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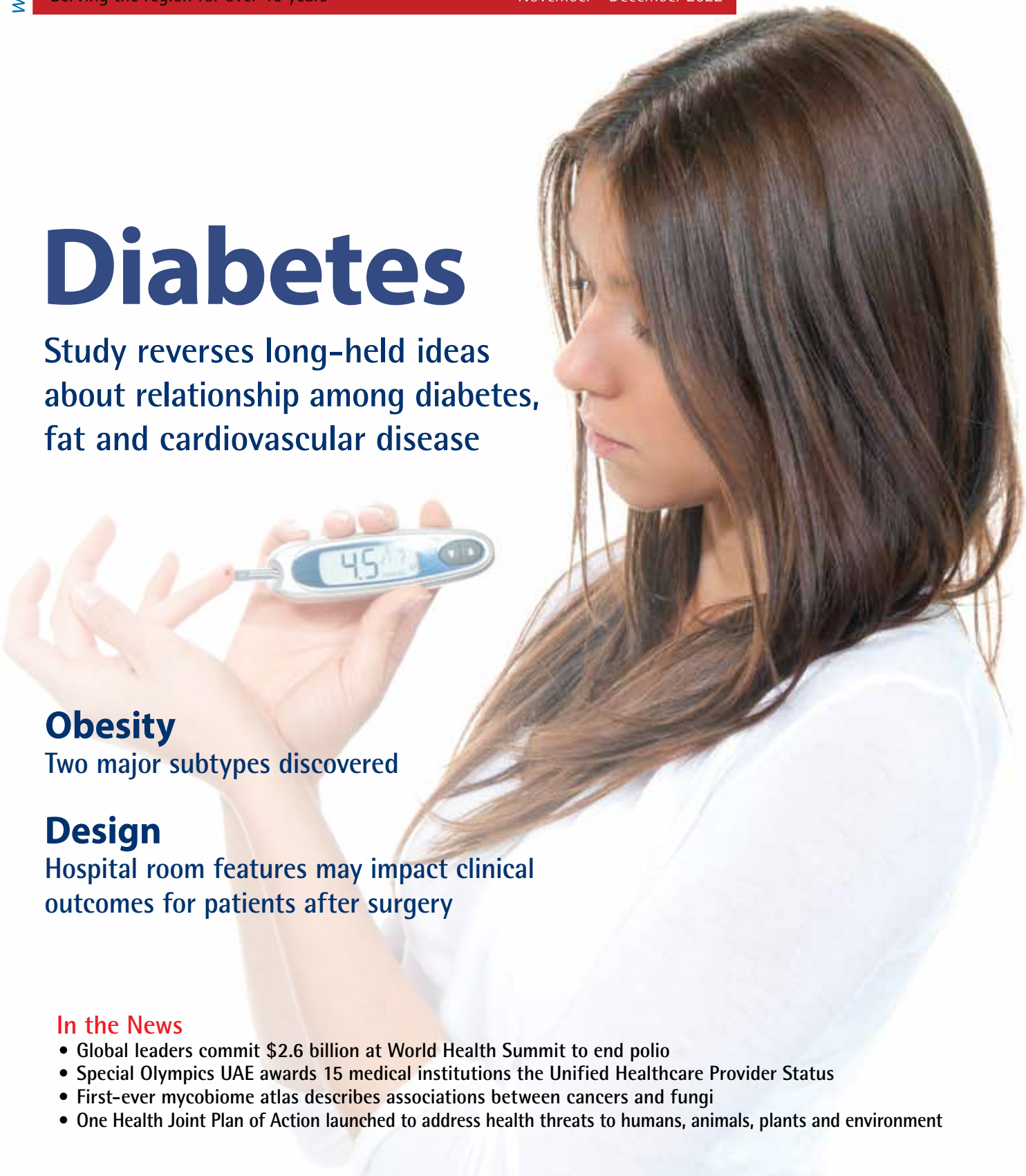

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- Special Olympics UAE awards 15 medical institutions the Unified Healthcare Provider Status
- First-ever mycobiome atlas describes associations between cancers and fungi
- One Health Joint Plan of Action launched to address health threats to humans, animals, plants and environment

Bahrain US$8, **Egypt** US$8, **Iran** US$8, **Iraq** US$8, **Jordan** US$8, **Kuwait** US$8, **Lebanon** US$8, **Oman** US$8, **Qatar** US$8, **Saudi Arabia** US$8, **Syria** US$8, **UAE** US$8, **Yemen** US$8

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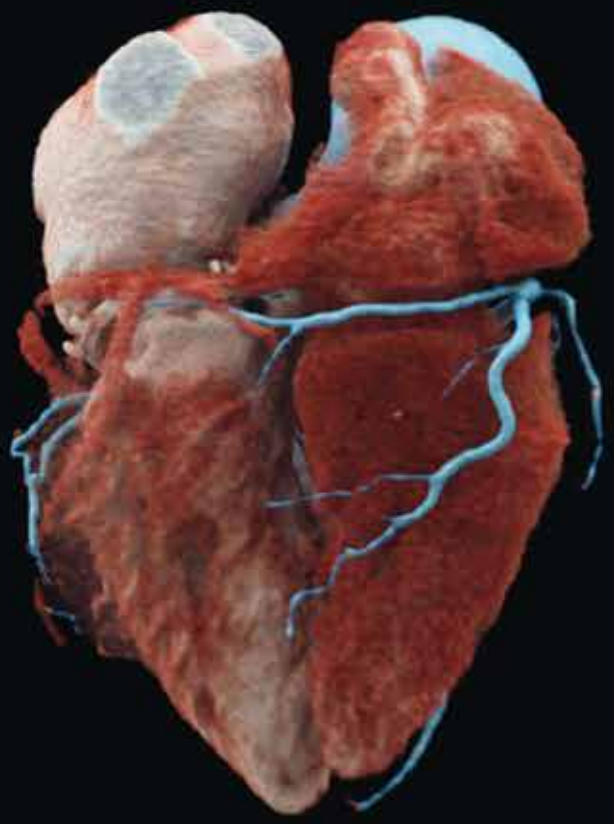

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Prognosis

Prepared for emergencies

In this issue we report on the 69th session of the WHO Regional Committee for the Eastern Mediterranean which was held in October in Cairo. Dr Tedros Adhanom Ghebreyesus, WHO Director-General, and Dr Ahmed Al-Mandhari, WHO Regional Director for the Eastern Mediterranean, addressed the inaugural session. They highlighted the intersecting crises that are taking a severe toll on the health of people in the region. Importantly, they called for investment in resilience, prevention and preparedness, noting how the COVID-19 pandemic showed the potential cost of not strengthening our systems. Dr Al-Mandhari said priority must be given to emergency preparedness and enhancing digital health, while taking bold steps to ensure equity in healthcare.

Several resolutions were adopted, including one encouraging Member States to strengthen health promotion and disease prevention through good governance and health system strengthening. The Regional Committee also issued a resolution to establish a regional Quadripartite One Health Coordination Mechanism comprising high-level representation from the WHO Regional Office for the Eastern Mediterranean and regional offices of the Food and Agriculture Organization of the United Nations, the World Organisation for Animal Health and the United Nations Environment Programme to oversee and manage One Health-related activities within the region. The resolution calls on Member States to increase efforts to institutionalize the One Health approach. The One Health initiative addresses health concerns at the human-animal-plant-environment interface and aims to create a framework to integrate systems and capacity so that we can collectively better prevent, predict, detect, and respond to health threats, ultimately to improve the health of humans, animals, plants, and the environment, while contributing to sustainable development.

Also in this issue we look at some important research from the Joslin Diabetes Centre with implications for people with diabetes. The researchers have identified a new metabolic pathway which shows how endothelial cells drive the body's metabolism. This counters previous thinking as the findings suggest that vascular dysfunction may itself be the cause of undesirable metabolic changes that can lead to diabetes, not an effect as previously thought.

Included in this issue is a sponsored section on the leading hospitals in South Korea that are active in medical tourism. For several years now they have been attracting patients from the Middle East who visit the country for advanced treatment of complex cases.

Also attached to this issue is our annual supplement about leading hospitals in the United States where they outline the cutting-edge treatments they offer to patients from the region.

Remember to keep an eye on our website – *www.MiddleEastHealth.com* – for regular news updates and research developments.

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UAE National Media Council - Approval Number: 2294781.

Middle East Health online
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NEWS FEATURES

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middle east monitor

Update from around the region

Al Jalila Children's Specialty Hospital and Gulf Scientific Corporation announce pilot study to check utility of pharmacogenomics in paediatric patients

Al Jalila Children's Specialty Hospital and Gulf Scientific Corporation (GSC) has launched a pharmacogenomic pilot study to assess if therapeutic plans can be modified based on paediatric patients' genetic information, to ultimately lead to better clinical outcomes, in terms of both efficacy and safety. Al Jalila Children's Specialty Hospital, the first and only dedicated children's hospital in the United Arab Emirates, is at the forefront of pediatric genomic medicine and will work with GSC, a UAE-based company committed to providing laboratories with innovative solutions and best-in-class services to improve patients' quality of life and analytical outcomes.

The purpose of the study is to correlate therapeutic drug responses with pharmacogenetic (PGx) information in previously treated patients with chronic disorders. The study will enrol approximately 200 patients receiving their medical care at Al Jalila Children's Hospital, and the collected DNA samples will be analysed at Al Jalila Children's Genomics Center using the PharmacoScan solution and ThermoFisher's GeneTitan high-throughput system. GSC will provide the systems and reagents as part of the partnership.

Dr Ahmad Abou Tayoun, Director of the Genomics Center of Excellence, Al Jalila Children's Specialty Hospital, said: "Al Jalila Genomics Center of Excellence is determined to bring the latest genomic technologies and applications to better diagnose, manage, and treat patients in the Middle East. The field of pharmacogenomics has recently been expanding, and clinicians at premier healthcare institutions have been utilizing patients' genetic information to guide personalized drug regimens for better clinical outcomes.

"In this pilot study, we will explore the role of pharmacogenomic markers on patients' responses to certain medications and drug doses. In this process, we will also educate clinicians about the emerging role of pharmacogenomics in clinical practice. The ultimate goal will be to inform future plans to implement routine pharmacogenomic testing in clinical settings."

Dr Omar Alsokhni, Director of the Pharmacy Department, Al Jalila Children's Specialty Hospital, said: "Findings of this study will provide guidance for a future approach to initiating a personalized medication plan that is more effective and safer on an individual level rather than using a common conventional treatment regimen." MEH

Cleveland Clinic Abu Dhabi installs advanced ARTIS Icono to treat stroke

Cleveland Clinic Abu Dhabi, has installed the Siemens Healthineers' ARTIS Icono, an advanced stroke interventional system that incorporates 2D and 3D imaging with artificial intelligence.

"With victims of ischemic stroke, the most common type of stroke, timing is crucial," said Dr Khalil Zahra, Chief of Neuro-interventional Surgery in the Neurological Institute of Cleveland Clinic Abu Dhabi. "Minutes count. Typically, we aim for a maximum of about six hours from symptom onset to perform what is called a neuro-thrombectomy, a procedure that dissolves the clot in a patient's brain. This new system makes that process much faster and more precise, which will save lives."

In traditional stroke intervention, the patient begins with a CT scan, and surgeons review imaging manually before operating to dissolve the blood clot. The ARTIS Icono transforms this process using artificial intelligence to deliver unparalleled image quality and reconstruction in real-time. Surgeons can skip a CT scan and begin treatment immediately. This saves precious time, gives surgeons far better visibility, and exposes the patient to less harmful radiation.

"According to the World Health Organization, one in four people run the risk of having a stroke in their lifetime. In the UAE, about 25 percent of UAE adults have hypertension, which puts our population at greater risk of having a stroke," said Dr. Zahra. "Here, stroke is the leading cause of disability and the third leading cause of death. It has never been more crucial to have the most innovative technology available for treating patients. This highly sophisticated system will ultimately help us give stroke victims the finest care in the world and the best possible chance of recovery."

The new system will be housed at the Neurological Institute's Neurovascular Medicine Program and Stroke Center at Cleveland Clinic Abu Dhabi, which offers a full range of the latest diagnostic and treatment options for patients with stroke and other cerebrovascular conditions. MEH

Special Olympics UAE awards 15 medical institutions the Unified Healthcare Provider Status in Abu Dhabi

Special Olympics UAE awarded 15 medical institutions in Abu Dhabi the Unified Healthcare Provider status in an appreciation ceremony held at the International Society for Physical Activity and Health Congress (ISPAH). The nine awarded entities have completed specialized Special Olympics UAE training for medical staff and employees in the healthcare sector who provide care for People of Determination (PoD) with Intellectual and developmental disabilities (ID/DD).

The awarded healthcare entities are UE Medical, Healthplus Networks, Moorfields Eye Hospital Centre, Healthpoint Hospital, Danat Al Emarat Hospital, SEHA - Al Towayya Children's Specialty Centre, SEHA - Al Mushrif Children's Specialty Centre, NMC Royal Khalifa City and NMC Royal the Unified Healthcare Provider Status.

On the occasion, His Excellency Talal Al Hashemi, National Director of Special Olympics UAE said: "Medical appointments for People of Determination with intellectual and development disabilities can be concerning for parents or caregivers, the patient, and medical professionals. The Unified Healthcare Providers Program empowers medical staff with knowledge and evidence-based techniques, that can help them understand POD patients, and deliver compassionate healthcare, that is tailored to their specific needs. This program is in line with the Abu Dhabi Strategy for People of Determination 2020-2024 which was launched by His Highness Sheikh Mohamed bin Zayed Al Nahyan, President of the UAE. It contributes directly to the healthcare pillar of the strategy, which aims to enhance the availability and quality of medical services offered to POD."

The Unified Healthcare Providers Program provides training to qualified medical teams and supporting healthcare staff in hospitals and clinics. To receive the status, medical and healthcare facilities must meet certain criteria, and employees across various medical and administrative departments and specialities must attend a 9-hour training and successfully complete the final assessments.

The awarding ceremony took place at the International Society for Physical Activity and Health Congress (ISPAH), hosted at Abu Dhabi National Exhibition Center (ADNEC) in Abu Dhabi, in collaboration with Abu Dhabi Public Health Centre.

Special Olympics UAE is currently providing Unified Healthcare Providers training to all SEHA clinics across Abu Dhabi, of which two have been successfully accredited. Furthermore, Special Olympics UAE signed a Memorandum of Understanding with Dubai Health Authority, to extend the program to the Emirate.

The Unified Healthcare Providers Program is organized in partnership with the Department of Health, Department of Community Development, Abu Dhabi Public Health Centre, Applied & Behavioral Training Institute, and the Mohammed bin Rashid Center for Special Education. MEH

MoHAP and Injazat to collaborate on developing digital solutions to improve healthcare

The UAE Ministry of Health and Prevention (MoHAP) has signed a Memorandum of Understanding (MoU) with Injazat, the UAE's home-grown technology champion in digital transformation, cloud, and cyber security, to accelerate digital transformation and provide advanced, full-fledged health services.

The collaboration targets the development of multiple digital health solutions, in line with the Ministry's strategic objectives to provide innovative and advanced technology-based and AI-integrated services. The MoU also comes in response to the government's ambitions towards making the UAE a leading international destination in smart healthcare.

The MoU was signed in October by H.E. Ahmed Al Dashti, Assistant Undersecretary for the Support Services Sector in MoHAP, and Dr Mansoor Al Mansoori, Chairman of the Board of Injazat.

The agreement will see MoHAP leverage Injazat's technological capabilities to launch digital solutions that can provide seamless and improved healthcare. Both parties will work together to enable a single, unified platform for patients and providers, as well as establish a strong digital strategy to help all stakeholders adapt to emerging healthcare trends and improve patient experience.

Additionally, to enhance the quality of health services and patients' safety, both parties will develop an innovative platform for data analysis of the population, using a comprehensive and sustainable analysis system. AI-based analysis will equip MoHAP with the necessary insights to improve the policies and processes that can ultimately deliver innovative and comprehensive health services as per the best international standards.

"The MoU defines a new milestone in the Ministry's digital transformation ambitions, enabling MoHAP to leverage AI technology to provide better, more efficient health services. In line with our wise leadership's directives to establish an integrated health ecosystem that ensures

community satisfaction and wellbeing, the collaboration will create sustainable solutions for smart healthcare, in addition to launching innovative projects and initiatives," commented Al Dashti.

"Our partnership with MoHAP is the perfect example of how public and private bodies can contribute to the evolution and advancement of the country's healthcare industry through digital transformation. We will also support the Ministry's efforts to establish a smart, sustainable, and fully integrated health ecosystem," said Ussama Dahabiyeh, Chief Executive Officer at Injazat. MEH

worldwide monitor

Update from around the globe

Global Fund private sector partners pledge record levels of support to End AIDS, TB, Malaria and strengthen systems for health

At the Global Fund's Seventh Replenishment Conference, private sector partners committed more funding, in-kind support and catalytic investment than ever before to end the three deadly diseases. This commitment and strong call to action for other partners to join in was led by the Bill & Melinda Gates Foundation, who committed a record US$912 million, and (RED), who pledged $150 million. With 11 private sector partners continuing their support and 16 new partners pledging for the first time, the total funding pledged grew to $1.23 billion, an increase of $108 million over the Sixth Replenishment.

The Global Fund partnership announced catalytic investments framed to accelerate growth and drive adoption of innovation across a number of crucial pillars of change in its Strategy, including:

- The Children's Investment Fund Foundation, who pledged $33 million to accelerate progress in the fight against HIV transmission by increasing equitable access to medicines like pre-exposure prophylaxis.
- Johnson & Johnson (J&J) and the Skoll Foundation will together provide $25 million as anchor investment in a fund to accelerate the professionalization of community health workers, the backbone to last-mile health care.
- The Rockefeller Foundation and the Abbott Fund committed a total of $20 million to a catalytic fund to strengthen laboratory systems in countries, build stronger regional collaboration and strengthen information systems for data sharing.
- A fund designed to accelerate countries' digital health transformation will be supported by Anglo American and the Anglo American Foundation with $15 million, as well as co-investment commitments valued at least $23 million from Dimagi, Medic Mobile, Medtronic LABS, the Novartis Foundation, Orange and Zenysis.
- SC Johnson and J&J, alongside Project Last Mile, which is celebrating 10 years of partnership, committed to use their expertise and private sector best practices to dramatically improve and accelerate the impact of precision behaviour change in prevention programmes. Roche will provide technical support to improve lab sample transport systems, as well as waste management. Thomson Reuters committed to redoubling efforts to reduce human rights-related barriers to health.
- Malaria No More and the Health Finance Coalition (HFC) launched the Outcomes Fund for Fevers (OFF) in partnership with the Global Fund, Global Citizen, NPX, and the Clinton Health Access Initiative (CHAI). The Fund aims to raise an initial $25 million to increase the quality of fever testing, treatment, and digital reporting through the private sector in sub-Saharan Africa.

"To defeat HIV, TB and malaria, we need innovations, and we need to ensure they reach the people who most need them. This scale of funding and the commitment of the private sector's expertise will help us transform millions of lives," said Peter Sands, Executive Director of the Global Fund. "Our partners are showing incredible leadership. We will not defeat these diseases without the private sector continuing to step up."

Sherwin Charles, the Global Fund Board Member representing the private sector and the CEO of Goodbye Malaria, which also pledged $5.5 million, said: "The Global Fund takes the power of private sector innovation and expertise and rapidly scales access to new solutions for the most vulnerable people, fast-tracks progress in key priority areas, and builds domestic capacity in the countries in which we invest."

> We will not beat these diseases alone; we will defeat them together with the public, private and civil society movement that the Global Fund embodies.

Two partnerships recognized the need to mobilize other forms of investment to accelerate innovation and build domestic capacity. Aligned with the Global Fund's mission to eliminate HIV, TB and malaria, MedAccess will deploy at least $150 million of its capital to secure price and volume agreements to accelerate the access of affordable new products by patients, and HFC intends to launch a $100 million investment fund to scale innovative health models in Africa.

Closing the event, Dr. Donald Kaberuka, Chair of the Global Fund Board, said: "I want to thank the private sector for responding to our call to action. We need to re-energize the world to defeat AIDS, TB and malaria. We will not beat these diseases alone; we will defeat them together with the public, private and civil society movement that the Global Fund embodies. This unprecedented set of resources will allow us to save millions more lives and even more livelihoods. To stop these diseases, we will need to mobilize even greater action, and we welcome more philanthropists, foundations and companies to join our movement."

Philips appoints Roy Jakobs as new president and CEO

Philips shareholders have appointed Roy Jakobs as the company's next president and Chief Executive Officer, effective October 15, 2022, succeeding current president and CEO Frans van Houten.

"I am very pleased that Roy Jakobs has been appointed today as the next CEO of Philips," said Feike Sijbesma, Chairman of the Supervisory Board of Royal Philips. "On behalf of the entire Supervisory Board, I would like to thank Frans for successfully leading Philips' transformation into a focused, global solutions leader in health technology. We are convinced that Roy is the right successor to lead Philips' efforts to help improve the health and well-being of people globally, and further shape the company for increased value creation for shareholders and all other stakeholders."

"I have enjoyed and feel deeply privileged for having been given the opportunity to shape Philips onto a path of future relevance as we embraced health and healthcare innovation as our company focus," said van Houten. "Much has been achieved in the past 12 years and I want to thank the many passionate, talented colleagues who have made this possible. Nevertheless, much remains to be done, and this will now be the task of the Executive Committee under the leadership of my successor. I wish Roy and the team much success."

"I am honoured to be appointed as the next CEO of Philips, and together with our Philips colleagues continue to help improve people's health and well-being with meaningful innovations," said Jakobs. "Philips is a unique company with a strong brand, more than 130 years of innovation power and a bright future as a leader in health technology solutions. I look forward to leading the company in a transparent way, empowering our people as we address the current challenges, while also shaping the next chapter of Philips." MEH

Roy Jakobs, newly appointed president and CEO of Philips

Global leaders commit $2.6 billion at World Health Summit to end polio

Global leaders confirmed US$2.6 billion in funding toward the Global Polio Eradication Initiative's (GPEI) 2022-2026 Strategy to end polio at a pledging event co-hosted by Germany's Federal Ministry for Economic Cooperation and Development at the World Health Summit in October in Berlin.

The funding will support global efforts to overcome the final hurdles to polio eradication, vaccinate 370 million children annually over the next five years and continue disease surveillance across 50 countries.

"No place is safe until polio has been eradicated everywhere. As long as the virus still exists somewhere in the world, it can spread.. We now have a realistic chance to eradicate polio completely, and we want to jointly seize that chance," said Svenja Schulze, Federal Minister for Economic Cooperation and Development, Germany.

Wild poliovirus is endemic in just two countries – Pakistan and Afghanistan. However, after just six cases were recorded in 2021, 29 cases have been recorded so far this year, including a small number of new detections in southeast Africa linked to a strain originating in Pakistan. Additionally, outbreaks of cVDPV, variants of the poliovirus that can emerge in places where not enough people have been immunized, continue to spread across parts of Africa, Asia and Europe, with new outbreaks detected in the United States, Israel and the United Kingdom in recent months.

"The new detections of polio this year in previously polio-free countries are a stark reminder that if we do not deliver our goal of ending polio everywhere, it may resurge globally," said Dr Tedros Adhanom Ghebreyesus, WHO Director-General. "We are grateful for donors' new and continued support for eradication, but there is further work to do to fully fund the 2022-2026 Strategy. We must remember the significant challenges we have overcome to get this far against polio, stay the course and finish the job once and for all."

At a challenging time for countries around the world, governments and partners have stepped forward to demonstrate their collective resolve to eradicate the second human disease ever. The pledging event in Berlin marked the first major opportunity to pledge support toward the $4.8 billion needed to fully implement the 2022-2026 Strategy. If the Strategy is fully funded and eradication achieved, it is estimated that it would result in $33.1 billion in health cost savings this century compared to the price of controlling outbreaks. Further, continued support for GPEI will enable it to deliver additional health services and immunizations alongside polio vaccines to underserved communities.

Mark Suzman, CEO, Bill & Melinda Gates Foundation, said: "The question is not whether it's possible to eradicate polio – it's whether we can summon the will and the resources to finish the job. The Bill & Melinda Gates Foundation is grateful to Germany, Rotarians, donors, countries, scientists, and partners who stood together to show that we are united in this goal. We look forward to working together to create a polio-free future and build more equitable and resilient health systems for all."

The Global Polio Eradication Initiative is a public-private partnership led by national governments with six core partners – Rotary International, the World Health Organization, the US Centers for Disease Control and Prevention, UNICEF, the Bill & Melinda Gates Foundation and Gavi, the Vaccine Alliance. MEH

the laboratory

Medical research news from around the world

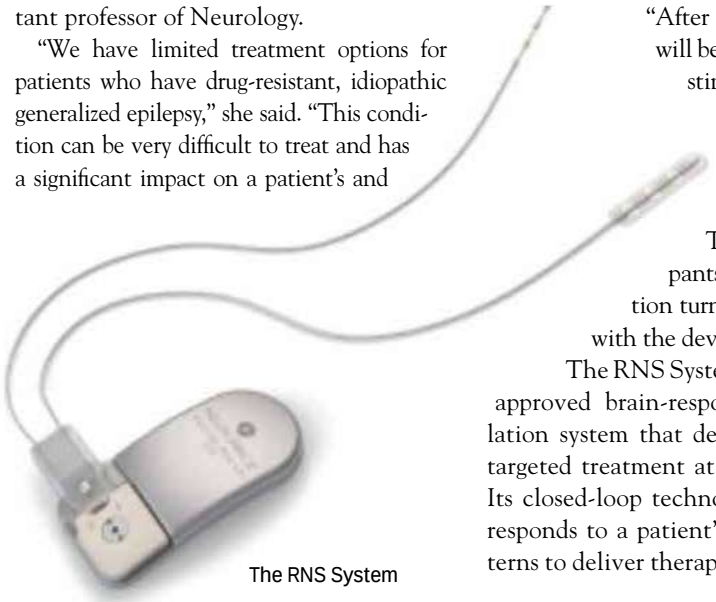
First patient in NAUTILUS study implanted with neuromodular stimulation for treatment of idiopathic generalized epilepsy

A female adult patient with idiopathic generalized epilepsy (IGE) is now the first to receive neuromodular stimulation of the brain to see if it can help with seizures.

IGE, which is diagnosed in childhood or adolescence and often results in lifelong seizures, accounts for 15-30% of epilepsies.

It is the second most common type of epilepsy, after focal onset epilepsy, but there are currently no FDA-approved devices available, according to Vanderbilt University Medical Center (VUMC) co-investigator Angela Crudele, MD, assistant professor of Neurology.

"We have limited treatment options for patients who have drug-resistant, idiopathic generalized epilepsy," she said. "This condition can be very difficult to treat and has a significant impact on a patient's and family's quality of life. I am excited about the possibility of having an FDA-approved treatment for this population, such as a brain-responsive neuromodulation, and giving these patients a better future."



The RNS System

The NAUTILUS clinical study is evaluating safety and effectiveness of the RNS System in individuals age 12 and older with drug-resistant IGE, also known as primary generalized epilepsy. The first procedure took place at VUMC with Crudele and co-investigator Dario Englot, MD, PhD, associate professor of Neurological Surgery.

"After surgery, participants will be randomized to have stimulation turned on or turned off for a period of time, and outcomes will be compared. Then, all participants will have stimulation turned on for treatment with the device," Englot said.

The RNS System is the only FDA-approved brain-responsive neuromodulation system that delivers personalized, targeted treatment at the seizure source. Its closed-loop technology monitors and responds to a patient's unique brain patterns to deliver therapy in real-time, typically before clinical symptoms occur.

Patients with IGE frequently have seizures that cause loss of consciousness and commonly experience injuries from seizure-related falls. Further consequences from uncontrolled seizures include poor cognitive outcomes, depression, decreased social interaction with peers, increased seizure frequency, and sudden unexplained death in epilepsy (SUDEP).

The first patient to be treated in the NAUTILUS study, an adult female, has had drug-resistant epilepsy since infancy, causing her to miss many school days and preventing her from driving a car and working.

"This is a groundbreaking study that could allow individuals who have drug-resistant generalized epilepsy to be treated with the RNS System. Brain-responsive neuromodulation is a proven therapy for drug-resistant focal epilepsy, with long-term studies demonstrating significant seizure reduction and quality of life improvements for patients," said Martha Morrell, MD, chief medical officer of NeuroPace, the company that makes the RNS System.

"I look forward to investigating whether this therapy could provide similar benefits to patients suffering from primary generalized epilepsy, helping to fill a large unmet need in this population," she said MEH

Drug discovery method identifies naturally occurring metabolite that converts 'bad' fat to 'good' fat

"Metabolism" describes the body's chemical changes that create the necessary materials for growth and overall health. Metabolites are the substances made and used during these metabolic processes – or, as a new discovery out of Scripps Research and its drug development arm, Calibr, indicates, they could also be potent molecules for treating severe diseases.

In a study published in *Metabolites* August 2022, the researchers used novel drug discovery technologies to uncover a metabolite that converts white fat cells ("bad" fat) to brown fat ("good" fat) cells. This discovery offers a potential way of addressing metabolic conditions like obesity, type 2 diabetes and cardiovascular disease. Even more, it speaks to the promise of using this creative drug discovery method to identify countless other potential therapeutics.

"The reason many types of molecules don't go to market is because of toxicity," says co-senior author Gary Siuzdak, PhD, the senior director of the Scripps Center for Metabolomics and professor of Chemistry, Molecular and Computational Biology at Scripps Research. "With our technology, we can pull out endogenous metabolites – meaning the ones that the body makes on its own – that can have the same impact as a drug with less side effects. The potential of this approach is even evidenced by the FDA's recent approval of Relyvrio, the combination of two endogenous metabolites for the treatment of amyotrophic lateral sclerosis (ALS)."

Metabolic diseases are often caused by an

imbalance in energy homeostasis – in other words, when the body takes in more energy than it expends. This is why certain therapeutic approaches have centred around converting white fat cells (adipocytes) into brown fat cells. White adipocytes store excess energy and can eventually result in metabolic diseases like obesity, while brown adipocytes dissolve this stored energy into heat – ultimately increasing the body's energy expenditure and helping bring it back into balance.

To uncover a therapy that could stimulate the production of brown adipocytes, the researchers searched through Calibr's ReFRAME drug-repurposing collection – a library of 14,000 known drug compounds that have been approved by the FDA for other diseases or have been extensively tested for human safety. Using high-throughput screening – an automated drug discovery method for searching through large pools of information – the scientists scanned ReFRAME for a drug with these specific capabilities.

This is how they uncovered zafirlukast, an FDA-approved drug used for treating asthma. Through a set of cell culture experiments, they found zafirlukast could turn adipocyte precursor cells (preadipocytes) into predominantly brown adipocytes, as well as convert white adipocytes into brown adipocytes.

While an encouraging find, zafirlukast is toxic when administered at higher doses, and it wasn't entirely clear how zafirlukast was converting the fat cells. This is when the researchers partnered with Siuzdak and his team of metabolite experts.

"We needed to use additional tools to break down the chemicals in zafirlukast's mechanism," says Kristen Johnson, PhD, co-senior author of the paper and a director in Translational Drug Discovery Research at Calibr. "Framed another way, could we find a metabolite that was providing the same functional effect that zafirlukast was, but without the side effects?"

Siuzdak and his team designed a novel set of experiments, known as drug-initiated activity metabolomics (DIAM) screening, to help answer Johnson's question. DIAM uses technologies such as liquid chromatography and mass spectrometry to pool through thousands of molecules and identify specific metabolites. In this case, the researchers were searching through adipose tissue for metabolites that could lead to brown adipocyte cell production.

After reducing 30,000 metabolic features to just 17 metabolites, they found myristoylglycine – an endogenous metabolite that prompted the creation of brown adipocytes, without harming the cell. Of the thousands of metabolic features measured in the analysis, only myristoylglycine had this special characteristic, even among nearly structurally identical metabolites.

"Identifying myristoylglycine among the thousands of other molecules speaks to the power of Siuzdak's approach and these technologies," adds Johnson. "Our findings illustrate what happens when an analytical chemistry team and a drug discovery group closely collaborate with each other." MEH

Reference:

Guijas C, To A, Montenegro-Burke JR, et. al. Drug-Initiated Activity Metabolomics Identifies Myristoylglycine as a Potent Endogenous Metabolite for Human Brown Fat Differentiation. Metabolites. August 16, 2022. doi: *https://doi.org/10.3390/metabo12080749*

KFSH&RC identifies fumarate hydratase as a novel gene for familial non-medullary thyroid cancer

Leading tertiary and quaternary healthcare provider in the Middle East King Faisal Specialist Hospital & Research Centre (KFSH&RC), has identified that fumarate hydratase is a novel gene for familial non-medullary thyroid cancer.

A research team from KFSH&RC pioneered the discovery following the evaluations of a 43-year-old female patient who sought medical attention for neck mass with progressive growth. After evaluations by endocrine, head and neck, and thoracic surgeons, they concluded that the patient had poorly differentiated thyroid cancer, which was unresectable.

Through further consultation, the patient's family history revealed that her father died 18 years ago of abdominal cancer and kidney stones. In addition, the patient underwent right nephrectomy for unclear reasons when she was nine years old. Considering her history, KFSH&RC suspected an underlying genetic cause.

Upon obtaining institutional review board approval from the Ethics committee of KFSH&RC, the patient and her immediate family donated 5 mL blood samples for molecular testing, followed by bioinformatics analysis, sequencing assessments and immunohistochemistry of the tumour tissue.

The medical tests and study spearheaded by KFSH&RC's research team, led by Dr Ali S. Alzahrani, Consultant Endocrinologist, Scientist and Professor of Medicine, uncovered the first case of thyroid cancer in hereditary leiomyomatosis and renal cell cancer (HLRCC) syndrome.

As per existing records and findings, familial non-medullary thyroid cancer occurs in about 5% to 9% of cases, either as a part of known syndromes such as Cowden syndrome or in the form of familial clustering of two or more affected family members. HLRCC syndrome is a rare familial cancer syndrome. Its underlying aetiology is heterozygous germline mutations of the fumarate hydratase (FH) gene. And while tumours may arise in this syndrome, thyroid cancer has never been described as part of HLRCC.

Commenting on this finding, Dr Alzahrani said: "This discovery puts HLRCC syndrome among the rare causes of familial non-medullary thyroid cancer. It also paves the way for better awareness and understanding of thyroid cancer pathogenesis and more ways for physicians to diagnose and treat patients with this syndrome."

The research report was published in the September 2022 issue of the *Journal of Clinical Endocrinology and Metabolism* (JCEM). MEH

doi: *https://doi.org/10.1210/clinem/dgac386*

the laboratory

Medical research news from around the world

First-ever mycobiome atlas describes associations between cancers and fungi

An international team of scientists, co-led by researchers at the University of California San Diego School of Medicine, has created the first pan-cancer mycobiome atlas – a survey of 35 types of cancer and their associated fungi.

The findings are published September 29, 2022 in the journal *Cell*.

Cancer cells and microbes have a long and enduring association. Both have co-evolved within the ecosystems of the human body, often relying on the same resources. Competition for these resources often affects the replication and survival of cancer cells, microbes and the human host.

The association between cancer and individual microbes has long been studied case-by-case, but much recent attention focuses on the whole human microbiome, particularly in the gut, which houses more – and more diverse – communities of bacteria, viruses and fungi than anywhere else in or on the human body.

However, the roles and influence of cancer-associated fungi remain largely unstudied and unknown. Fungi are more complicated organisms than viruses and bacteria. They are eukaryotes – organisms with cells containing nuclei. Their cells are much more similar to animal cells than to bacteria or viruses.

"The existence of fungi in most human cancers is both a surprise and to be expected," said Rob Knight, PhD, professor in the departments of Pediatrics at UC San Diego School of Medicine and Bioengineering and Computer Science at UC San Diego Jacobs School of Engineering, Wolfe Family Endowed Chair in Microbiome Research at Rady Children's Hospital-San Diego and co-founder of Micronoma, a San Diego-based company developing microbial biomarkers in blood and tissues to diagnose and treat cancers.

"It is surprising because we don't know how fungi could get into tumours throughout the body. But it is also expected because it fits the pattern of healthy microbiomes throughout the body, including the gut, mouth and skin, where bacteria and fungi interact as part of a complex community."

Fungi found on the human body come in two main types: environmental fungi, such as yeasts and mould that generally pose no harm to most healthy people, and commensal fungi, which live on or inside the human body and may be harmless, provide a benefit such as improving gut health or contribute to disease, such as yeast infections or liver disease. Fungi also play a role in shaping host immunity, for better or worse, which looms large in immunocompromised persons, including cancer patients.

The new study characterizes the cancer mycobiome – fungi linked to cancers – in 17,401 samples of patient tissues, blood and plasma across 35 types of cancer in four independent cohorts. The researchers found fungal DNA and cells in low abundances across many major human cancers, with differences in community compositions that differed among cancer types.

"The finding that fungi are commonly present in human tumours should drive us to better explore their potential effects and re-examine almost everything we know about cancer through a 'microbiome lens,'" said co-corresponding author Ravid Straussman, MD, PhD, a principal investigator at Weizmann Institute of Science.

Analyses that compared fungal communities with matched bacteriomes (the bacterial component of the microbiome) and immunomes (genes and proteins constituting the immune system) revealed that the associations between them were often "permissive", rather than competitive.

For example, one species of fungi was found to be enriched in breast cancer tumours of patients older than 50 years while another species was notably abundant in lung cancer samples.

The existence of fungi in most human cancers is both a surprise and to be expected. It is surprising because we don't know how fungi could get into tumours throughout the body. But it is also expected because it fits the pattern of healthy microbiomes throughout the body.

The researchers said there were significant correlations between specific fungi and age, tumour subtypes, smoking status, response to immunotherapy and survival measures. Whether the fungi are simply correlated or causally associated remains to be determined.

"These findings validate the view that the microbiome in its entirety is a key piece of cancer biology," said study co-author Gregory Sepich-Poore, PhD, co-founder and chief analytics officer at Micronoma, "and may present significant translational opportunities, not only in cancer detection, but also in other biotech applications related to drug development, cancer evolution, minimal residual disease, relapse and companion diagnostics."

Reference:

Narunsky-Haziza L., Sepich-Poore G. D., Livyatan I., et. al. Pan-cancer analyses reveal cancer-type-specific fungal ecologies and bacteriome interactions. Cell. September 29, 2022. doi: *https://doi.org/10.1016/j.cell.2022.09.005*

Totally endoscopic heart surgery reduces risk

Traditionally keyhole heart valve surgery involves opening the breastbone and performing the operation through a 20cm incision on the patient's side. But Royal Brompton & Harefield Hospitals, based in London, is the only UK centre using a new totally endoscopic technique for mitral valve repair and aortic valve replacement.

Higher precision

Consultant cardiac surgeon Mr Toufan Bahrami, who is nationally and internationally recognised in minimally invasive, endoscopic cardiac surgery, uses the novel approach to avoid a large incision or division of the sternum.

He enters the chest through a tiny cut and spreads the soft tissue. With another incision, a 4K resolution 3D camera is used which shows the inside of the chest via a high-definition TV monitor in the operating theatre. Endoscopic instruments are mechanically manipulated, and the surgeon can intervene manually if required.

Quicker recovery

Patients of all ages are eligible for the technique, which has a much faster recovery time.

During open heart surgery, the breastbone is opened, recovery takes three months and patients cannot drive or lift anything heavy for two months. With the minimally invasive approach, recovery is one month. But with totally endoscopic heart surgery, patients can return to normal daily activity within three weeks.

"Because the chest is not opened, they can breathe faster, mobilise quicker and recover quicker. This technique is a game-changer for patients, reducing the risk of infection and the length of time in hospital," explains Mr Bahrami.

Compared to other techniques, the length of operations is similar, but hospital stay is reduced, and there is minimal scarring.

Training and teaching

The approach has training advantages too, as the procedure is displayed on monitors and can be recorded. Mr Bahrami says 4K image quality on the monitor also enables a more accurate assessment of organs.

"To me, this is the future of cardiac surgery; and any patient, whether low risk or high risk, can have this operation," he adds.

Having conducted many operations, Mr Bahrami trains other surgeons in the technique and works with surgical companies to develop and improve the procedure further. MEH

- To find out more visit: *rbhh-specialistcare.co.uk/totallyendoscopic*

Health for All by All

The 69th session of the WHO Regional Committee for the Eastern Mediterranean was held from 10-13 October in Cairo. It was inaugurated by Dr Tedros Adhanom Ghebreyesus, WHO Director-General; Dr Ahmed Al-Mandhari, WHO Regional Director for the Eastern Mediterranean; and H.E. Dr Ahmed Robleh Abdilleh, Minister of Health of Djibouti and Vice-chair of the 68th session of the Regional Committee. The inauguration was attended by ministers of health and representatives of the Region's Member States, participating in person for the first time since the outbreak of the COVID-19 pandemic. They were joined by representatives of international, regional and national organizations. *Middle East Health* reports.

The theme of this year's session was "Reaching the Sustainable Development Goals in the post-COVID-19 age: accelerating universal health coverage and health security – Health for All by All".

In his opening remarks to the ceremony, WHO Regional Director Dr Ahmed Al-Mandhari cast a spotlight on the gravity of the situations impacting people's lives in the Eastern Mediterranean Region, from multiple conflicts to the earthquake in Afghanistan, chronic and acute food insecurity in the Horn of Africa, floods in Pakistan and the recent cholera outbreak in the Syrian Arab Republic.

"These intersecting crises take a severe toll on people's health, livelihoods and lives and make it even more difficult to achieve Health for All by All. Yet I know that if we focus firmly on what is possible, together we can make that vision a reality," said Dr Al-Mandhari.

"Investing in resilience, prevention and preparedness is always difficult to prioritize because success is invisible: an effective system keeps us safe by stopping emergencies before they begin. But COVID-19 has shown the potential cost of not strengthening our systems. So we need to recognize the value of timely investment rather than paying all too dearly later."

Dr Ghebreyesus told participants in his opening address that the fact they are able to meet in person this year "is testament to how far you have all come in the fight against COVID-19."

Though "the world has never been in a better position to end the COVID-19 pandemic as a global health emergency," Dr Ghebreyesus cautioned that "we're not at the end of the pandemic yet."

Highlighting the vaccination gap, he urged Member States to prioritise the vaccination of health workers and older people and continue to work towards achieving the target of 70% coverage in all countries.

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> And so I plead with all of you, in whatever way you can, to work for health for peace, and peace for health.
> – Dr Tedros Adhanom Ghebreyesus

Stressing that "we must maintain momentum on building a stronger architecture for health emergencies," he appealed to "Member States to engage more actively in negotiating the new, legally binding international instrument on pandemic prevention, preparedness and response."

He ended his remarks by drawing attention to peace, the "one essential medicine for good health that WHO cannot deliver."

"And so I plead with all of you, in whatever way you can, to work for health for peace, and peace for health," Dr Ghebreyesus concluded.

Addressing the inaugural session, Dr Abdilleh told participants that despite the world being taken by surprise by the COVID-19 pandemic which turned lives, societies and economies upside down, the response had included major investments in vaccines which were developed and distributed at unprecedented speed.

"We must now keep our focus and continue to work tirelessly towards universal health coverage. This is the only way to build our resilience to all kinds of crises," said Dr Abdilleh.

He noted that, in the face of new and ongoing challenges "we need better preparation and effective coordination between Member States to build back a strong, resilient, flexible health care system that can adapt to sudden changes."

Earlier in the day, Regional Committee delegates led by ministers of health, the WHO Director-General and WHO Regional Director, took part in a Walk the Talk event in Child's Park opposite the WHO Regional Office for the Eastern Mediterranean in Cairo.

WHO's Walk the Talk is a global initiative to promote health, particularly physical activity, as an integral component of a sustainable future. MEH

Climate resilient healthcare systems

Climate change is now regarded as the greatest global health threat of the 21st century. Human activities continue to cause environmental pollution and loss of biodiversity, factors that are leading not only to the emergence of new diseases but to the redistribution of existing ones.

A side event at the 69th session of the WHO Regional Committee for the Eastern Mediterranean discussed a regional framework based on WHO guidance to enable healthcare systems and facilities to become climate resilient and environmentally sustainable by optimizing the use of resources and minimizing the release of waste into the environment.

It also emphasized the importance of ensuring clean and efficient energy supplies; water, sanitation and hygiene (WASH) services; waste management; occupational health and safety; food safety; air quality and chemical safety in moving towards climate-resilient and environmentally sustainable health care facilities

The side event outlined additional COVID-19 environmental health burdens, described current WASH and environmental management systems used in health care facilities, and summarized evolving best practices and solutions for reducing the impact of pollution on human and environmental health.

Ways to develop low-carbon and low-emission health care facilities were also discussed, alongside promoting an equitable, healthy and green recovery from the COVID-19 pandemic.

Premature deaths from unhealthy environments

Exacerbated by climate change, environmental risk factors are increasingly being driven by a range of ecological, social and economic threats. They include conflicts, pandemics, fragile ecosystems, deteriorating environments, unsustainable development, rapid urbanization and weak and fragmented environmental health monitoring and surveillance systems.

Environmental and climatic risks are responsible for around 23% of the total burden of disease in the Eastern Mediterranean Region. It is estimated that 1 million people in the Region die prematurely every year as a result of living and/or working in unhealthy environments. More than half of such deaths are attributable to air pollution. The other half is due to chemicals and other occupational exposures, lack of access to water and sanitation and other environmental risks. In addition, more than 100 million people in the Region fall ill every year from foodborne diseases, with an estimated 40000 people (mostly children) dying as a result.

Ministries of health in 11 countries and territories (Bahrain, Egypt, the Islamic Republic of Iran, Jordan, Morocco, occupied Palestinian territory, Oman, Pakistan, Tunisia, United Arab Emirates and Yemen) have announced their commitment to making their health systems and facilities both climate resilient and environmentally sustainable. More countries are expected to follow suit, enhancing the ability of healthcare systems and facilities in the Region to protect and improve the health of communities in an unstable and changing world. MEH

Towards more responsive and participatory health systems

Regional health policy-makers and experts have paved the way towards a regional agenda on priorities for advancing health systems participatory governance.

Discussions took place during a side event on "Institutionalizing Participatory Governance in the Eastern Mediterranean Region" organized by the health system governance team as part of the 69th session of the WHO Regional Committee for the Eastern Mediterranean.

The priorities will inform a resolution on the subject, scheduled to be considered at the 77th World Health Assembly in 2024.

Dr Rana Hajjeh, Director of Programme Management at the WHO Regional Office for the Eastern Mediterranean, set the side event in motion on behalf of the Regional Director by highlighting the challenges posed to health systems by COVID-19 and the lessons learned, particularly the need to establish and institutionalize health systems governance mechanisms that foster public trust in governments and public institutions during emergency responses and beyond.

"We learned the hard way during COVID-19 that trust cannot be gained during health emergencies if there are no sustainable participatory governance mechanisms to ensure regular government interactions with key stakeholders within the public and private sectors, both providers and beneficiaries," said Dr Hajjeh.

"The objective of these mechanisms is to bridge the gap between policy-makers' perspectives and the experiences and needs of communities, ultimately shaping health policies and decisions that are informed by people's voices and needs."

Global commitments to advancing participatory governance

During the side event, attendees were introduced to regional governance challenges, bottlenecks and gaps, as well as priority areas for action, including strengthening health system governance arrangements, capacities and supportive regulations alongside participatory governance, points that were reemphasized in a global technical paper calling for institutionalizing participatory governance to advance universal health coverage (UHC) and health security.

Attendees also listened to a panel discussion in which countries shared their experiences in establishing and institutionalizing participatory governance arrangements. In their interventions, including through a pre-recorded message by the Minister of Health of Tunisia, the participants reiterated that guaranteeing sustainable participation of citizens in health-related decision-making requires building a common understanding of participatory governance mechanisms, providing clear engagement criteria and institutionalization.

That participatory governance mechanisms play a vital role in UHC and health security has been reaffirmed in various national, regional and international resolutions and declarations, including target 16.7 in the sustainable development agenda which calls for ensuring responsive, inclusive, participatory and representative decision-making at all levels.

Similarly, Member States in the Political Declaration of the High-Level Meeting on Universal Health Coverage <*https://bit.ly/3TX3LWA*> committed to "engage all relevant stakeholders, including civil society, private sector, parliamentarians and academia, as appropriate, through the establishment of participatory and transparent multi-stakeholder platforms and partnerships". MEH

Inauguration session of the 69th session of the WHO Regional Committee for the Eastern Mediterranean

Regional Director's closing statement

Dr Ahmed Al-Mandhari, Regional Director of the WHO Eastern Mediterranean Region, gave the following closing statement to the 69th session of the Regional Committee for the Eastern Mediterranean.

We have just concluded the 69th session of the Regional Committee for the Eastern Mediterranean, held between 10 and 13 October 2022.

The session convened under the theme "Reaching the Sustainable Development Goals in the post-COVID-19 age: accelerating universal health coverage and health security – Health for All by All". The theme summarizes the urgent need to mobilize all of our capacities, will and strength to achieve the health-related SDGs applying the lessons that we have learned during the COVID-19 pandemic.

For four days, Regional Committee meetings have involved intense discussions, deliberations, exchanges of views and experiences, with ministers of health, representatives of Member States, partner organizations and WHO experts, many of whom were able to attend in person for the first time in 2 years. Together, we have reviewed the health situation across the Region and looked at ways to move forward in the post-COVID-19 era.

We discussed the vital importance of investing in more resilient health systems, the need to prioritize preparedness for emergencies, to enhance digital health, and to take bolder steps towards ensuring equity as we adopt the One Health approach.

Our discussions resulted in several resolutions that aim to translate words into concrete policies and action on the ground.

SDG targets

The Regional Committee expressed concern not just about progress towards the SDG targets for universal health coverage, but also over the Region's vulnerability to emergencies from multiple hazards, including disease outbreaks and natural disasters. It endorsed the regional agenda set out in the paper "Building resilient health systems to advance universal health coverage and ensure health security in the Eastern Mediterranean Region" and urged Member States to work on all the actions recommended in the paper, as well as to set up a high-level multisectoral mechanism to oversee health system resilience building.

Member States were also urged to fulfil their commitments under Vision 2023 - Health for All by All, to implement the cervical cancer elimination strategy, ensure inclusivity of health access for refugees and migrants, to update national strategies on HIV, hepatitis and sexually transmitted infections, and to accelerate their implementation towards achieving the 2030 targets.

The Committee endorsed a strategic framework to coordinate and integrate support from Gavi, the Vaccine Alliance and the Global Fund to Fight AIDS, Tuberculosis and Malaria and urged Member States to take all necessary steps to accelerate the prevention, control and elimination of communicable diseases and increase domestic public funding allocations for HIV, tuberculosis, malaria and immunization programmes.

Health inequities

Reaffirming that health inequities within and between countries are politically, socially and economically unacceptable, and mindful of the vast implications that current health, environmental and social crises have on people's ability to take control over and improve their health, the Regional Committee issued a resolution calling on Member States to strengthen health promotion and disease prevention through good governance and health system strengthening, and requested the Regional Director to propose a roadmap to guide Member States in the implementation of the agenda to improve health and well-being in the Region.

Concerned that around 75% of emerging infectious diseases among humans are zoonotic in origin, and cognizant of the escalating public health risks posed by emerging and re-emerging zoonotic disease outbreaks and their pandemic potential, the Regional Committee issued a resolution to establish a regional Quadripartite One Health Coordination Mechanism comprising high-level representation from the WHO Regional Office for the Eastern Mediterranean and regional offices of the Food and Agriculture Organization of the United Nations, the World Organisation for Animal Health and the United Nations Environment Programme to oversee and manage One Health-related activities within the Region.

One Health

The resolution calls on Member States to boost efforts to institutionalize the One Health approach and ensure that a system is in place to govern, manage, coordinate and oversee One Health activities, and create a supportive and enabling environment for One Health, including legislation, policy and budgetary allocations.

Acknowledging that effective implementation of digital health technologies is crucial for efficient national and subnational health systems and that such technologies offer enormous opportunities for health innovation while also posing potential risks, the Regional Committee issued a resolution endorsing a regional strategy to foster digital health.

Combined, the resolutions passed by the 69th session of the Regional Committee represent a clear departure point for our work in the years to come. We will strive towards their optimal implementation to ensure they achieve the desired results and move us towards a healthier and more sustainable future.

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Study reverses long-held ideas about relationship among diabetes, fat and cardiovascular disease

Scientists at Joslin Diabetes Center describe a series of studies designed to determine the relationship among insulin, fats and the vascular system in a paper published in *Circulation Research*.[1] Insulin resistance is a major risk factor for diabetes. The condition is known to increase the risk of cardiovascular disease and atherosclerosis. However, the exact mechanism by which insulin and the cells lining vascular walls act upon each other has been unknown.

The research team, led by George King, MD, chief scientific officer and director of research at Joslin, identified a new pathway in which the cells lining the blood vessels – endothelial cells – drive the body's metabolism. In a reversal of scientific dogma, the findings suggest that vascular dysfunction may itself be the cause of undesirable metabolic changes that can lead to diabetes, not an effect as previously thought.

"In people with diabetes and insulin resistance, the idea has always been that white fat and inflammation causes dysfunction in the blood vessels, leading to the prevalence of heart disease, eye disease and kidney disease in this patient population," said King, the Thomas J. Beatson, Jr. Professor of Medicine in the Field of Diabetes at Harvard Medical School. "But we found that blood vessels can have a major controlling effect here, and that was not known before."

Importance of brown fat

In addition to being linked to blood vessel abnormalities, diabetes is also associated with an undesirable decrease in the body's store of brown fat, also called brown adipose tissue. Unlike white fat which primarily stores energy, brown fat burns energy, maintains body temperature and regulates body weight and metabolism. In a series of experiments with a mouse model of diabetes, King and colleagues observed that mice engineered with enhanced sensitivity to insulin only in the blood vessels weighed less than control animals, even when fed a high-fat diet. It turned out, the extra insulin-sensitive mice had more brown fat than control animals; they also showed less damage to the blood vessels.

The team's further investigation revealed that insulin signals endothelial cells in the blood vessels to produce nitrous oxide, which in turn triggers the production of brown fat cells. In the context of insulin resistance, endothelial cells produced less nitrous oxide – a decrease known to raise cardiovascular risk – leading to a drop in brown fat production. Because brown fat plays such an integral role in regulating the body's weight and metabolism, smaller brown fat stores could be a risk factor for, not a symptom of, diabetes.

"What we found here is that the endothelial cells lining the blood vessels can have a major controlling effect on how much brown fat you develop," said King. "Nitrous oxide comes from endothelial cells to regulate how much brown fat you make, and that finding is very exciting because in the past we thought diabetes causes cardiovascular problems, but that relationship appears to be reversed in this scenario."

That finding is very exciting because in the past we thought diabetes causes cardiovascular problems, but that relationship appears to be reversed in this scenario.

The study's findings set the stage to use brown fat and the suite of hormones and inflammatory proteins it controls as biomarkers, or signs physicians can test for, for atherosclerosis or cardiovascular disease. Down the road, with future animal and clinical studies, this new information could open the door to an entirely new method of weight control by increasing brown fat tissues through improving endothelial nitrous oxide production.

"Everything is connected," said King. "We think blood vessels and endothelial cells play an important role not just in regulating brown fat, but also in regulating whole body's metabolism. Thus, these endothelial cells are a key factor in regulating weight and developing diabetes and, as other labs have shown, blood vessels appear to be a major regulator of brain function as well. Intervening at the level of endothelial cells could have a major impact on many diseases." MEH

Reference:

1. Park K., Li Q., Lynes M., et. al. Endothelial Cells Induced Progenitors into Brown Fat to Reduce Atherosclerosis. Circulation Research. July 8, 2022. doi: https://doi.org/10.1161/CIRCRESAHA.121.319582

Scientists redefine obesity with discovery of two major subtypes

Courtesy of Van Andel Institute

Dr J. Andrew Pospisilik, Chair of the Department of Epigenetics, Van Andel Institute

A team led by Van Andel Institute scientists has identified two distinct types of obesity with physiological and molecular differences that may have lifelong consequences for health, disease and response to medication.

The findings, published in the journal *Nature Metabolism*, [1] offer a more nuanced understanding of obesity than current definitions and may one day inform more precise ways to diagnose and treat obesity and associated metabolic disorders.

The study also reveals new details about the role of epigenetics and chance in health and provides insights into the link between insulin and obesity.

"Nearly two billion people worldwide are considered overweight and there are more than 600 million people with obesity, yet we have no framework for stratifying individuals according to their more precise disease aetiologies," said J. Andrew Pospisilik, Ph.D., chair of Van Andel Institute's Department of Epigenetics and corresponding author of the study. "Using a purely data-driven approach, we see for the first time that there are at least two different metabolic subtypes of obesity, each with their own physiological and molecular features that influence health. Translating these findings into a clinically usable test could help doctors provide more precise care for patients."

Currently, obesity is diagnosed using body mass index (BMI), an index correlated to body fat that is generated by comparing weight in relation to height. It is an imperfect measure, Pospisilik says, because it doesn't account for underlying biological differences and can misrepresent an individual's health status.

Four metabolic subtypes

Using a combination of laboratory studies in mouse models and deep analysis of data from TwinsUK, a pioneering research resource and study cohort developed in the United Kingdom, Pospisilik and his collaborators discovered four metabolic subtypes that influence individual body types: two prone to leanness and two prone to obesity.

One obesity subtype is characterized by greater fat mass while the other was characterized by both greater fat mass and lean muscle mass. Somewhat surprisingly, the team found that the second obesity type also was associated with increased inflammation, which can elevate the risk of certain cancers and other diseases. Both subtypes were observed across multiple study cohorts, including in children. These insights are an important step toward understanding how these different types impact disease risk and treatment response.

After the subtypes were identified in the human data, the team verified the results in mouse models. This approach allowed the scientists to compare individual mice that are genetically identical, raised in the same environment and fed the same amounts of food. The study revealed that the inflammatory subtype appears to result from epigenetic changes triggered by pure chance. They also found that there seems to be no middle ground – the genetically identical sibling mice either grew to a larger size or remained smaller, with no gradient between them. A similar pattern was seen in data from more than 150 human twin pairs, each of whom were virtually the same genetically.

"Our findings in the lab almost carbon copied the human twin data. We again saw two distinct subtypes of obesity, one of which appeared to be epigenetically 'triggerable,' and was marked by higher lean mass and higher fat, high inflammatory signals, high insulin levels, and a strong epigenetic signature," Pospisilik said.

Depending on the calculation and traits in question, only 30%–50% of human trait outcomes can be linked to genetics or environmental influences. That means as much as half of who we are is governed by something else. This phenomenon is called unexplained phenotypic variation (UPV) and it offers both a challenge and untapped potential to scientists like Pospisilik and his collaborators.

The study indicates that the roots of UPV likely lie in epigenetics, the processes that govern when and to what extent the instructions in DNA are used. Epigenetic mechanisms are the reason that individuals with the same genetic instruction manual, such as twins, may grow to have different traits, such as eye colour and hair colour. Epigenetics also offer tantalizing targets for precision treatment.

"This unexplained variation is difficult to study but the payoff of a deeper understanding is immense," Pospisilik said. "Epigenetics can act like a light switch that flips genes 'on' or 'off,' which can promote health or, when things go wrong, disease. Accounting for UPV doesn't exist in precision medicine right now, but it looks like it could be half the puzzle. The findings underscore the power of recognizing these subtle differences between people to guide more precise ways to treat disease."

Pospisilik is hopeful that the team's findings will inform development of future precision medicine strategies and lead to a version of their method that may be used in doctors' offices to better understand individual patients' health and inform care.

Reference:

Yang, C.H., Fagnocchi, L., Apostle, S. et al. Independent phenotypic plasticity axes define distinct obesity sub-types. Nature Metabolism. September 6, 2022. doi: *https://doi.org/10.1038/s42255-022-00629-2*

Technogym at the forefront of the Dubai 30 x 30 Movement

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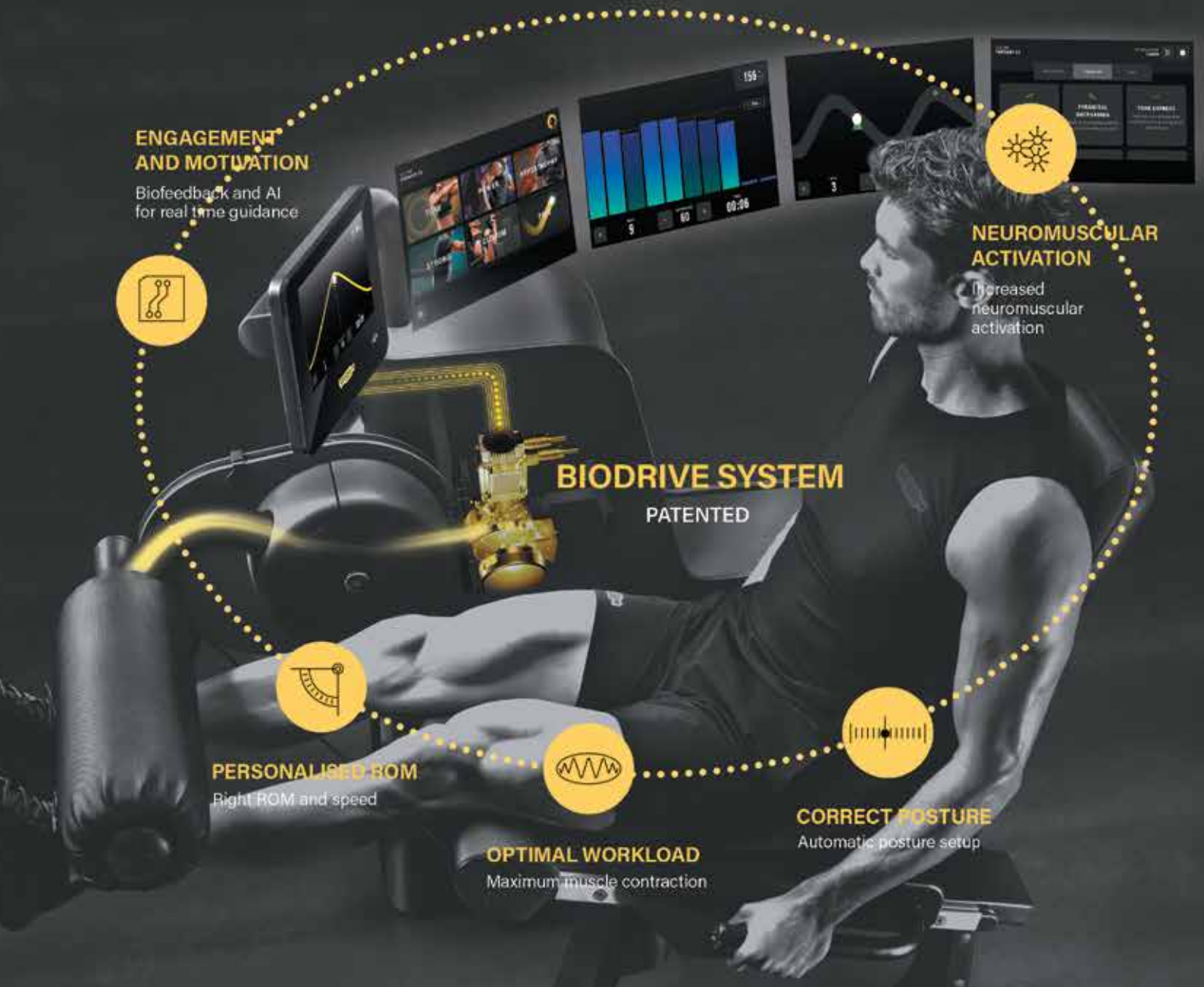

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TECHNOGYM®

South Korea attracts foreign patients with highly skilled physicians and advanced technology

South Korea provides some of the most advanced healthcare in the world. With highly skilled physicians, hospitals equipped with cutting-edge technology and a robust culture of medical research, patients from around the world regularly visit the country for complex medical treatments. The country is well known for this in the Middle East.

Supported by a long history and deep knowledge of healthcare, the Korea Health Industry Development Institute (KHIDI) established the Medical Korea Academy which hosts specialists from around the world who come to South Korea to further enhance their medical skills.

In this article KHIDI provides an overview of some of the leading hospitals in the country and looks at their specialties.

Gangnam Severance Hospital

Gangnam Severance Hospital first opened its doors to the public in Gangnam, Seoul in 1983, at a time when the area lacked high-quality medical services. With the opening of the international Healthcare Center in October 2003, Gangnam Severance Hospital began a full-scale rise as the leader in treating non-Korean patients. In 2019, more than 1,400 non-Korean outpatients visited the hospital on a monthly basis, and more than 350 non-Korean patients per month received hospitalized treatment.

Gangnam Severance Hospital is recognized for its high satisfaction level among international patients. It recorded a score of 94.5 on the 2021 satisfaction survey for international patients who have experienced healthcare services in Korea conducted by The Korea Health Industry Development Institute. This far exceeds the average score of 89.9 for all healthcare providers.

The main reason why international patients prefer Gangnam Severance Hospital is its exclusive fast-track programme designed to offer tailored services. The comprehensive programme seamlessly connects "health screening", "outpatient care", and "hospitalized treatment and surgery" by fully capitalizing on its status as an upper-tier general hospital equipped with a cutting-edge physical examination centre. This enables more expedited and pinpointed treatment compared to other hospitals, offering a significant advantage for those who are staying in Korea for a limited period of time.

The departments most frequently visited by international patients are Breast Surgery, Obstetrics and Gynaecology, Thyroid and Endocrine Surgery, Urology, Chest Surgery, and Cardiovascular Surgery.

Gangnam Severance Hospital specializes in the treatment of hard-to-cure, advanced cancers that affect women, such as breast, ovarian, and thyroid cancers.

In 2021, Gangnam Severance Hospital introduced Elekta Unity for magnetic resonance radiation therapy with real-time image-tracking capabilities for the first time in Korea. Unlike CT and X-ray, Elekta Unity utilizes 1.5 MRI to allow physicians to track the motions of tumours and adjust radiotherapy plans accordingly in real-time.

It also offers more accurate information on the boundaries between normal tissue and cancer cells to ensure safer precision treatment focused only on tumours. In particular, Elekta Unity distinguishes soft-tissue tumours from the surrounding organs more accurately. As such, it offers groundbreaking treatment for some metastatic cancers as well as lung and breast cancers.

- For more information, e-mail: *gnseverance1@yuhs.ac*

Seoul National University Hospital

Seoul National University Hospital

Professor Kim Woong-Han of the Department of Pediatric Thoracic & Cardiovascular Surgery at SNUH.

Seoul National University Hospital (SNUH) has been leading the medical development of Korea as the country's representative national university medical institution. Seoul National University Main Hospital (Yeongeon Campus) is home to the SNU Children's Hospital, SNU Cancer Hospital, and SNUH Biomedical Research Institute. In Korea, it operates SNU Bundang Hospital, SNUH Healthcare System Gangnam Center, SMG-SNU Boramae Medical Center, and the National Traffic Injury Rehabilitation Hospital; while overseas, it is commissioned to operate the Sheikh Khalifa Speciality Hospital in the United Arab Emirates. As of 2021, 1,793 beds were in operation, and over 8,000 employees, including 1,621 doctors, were taking care of about 6,720 outpatients per day.

In particular, SNU Children's Hospital has become a world-class institution since it opened as the only paediatric specialty hospital in Korea in 1985. The Children's Hospital is operated with 17 specialized departments for children, 13 sub-specialties within the Department of Pediatrics, 40 beds in the neonatal intensive care unit, and 22 beds in the paediatric intensive care unit. SNU Children's Hospital is the only hospital in Korea to have 10 dedicated operating rooms for children and performs an average of 10,000 surgeries per year, and to ensure the safety of patients, paediatric anaesthesiologists are responsible for the safety of anaesthesia.

Case example

A young girl from the United Arab Emirates came to Korea in March 2019 after being diagnosed with hepatoblastoma in Thailand and was treated at SNU Children's Hospital. Initially, her tumour size was huge and was invading important blood vessels, which made immediate surgery difficult, so long-term chemotherapy was adopted first. Liver transplantation was also considered in case of an emergency. So, the father of the patient went through various difficult steps, such as getting a donor test and approval to make preparations for the liver transplant. However, after about a year of chemotherapy, a right hemi-hepatectomy was performed in March 2020. The operation was successful and a liver transplant was not required. After about 2-3 months of additional chemotherapy, the excision of the diaphragmatic mass was also successfully performed in June, allowing the patient and her parents to return home safely, where the young girl continues to lead a healthy life.

A young girl from the United Arab Emirates with a large hepatoblastoma was successfully treated at Seoul National University Hospital.

2022 Medical Korea in UAE

At the "2022 Medical Korea in UAE" event, which was held in the last week of October, Professor Kim Woong-Han of the Department of Pediatric Thoracic & Cardiovascular Surgery at SNUH gave lectures on the latest trends in surgery for congenital heart diseases. Prof. Kim is renowned for the successful surgery of the narrowest aorta coarctation in Korea where a 3cm-wide heart of an extremely premature baby weighing just 590g had to be opened. In addition to surgery and treatment for sick children, he has been supporting many foreign countries' medical staff in the treatment of heart diseases by helping with medical infrastructure and training for cardiac surgery in Côte d'Ivoire, Nepal, and Uzbekistan.

- For more information, email: *arab@snuh.org* or call: +82-2-2072-1817

Samsung Medical Center

Samsung Medical Center

Cancer treatment specialists

Samsung Medical Centre (SMC) established Asia's first 'Comprehensive Cancer Center' in 2008. The facility houses 700 beds, cancer care units and laboratories across 19 floors, offering groundbreaking oncological treatment to patients from all over the globe. Currently, 10 percent of South Korean patients choose SMC for their cancer care.

Prominent U.S. news magazine, Newsweek, ranked Samsung Medical Center as South Korea's number one cancer treatment facility, and sixth globally, just behind the Mayo Clinic, Rochester. Samsung Comprehensive Cancer Center (SCCC), its state-of-the-art patient care, and its 14 years of operation, has therefore been recognized and endorsed both domestically and internationally.

In 2015, a US$100 million investment by SCCC brought a new proton therapy centre on line, introducing a cutting-edge cancer therapy option. As a result, a number of cases of diverse, complex cancers including childhood cancer, brain tumours, head and neck cancer, liver and lung cancer, have been successfully treated. The Cancer Center's pursuit of innovation in treatment is unstinting. Advanced technology, such as the robotic da Vinci Surgical System, has been extensively applied to target prostate cancer, as well as the Gamma Knife Icon for brain tumours. Furthermore, establishing Korea's first CAR-T Cell Therapy Center in 2021 has enabled SCCC to lead the field in blood cancer therapy as well. Harnessing new technologies, SMC's premier cancer experts have worked relentlessly to make integrated multi-disciplinary diagnosis a reality, and adopted genome analysis-driven precision medicine therapy to boost survival rates in cancer patients.


Proton therapy


Robotic surgery

Gamma Knife treatment


CAR-T cell therapy

Cancer Center

5-year Relative Survival Rates

Cancer Type	SMC (2008-2019)	KCCR (2014-2018)	SEER1 (2011-2017)
Stomach	87.7	77.0	32.4
Colorectal	84.0	74.3	64.7
Lung	50.7	32.4	21.7
Breast	95.3	93.3	90.3
Liver	55.5	37.0	20.3
Pancreas	18.6	12.6	10.8
NHL2	70.4	64.0	73.2
Cervix Uteri	84.7	80.5	66.3

SMC_Published Cancer Statistics as of Aug.2019 / Korea Central Cancer Registry(KCCR)_Published Cancer Statistics as of Jan.2019 / The Surveillance, Epidemiology, and End Results (SEER)_Published Cancer Statistics as of Jan.2019

5-year relative survival rate from SMC

Tireless devotion to providing the best cancer care has seen SCCC patients top the average five-year survival rates, far outstripping other hospitals' performance since the 2000s, both in Korea and the U.S. Samsung Comprehensive Cancer Center's efforts have secured unparalleled treatment accomplishments and improved survival rates, year-on-year.

The Samsung Medical Center, since founding the SCCC, continues to develop as a proven, world-class oncology institution offering comprehensive, integrated cancer treatments, preventive measures, ongoing research and therapeutic studies. MEH

Seoul National University Bundang Hospital

Seoul National University Bundang Hospital

Seoul National University Bundang Hospital (SNUBH) is a 1,360-bed tertiary care academic hospital. SNUBH has a staff of more than 2,700 physicians and nurses at 12 specialized centres and 35 departments serving 1.6 million patients a year. Since its opening in 2003, it has grown into a premier national and international leader in patient care, research, and education. Every year international evaluations and surveys of hospitals worldwide, rank SNUBH among the Korea's top 5 hospitals.

Global Healthcare Accreditation

SNUBH is the first hospital in Korea accredited by the GHA (Global Healthcare Accreditation) programme, an innovative accreditation body with specialized focused on international patient services. This accreditation is proof of the world class standards at SNUBH, validating their clinical expertise and joining a prestigious group of global healthcare institutions, such as Cleveland Clinic in U.S. and Bumrungrad International Hospital in Thailand.

Home away from home

SNUBH's International Healthcare Center (IHC) was established in 2014. It is widely recognized for its unparalleled services that ensure the satisfaction of international patients from around the world as well as domestic patients. It also boasts an integrated patient care model that enables patients to access all essential services in a comprehensive manner. The IHC offers translation, escort, and counselling services throughout the medical process from appointment, treatment, billing, examination and administration.

SNUBH is dedicated to delivering the highest quality, compassionate care and service to every one of their patients and their families in a warm and friendly environment. From the warmth of our welcome to the quality of our care, international patients will remember the SNUBH experience as a home away from home.

Introducing Professor Sung Ki-hyuk

Professor Sung Ki-hyuk is a paediatric orthopaedic surgeon at SNUBH. He treats limb deformities (bowlegs, cross legs, leg length discrepancy, and foot deformity). Neuromuscular diseases (Cerebral palsy, arthrogryposis, muscular atrophy, etc.), hip dislocation paediatric injuries, growth plate damage, and youth sports injuries. Every year the achievements and results of diagnosis and surgical treatment with the use of state-of-the-art operative techniques, and pre/post-operative surgical management are presented in international journals and conferences.

Prof. Sung and SNUBH will continue to provide the best treatment – with a warm heart like family – for patients from the United Arab Emirates and the rest of the world and help them regain their health.

Seoul St. Mary's Hospital, the Catholic University of Korea

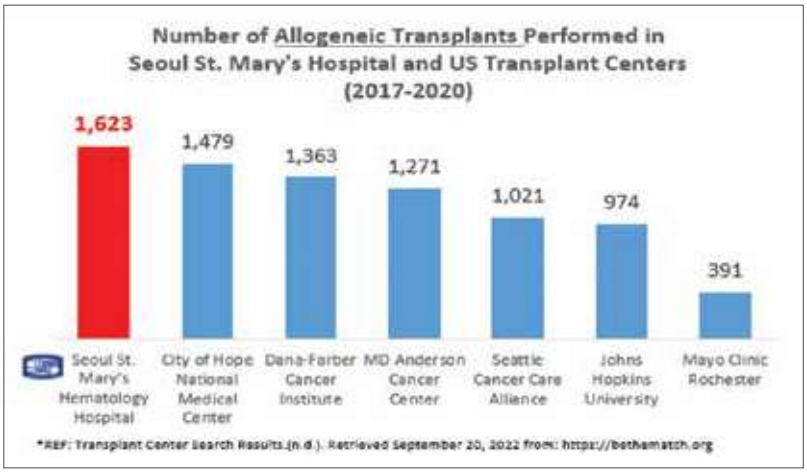
Seoul St. Mary's Hospital is a flagship hospital of the Catholic Medical Center equipped with world-class medical staff and state-of-the-art medical facilities. The largest single-building hospital in Korea has achieved outstanding clinical and research outcomes, performing the first kidney transplantation, hematopoietic stem cell transplantation (HSCT), and small bowel transplantation in Korea based on its 80 years of experience and the most extensive medical network in the country. It is globally recognized for its safe hospital environment demonstrated by obtaining JCI accreditation five consecutive times as of 2022.

Catholic Hematology Hospital -- Korea's first hospital specialized in blood diseases

Seoul St. Mary's Hospital upgraded the status of the BMT centre to the Catholic Hematology Hospital in order to maintain and further enhance its competitiveness in treating blood diseases at home and abroad based on its globally unparalleled expertise.

As the first haematology hospital in Korea and the largest in Asia with an independent system to comprehensively treat blood diseases, the Catholic Hematology Hospital holds one of the world's best treatment outcomes for haematologic cancer and acute myeloid leukaemia, and is recognized worldwide for its expertise. After performing successful allogeneic hematopoietic stem cell transplantation (HSCT) for the first time in Korea in 1983, it holds "Korea's first" titles in HSCT as follows: first to perform autologous HSCT (1985), unrelated HSCT (1995), umbilical cord blood transplantation (1996), non-myeloablative HSCT (1998), and related haplo-identical HSCT (2001). The hospital performs about 600 HSCTs every year. In March 2021, despite the global COVID-19 pandemic, it became the first hospital in the world to perform 9,000 HSCTs at a single institution. Since it conducted a sibling HSCT on a patient from the United Arab Emirates in 2012, the hospital has performed the transplant on an increasing number of international patients (more than 100 cases).

The Catholic Hematology Hospital carries out approximately 20% of domestic HSCTs, and as for allogeneic HSCT, which is more complex than autologous transplantation, the hospital accounts for 74.3% of the total number of domestic cases.



CAR T-cell therapy

The Catholic Hematology Hospital has successfully treated a paediatric patient with Philadelphia chromosome-positive (Ph+) acute lymphoblastic leukaemia (ALL) with chimeric antigen receptor (CAR) T-cell therapy, called "Kymriah".

CAR T-cell therapy is an advanced cell therapy that finds and destroys tumour cells by combining immune cells called T cells to a protein called chimeric antigen receptor. The targeted cancer therapy has emerged as a new, innovative treatment paradigm for patients with rare blood cancers. This advanced biomedicine, whose high treatment effectiveness has been proven, can give hope to treatment non-responders and those with relapsed blood cancer. MEH

- For more information: International Health Care Centre of Seoul St. Mary's Hospital
  Website: *www.cmcseoul.or.kr/ar.common.main.main.sp*
  Email: *ihcc@catholic.ac.kr* Tel: +82-2-2258-5745

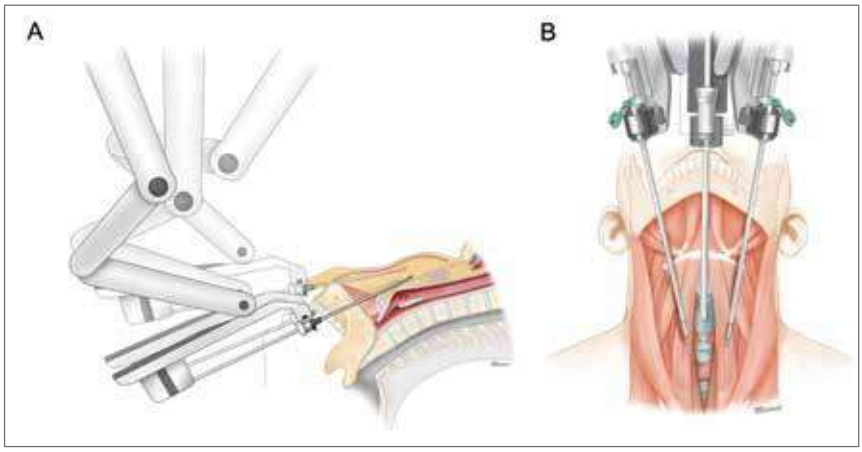
Korean University Anam Hospital

Korean University Anam Hospital's Professor Kim Hoon-yub, the founder of Trans-Oral Robotic Thyroidectomy (TORT), has performed the most TORT procedures in the world, recently surpassing 1000 surgeries.

TORT is recognized as the world's most advanced for its technological perfection and clinical safety. It is a surgical procedure that precisely removes only the thyroid gland without damaging other tissues and organs by inserting a robotic arm into the mouth and minimizing side effects and post-operative discomfort. Within a month after surgery, the scars in the mouth disappear, and the post-operative pain is significantly less than existing robotic thyroidectomies. In addition, the patient's satisfaction is high because the thyroid gland is precisely excised at the nearest site and there is little change in the voice after surgery.

Professor Kim Hoon-yub made headlines when he imparted surgical know-how to world-renowned hospitals, including Johns Hopkins University Hospital and the Cleveland Clinic in the United States. In addition, there are constant visits to Prof. Kim from the Americas, Europe, and Asia to learn his surgical techniques. He is often invited to perform live surgeries in various countries around the world, proving that there is great interest in his TORT procedures.

Professor Kim Hoon-yub, the founder of Trans-Oral Robotic Thyroidectomy.



When the development of TORT was made known, it received great attention not only for its effectiveness, but also for its approach to the mouth. After surgery, no matter how small the scar may be, an indelible memory of the patient's illness remains. However, since this method is trans-oral, it leaves no scars at all. Trans-oral robotic thyroidectomy will serve as a role model for researching and developing new surgical methods as truly patient-centred medical care.

- For more information:

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07nader@kumc.or.kr (Arabic Coordinator)
Or call: +82-2-920-5677 (International Healthcare Center)

Severance Hospital

Severance Hospital, established in 1885, is Korea's first western-style medical institution and represents the history of Korea's medical care. Severance Hospital was the first hospital in Korea to receive JCI accreditation, an international medical institution accreditation and certification, and is recognized as a hospital that provides medical services at an international level. In addition, Severance Hospital has performed over 30,000 robotic surgeries which is the first record in the world, and is now leading Korea's cutting-edge medical technology and industry by introducing Heavy Ion Therapy System, a state-of-the-art cancer treatment device, in 2022.

The world's most advanced robotic surgery technology

Robotic surgery is used for treating various cancer diseases, such as thyroid cancer, colorectal cancer, stomach cancer, liver cancer, prostate cancer, and kidney cancer. It minimizes scarring and reduces the amount of bleeding, which allows stable treatment and fast recovery for patients. Severance Hospital performed the first robotic surgery in Korea in 2005. Since then, as of 2021, for the first time in the world, 30,000 robotic surgeries using the Da Vinci Robotic Surgical System have been performed.

Heavy ion therapy system

Severance Hospital is planning to offer treatment with a heavy ion therapy system in 2023. It is a state-of-the-art cancer treatment system that only 10 institutions have around the world.

The heavy ion therapy device maximizes therapeutic effects by precisely targeting cancer tissues with radiation while minimizing side effects to normal tissue. This new state-of-art technology can replace traditional cancer treatments such as radiation, x-rays, or gamma radiation. Its effectiveness is 2.5 to 3 times higher than that of conventional radiation therapy.

The top 3 cancers of Korea (lung cancer, liver cancer, and pancreatic cancer) can be treated by this new method, and it can also tackle incurable cancers such as bone and soft tissue sarcomas, chordoma, recurrent rectal cancer, head and neck cancer, and malignant melanoma. Severance Hospital will open the new Heavy Ion Therapy Center in 2023.

- For more information:

Email: *arab@yuhs.ac* or call: +87-2-2228-5847

Medical professionals head to South Korea for world-class training

Medical Korea Academy offers a platform for foreign specialists to learn cutting-edge techniques and treatments

By Korea Health Industry Development Institute

South Korea is proving to be a leader in the healthcare industry, with its advanced medical infrastructure and innovative practices that result in notable clinical trials and reputable treatment and surgical successes.

With its pioneering medical practices for a wide range of specialties, medical professionals from around the world have sought South Korea as the place to advance their medical knowledge and techniques. In the past, Dr James Eason, Director of the Methodist University Hospital Transplant Institute and renowned surgeon who performed a complete liver transplantation on Steve Jobs, visited South Korea to learn from the hospital's liver transplant team, who developed new surgical methods that prioritized safety.

With a goal to improve global healthcare, the Medical Korea Academy (MKA), hosted by the Korea Health Industry Development Institute (KHIDI), is a training programme that aims to pass on South Korea's cutting-edge medical skills and knowledge to foreign specialists. Each year, physicians from the U.S., Europe, and the Middle East travel to South Korea to participate in training programmes provided by various hospitals. Between 2007 and 2020, 1,392 medical professionals from 53 countries took part in the MKA programme, with the top five countries to send the highest number of medical practitioners being Saudi Arabia (314), Mongolia (250), Russia (146), China (116), and Kazakhstan (115).

Medical training programme for Middle Eastern physicians and dentists

Established for medical professionals located in the Gulf, the Middle Eastern Physicians and Dentists Korea Medical Training Program (KMTP) has proven to be a great success. Following an agreement with Saudi Arabia in September 2013, medical professionals have been able to visit South Korea to receive

world-class training in a variety of specialties. Especially with many female patients from the Middle East visiting South Korea for cancer treatment, Medical Korea Academy offers a platform for foreign specialists to be educated on the advanced medical practices for such malignant and chronic conditions, enabling advanced local treatment options in their own countries.

With the growing reputation of KMTP, a total of 161 Saudi Arabia physicians have successfully completed the programme between 2014 and 2020. In addition, KMTP has signed agreements to train specialists with the Kuwait Ministry of Health in May 2016, the Dubai Health Authority and Bahrain Defense Force-Royal Medical Services in 2018, and the Oman Medical Specialty Board in 2019. In total, 311 Middle Eastern physicians have participated in the programme since 2014.

These agreements have given medical professionals in the Middle East an opportunity to learn about the latest medical practices available in Korea with access to research activities, academic conferences, and other insightful educational opportunities about the cutting-edge care provided in the country.

Dr Adel Saeed Alghamdi, from Saudi Arabia, who visited Korea for increased specialization in his field commented: "I decided to come to Korea because I knew that Korea has a high level of education in medical science and is scientifically and technologically advanced."

He added: "Because I came to Korea with my family, I was able to experience many aspects of Korean culture and environment. I have not only learned medical skills, but also how to allocate difficult tasks, continuously update new medical information, and work as a team with new technology from the professors and my colleagues."

Similar to Dr Alghamdi's story, the programme has been able to provide countless physicians with the opportunity to receive advanced medical training in clinical specialties ranging from anaesthesiology and pain medicine diagnostics to radiology and neurosurgery.

How to join the programme?

To join the programme, participants can apply online and select their specific department and hospital faculty. Visas are then organized and a pre-training programme follows, which consists of mandatory Korean language training and observational training at a hospital. Candidates can then apply to participate in a hands-on medical training programme at the hospital which can range from one to two years. By participating, medical practitioners can look forward to expanding their medical knowledge and then returning to their own hospitals with the latest, state-of-the-art treatments. In addition, with the ongoing Covid-19 pandemic, MKA also provides an e-class – an online education system that informs medical professionals about the latest medical practices, including surgical techniques for conditions such as pancreatic, gastrointestinal and colorectal cancer.

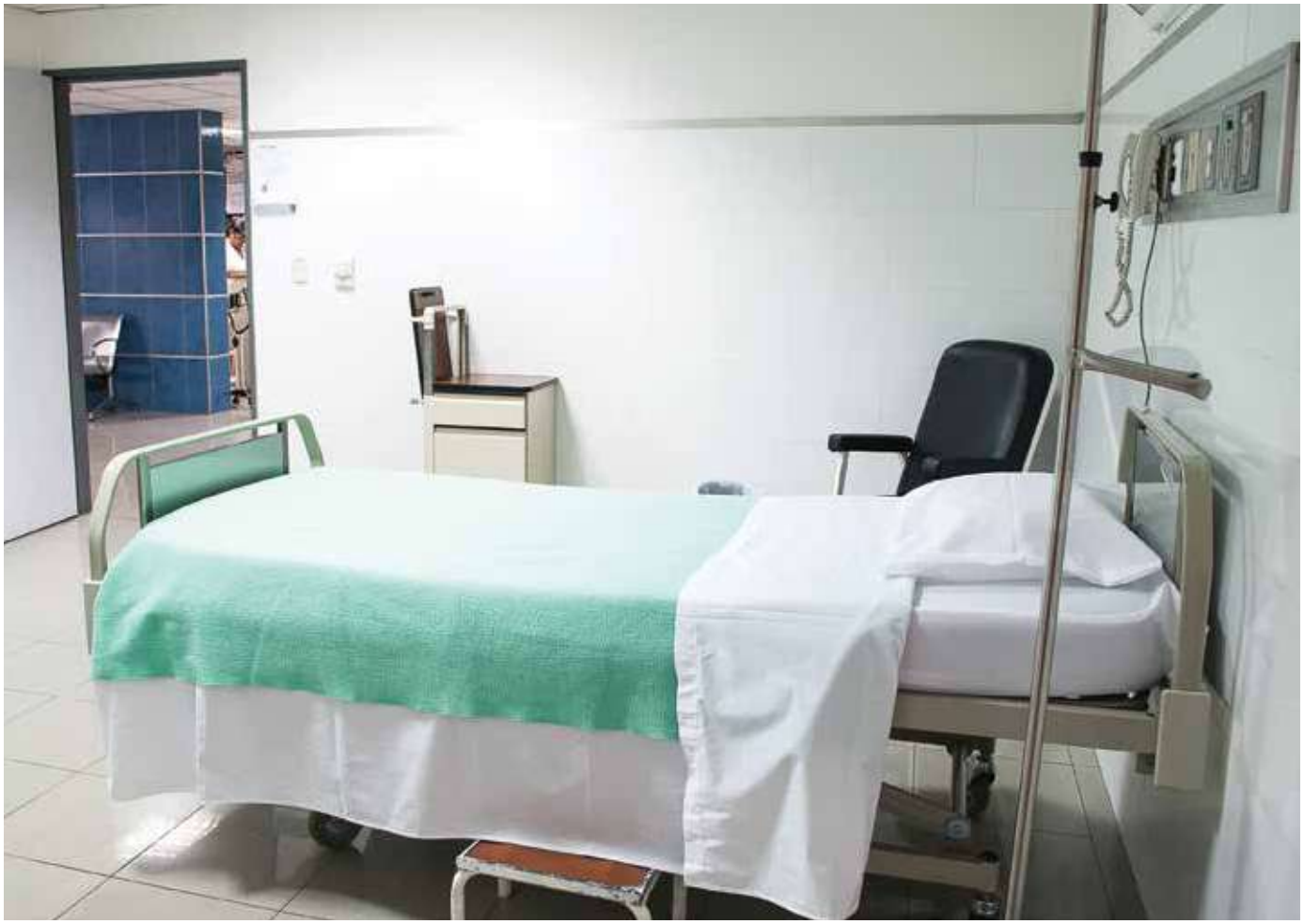
- To learn more, visit: *http://mka-eclass.or.kr*

Hospital room features may impact clinical outcomes for patients after surgery

Certain hospital room features, such as having a window view and distance from a nursing station, may influence clinical outcomes after undergoing high-risk operations, according to research findings presented at the Scientific Forum of the American College of Surgeons (ACS) Clinical Congress 2022.

Each year, about US$50 billion is spent on the construction of healthcare facilities in the United States. [1] 1 Architecture and interior design can enhance patient care and outcomes. A seminal comparative study published in Science in 1984 revealed that having a window view may influence recovery from surgery, and additional research has found that severely ill patients who are assigned to ICU rooms that are not well visualized by the medical staff may experience worse outcomes.[2,3] However, little research has investigated how room features such as single versus double occupancy, distance from a nursing station, and a window view may impact clinical outcomes. Researchers at the University of Michigan sought to understand whether certain hospital room features impact mortality and length of stay after surgery.

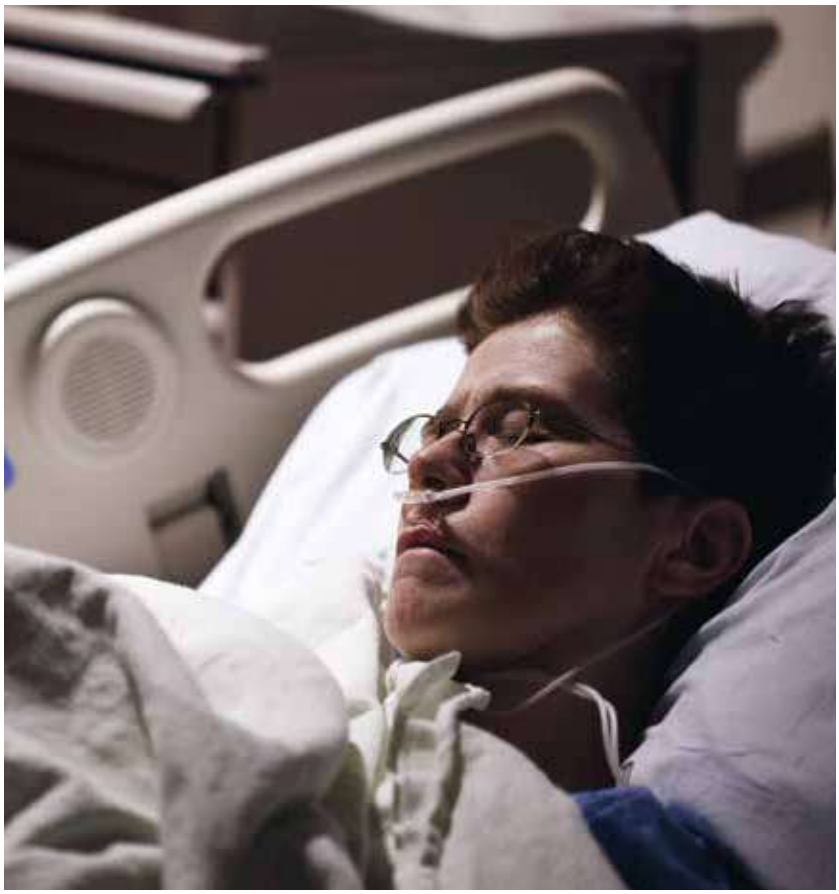
"We were fascinated to see from a previous study that mortality was different in rooms that were in the line of sight of a nurse's station. Nurses could more readily assess the patient's condition and intervene more quickly in severe events. We wanted to see how this finding would play out at our institution, specifically in a surgical population," said study coauthor Mitchell J. Mead, a health and design scholar at the University of Michigan. "One of the next big steps for healthcare design is to understand these pathways of causation that can lead to different clinical



outcomes in patients staying in hospital rooms with different features."

The analysis for this single-site study involved 3,964 patients who underwent 13 high-risk surgical procedures (including colectomy, pancreatectomy, and kidney transplant) at the University of Michigan Hospital between 2016 and 2019. The patients were admitted to rooms on two hospital floors.

Patient rooms were coded based on their features – window or no window, single occupancy, double occupancy, distance to the nursing station, and line of sight to clinicians. Patient encounters were linked by room number to identify clinical outcomes, including mortality and length of stay, related to room design.



Key findings

- Mortality rates for high-risk procedures varied across room design features and room type.
- Room features that influenced clinical outcomes after surgery included distance from a nursing station, single room occupancy, and having a direct line of sight where clinicians can see into the room.
- After adjusting for patient comorbidities and complexity of the operation, mortality rates were 20% higher (odds ratio 1.2) if patients were admitted to a hospital room without a window than if they were put in a room with a window.
- For patients staying in a room without a window, 30-day mortality rates were 10% higher (odds ratio 1.1).
- Though mortality rates varied across room design, mortality rates did not vary by room type after accounting for length of stay, suggesting that length of stay does not account for differences in mortality.

"This investigation provided evidence that patients had differential outcomes across room design features, when accounting for clinical risk, and warrants further investigation for how hospital design may be influencing outcomes," Mead said.

When the authors looked at different rooms based on the favourable design features, it became clear that the sicker patients were more likely to get single rooms, closer to a nursing station and within direct line of sight, and a window view, added study coauthor Andrew M. Ibrahim, MD, MSc, assistant professor of surgery, architecture, and urban planning at the University of Michigan and co-director of the Center for Outcomes and Policy.

Dr Ibrahim noted that this study is just one example illustrating the often-overlooked relationship between hospital design and patient care. Investing in research to figure out what design features work best may be one key factor in improving patient outcomes. "I think we can get a much better return on what we build and hopefully design safer, healthier hospitals," he said.

Future studies should investigate these outcomes at multiple hospitals to find out if the results are generalizable, the authors suggest. They are in the process of replicating a similar study across Michigan Medicine and hope to recruit collaborators across other hospital systems.

In addition, the researchers hope to expand their study to include other metrics like use of pain medication and patient satisfaction across these room types.

"The common question we get asked is, do you want us to rebuild our hospitals? Of course, that is not practical. But we do recognize clear patterns where certain room types have better outcomes after surgery," Dr Ibrahim said. "We can start to prioritize the sickest patients there. Just the way we have developed precision health models for getting the right care to the patient, there may be a corollary for the right room for the right patient and procedure to optimize outcomes collectively."

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The modern hospital bed Evario one is designed for the requirements of international markets.

Dorian Klusmann, Head of Export at the Stiegelmeyer Group (left), and the new Area Manager Middle East, Mohammed Hifawi, are looking forward to Arab Health in January 2023.

Medical beds for the Middle East

Mohammed Hifawi represents the Stiegelmeyer Group in this important promising region

The Middle East is a region with great future potential for the Stiegelmeyer Group. Germany's leading manufacturer of medical beds wants to support local people in health and long-term care. This task has been in the hands of Mohammed Hifawi for several months. The new Stiegelmeyer Area Manager Middle East is pursuing big plans from the Jordanian capital Amman.

Mr. Hifawi, please introduce yourself.
As Area Manager Middle East, I work for the Stiegelmeyer Group and for the German Novacare GmbH, which cooperates with Stiegelmeyer in alternating pressure systems. I am a certified International Trainer and Bachelor of Science in Medical Physics. I have many years of experience in the medical device field and have worked with renowned companies such as Hitachi, Toshiba and Philips

What is special about the work in your region?
I know from experience that good connections and a trusting relationship with clients are particularly important in the Middle East. This is where my creativity is needed, for example, to fully exploit the possibilities of social media. Our clients need to be convinced that I listen to them well.

What advantages does the Stiegelmeyer Group have to offer the region?
The Stiegelmeyer Group rightly sees the Middle East as a region that deserves a stronger focus. We can exploit the advantages of all our product divisions here. Modern beds for hospitals and nursing homes are just as important for the region as homecare beds and lifestyle beds for discerning private customers. Our focus on the needs of customers and end users and our customised service processes are very well received here.

What role does the high quality of the products play?
A very big role – the durability of our products will lead to lasting customer satisfaction and long-term business relationships. Stiegelmeyer tests all products far beyond standard requirements to ensure their reliability under many different conditions. Added to this are our impressive manufacturing capabilities, which make us a reliable partner even for very large projects.

With which products from Stiegelmeyer and Burmeier are you getting started?
In the area of care beds, we rely on the Libra by Stiegelmeyer, a comfortable and elegant low-height bed. For homecare, we offer the Dali by Burmeier, Germany's best-selling care bed for safe care and a high quality of life. Private customers can enjoy the luxury and design of our lifestyle bed suite eMotion.

Which bed is particularly interesting for the hospital sector?
Our Evario one was developed for the diverse requirements of international markets. This bed can be used in many wards and combines high quality with a good price-performance ratio, easy operability and excellent hygiene properties. In addition, with the Sicuro tera we offer an exceptional ICU bed for the high demands of intensive care. It offers a high clinical benefit, e.g. through lateral tilting, an integrated scale and an X-ray compatible backrest.

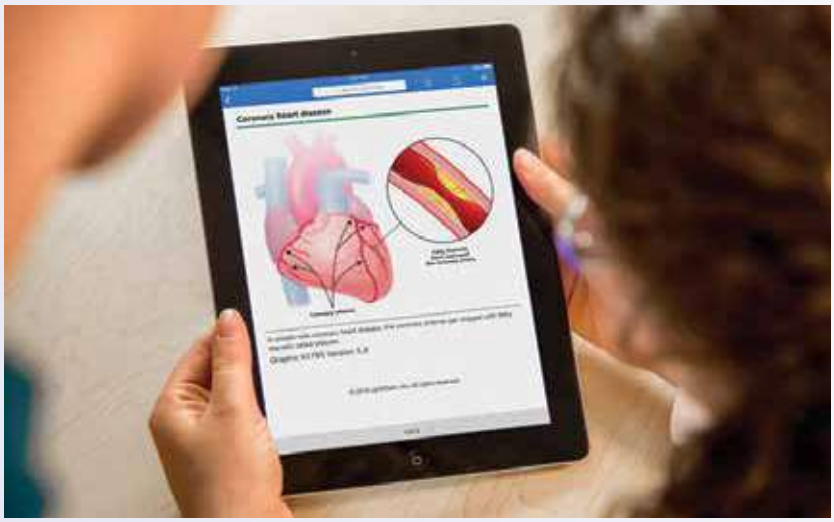
Stiegelmeyer's Connectivity Lab develops innovative digital solutions. Connected beds will soon send status information and make the organisation of everyday hospital life much easier. What is the interest in digitalisation like in your region?
Interest has just awakened and is already increasing dramatically. I expect this to develop into an important trend and that our expertise in this area will open many doors for us.

In January you will present the Stiegelmeyer Group at Arab Health. What are your expectations?
I've been at Arab Health for many years, but I've never looked forward to it so much. I believe in the products we present there – for example, the electric version of our Vitano bedside cabinet, which allows patients to charge smartphones and tablets effortlessly. We are currently working on the design of our booth, which will be bigger and more inviting than before. Visitors will find us at booth S1.G10. We will exchange ideas and receive valuable feedback. MEH

Using technology to become a high-reliability healthcare organization

The practice of medicine has evolved. More than ever, it's incumbent on healthcare providers to access and understand the latest in evidence-based research in order to make decisions that have real impact. Leaders are turning to technology like telemedicine to enable evolution of information access and guidance.

To achieve this, leaders are implementing a variety of tech initiatives to improve the way they deliver care. We explore these further.



1. Full access to the right data and information

Many of healthcare's change initiatives going back two decades can be traced to the optimization and coordination of health data. Yet until now, so much essential data has remained siloed, unstructured, inconsistent, or proprietary. Furthermore, clinicians today are faced with a dizzying volume of research, emerging information, government and health organization guidance, and the need for speed.

During the first years of the Covid-19 pandemic, private and public stakeholders around the world got together, tearing down the walls that keep data apart. Healthcare data functions as the brain and central nervous system for decision-making. Unfortunately, beyond a pandemic, sharing health data for research across borders has remained very difficult.

In order to improve care coordination and get closer to a truly patient-centered care model, the barriers to accurate and actionable data must be removed.

Clinicians often need treatment recommendations they can trust that don't yet exist or are not clearly outlined in peer reviewed literature. A systematic review of 48 studies on clinician expectations on the benefits and/or harms of treatments, tests, or screening tests showed that in most studies most physicians had inaccurate expectations.

Clinicians and patients alike are also confronted with an unrelenting amount of misinformation that is now so pervasive that the World Health Organization has coined it an infodemic. Most guidelines (which clinicians rely on to guide treatment decisions) do not fully acknowledge the poor quality of the data on which they are based. [1]

According to "How to survive the medical misinformation mess" published in the *European Journal of Clinical Investigation* of 2017 [2] there are four key problems:

1. Much of the published medical research is not reliable or is of uncertain reliability, offers no benefit to patients, or is not useful to decision makers.
2. Even if they are aware of this problem, most healthcare professionals lack the skills necessary to evaluate the reliability and usefulness of medical evidence.
3. Most healthcare professionals are not aware of this problem.
4. Patients and families frequently lack relevant, accurate medical evidence and skilled guidance at the time of medical decision-making.

Health misinformation can also undermine the patient-clinician relationship and negatively impact health outcomes. For example, misinformation about medication has been shown to reduce adherence. Patients might be concerned about taking too many medications, and have misinformation or misunderstandings about treatment, thinking for example: "When my test results are normal, I can stop treatment".

2. Transparency and trust to turn the best evidence into action

Clinicians make decisions for care and management every day, so they must have timely access to guidance that synthesizes the best available evidence augmented by the wisdom of clinical experts and other relevant information sources that should have a bearing on clinical decision-making.

A best-evidence-of-the-moment approach can reliably distill the massive amounts of data that new research and clinical care generate at speed and can transform it into reliable and actionable treatment recommendations. In the past, the slower pace of medical change tended to obscure when care team members were not fully

aligned. However, today, when people act on disparate information, care is not just inefficient, it can be truly harmful.

In contrast, a rapidly vetted single source of truth creates a true opportunity to align care across settings and, globally, has a dramatic effect on safety, quality, and patient outcomes.

Making the best evidence available in a format that can be used by frontline healthcare providers holds enormous potential for improving post-pandemic care and saving lives – but only if done right. Clinical decision support in the workflow is critically important for aligning and connecting care teams across specialties and settings for helping to standardize best practices and ensuring that patients are offered the best choices based upon the available evidence and clinical experience.

What are the critical components to balancing the best science with action?

1. Synthesized evidence

Rigorous processes are required to systematically review relevant sources of evidence. These must be synthesized thoughtfully and presented to clinicians in a way that they can be understood quickly and accurately.

2. Recognizable expertise

Clinical experts are essential to translate published evidence (often incomplete and/or variable) into recommendations for care. Experts must understand the evidence and have experience caring for patients with the conditions for which they offer guidance.

3. Rigor and speed

The process must be efficient but cannot sacrifice quality. This means that content has to be founded on the best evidence and peer reviewed by specialists following a rigorous process that is clearly outlined.

4. Easy-to-find information

Clinical decision support should come in formats that easily integrate into workflows and wherever clinicians are working. Health system leadership's adoption of this approach into the workflow e.g. via an EMR can expedite appropriate practice change, ensuring clinical improvements enhance the process of building trust.

5. Peer review

A team effort is required to ensure that recommendations for care are clear, useful and reflective of contemporary thinking. Formal peer-review processes are essential. Feedback from clinician end users should be incorporated into the editorial process.

6. Transparency

Because no clinician can distill the high volume of new data on a regular basis, they need to understand how experts evaluate data and arrive at a recommendation. Grading clinical recommendations by the quality of evidence indicates confidence levels that guide decision-making.

3. Empowering the healthcare workforce

Efforts to digitize and standardize healthcare also stem from the global gaps in staffing resources and shrinking budgets. The reallocation of care staff and expansion of roles that were started decades ago were exacerbated during the crisis phase of the Covid-19 pandemic. Care management and team-based responsibilities as well as more data-driven roles are now commonplace.

While these can temporarily address workforce shortages, they do not address the deep burnout that many clinicians are now reporting. Doctors, nurses and other frontline clinicians in some countries have left the profession at alarming rates. In England, NHS hospitals, mental health services, and community providers are now reporting a shortage of nearly 94,000 full-time staff, one in ten posts being vacant in nursing. [3]

Future-based workforce strategies will have to keep pace. The challenge will be to architect new models that foster retention, career development, and restorative self-care – not to mention all-new areas such as teaching soft skills that are increasingly important with new delivery options and care models. But technology also competes with other budget needs within hospitals, and within the IT budget, priorities need to be appropriately assessed and ranked in terms of their potential return on the quality of care provided to patients.

For care delivery, clinicians will have to reinforce their competence with new tools and technologies – from telehealth and remote patient monitoring to how to access, analyze, and use data gleaned from electronic health records and a host of other data sources. Clinicians should also be supported to develop their soft skills and competence with technology for future understanding of how to interact effectively to meet their own needs and those of patients. For on-the-job training, as artificial intelligence becomes more refined and its use expands, algorithms could surface insights much earlier that generate mini-lessons, clinical updates, remediation, and reminders within existing workflows. Used correctly, technology can drive more-efficient care delivery and workforce training. MEH

Reference

1. STM Global Brief 2021,
2. Ioannidis, J.P.A., Stuart, M.E., Brownlee, S. and Strite, S.A. (2017),
3. The King's Fund. 23 February 2022.

Neusoft unveils NeuAngio 30C – a state-of-the-art railless DSA system with DRC ceiling mounted 7-axis C-arm gantry

Neusoft Medical Systems has unveiled their new NeuAngio 30C, an advanced digital angiography X-ray system. DSA, or digital subtraction angiography, is an X-ray-based procedure for vascular imaging.

The NeuAngio 30C has the following key features:

Convenient installation and operation control

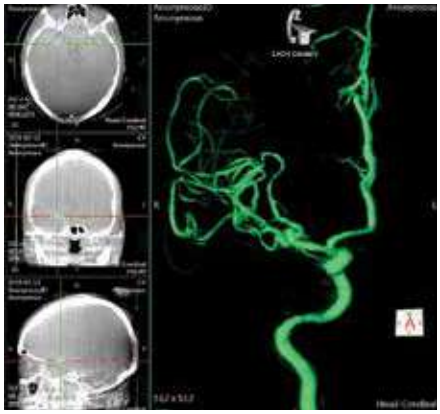
- The unique railless gantry is easy to install and control, optimizing the laminar flow design in the OR and the layout of the catheter room.
- Dual rotational center ceiling mounted C-arm stand with 7 axes easily achieves large-scale transverse and vertical projection without blind angle (2.74m * 2.3m), making better collaboration between department of medicine and surgery.

Stable high image quality

- The cutting-edge 16bit digital flat detector combines with patent-owned noise reduction technology and one-touch filter grid, making a good balance between high quality image and clinical low dose requirement.
- The compatible square-shaped FPD has 2K imaging resolution and five fields of vision, allowing a wide range of projections among the whole body.
- Equipped with large heat capacity, liquid-metal mute tube ensures absolute silence and high-definition image during operation.

Excellent low dose control

- Neural network low dose control helps set the best kV and mA for the tube minimizing the dose automatically.
- Footswitch in the examination room is switched flexibly among normal-dose acquisition and low-dose acquisition based on the clinical needs.
- One-button organ program selection on the user interface minimizes the incident dose of the detector by automatically choosing the best dose parameters for different tissues (e.g. head, cardiac, chest, abdomen and limbs). MEH



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Pioneering HealthTech companies and world-renowned hospitals to reunite on the UK Pavilion at Arab Health 2023

By **Michelle Michelucci,**
Head of International Events at the Association of British HealthTech Industries

The UK Pavilion is heading back to Arab Health in January 2023. The show – one of the world's leading platforms for international trade in the healthcare sector – represents a huge opportunity for UK healthcare manufacturers and providers to showcase the very best of talent and innovation to a global audience.

The Association of British HealthTech Industries (ABHI) UK Pavilion has been a staple of Arab Health for nearly two decades and each year we host to a diverse mix of UK companies, hospitals and national partners, who all supply a range of high-quality HealthTech and healthcare services.

The UK brand is incredibly well respected in the Middle East, and Arab Health represents a prime opportunity for UK innovators to connect with procurement professionals from across the region to support patient care.

With over 100 of the UK's leading industry players already signed up, we are thrilled to announce that our flagship UK Pavilion is set to nearly double the amount of space taken at the 2022 show, representing a brilliant return to face-to-face activity, after the Covid disruption of recent years.

Along with our expanded exhibition space, we look forward to delivering an enhanced programme of activity at next year's show, all designed to help our companies boost their profile and connect with more global partners.

ABHI UK Pavilion

The ABHI UK Pavilion – which remains one of the biggest national pavilions at the show – is a vibrant hub of activity dedicated to showcasing the latest technology and talent, giving visitors a chance to see everything from live

surgical demonstrations to product showcases and launches; activities which always draw sizeable crowds to the pavilion.

Once again, we will be partnering with the UK's Department for International Trade (DIT) to present a week-long programme of live surgical demonstrations and thought leadership presentations. This activity will be further supported by the virtual UK Healthcare Pavilion, which will also spotlight the companies in attendance with all exhibitors profiled on the site.

In addition, we will be publishing our first-ever UK Healthcare Pavilion Magazine. This dedicated UK show guide will feature a directory of UK exhibitors, news and features on the best of UK innovation, interviews with key opinion leaders, all four devolved nations and UK Government, and including the programme of activity for the show.

Simulated operating theatre

Like in previous years, taking centre stage within the ABHI UK pavilion will once again be our state-of-the art simulated operating theatre. It celebrates collaborations between healthcare providers, clinicians and healthcare technology companies, allowing visitors to watch Britain's best surgeons in action.

Last year global clinicians made 'exhibition history' by attending a lecture in the Metaverse with the launch of The Metaversity. The session presented by cutting-edge surgeon Professor Shafi Ahmed connected medical professionals from around the world and demonstrated how the digital technology can be used in healthcare.

Last year we also united a former NASA astronaut and world-leading surgeon to journey into the future of healthcare with Space and 3D technologies. The expert panel, which included renowned American physician and former NASA astronaut Dr Scott Parazynski, explored the lessons that can be learnt from working in space, recent advancements in 3D Printing and the importance of continuing to innovate to take one giant leap forward for healthcare.

Another highlight was world renowned surgeons from Guy's and St Thomas' NHS Foundation Trust who performed a Right RATS (Robotic Assisted Thoracic Surgery) Lower Lobectomy and Lymph Node Dissection procedure. The surgery was beamed into the exhibition from the UK via Proximie, a software platform connecting clinicians to the operating room, from anywhere in the world.

Exhibitors

On the exhibitor side with over 100 of the UK's leading industry players already signed up, we are thrilled to announce that our flagship UK Pavilion is set to nearly double the amount of space taken at the 2022 show.

We have also just announced four major exhibitors who will be joining us in January. These include GlucoRx – a leading supplier of innovative diabetes management solutions – who will be demonstrate their groundbreaking diabetic products and glucose testing solutions. GlucoRx has launched the UK's first Continuous Glucose Monitor (CGM) on prescription, GlucoRx AiDEX. Additionally, their new GlucoRx BioXensor technology provides a novel non-invasive Continuous Blood Glucose Monitor that generates real-time glucose measurements which can be transmitted wirelessly via Bluetooth to a smartphone or watch. Visitors to the ABHI stand will be able to test out these cutting-edge solutions.

Also making its return is the prestigious Harley Street Medical Area (HSMA), who will be bringing together its unique cluster of world-leading clinics and hospital groups to showcase the very best of London's medical excellence. During the four days of the congress, they will be hosting a variety of presentations, with esteemed clinicians presenting on their pioneering work under the ABHI banner. The HSMA is home to over 5,000 practitioners, small clinics and full-scale hospitals covering over 200 medical specialties. Harley Street Medical Area clinics and hospitals attending Arab Health include Cleveland Clinic London, Mayo Clinic Healthcare, HCA UK, Moorfields Private Eye Hospital and The London Clinic.

We are also delighted to welcome back infection control specialists GAMA Healthcare, who will be showcasing their latest award-winning innovations in infection control technology. The company consistently innovates and has patented many unique formulations to help reduce the spread of infections such as Covid19. This includes a range of air filtration, surface cleaning and disinfection and hand hygiene solutions for healthcare and dental environments.

Invest Northern Ireland – the economic development agency for Northern Ireland – have also confirmed their participation. Together their cohort of leading medical technology companies will be showcasing their latest innovations and developments to promote the unique strengths and world-class excellence of the region to a global audience.

We are so delighted to welcome such prestigious companies, partners and organisations to the ABHI UK Pavilion. Together we will demonstrate the strengths of UK HealthTech to a global audience, giving visitors a chance to see cutting-edge technologies and the latest product launches – and showcase how UK technology and expertise can help solve some of today's biggest healthcare challenges. MEH

- For more information, visit: *https://ukhealthcarepavilion.com/events/arab-health-2023/*

Target-Controlled Infusion anaesthesia: New more universal models

By **James Waterson,** RN, M.Med.Ed. MHE. Becton Dickinson. Medical Affairs Manager, Middle East & Africa

In simple terms Target-Controlled Infusion (TCI) means that instead of setting a dose-rate on the pump, the pump is programmed to target a required plasma concentration or effect-site concentration. A TCI pump automatically calculates how much drug is needed during induction and maintenance to maintain the desired effect-site or plasma concentration.

A TCI algorithm (the 'target' and plan on which the pump relies to deliver appropriate induction and maintenance rates to maintain anaesthesia without overdosing the patient) is based on pharmacokinetic (PK) and pharmodynamic (PD) models and on Absorption, Distribution, Metabolism, and Excretion of medications by the body.

For example, the effect-site concentration of Propofol required to produce loss of consciousness is about 3 to 6 mcg/ml, depending on the patients' demographics. Patients waking from anaesthesia generally have a blood concentration of around 1- 2 mcg/ml, although this is dependent on other drugs given during anaesthesia.

Adequate analgesia with Remifentanil is generally achieved with 3-6 ng/ml. A Remifentanil infusion of 0.25-0.5 mcg/kg/min in an 'average' man – 70 kg, 170 cm, 40 years old – produces a blood concentration of around 6ng/ml after 25 minutes.

PK models are based on body compartments

Conventionally the body compartment that the drug is injected into is V1 (plasma/blood), the next compartment is the 'vessel-rich' or 'fast re-distribution' compartment and is characterized as V2 (heart, liver, etc.). The final compartment, which is anatomically 'vessel-poor' and 'slow' in terms of re-distribution, is V3 (fatty tissue).

Drug distribution and the metabolism/elimination of each drug in each compartment is also part of each TCI model, as is the pharmacodynamics of the time taken between the plasma and effect-site effect.

Computer simulations and mathematical modelling of infusion schemes based on the above theories of compartments and clearances give models for both Target Plasma Concentration (Cpt) and Target Effect Concentration (Cet) and these can be incorporated into specialist infusion pumps.

The Marsh model for Propofol requires only age and weight to be programmed in the pump. The Schnider model is an alternative model for Propofol and has advantages in elderly patients as it is based on a lean body mass (LBM) calculation for each patient. Elderly patients receive a lower induction and maintenance dose, which can assist with hemodynamic stability.

The Remifentanil Minto model uses age, height, gender and weight, and determines LBM for its calculations.

TCI pumps deliver the infusion at a constantly altering rate, but it is useful to think of this one infusion as being a mean-average of three continually calculated infusion rates: a constant rate to replace drug elimination and two exponentially decreasing infusions to match drug removed from central compartments to other peripheral compartments of distribution.

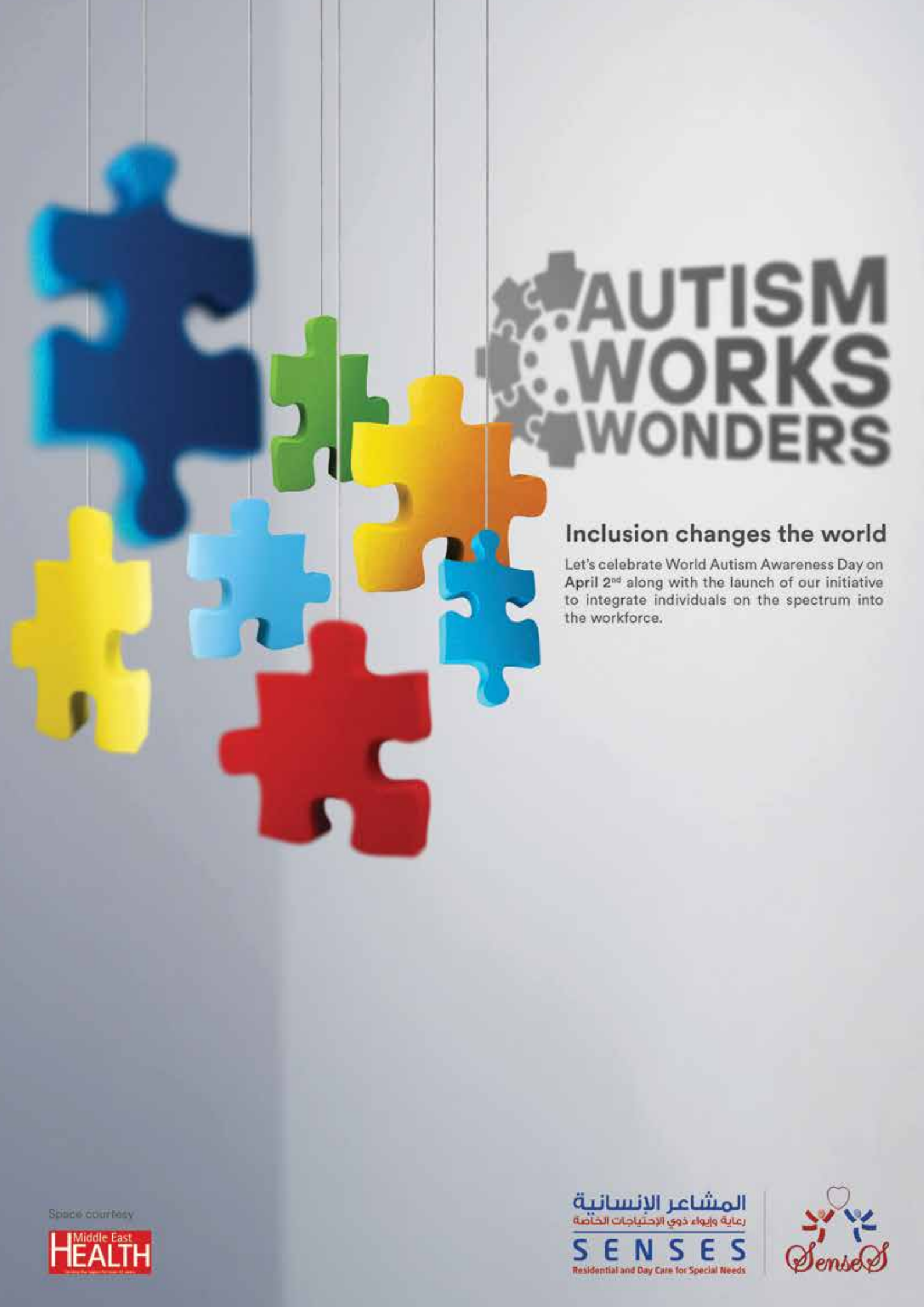
Key features of an ideal TCI infusion system or pump are:

- Critical information such as decrement time, current Cet or Cpt and respective targets, current dose rate and concentration and type of agent being infused can be displayed at the same time on one screen.
- Patient parameters used during the setting-up of infusions appear on one screen to avoid the need for shuttling through multiple screens to check vital information.
- An Induction Time adjustable from seconds to minutes to allow for a gentle induction for patients with cardiovascular conditions or established hypotension.

Obese patients have previously presented a problem for 'classic' TCI, and the physiological differences between paediatrics and adults had required separate models for children.

Now, however, we have the Eleveld model for both Propofol and Remifentanil, and the Kim-Obara-Egan Remifentanil model which are much more universal and can potentially allow TCI in age ranges from 6 months to 99 years of age, and from 2.5 to 215 kg.

TCI, with its emphasis on evidence-based anaesthesia, and new near-universal patient models seems primed to change our approach to the management of all patients receiving sedatives and analgesic agents. MEH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Alzheimer's Disease International calls for palliative care to be considered a human right

Alzheimer's Disease International (ADI), one of the authors of the World Innovation Summit for Health (WISH) report on palliative care highlights that up to 88 percent of patients and families globally are missing out on palliative care. ADI is calling for palliative care for those living with dementia to be considered a human right.

The report from World Innovation Summit for Health (WISH) on 'Palliative Care for Older Adults' was written in collaboration with ADI, Worldwide Hospice Palliative Care Alliance (WHPCA) and SANAD Hospice Lebanon and Hamad Medical Corporation (HMC) and has sought to take stock of palliative care globally.

"It is totally shocking that 88 percent of people around the world who are dying, could be missing out on palliative care," said Paola Barbarino, CEO of ADI, a speaker on healthy ageing at the WISH summit in Doha in October. "Access to palliative care should be recognised as a human right. We are calling on governments around the world to take note and act now before it is too late.

"Unfortunately, this report highlights what we have known for some time: Post-diagnostic support, including palliative care, is not available to those living with dementia or is woefully inadequate. Our own World Alzheimer Report 2022 found that up to 85 percent of those living with dementia were not receiving the post-diagnostic support they so desperately need. Enough is enough, governments have the evidence they need, now it is time for them to take note and act."

Dementia currently affects over 55 million people worldwide and is set to increase to 139 million by 2050. While dementia isn't a part of normal ageing, age is the greatest risk factor for developing the condition, as such it is the 7th leading cause of death worldwide and the leading cause in some countries.

Worryingly, emerging data suggests that the Middle East & North Africa (MENA) region will experience the greatest increases in prevalence globally, with countries such as Qatar expected to see around a 2000 percent increase by 2050, further signifying the need to improve palliative care services in the region.

Five strategic recommendations

The WISH report recommends improvements in five areas: Service provision, advocacy and awareness raising, adopting a social approach to death through caregivers' families and communities, education in specialist palliative care and developing strategic policy to underpin palliative care.

"These five strategic recommendations align themselves with the Global Action Plan on the public health response to dementia unanimously adopted by all member states of WHO in 2017," Barbarino said.

Glenn Rees, Chair of the Palliative Care Project, Qatar and ADI Honorary Vice President said: "National Dementia Plans encompassing all seven action areas of the Global Action Plan remain the most robust way to support those living with dementia and their carers, as well as wider society. At the end of the day, it is the basic right of those living with dementia and carers to be able to access the treatment care and support that they need and deserve.

"It is evident that palliative care services, whether community or institutional, are all too often not available for people with dementia or are of variable quality. This is because of a lack of resources within health systems for palliative care and the lack of trained staff with the skills to deal with the complexity of end-of-life care for people with dementia, the majority of whom will have comorbidities."

It is evident that palliative care services, whether community or institutional, are all too often not available for people with dementia or are of variable quality.

While the projected forecasts for dementia in the MENA region are striking, especially when accounting for inadequacies in the palliative care pathways for those living with dementia, there are tools at the disposal of governments to mitigate these forecasts. Research published in *The Lancet* predicts tha t up to 40 percent of cases of dementia could be delayed or prevented by focusing on just 12 modifiable risk factors. <*https://www.thelancet.com/article/S0140-6736(20)30367-6/fulltext* >

▶ Download the WISH report – Integrating Palliative Care for Older Adults: *https://bit.ly/3t8btSg*

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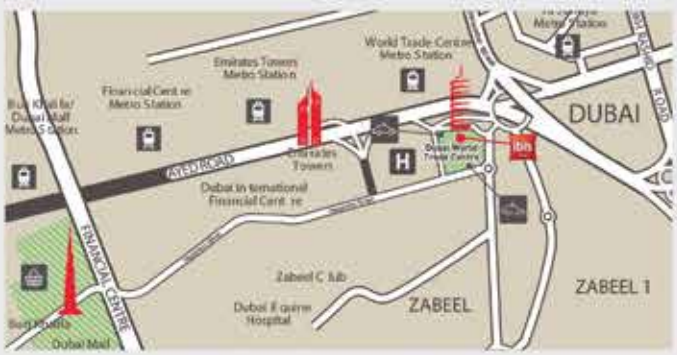


One Health Joint Plan of Action launched to address health threats to humans, animals, plants and environment

A new One Health Joint Plan of Action was launched on 17 October by the Quadripartite – the Food and Agriculture Organization of the United Nations (FAO), the United Nations Environment Programme (UNEP), the World Health Organization (WHO), and the World Organisation for Animal Health (WOAH, founded as OIE).

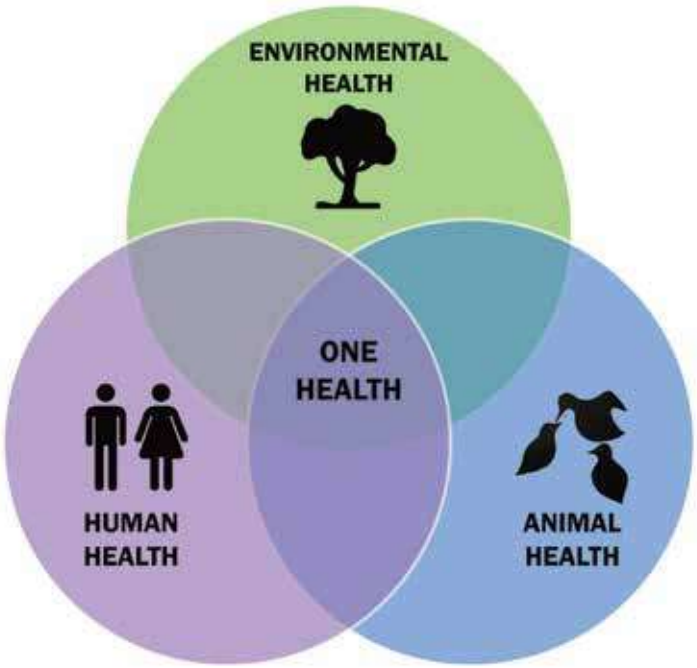
This first joint plan on One Health aims to create a framework to integrate systems and capacity so that we can collectively better prevent, predict, detect, and respond to health threats. Ultimately, this initiative seeks to improve the health of humans, animals, plants, and the environment, while contributing to sustainable development.

The One Health Joint Plan of Action, developed through a participatory process, provides a set of activities that aim to strengthen collaboration, communication, capacity building, and coordination equally across all sectors responsible for addressing health concerns at the human-animal-plant-environment interface.

The five-year plan (2022-2026) focuses on supporting and expanding capacities in six areas: One Health capacities for health systems, emerging and re-emerging zoonotic epidemics, endemic zoonotic, neglected tropical and vector-borne diseases, food safety risks, antimicrobial resistance and the environment.

This technical document is informed by evidence, best practices, and existing guidance. It covers a set of actions which endeavour to advance One Health at global, regional and national levels. These actions notably include the development of an upcoming implementation guidance for countries, international partners, and non-State actors such as civil society organizations, professional associations, academia and research institutions.

The plan sets out operational objectives, which include: providing a framework for collective and coordinated action to mainstream the One Health approach at all levels; providing upstream policy and legislative advice and technical assistance to help set national targets and priorities; and promoting multinational, multi-sector, multidisciplinary collaboration, learning and exchange of knowledge, solutions and technologies. It also fosters the values of cooperation and shared responsibility, multisectoral action and partnership, gender equity, and inclusiveness.



One Health is the main approach for addressing the complex health challenges facing our society, such as ecosystem degradation, food system failures, infectious diseases and antimicrobial resistance.

"Using a One Health lens that brings all relevant sectors together is critical to tackle global health threats, like monkeypox, COVID-19 and Ebola," said Dr Monique Eloit, WOAH Director General. "It all starts with ensuring the health of animals. Animal health is our health, it is everyone's health."

QU Dongyu, FAO Director-General added: "One Health should start from proper land management and stopping deforestation, which will help people and their animals in the surrounding environment. We need all sectors working closely together to identify and implement adaptation and mitigation measures."

Dr Tedros Adhanom Ghebreyesus, WHO Director-General said: "It's clear that a One Health approach must be central to our shared work to strengthen the world's defences against epidemics and pandemics such as COVID-19. That's why One Health is one of the guiding principles of the new international agreement for pandemic prevention, preparedness and response, which our Member States are now negotiating."

Building on existing structures and agreements, mechanisms for coordinated financing are under development to support the plan's implementation. The Quadripartite will join forces to leverage the needed resources in support of the common approach to address critical health threats and promote the health of people, animals, plants and the environment.

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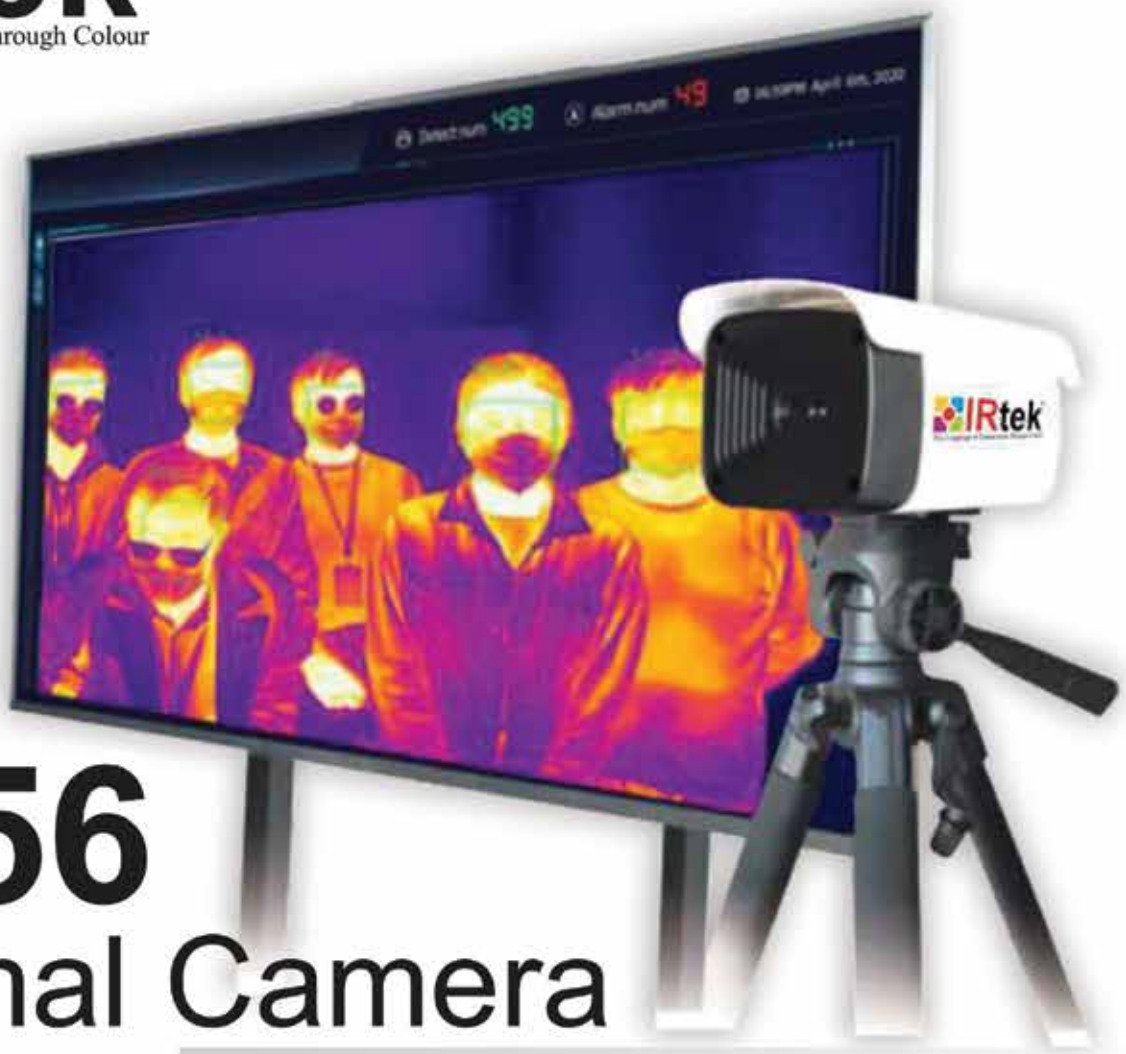

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F#	: 1.1
Visual Camera	
Resolution	: 1280 x 720pixels
Focal Length	: 4.4mm
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