their associated pollution but also "increase knowledge scores, lead to more realistic perceptions of the benefits and harms of surgical treatment, reduce decisional conflict, reduce uncertainty, and generate greater agreement between patient values and decisional outcomes."

Environmentally conscious anaesthesia choices

The review provides detailed guidance on reducing the environmental impact of anaesthetic practices, noting that inhaled anaesthetic gases are potent greenhouse gases with global warming potentials ranging from 144 to 2540 times that of carbon dioxide.

Desflurane and nitrous oxide are identified as having climate impacts "one to two orders of magnitude greater than that of isoflurane and sevoflurane in clinically relevant doses, suggesting that the former should be avoided when clinically safe." Some health systems have already eliminated desflurane from pharmacy formularies given its outsized environmental footprint and the availability of alternatives.

The authors also advocate for low-flow anaesthesia techniques, which can significantly reduce anaesthetic gas waste, and suggest prioritising intravenous and regional anaesthesia approaches when clinically appropriate. They note that comprehensive environmental impact assessments demonstrate that inhaled anaesthesia emissions are significantly greater

than those associated with intravenous and local anaesthesia.

Circular economy principles for perioperative supplies

Medical devices, particularly single-use consumables, represent another significant source of perioperative emissions. The review advocates for applying circular economy principles to address this issue, including reduction, reuse, repair, reprocessing, and recycling.

"The suite of strategies for maximising material resource value in a circular economy is arranged in a hierarchy, with reduction being the kingpin sustainability strategy," the authors explain. They recommend opening only immediately required items during procedures and keeping "just in case" materials unopened but accessible.

The review cites evidence that reusable products are generally environmentally preferable to disposables. A systematic review of perioperative product life cycle assessments found that reusable products were environmentally preferable across 28 studies encompassing rigid laryngoscopes, laparotomy pads, laryngeal mask airways, surgical linens, and surgical scissors.

The authors also advocate for modular, repairable medical devices and note the potential of hybrid instruments that combine reusable handles with disposable components, which can reduce emissions by approximately 75% compared with fully single-use equivalents.

Operating theatre facility emissions

The review addresses facility-level environmental impacts, noting that the majority (90-99%) of operating theatre energy consumption relates to heating, ventilation, and air conditioning. The authors suggest that while individual clinicians may have limited influence on day-to-day energy consumption, teams can advocate for design modifications, renewable energy sources, and improved efficiency at institutional levels.

They also highlight the issue of nitrous oxide leakage through central piping systems. Studies from hospitals on three continents discovered that "the vast majority of nitrous oxide (75-95%) leaks out through central piping at the point of tank manifold connections before use, and through tank remnant discharge (~10%) before return to vendor." The authors recommend capping outlets of existing piped systems and avoiding new installations.

Postoperative strategies for reduced environmental impact

After surgery, opportunities exist to mitigate environmental impacts by shifting care to less resource-intensive settings, adopting a stewardship approach to inpatient care, and strengthening coordination across the healthcare system.

The authors note the trend toward same-day discharge for procedures previously requiring inpatient stays, including laparoscopic appendectomies, robotic prostatectomies, mastectomies with reconstruction, and joint arthroplasties. They emphasise the role of Enhanced Recovery After Surgery (ERAS) programmes in facilitating early discharge and the potential of home hospital services as "the next evolution of ERAS in delivering patient-centred, value-based, and environmentally sustainable care."

The review also addresses opportunities to reduce unnecessary waste of medical supplies on postoperative wards and in ICUs, and to minimise unnecessary laboratory investigations and diagnostic imaging. A study of acute care general surgery inpatients revealed that 76% underwent unnecessary blood tests during their hospital stay.

Mobile applications and virtual care platforms can also reduce the environmental impact of postoperative follow-up by decreasing in-person visits, emergency department presentations, and readmissions, the authors note.

A holistic approach to sustainable perioperative care

The review concludes by emphasising the need for a holistic approach that considers the entire continuum of care rather than focusing exclusively on operating theatre practices.

"Surgical and anaesthesia teams are positioned to modify considerable swaths of healthcare emissions," the authors write. "Within this holistic approach, clinicians can engage in prevention of surgical illness, ensure appropriate clinical decisions, and be stewards of healthcare resources. Innovation and collaboration are required to redesign clinical care pathways and processes, optimise logistical systems, and address facility emissions."

Perhaps most importantly, the authors highlight that these environmental improvements also enhance care quality: "The results will extend beyond the reduction of public health damages from healthcare pollution to the provision of higher-value, higher-quality, patient-centred care."

This comprehensive review provides a practical framework for perioperative teams seeking to reduce their environmental footprint while improving patient outcomes, demonstrating that sustainability and clinical excellence can be synergistic rather than competing priorities. MEH

Reference:

MacNeill, A. J., Rizan, C., & Sherman, J. D. (2024). Improving sustainability and mitigating the environmental impact of anaesthesia and surgery along the perioperative journey: a narrative review. *British Journal of Anaesthesia*, 133(6), 1397-1409. doi: https://doi.org/10.1016/j.bja.2024.05.042

Greener anaesthesia initiative reduces emissions without compromising patient safety

A health system-wide initiative at Michigan Medicine demonstrates that changes to anaesthesia practice can slash greenhouse gas emissions by 50% in one year, while maintaining excellent patient outcomes.

A significant study from Michigan Medicine reveals that simple changes to anaesthesia practice can dramatically reduce harmful greenhouse gas emissions without affecting patient safety or treatment outcomes. The research, published in *The Lancet Planetary Health* this February, offers compelling evidence that healthcare sustainability initiatives can be implemented without sacrificing quality of care.

Background

Healthcare contributes substantially to global carbon emissions, with an estimated 3% stemming from inhaled anaesthetic agents alone. These agents, including fluorinated ethers and nitrous oxide, have potent environmental impacts – some with warming effects up to 270 times stronger than carbon dioxide.

In March 2022, Michigan Medicine launched the Green Anesthesia Initiative (GAIA) across its facilities. The programme aimed to reduce nitrous oxide use, substitute less environmentally harmful inhaled fluorinated ethers, and increase intravenous anaesthetic use.

Significant environmental impact

The researchers conducted a comprehensive before-and-after study of anaesthesia care delivered across their health system, analysing data from 92,891 general anaesthetics performed over a two-year period – 45,692 cases pre-intervention and 47,199 post-intervention.

After implementing GAIA, the study found a remarkable reduction in harmful emissions. CO_2 equivalents were reduced by 14.38 kg per patient case, representing a 50% drop in greenhouse gas impact from anaesthesia.

"We've shown that small changes in our practice lead to big changes for the environment and, importantly, no changes for the patients," said Douglas Colquhoun, M.B.Ch.B., assistant professor of anaesthesiology at U-M Medical School and lead author of the study.

The magnitude of this reduction is significant – equivalent to removing the emissions from 2.7 million kilometres (1.7 million miles) driven by a standard passenger car.

Agent substitution without compromising care

This impressive reduction was primarily achieved through agent substitution rather than reduced anaesthetic delivery. The department encouraged providers to reduce nitrous oxide use, which fell from 58.3% of cases pre-intervention to 28.9% post-intervention. Similarly, the more environmentally harmful isoflurane was used in fewer cases (44.7% vs 27.3%), while the use of sevoflurane, the least environmentally harmful ether, increased from 44.1% to 68.2% of cases.

Crucially, these changes did not affect patient safety or experience. There was no clinically meaningful difference in median anaesthetic dose delivered, with minimum alveolar concentration changing by just -0.02 units. Pain scores showed a minimal decrease of -0.34 points on a 0-10 scale, and postoperative nausea and vomiting rates remained unchanged.

The study also monitored for intraoperative awareness with explicit recall – a feared complication of anaesthesia care where patients have memories of surgical events despite intended unconsciousness. Only three definite cases were identified across the study period (one pre-intervention, two post-intervention), showing no increase in this serious adverse outcome.

Implementation across a complex health system

GAIA was implemented across Michigan Medicine's extensive system, which includes over 110 anaesthetising locations in three distinct inpatient hospitals and three freestanding ambulatory surgery sites, staffed by approximately 183 attending faculty anaesthesiologists, 129 residents and fellows, and 218 nurse anaesthetists.

"I think the important thing that we showed was that it is possible to significantly reduce the environmental impact of anaesthesia," said David Hovord, M.B.B.Chir., clinical assistant professor of anaesthesiology and co-first author of the study. "We did this while modernising our care and improving safety for patients. This is a great example of where mindful choices, technology and education all come together to make care better for our patients – both directly in the OR and in the environment in which we all live."

Future opportunities

The authors note that further reductions in environmental impact remain possible. The mean fresh gas flow remained relatively high (2.6 L/min) during the study, and reducing this represents an additional opportunity for improvement.

"Modifications to anaesthesia care practice can be performed to substantially reduce environmental impact without detriment to patient outcome," the authors conclude in the journal. "This study suggests that mitigating environmental impact and safe clinical care are not in conflict with each other and consequently creates further scope to reduce adverse environmental impact."

Tony Denton, Michigan Medicine's senior vice president and chief environmental, social and governance officer, praised the initiative: "These impressive results show that we can redesign our long-standing approaches to care without compromising patient safety, quality and outcomes. This is a great example of what we can do to reduce environmental harm and improve public health across the communities and society we serve." MEH

Reference:

Colquhoun, D. A., Hovord, D., Rachel, R., et. al. (2025). Environmental and patient safety outcomes of a health-system Green Anesthesia Initiative (GAIA): a retrospective observational cohort study. *The Lancet Planetary Health*, 9, e124-e133. doi: https://doi.org/10.1016/S2542-5196(24)00331-0

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