

Cholera in Yemen

5000 a day infected in runaway epidemic



Lebanon Tech Hub

Innovative blood glucose monitor developed with AUB partnership

Healthcare for humanity

70th World Health Assembly adopts wide-ranging resolutions

In the News

- Sleep loss can lead to weight gain
- WhatsApp enables monitoring of attacks on healthcare workers in Syria
- 3000 adolescent deaths a day are preventable – WHO
- Hospitals treated as targets by parties to conflict – UN chief
- Research funders to implement WHO standards on reporting clinical trials



MEDICAL



NOW AVAILABLE ON



FOR MORE INFO: WILLIAMSON-DICKIE MIDDLE EAST FZE 04 887 8223 - INFO@DICKIES-ME.COM

DIEP FLAP

Mediclinic Welcare Hospital offers advanced DIEP flap surgery for breast cancer reconstruction.

More and more women are opting to have a more natural approach to reconstructive surgery than prosthesis implants. DIEP (deep inferior epigastric perforators) flap surgery offers the patient a natural breast that will grow with her as she gains or loses weight, giving her a natural appearance.

A DIEP flap is a technique that uses skin, fat, and blood vessels taken from the patients abdomen to form the breast. The procedure is done by a specialised plastic and reconstructive team at Mediclinic Welcare Hospital

This technique is performed by our two doctors:

Dr. Jamil Al-Jamali, Consultant Plastic and Reconstructive Surgeon

Dr. Marco Romeo, Specialist Plastic Surgeon

Surgery can be planned for directly after mastectomy or as per doctor consultation .
For more information please visit our website www.mediclinic.ae or call **04 282 7788**

EXPERTISE YOU CAN TRUST.

A MEDICLINIC INTERNATIONAL COMPANY.








Sapphire

Hospital Management System

Easy to use, hard to believe

Sapphire is a complete and integrated solution that can be deployed and customized for any hospital or healthcare institution, providing patients with the service they expect to find in state of the art medical institutions.

Sapphire comes with a customizable HL7 Integration Engine allowing seamless integration with all hospital systems such as EMR, LIS, RIS, PACS or CDSS.

-  100% Cloud-ready
-  Mobile-ready
-  User-friendly
-  Global support helpdesk
-  Intuitive design



Sapphire Hospital



Sapphire Clinician



Sapphire Emergency



Sapphire Pharma



Sapphire Care



Patient Administration System



Clinical Information Manager



Emergency Department Management



Pharmacy Management Solution



Patient Interaction and Information



Contact us today for your turnkey solution and a paper-free hospital
www.sapphirehms.com | info@sapphirehms.com | +965 22247437



Prognosis

World's worst cholera epidemic

An unprecedented cholera epidemic has been sweeping across war-torn Yemen since April. Due to the conflict, aid agencies have struggled to provide treatment on the ground and the spread of the disease has escalated to a point where more than 5000 people a day are being infected. At the time of going to press the death toll was 1300 and climbing, a quarter of them children. Oxfam warns that if it is not contained it will threaten the lives of thousands of people in the coming months.

Highlighting the danger humanitarian aid workers face in conflict zones, the Office for the Coordination of Humanitarian Affairs (OCHA) released a report stating that “conflict parties’ lack of respect for the fundamental tenets of international humanitarian law and the brutality and volatility of today’s armed conflicts make it extremely difficult and dangerous for these brave aid workers to deliver humanitarian assistance and protection in complex emergencies”. OCHA notes that “not enough progress has been achieved since [their previous report in] 2011, and many of the recommendations contained in the initial report remain particularly relevant today”.

The 70th World Health Assembly held in May adopted many important resolutions to improve public health for the world’s people. Read a summary of the key resolutions in this issue of *Middle East Health*. The Assembly also elected Dr Tedros Adhanom Ghebreyesus from Ethiopia as the new Director-General of WHO. He gave a profound acceptance speech about our shared humanity which I urge all people to watch: <https://www.youtube.com/watch?v=5oUdOYARcRA>

Also in this issue, we look at healthcare tourism in Jordan and healthcare developments in Lebanon, specifically a collaboration between a Lebanese tech hub and the American University of Beirut to develop a first-of-its-kind non-invasive blood glucose monitor, which participants say bodes well for Lebanon’s move towards a knowledge economy.

In the focus on paediatrics we look at future treatments in the pipeline for celiac disease and a study that finds that celiac disease and anorexia nervosa diagnoses are linked.

As in each issue, this issue is full of interesting news, interviews and product reviews.

Read on...

Callan Emery

Editor

editor@MiddleEastHealthMag.com



Publisher

Michael Hurst
michael@middleeasthealthmag.com

Editor

Callan Emery
editor@middleeasthealthmag.com

Editorial and Production

Trident Communications
www.TridentComms.media

Editorial Consultants

Dr Gamal Hammad, Dr Peter Moore, Harry Brewer

Middle East Editorial Office

PO Box 72280, Dubai, UAE
Telephone: (+9714) 391 4775
editor@middleeasthealthmag.com

Marketing Manager

Foehn Sarkar
Telephone: (+9714) 391 4775 || Fax: (+9714) 391 4888
marketing@middleeasthealthmag.com

Subscription & Admin Manager

Savita Kapoor
Telephone: (+9714) 391 4775 || Fax: (+9714) 391 4888
savita@middleeasthealthmag.com

Advertising Sales

PO Box 72280, Dubai, UAE
marketing@middleeasthealthmag.com

Americas, France

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

Japan

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

China

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

Taiwan

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

Middle East Health is published by Hurst Publishing FZE,
Creative City Fujairah, Licence Number: 3910/2013 FBCC.

UAE National Media Council - Approval Number: 2207

Middle East Health website

www.MiddleEastHealthMag.com



Middle East Health is printed by Atlas Printing Press.
www.atlasgroupme.com



10

NEWS

- 6 Middle East Monitor
- 11 Worldwide Monitor
- 14 The Laboratory

NEWS FEATURES

- 32 70th World Health Assembly
- 44 Screening MRI benefits women at average risk of breast cancer

FOCUS

- 18 **Lebanon Report:** Tech hub develops innovative glucose monitor in partnership with American University of Beirut
- 26 **Jordan Report:** King Hussein Cancer Center expansion doubles capacity
- 36 **Paediatrics:** Celiac disease – new treatments in the pipeline

COLUMNS

- 48 Beyond Borders

BACK PAGES

- 52 On the Pulse
- 54 The Back Page
- 55 Agenda

COVER IMAGE

Two boys at the Sab'een Hospital in Sana'a, Yemen, receive treatment for cholera. An unprecedented cholera epidemic is sweeping war-torn Yemen. – © UNICEF/UN065871/Alzekri



20



22



24



28

Are you ready to take on the next challenge in your career?

Join MSc in International Healthcare Leadership in Dubai.

Transform your healthcare career through a new Masters programme from The University of Manchester.

The part-time MSc International Healthcare Leadership develops leadership skills and international perspectives, while you continue to work.

Healthcare industry professionals in the Middle East will follow a flexible study programme, with regular face to face workshops in Dubai.

Accelerate your career with a world-class Masters degree from Alliance Manchester Business School – a top ranked and triple accredited business school and part of one of the world's great research universities.

Accepting applications for September 2017 Intake.



Dr. Karan Thakur, Class of 2009

General Manager, Operations & Public Affairs
Apollo Hospital, New Delhi

All healthy systems are unique with fast-changing demographics, and most are witnessing changes in the way they provide healthcare. This course helped us understand how those changes are occurring in different systems, settings and countries.

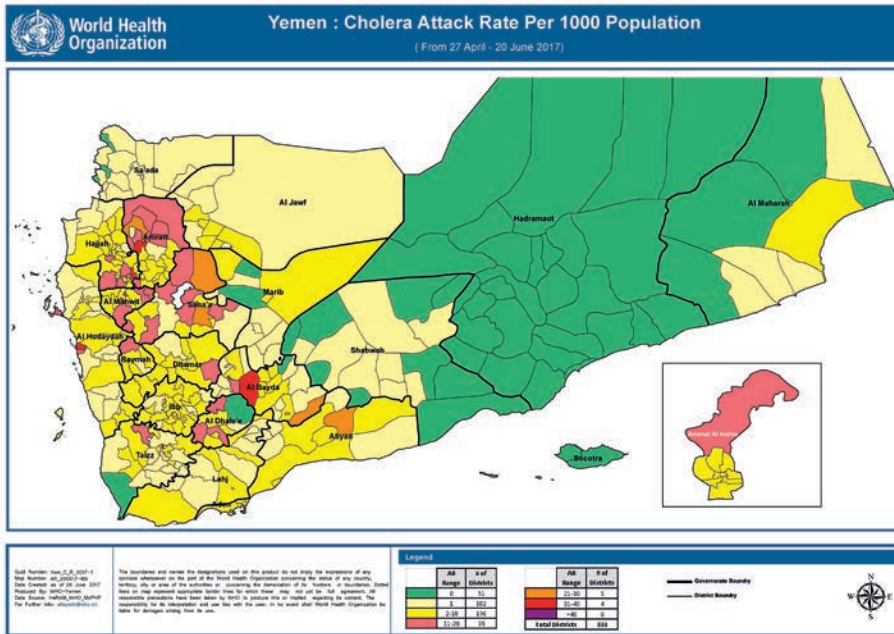
The University of Manchester, Middle East Centre

Office F-16, Block 2B, Dubai Knowledge Park

Email: ihl@manchester.ac.ae | Tel: +971 (0)4 446 8664 | www.manchester.ac.ae

middle east monitor

Update from around the region



More than 200,000 affected by cholera epidemic in Yemen

Yemen is in the grip of a runaway cholera epidemic that is killing one person nearly every hour and if not contained will threaten the lives of thousands of people in the coming months, international agency Oxfam said in statement in June.

The UN says the country is facing the worst cholera outbreak in the world, with suspected cases exceeding 200,000 (as of 24 June) and the number increasing at an average of 5,000 a day.

In a joint statement, United Nations Children's Fund (UNICEF) Executive Director Anthony Lake and World Health Organization (WHO) Director-General Margaret Chan said that in just two months, cholera has spread to almost every governorate of this war-torn country.

Already more than 1,300 people have died – one quarter of them children – and the death toll is expected to rise.

“UNICEF, WHO and our partners are racing to stop the acceleration of this deadly outbreak,” they said, also calling on authorities in Yemen to strengthen their internal efforts to stop the outbreak from spreading further.

Cholera has affected around 268 districts in 20 of Yemen's 22 governorates. While cholera is endemic in Yemen, the

country has experienced a surge in cholera cases since 27 April 2017.

Sajjad Mohammed Sajid Oxfam's Yemen Country Director said: “Yemen is on the edge of an abyss. Lives hang in the balance. Two years of war has plunged the

country into one of the world's worst humanitarian crises and at the risk of famine. Now it is at the mercy of a deadly and rapidly spreading cholera epidemic. Cholera is simple to treat and prevent but while the fighting continues the task is made doubly difficult. A massive aid effort is needed now. Those backers of this war in Western and Middle Eastern capitals need to put pressure on parties to the fighting to agree a ceasefire to allow public health and aid workers to get on with the task.”

The more than two-year conflict in the country has devastated the country's health facilities; less than half are fully functional and many public health professionals have not been paid in months. Key infrastructure, including water and sanitation facilities, are collapsing, contributing to the spread of diarrhoeal disease. The weather is also playing a role: the pathogens that cause cholera are more likely to spread in warmer weather and heavy rains in April / May washed piles of uncollected waste into water sources.

“We see that the numbers are going up,

Aid groups unable to manage war zone risks – OCHA, NRC report

Humanitarian aid workers want to help people in some of the biggest war zones, but extreme risks and threats are paralyzing their operations, a United Nations-backed report concluded recently.

“Conflict parties' lack of respect for the fundamental tenets of international humanitarian law and the brutality and volatility of today's armed conflicts make it extremely difficult and dangerous for these brave aid workers to deliver humanitarian assistance and protection in complex emergencies,” said UN Emergency Relief Coordinator Stephen O'Brien, whose Office for the Coordination of Humanitarian Affairs (OCHA) co-produced the report.

Presence and Proximity: To Stay and Deliver, Five Years On <<http://reliefweb.int/report/world/presence-and-proximity-stay-and-deliver-five-years>>, produced by OCHA, the Norwegian Refugee Council (NRC) and Jindal School of International Affairs in India, is based on interviews with more than 2,000 international and national aid workers, and includes case studies on humanitarian aid in Afghanistan, the Central African Republic (CAR), Syria and Yemen.

“It is our duty as aid workers to work where needs are greatest,” said Jan Egeland, Secretary General of NRC. “But our international humanitarian community is failing too many people in too many places, from Syria and Yemen to South Sudan and Nigeria. Extreme risks and threats are paralyzing too many organizations and their ability to deliver aid and save lives.”

Among its findings, the report found that as overall needs in the field have grown, so have the funding gaps, which necessitate cutting of projects and aid work.



On 12 May 2017 at the Sab'een Hospital in Sana'a, Yemen, a child with severe diarrhoea or cholera receives treatment.



On 30 May 2017 at the Al Sab'een Hospital in Sana'a, Yemen, a doctor checks on a girl suffering from cholera.



On 12 May 2017 at the Sab'een Hospital in Sana'a, Yemen, patients suffering from severe diarrhoea or cholera receive treatment.

it's really important to race against the spread and try to get treatment and water and sanitation measures to every corner, especially to those corners that are basically exporting the bacteria to other places," Tarik Jasarevic a spokesperson for WHO said in June.

And although cholera can be treated quickly if caught early, WHO reiterated that getting help in a middle of a conflict "is not so easy."

WHO and health partners are actively supporting the Ministry through a cholera task force to improve cholera response efforts at the national and local levels. As of 21 June, WHO has helped to set up 144 diarrhoea treatment centres and 206 oral rehydration points, along with more than 1,900 beds for cholera patients in 20 governorates.

The agency added that its health, water, sanitation and hygiene partners need \$66.7 million to scale up the cholera response.

Meritxell Relaño, the UNICEF Representative in Yemen, said: "With no end in sight to the conflict, the cholera outbreak – and potentially other disease will continue to stalk the lives of children."

Oxfam said that the outbreak is set to be one of the worst this century if there is not a massive and immediate effort to bring it

Based on interviews with aid workers, the authors also concluded that abductions of workers are on the rise, criminality is seen as a rising threat, and the number of incidents against national aid workers has increased.

"Humanitarians expressed an increased sense of risk and vulnerability, even though most major security incidents affecting humanitarians occur in a very small number of countries and tend to reflect the increased level of humanitarian activity in proximity to ongoing conflict rather than expanded targeting of humanitarians around the world," the authors wrote.

The report is a five-year follow-up to the 2011 document, 'To Stay and Deliver', which provided advice and recommendations to practitioners on critical issues, such as risk management, responsible partnerships, adherence to humanitarian principles, acceptance and negotiations with relevant actors.

Among the conclusions, the authors wrote that "not enough progress has been achieved since 2011, and many of the recommendations contained in the initial report remain particularly relevant today".

Other trends noted that humanitarians are more focused on security analysis, and that remote programming – the concept of using local organizations to help implement aid activities – can generate risks and undermine the quality of protection and humanitarian programmes.

under control. It is calling on rich countries and international agencies to generously deliver on promises of \$1.2bn of aid they made last month.

On June 23, the European Commission issued a statement saying it was scaling up its response with an additional Euro 5 million, bringing total EU support for efforts to tackle the disease to Euro 8.8 million.

Christos Stylianides, European Commissioner for Humanitarian Aid and Crisis Management, said: "The cholera outbreak in Yemen continues to spread dramatically during the last weeks and warrants urgent action. Crucially, humanitarian organisations must be allowed full access to do their life-saving job. While we do all we can to help those in need, only a political solution will bring this catastrophe to an end."

SINGLE USE AND REUSABLE LARYNGOSCOPES SYSTEMS



Macintosh and Miller Designs
Xenon and LED Light Handles
New Preloaded Single Use Handles

TIMESCO
INSTRUMENTS FOR LIFE

 **TIMESCO ENGLAND**

Timesco Healthcare Ltd, 3 Carnival Park,
Basildon, Essex, SS14 3WN. England.
export@timesco.com | www.timesco.com





GE signs MoU with Saudi Arabia to support kingdom's Vision 2030

GE has signed a range of Memorandums of Understanding [MoU] with the Kingdom of Saudi Arabia in an effort to support the delivery of Saudi Vision 2030. The MoUs cover multiple sectors and partners and aim to create a diverse and sustainable economic platform in the kingdom.

The initiatives touch upon the key pillars within Saudi Vision 2030, focusing on transforming the nation into a global investment leader and geographic hub and the upscaling of industrial skills and capabilities.

The agreements also place significant emphasis on human capital development and the digital transformation across multiple sectors, with the expanded application of GE's Predix platform, which utilizes cloud-based data analytics to better ensure and enhance manufacturing efficiency.

The transformation of the healthcare industry is a main priority of the government, which is looking to offer services and research capabilities on par with leading nations in healthcare around the world. Through five different partnerships with King Faisal Specialist Hospital [KFSH], Dr. Sulaiman Al Habib Medical Group, the Saudi Telecom Company [STC], King Fahad Medical City [KFMC] and the Saudi Industrial Clusters Development Program [NICDP] respectively, GE is providing expertise, equipment and cutting-edge digital solutions to ramp-up national healthcare competencies.

King Fahad Specialist Hospital (KFSH) – Through their partnership, KFSH and GE are aiming to establish a long-term technology management partnership for both GE and non-GE equipment, and in so doing establishing KFSH as a Digital Hospital, making use of advanced analytics, information technology systems and infrastructure. Education is a crucial component of this agreement, which will see the development of clinical, technical medical and leadership educational programs.

Dr Sulaiman Al Habib Medical Group (HMG) – GE and HMG are collaborating to deploy and develop a Hospital Information Solution through GE's Predix, with

the goal to deploy it in Saudi Arabia and across the region.

STC, MoH – The landmark agreement between STC and GE, under the patronage of the Saudi Ministry of Health, is a vital element in the digitization of industry in the Kingdom. The three partners will introduce digital solutions through an Electronic Medical Records Predix Solution and a Centralized Appointment System, which together will serve to transform the centers into 'digital hospitals.'

King Fahad Medical City (KFMC) – The partnership between KFMC and GE Healthcare focuses on the radiology privatization proof-of-concept for the medical imaging department at King Fahad Medical City and nearby hospitals, in addition to providing an operator to validate the government-wide operations over a 10-year period.

NICDP – This cooperation agreement will foster collaboration across multiple fronts in the development of biopharmaceutical capabilities in the Kingdom, stressing the importance of vaccine research and the development of local capabilities, eventually leading to the initiation of a bio-science park.

Report outlines changes required for improved healthcare in GCC

Dramatic economic growth fuelled by high oil prices since the early 2000s has brought rapid cultural change and resulted in a shift in lifestyle and dietary habits, leading to a rise in non-communicable diseases. In a new report, *'Diagnosing healthcare in the GCC: A preventative approach'*, www.eiuperspectives.economist.com/healthcare/diagnosing-healthcare-gcc-0 sponsored by Abbott, The Economist Intelligence Unit (EIU) reviews the health challenges facing the population in the six Gulf Co-operation Council (GCC) states – Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the UAE – and highlights the need for early diagnosis and preventative healthcare strategies.

The key sentiment among regional healthcare experts is that healthcare delivery should be the mandate of the private sector, while the public sector should be responsible for planning, oversight and

clinical governance. Improved efficiency – in terms of better utilisation of resources and improved patient turnaround times – will drive the system towards faster and more effective diagnosis. Government oversight will be essential to ensure that the private sector is operating as it should.

A central component of the healthcare system critical to early diagnosis is pathology, driving an estimated 70% of all healthcare decisions. Ensuring adherence to quality assurance protocols in laboratories will therefore be essential. In particular, ongoing training for laboratory technicians, provided by local educational facilities, will help to standardise testing procedures across the region.

Another component is insurance. To comply with the new insurance laws in the GCC, many companies are offering their employees a basic insurance package. In most cases, regular screenings and sophisticated testing are not covered. A framework must be developed to cover such tests if a genuine need can be identified.

The proliferation of insurance coverage has led to egregious doctor-incentivising practices. Enforcing regulation on incentivising of medical professionals will improve transparency and patient trust in the Gulf. Increased data capture and record-keeping, through systems such as Dubai's "e-claim", will shed more light on such practices, identifying instances where unnecessary tests are performed. In addition, individual health records will provide medical practitioners with detailed patient histories, which will lead to better diagnosis.

Melanie Noronha, the editor of the report, said: "Governments must develop a combined primary, secondary and tertiary prevention strategy to facilitate early diagnosis and preventative healthcare. A holistic strategy will entail educating the public about the need for regular screenings while improving access to these programmes, to create a system in which early diagnosis is possible."

UAE MoH signs MoU with Sanofi to tackle non-communicable diseases

The UAE Ministry of Health & Prevention has signed a Memorandum of Understand-

ing (MoU) with Sanofi to initiate comprehensive measures for the prevention of non-communicable diseases in the country.

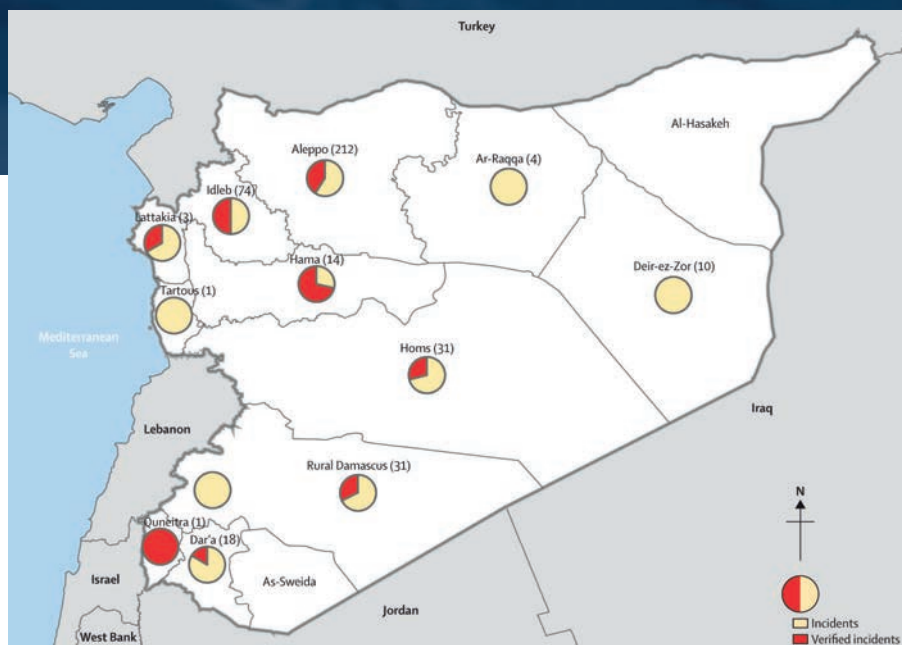
The collaborative initiative aims to develop programs that will help enhance the skills of healthcare professionals for better disease management, implement national health awareness activities, and improve education and training on pharmaco-economics. The objective of the MoU is to reinforce support for all the key stakeholders involved in the healthcare sector including, regulators, health authorities, healthcare providers (HCPs) and, patients and caregivers.

The initiative involves customized outreach activities designed to effectively educate various stakeholders and target groups for different disease areas.

Dr Hussein Abdul Rahman Al Rand, Assistant Undersecretary for the Ministry's Health Centers and Clinics Sector and Public Health, said: "The healthcare system in the UAE is taking every step to control the prevalence of preventable diseases among communities. Non-Communicable diseases such as diabetes and cardiovascular disease pose a threat to the health of the Emirati population and citizens. The incidence of these conditions can be greatly reduced if preventive and curative interventions are implemented effectively. Collaborative public-private partnerships are critical to achieving our healthcare goals and securing the future of the country. In line with this, we are happy to have Sanofi's support in helping us strengthen the healthcare infrastructure in the UAE."

To encourage two-way communication between patients, caregivers and the public, an integrated smart phone app will be developed to help maximize access to healthcare services.

The MoU also focuses on enhancing laboratory capabilities and genetic assay expertise by offering access to high-quality diagnostic testing for newborn babies, and free of cost testing for patients with high risk of LSDs (Lysosomal Storage Disorders). The long-term plan involves establishing disease registries, collecting epidemiological data, and driving awareness campaigns and screening programs on rare diseases.



Map of verified attacks – developed from shared information by WhatsApp group

WhatsApp enables monitoring of attacks on healthcare workers in Syria

The messaging service Whatsapp is being used in Syria to help monitor and collect data on attacks on healthcare workers and facilities, providing robust data in support of advocacy and accountability efforts.

The system, which enables teams to share data about attacks within 24 hours, identified 402 attacks against health care in Syria between November 2015 and December 2016, according to a new study in *The Lancet*. The study shows that during this year of the study, nearly half of hospitals in non-government controlled areas were attacked and a third of services were hit more than once.

Attacks on health care have reached unprecedented levels in Syria, now in its 7TH year of conflict. Collecting robust and reliable data is important to convince the international community to enforce legal protections, and to achieve accountability for widespread breaches of international law.

While reporting of attacks has improved, until now there has been no standardised method of collecting robust data. Collecting first-hand accounts from people on the ground can result in limited coverage, and using second-hand data such as media reports, satellite images and retrospective accounts can result in incomplete data, and collection is hampered by access constraints, security fears and concerns about confidentiality.

Following the 2010 UN General Assembly Resolution that threats to health care should be addressed, the WHO was tasked to develop a method of collecting more re-

liable data on attacks on health care.

The new tool was piloted by the Health Cluster in Gaziantep, Turkey, which coordinates humanitarian activities in Syria, including the UN and around 50 NGOs. The Health Cluster supports 352 health facilities in Syria, serving a population of approximately 5.5 million people.

The monitoring tool uses a 293-member WhatsApp group. When an incident occurs, a short message is posted to the group. All members with physically-verified information (i.e., who have visited the site or were present – not hearsay) are then asked to complete an anonymous and confidential online form to detail location, attack type (e.g. aerial bombardment, gunfire, arson), facility type, extent of damage, who was affected, injuries and deaths.

Within 24 hours, the team in Turkey issues a flash update to key partners, the WHO, UN and donors. Every month, data is verified by checking health cluster alerts against external reports. Reports that remain unverified because of insufficient information are also recorded

From November 2015 to December 2016, 402 individual attacks were identified, of which 158 were verified. A total of 938 people were harmed, a quarter of whom were health workers. Nearly half (44%) of hospitals in non-government controlled areas were attacked and a third of services were hit more than once. Services providing trauma care were attacked more than other services. Aerial bombardment was the main weapon, and land operations to take over a specific location were associated with increased attacks.

Dr Alaa Abou Zeid, Emergency Health



Coordinator, WHO Health Cluster, Gaziantep (now Health Cluster Coordinator, WHO, Yemen) and lead author of the paper, says: “On a daily basis, we have witnessed the efforts that partners do to keep health facilities operational, including dividing facilities, such as operating theatres and post-operative care, among locations to try to reduce the risk that all services are affected, or moving entire services underground. Our challenge now is to convince our colleagues on the ground to continue collecting and verifying data, when they have still not seen a reduction in attacks. We urge the international community to mobilise and apply the Geneva Convention with conviction in order to effectively protect health care and similar civilian services in conflict.”

Need for improved evidence – The paper is part of a wider four-paper Series, led by researchers from the London School of Hygiene & Tropical Medicine, UK, assessing the evidence base for health interventions in humanitarian crises. Large-scale humanitarian crises are ongoing in Syria, Afghanistan, Central African Republic, DR Congo, Iraq, Libya, Nigeria, Somalia, South Sudan, and Yemen among others.

Worldwide, an estimated 172 million people are affected by armed conflict, including 59 million people displaced - the highest number since World War 2. In addition to these man-made crises, 175 million people are affected by natural disasters each year.

The four-paper Series reveals significant variations in the quantity and quality of evidence for health interventions in humanitarian crises, and brings together lessons learned from recent failures in humanitarian crises to provide recommendations to improve a broken system.

Professor Francesco Checchi, London School Hygiene & Tropical Medicine, and lead author for the Series, says: “Timely and robust public health information is essential to guide an effective response to crises, whether in armed conflicts or natural disasters. Yet insecurity, insufficient resources and skills for data collection and analysis, and absence of validated methods combine to hamper the quantity and qual-

ity of public health information available to humanitarian responders. Far greater investment and collaboration across academic and operational agencies is needed to generate reliable evidence, and improve the response to humanitarian crises.”

Professor Paul Spiegel, Johns Hopkins Bloomberg School of Public Health, Baltimore, USA, and Series co-author adds: “The humanitarian system is broken. An unprecedented number of large-scale humanitarian emergencies are taking place, from Syria to South Sudan and Yemen, causing the largest number of people in a generation to be forcibly displaced. The existing humanitarian system was created for a different time and is no longer fit for purpose. Major changes are now needed to put the protection of humanitarian workers front and centre, to align humanitarian interventions with development programmes, to improve leadership and coordination and to make interventions more efficient, effective and sustainable.”

Polio outbreak in Syria

The Global Polio Eradication Initiative (GPEI) reports 8 June 2017 that a circulating vaccine-derived poliovirus type 2 (cVDPV2) outbreak has been confirmed in the Deir-Ez-Zor Governorate of the Syrian Arab Republic. The virus strain was isolated from two cases of acute flaccid paralysis (AFP), with onset of paralysis on 5 March and 6 May, as well as from a healthy child in the same community.

Outbreak response plans are being finalized, in line with internationally-agreed outbreak response protocols, including plans for targeted vaccination campaigns to rapidly raise population immunity. An initial risk analysis has been conducted, finding low overall population immunity levels in the area but solid levels of disease surveillance. Active searches are being conducted for additional cases of acute flaccid paralysis. Surveillance and immunization activities are also being strengthened in neighbouring countries.

Although access to Deir-Ez-Zor is compromised due to insecurity, the

Governorate has been partially reached by several vaccination campaigns against polio and other vaccine-preventable diseases since the beginning of 2016. Most recently, two campaigns have been conducted in March and April 2017 using bivalent oral polio vaccine (OPV). However, only limited coverage was possible through these campaigns. Syria also introduced two doses of inactivated polio vaccine in the infant routine immunization schedule in 2018.

The detection of the cases demonstrates that disease surveillance systems are functional in Syria. The polio programme is working with local authorities and organisations on the ground to respond immediately, using proven strategies. In 2013-2014, Deir-Ez-Zor was the epicentre of a wild poliovirus type 1 (WPV1) outbreak, resulting in 36 cases at the time. This outbreak was successfully stopped; the now-detected cVDPV2 strain is unrelated to the WPV1 outbreak.

Circulating VDPVs are extremely rare forms of poliovirus, mutated from strains in the oral polio vaccine (OPV) that can emerge in under-immunised populations. OPV has been a critical tool in eliminating 99.9% of polio cases worldwide, and while cVDPV is rare, the GPEI is actively working with countries to eradicate both vaccine-derived and wild polio. The same strategies that are eliminating wild poliovirus also stop cVDPV – it remains critical that all countries maintain strong disease surveillance and ensure all children are vaccinated. MEH

worldwide monitor

Update from around the globe

Most of 3000 adolescent deaths a day are preventable

More than 3000 adolescents die every day, totalling 1.2 million deaths a year, from largely preventable causes, according to a new report from the World Health Organization (WHO) and partners. In 2015, more than two-thirds of these deaths occurred in low- and middle-income countries in Africa and South-East Asia. Road traffic injuries, lower respiratory infections and suicide are the biggest causes of death among adolescents.

Most of these deaths can be prevented with good health services, education and social support. But in many cases, adolescents who suffer from mental health disorders, substance abuse or poor nutrition cannot obtain critical prevention and care services – either because the services do not exist, or because they do not know about them.

In addition, many behaviours that impact health later in life, such as physical inactivity, poor diet, and risky sexual behaviours, begin in adolescence.

“Adolescents have been entirely absent from national health plans for decades,” says Dr Flavia Bustreo, Assistant Director-General, WHO. “Relatively small investments focused on adolescents now will not only result in healthy and empowered adults who thrive and contribute positively to their communities, but it will also result in healthier future generations, yielding enormous returns.”

Data in the report, *Global Accelerated Action for the Health of Adolescents (AA-HA!): Guidance to Support Country Implementation*, reveal stark differences in causes of death when separating the adolescent group by age (younger adolescents aged 10-14 years and older ones aged 15-19) and by sex. The report also includes the range of interventions – from seat-belt laws to comprehensive sexuality education – that countries can take to improve their health and well-being and dramatically cut unnecessary deaths.

Road injuries

In 2015, road injuries were the leading cause of adolescent death among 10 to

19-year-olds, resulting in approximately 115,000 adolescent deaths. Older adolescent boys aged 15 to 19 years experienced the greatest burden. Most young people killed in road crashes are vulnerable road users such as pedestrians, cyclists and motorcyclists.

However, differences between regions are stark. Looking only at low- and middle-income countries in Africa, communicable diseases such as HIV/AIDS, lower respiratory infections, meningitis and diarrhoeal diseases are bigger causes of death among adolescents than road injuries.

Lower respiratory infections and pregnancy complications

The picture for girls differs greatly. The leading cause of death for younger adolescent girls aged 10-14 years are lower respiratory infections, such as pneumonia – often a result of indoor air pollution from cooking with dirty fuels. Pregnancy complications, such as haemorrhage, sepsis, obstructed labour and complications from unsafe abortions, are the top cause of death among 15 to 19-year-old girls.

Self-harm and suicide

Suicide and accidental death from self-harm were the third cause of adolescent mortality in 2015, resulting in an estimated 67,000 deaths. Self-harm largely occurs among older adolescents, and globally it is the second leading cause of death for older adolescent girls. It is the leading or second cause of adolescent death in Europe and South-East Asia.

Vulnerable population

Adolescent health needs intensify in humanitarian and fragile settings. Young people often take on adult responsibilities, including caring for siblings or working, and may be compelled to drop out of school, marry early or engage in transactional sex to meet their basic survival needs. As a result, they suffer malnutrition, unintentional injuries, pregnancies, diarrhoeal diseases, sexual violence, sexually-transmitted diseases and mental health issues.

Interventions

“Improving the way health systems serve adolescents is just one part of improving their health,” says Dr Anthony Costello, Director, Maternal, Newborn, Child and Adolescent Health, WHO. “Parents, families and communities are extremely important, as they have the greatest potential to positively influence adolescent behaviour and health.”

The *AA-HA! Guidance* recommends interventions across sectors, including comprehensive sexuality education in schools; higher age limits for alcohol consumption; mandating seat-belts and helmets through laws; reducing access to and misuse of firearms; reducing indoor air pollution through cleaner cooking fuels; and increasing access to safe water, sanitation and hygiene. It also provides detailed explanations of how countries can deliver these interventions with adolescent health programmes.

Hospitals treated as targets by parties to conflict – UN chief

Parties to conflict are treating hospitals and clinics as targets, rather than respecting them as sanctuaries, United Nations Secretary-General António Guterres warned in May at a Security Council debate on the protection of civilians in armed violence.

“Despite our efforts, civilians continue to bear the brunt of conflict around the world,” Guterres told the 15-member body, stressing that attacks on medical staff and facilities continue in conflict zones. Alongside him were Christine Beerli, Vice-President of the International Committee of the Red Cross (ICRC) and Bruno Stagno Ugarte, Deputy Executive Director for Advocacy of Human Rights Watch.

The UN chief recalled that last year, the Council took specific action to improve the protection of medical care during conflict, by adopting Resolution 2286, which, among others, urged ‘States and all parties to armed conflict to develop effective measures to prevent and address acts of violence, attacks and threats against medical personnel and humanitarian personnel exclusively engaged in medical duties.

worldwide monitor

Update from around the globe

In August, his predecessor submitted recommendations for the swift implementation of this resolution.

“But on the ground, little has changed,” Guterres warned, citing statistics from the World Health Organization showing that attacks on medical care took place in at least 20 countries affected by conflict in 2016.

In Syria, Physicians for Human Rights has documented more than 400 attacks on medical facilities since the conflict began. More than 800 medical staff have been killed, and more than half of all medical facilities are closed or are only partially functioning, with two-thirds of specialized medical personnel having fled the country.

In Yemen, just a few months after the adoption of resolution 2286, 15 people including three medical staff were reported killed when a hospital was hit in an airstrike.

In Afghanistan, the number of reported attacks against health facilities and personnel almost doubled in 2016 compared with 2015.

In South Sudan, after years of attacks, less than 50% of medical facilities are functional in areas affected by conflict.

“These attacks are evidence of a broader trend: parties to conflict are treating hospitals and health clinics as targets, rather than respecting them as sanctuaries,” Guterres said.

He went on to highlight the three main protection priorities; ensure greater respect for international humanitarian and human rights law; stepping up the protection of humanitarian and medical missions, by implementing his predecessor’s recommendations on Security Council resolution 2286 (2016); and preventing forced displacement and finding durable solutions for refugees and internally displaced people.

On the third point, he stressed the need to address the root causes of conflicts that are driving displacement, by investing in inclusive and sustainable development, promoting all human rights and the rule of law, strengthening governance and institutions,

and enhancing mediation capacity, from communities to national governments.

“Preventing and ending conflict is my first priority,” he declared. “I call on you all to make it yours, for the sake of the millions of civilians who are suffering around the world.”

Major research funders to implement WHO standards on reporting clinical trial results

Some of the world’s largest funders of medical research and international non-governmental organizations have agreed on new standards that will require all clinical trials they fund or support to be registered and the results disclosed publicly.

In a joint statement in May, the Indian Council of Medical Research, the Norwegian Research Council, the UK Medical Research Council, Médecins Sans Frontières and Epicentre (its research arm), PATH, the Coalition for Epidemic Preparedness Innovations (CEPI), Institut Pasteur, the Bill & Melinda Gates Foundation, and the Wellcome Trust agreed to develop and implement policies within the next 12 months that require all trials they fund, co-fund, sponsor or support to be registered in a publicly-available registry. They also agreed that all results would be disclosed within specified timeframes on the registry and/or by publication in a scientific journal.

Currently, about 50% of clinical trials go unreported, according to several studies, often because the results are negative. These unreported trial results leave an incomplete and potentially misleading picture of the risks and benefits of vaccines, drugs and medical devices, and can lead to use of sub-optimal or even harmful products.

“Research funders are making a strong statement that there will be no more excuses on why some clinical trials remain unreported long after they have completed,” said Dr Marie-Paule Kieny, Assistant Director-General for Health Systems and Innovation at WHO.

The signatories to the statement also agreed to monitor compliance with registration requirements and to endorse

the development of systems to monitor results reporting.

“We need timely clinical trial results to inform clinical care practices as well as make decisions about allocation of resources for future research,” said Dr Soumya Swaminathan, Director-General of the Indian Council of Medical Research. “We welcome the agreement of international standards for reporting timeframes that everyone can work towards.”

In 2015 WHO published its position on public disclosure of results from clinical trials, which defines timeframes within which results should be reported, and calls for older unpublished trials to be reported. That position builds on the World Medical Association’s Declaration of Helsinki in 2013. Today’s agreement by some of the world’s major research funders and international NGOs will mean the ethical principles described in both statements will now be enforced in thousands of trials every year.

Dr Trevor Mundel, President, Global Health, Bill & Melinda Gates Foundation, said: “It’s a 21st-century best practice – and an essential part of the social contract that underlies medical research – that clinical trial data should be made publicly available less than one year after a clinical trial’s completion. We strongly support WHO’s effort to establish a global standard for reporting data within this timeframe, which is a practice we require of our grantees as well.”

“Requiring summary results of clinical trials to be made freely available through open access registries within 12 months of study completion is good for both science and society,” said Dr Jeremy Farrar, Director of the Wellcome Trust. “Not only will this help ensure that these research findings are more discoverable, but it will also reduce reporting biases, which currently favour publication of trials which have a positive outcome.”

Most of these trials and their results will be accessible via WHO’s International Clinical Trials Registry Platform, a unique global database of clinical trials that com-

piles data from 17 registries around the world, including the United States of America's ClinicalTrials.gov, the European Union's Clinical Trials Register, the Chinese and Indian Clinical Trial Registries and many others.

Dr Micaela Serafini, Medical Director, Médecins Sans Frontières, said: "Timely reporting of all clinical trial results is of upmost importance to MSF allowing fully informed decisions when it comes to health strategies, treatments and diagnostics. We fully support this move towards increased transparency and accountability in clinical research."



WHO International Clinical Trials Registry Platform
www.who.int/ictrp

Life expectancy set to increase in developed nations, potentially surpassing 90 years in some countries

Life expectancies in developed countries are projected to continue increasing, with women's life expectancy potentially surpassing 90 years old in South Korea by 2030, according to a study published in *The Lancet*.

The study predicts life expectancy is likely to be highest in South Korea (90.8 years old), France (88.6 years old) and Japan (88.4 years old) for women, and in South Korea (84.1 years old), Australia (84.0 years old) and Switzerland (84.0 years old) for men.

The researchers advise that increasing life expectancies will have major implications for health and social services that will need to adapt and will require policies to support healthy ageing, increase investment in health and social care, and possibly changes to retirement age.

"As recently as the turn of the century, many researchers believed that life expectancy would never surpass 90 years," said lead author Professor Majid Ezzati, Imperial College London, UK. "Our predictions of increasing lifespans highlight our public health and healthcare successes. However, it is important that policies to support the

growing older population are in place. In particular, we will need to both strengthen our health and social care systems and to establish alternative models of care such as technology-assisted home care."

In the study, researchers used a statistical technique used in weather forecasting to determine their projections and how certain they are. They developed 21 models to predict life expectancy in 35 developed countries – unlike most life expectancy projections which are based on a single model – and combined the results from these models based on how well they performed. All the predictions in the study come with a range of uncertainty. For instance, there is a 90% probability that life expectancy for South Korean women in 2030 will be higher than 86.7 years, and a 57% probability that it will be higher than 90 years.

Although life expectancy is predicted to increase across all 35 countries, the extent of the increase varies by country. Comparing 2030 and 2010 life expectancies, female life expectancy is projected to increase most in South Korea, Slovenia and Portugal (6.6, 4.7 and 4.4 years, respectively). While for men life expectancy will increase most in Hungary, South Korea and Slovenia (7.5, 7.0 and 6.4 years).

Life expectancy is predicted to increase least in Macedonia, Bulgaria, Japan and the USA (1.4, 1.5, 1.8 and 2.1 years) for women, and in Macedonia, Greece and Sweden and the USA (2.4, 2.7, 3.0 and 3.0 years) for men.

The USA is predicted to see relatively small improvements in life expectancy (from 81.2 for in 2010 to 83.3 in 2030 for women and 76.5 to 79.5 for men). US life expectancy is already lower than most other high-income countries, and is expected to fall further behind in 2030, potentially as a result of its large inequalities, absence of universal health insurance and of the country having the highest homicide rate, body mass index (BMI) and death rates for children and mothers of all high-income countries.

Conversely, South Korea's projected gains may be the result of continued improvements in economic status which has improved nutrition for children, access to healthcare and medical technology across the whole population. This has resulted in fewer deaths from infections and better prevention and treatment for chronic diseases, in a way that is more equitable than some Western countries.

As well as calculating life expectancy at birth in 2030, the researchers projected how long those aged 65 years were likely to live in 2030. They found that women were likely to live an additional 24 years in 11 of the 35 countries, and that 65-year old men were likely to an additional 20 years in 22 countries – illustrating that older populations are likely to continue growing across the developed world.

With an ageing population it will be important to help people to age healthily and ease the impact of an ageing population on health systems through programmes that support healthy lifestyles and detect and treat diseases early. Providing assistive technology could also help older people remain in their homes by compensating for loss of mobility and senses, while building communities that are more accessible and providing good transportation services could help older people access amenities while staying in their community for longer.

The social implications of this change will also likely require changes to pensions and retirement, with further payments of social security and pensions needed to support those living longer. As a result, the researchers propose changes to working practice through changing retirement age or creating schemes that allow a gradual transition to retirement.

"Dealing with an ageing population will require a combination of strengthening and positioning our health and social care systems and our societies as a whole, so as to ensure that people age healthily, continue to contribute to society for longer, and receive appropriate pension and care once they age." said Professor Ezzati. MEH

the laboratory

Medical research news from around the world



Thalamus key to holding thoughts in the mind

Long assumed to be a mere “relay”, an often-overlooked egg-like structure in the middle of the brain also turns out to play a pivotal role in tuning-up thinking circuitry. A trio of studies in mice funded by the US National Institutes of Health are revealing that the thalamus sustains the ability to distinguish categories and hold thoughts in mind.

By manipulating activity of thalamus neurons, scientists were able to control an animal’s ability to remember how to find a reward. In the future, the thalamus might even become a target for interventions to reduce cognitive deficits in psychiatric disorders such as schizophrenia, researchers say.

“If the brain works like an orchestra, our results suggest the thalamus may be its conductor,” explained Michael Halassa, M.D., Ph.D., of New York University (NYU) Langone Medical Center, a BRAINS Award grantee of the NIH’s National Institute of Mental Health (NIMH), and also a grantee of the National Institute of Neurological Disorders and Stroke (NINDS). “It helps ensembles play in-sync by boosting their functional connectivity.”

Three independent teams of investigators led by Halassa, Joshua Gordon, M.D., Ph.D., formerly of Columbia University, New York City, now NIMH director, in collaboration with Christoph Kellendonk, Ph.D. of Columbia, and Karel Svoboda, PhD, at Howard Hughes Medical Institute

Janelia Research Campus, Ashburn, Virginia, in collaboration with Charles Gersen, Ph.D., of the NIMH Intramural Research Program, report on the newfound role for the thalamus online May 3, 2017 in the journals *Nature* and *Nature Neuroscience*.

The prevailing notion of the thalamus as a relay was based on its connections with parts of the brain that process inputs from the senses. But the thalamus has many connections with other parts of the brain that have yet to be explored, say the researchers.

All three groups investigated a circuit that connects the mid/upper (mediodorsal) thalamus with the prefrontal cortex (PFC), the brain’s thinking and decision making center. Brain imaging studies have detected decreased connectivity in this circuit in patients with schizophrenia, who often experience working memory problems.

Halassa and colleagues found that neurons in the thalamus and PFC appear to talk back and forth with each other. They monitored neural activity in mice performing a task that required them to hold in mind information about categories, so that they could act on cues indicating which of two doors hid a milk reward.

Optogenetically suppressing neuronal activity in the thalamus blocked the mice’s ability to choose the correct door, while optogenetically stimulating thalamus neural activity improved the animals’ performance on the working memory task. This confirmed a previously known role for the structure, extending it to the specialized tasks Halassa and colleagues used and demonstrating for the first time a specific role in the maintenance of information in working memory.

What kind of information was the thalamus helping to maintain? The researchers found sets of neurons in the PFC that held in memory the specific category of information required in order to choose the correct door. They determined that the thalamus did not (at least in this case) relay such specific category information, but instead broadly provided amplification that was crucial in sustaining memory of the category in the PFC. It accomplished

this by boosting the synchronous activity, or functional connectivity, of these sets of PFC neurons.

“Our study may have uncovered the key circuit elements underlying how the brain represents categories,” suggested Halassa.

Gordon and colleagues saw similar results when they tested how the same circuit controlled a mouse’s ability to find milk in a maze. The animals had to remember whether they had turned left or right to get their reward prior to a brief delay – and do the opposite. Also using optogenetics, the study teased apart differing roles for subgroups of PFC neurons and interactions with the brain’s memory hub, the hippocampus.

Thalamus inputs to the PFC sustained the maintenance of working memory by stabilizing activity there during the delay. “Top-down” signals from the PFC back to the thalamus supported memory retrieval and taking action. Consistent with previous findings, inputs from the hippocampus, were required to encode in PFC neurons the location of the reward – analogous to the correct door in the Halassa experiment.

“Strikingly, we found two separate populations of neurons in the PFC. One encoded for spatial location and required hippocampal input; the other was active during memory maintenance and required thalamic input,” noted Gordon. “Our findings should have translational relevance, particularly to schizophrenia. Further study of how this circuit might go awry and cause working memory deficits holds promise for improved diagnosis and more targeted therapeutic approaches.”

In their study, the Janelia team and Gersen similarly showed that the thalamus plays a crucial role in sustaining short-term memory, by cooperating with the cortex through bi-directional interactions. Mice needed to remember where to move after a delay of seconds, to gather a reward. In this case, the thalamus was found to be in conversation with a part of the motor cortex during planning of those movements. Neuronal electrical monitoring revealed activity in both structures, indicating that they together sustain information held in



the cortex that predicted in which direction the animal would subsequently move. Optogenetic probing revealed that the conversation was bidirectional, with cortex activity dependent on thalamus and vice versa.

“Our results show that cortex circuits alone can’t sustain the neural activity required to prepare for movement,” explained Gerfen. “It also requires reciprocal participation across multiple brain areas, including the thalamus as a critical hub in the circuit.”

■ Watch video: Michael Halassa - Understanding Thalamic Function: <<https://www.youtube.com/watch?v=4yc1XFLNb7w>>

- doi:10.1038/nature22073.
- doi:10.1038/nn.4568
- doi:10.1038/nature22324

Chikungunya vaccine trial begins

A clinical trial of an experimental vaccine to prevent infection with chikungunya virus is now enrolling healthy adult volunteers at three sites in the United States. The Phase 1/2 trial, which is sponsored by the US National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health, is being conducted at several NIAID-funded Vaccine and Treatment Evaluation Units. The candidate vaccine, MV-CHIKV, was developed by Themis Bioscience of Vienna, Austria.

Although chikungunya is rarely fatal, the mosquito-transmitted virus causes an intense inflammatory reaction resulting in severe joint pain, fever, rash and muscle pain. While most symptoms usually resolve in days, the joint inflammation can linger.

“Chikungunya virus can cause debilitating joint pain that can last for months or even longer,” said NIAID Director Anthony S. Fauci, M.D. “A vaccine to prevent infection with this virus would be of considerable benefit to people living in the more than 60 countries where chikungunya transmission has occurred, as well as travelers to those countries.”

Chikungunya virus has been endemic in East Africa since at least the 1950s,

when it was first discovered. There it circulates among monkeys and, occasionally, humans. The virus likely arrived in the Caribbean in late 2013, and as of March 2017, may have infected more than two million people in the Americas, according to the Pan American Health Organization (PAHO).

A 2014 Phase 1 trial of the MV-CHIKV vaccine conducted in Austria by Themis Bioscience showed that the experimental vaccine was safe and induced an immune response. The candidate vaccine is a measles vaccine virus modified to produce chikungunya virus proteins. Once inside a human cell, the vaccine induces the production of both measles and chikungunya proteins. The immune system then develops antibodies against those proteins, which may protect the vaccinated person from future infection by chikungunya virus.

Led by principal investigator Patricia Winokur, M.D., of the University of Iowa Carver College of Medicine, the new vaccine study will enrol 180 healthy adults ages 18 to 45 at three sites: the University of Iowa in Iowa City; Baylor College of Medicine in Houston; and Emory University in Atlanta. Participants will receive two injections of either low-dose or high-dose experimental vaccine or placebo. Neither the participants nor the investigators will know whether a volunteer is receiving placebo or investigational vaccine. The volunteers will be assigned at random into different groups that receive the two injections at different intervals (29, 85, or 169 days after the initial injection) in order to help the researchers determine which schedule is most effective.

Clinic staff will follow up with study participants by phone and during clinic visits over the course of 8 to 13 months to monitor for any adverse reactions or safety issues. The participants will provide blood samples to be analysed for evidence of antibody production, which would indicate that the vaccine is prompting an immune response.

Themis Bioscience is currently conducting a Phase 2 trial in Europe with the same vaccine candidate. Other chikungunya

vaccine candidates are also under investigation in different trials, including one that uses virus-like particles (VLPs) to induce an immune response in recipients. NIAID sponsored the Phase 1 trial of the VLP vaccine candidate; a Phase 2 trial began in 2015.

Glutamine suppresses herpes in mice

Glutamine supplements can suppress reactivation of herpes simplex virus (HSV) in mice and guinea pigs, according to findings recently published in the *Journal of Clinical Investigation*. The research was conducted by scientists at the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health, and at the US Food and Drug Administration.

There is no cure for infection with HSV-1 and HSV-2, viruses that can cause recurrent outbreaks of cold sores and genital sores in humans. Although antiviral medications can help shorten outbreaks, the virus persists in the body and can reactivate, which underscores the need for new treatment approaches. Prior research demonstrated the importance of HSV-specific T cells for controlling recurrent HSV outbreaks, and that activated T cells require increased metabolism of glutamine (an amino acid produced by the body and found in food). Therefore, the authors speculated that glutamine supplementation might increase T-cell function and improve infection control.

To test this hypothesis, scientists infected mice with HSV-1 and guinea pigs with HSV-2 and randomly assigned the animals to different treatment groups. Two weeks after infection, some animals received an oral glutamine supplement and others did not. Results showed that mice that received glutamine were less likely to have HSV-1 reactivation than those that did not, and similarly, guinea pigs that received glutamine were less likely to have recurrent outbreaks of HSV-2 than those that did not receive the supplement.

Evaluation of host cellular gene expression in mice treated with glutamine showed that several genes inducible by in-



terferon gamma (IFN- γ) had an increased response. IFN- γ is produced by virus-specific T cells and can inhibit viral reactivation. Mice treated with glutamine also had high numbers of virus-specific T cells in infected nerve tissues. Together, the results suggest glutamine may reduce HSV reactivation by improving the T-cell response to infection. Clinical trials are needed to determine whether this novel treatment approach would effectively treat HSV in humans, according to the authors.

● doi:10.1172/JCI88990 (2017).

Researchers connect blood brain vessel lesions to gut bacteria

A study in mice and humans suggests that bacteria in the gut can influence the structure of the brain's blood vessels, and may be responsible for producing malformations that can lead to stroke or epilepsy. The research, published in *Nature*, adds to an emerging picture that connects intestinal microbes and disorders of the nervous system. The study was funded by the US National Institute of Neurological Disorders and Stroke (NINDS), a part of the National Institutes of Health.

Cerebral cavernous malformations (CCMs) are clusters of dilated, thin-walled blood vessels that can lead to seizures or stroke when blood leaks into the surrounding brain tissue. A team of scientists at the University of Pennsylvania investigated the mechanisms that cause CCM lesions to form in genetically engineered mice and discovered an unexpected link to bacteria in the gut. When bacteria were eliminated the number of lesions was greatly diminished.

"This study is exciting because it shows that changes within the body can affect the progression of a disorder caused by a genetic mutation," said Jim I. Koenig, Ph.D., program director at NINDS.

The researchers were studying a well-established mouse model that forms a significant number of CCMs following the injection of a drug to induce gene deletion. However, when the animals were relocated to a new facility, the frequency of lesion formation decreased to almost zero.

"It was a complete mystery. Suddenly,

our normally reliable mouse model was no longer forming the lesions that we expected," said Mark L. Kahn, M.D., professor of medicine at the University of Pennsylvania, and senior author of the study. "What's interesting is that this variability in lesion formation is also seen in humans, where patients with the same genetic mutation often have dramatically different disease courses."

While investigating the cause of this sudden variability, Alan Tang, a graduate student in Dr Kahn's lab, noticed that the few mice that continued to form lesions had developed bacterial abscesses in their abdomens – infections that most likely arose due to the abdominal drug injections. The abscesses contained Gram-negative bacteria, and when similar bacterial infections were deliberately induced in the CCM model animals, about half of them developed significant CCMs.

"The mice that formed CCMs also had abscesses in their spleens, which meant that the bacteria had entered the bloodstream from the initial abscess site," said Tang. "This suggested a connection between the spread of a specific type of bacteria through the bloodstream and the formation of these blood vascular lesions in the brain."

The question remained as to how bacteria in the blood could influence blood vessel behaviour in the brain. Gram-negative bacteria produce molecules called lipopolysaccharides (LPS) that are potent activators of innate immune signalling. When the mice received injections of LPS alone, they formed numerous large CCMs, similar to those produced by bacterial infection. Conversely, when the LPS receptor, TLR4, was genetically removed from these mice they no longer formed CCM lesions. The researchers also found that, in humans, genetic mutations causing an increase in TLR4 expression were associated with a greater risk of forming CCMs.

"We knew that lesion formation could be driven by Gram-negative bacteria in the body through LPS signalling," said Kahn. "Our next question was whether we could prevent lesions by changing the bacteria in the body."

The researchers explored changes to the body's bacteria (microbiome) in two ways. First, newborn CCM mice were raised in either normal housing or under germ-free conditions. Second, these mice were given a course of antibiotics to "reset" their microbiome. In both the germ-free conditions and following the course of antibiotics, the number of lesions was significantly reduced, indicating that both the quantity and quality of the gut microbiome could affect CCM formation. Finally, a drug that specifically blocks TLR4 also produced a significant decrease in lesion formation. This drug has been tested in clinical trials for the treatment of sepsis, and these findings suggest a therapeutic potential for the drug in the treatment of CCMs, although considerable research remains to be done.

"These results are especially exciting because they show that we can take findings in the mouse and possibly apply them at the human patient population," said Koenig. "The drug used to block TLR4 has already been tested in patients for other conditions, and it may show therapeutic potential in the treatment of CCMs, although considerable research still remains to be done."

Kahn and his colleagues plan to continue to study the relationship between the microbiome and CCM formation, particularly as it relates to human disease.

Sleep loss can lead to weight gain

Sleep loss increases the risk of obesity through a combination of effects on energy metabolism. This research, presented at the European Congress of Endocrinology in Lisbon in May, highlights how disrupted sleep patterns, a common feature of modern living, can predispose to weight gain, by affecting people's appetite and responses to food and exercise.

In the 24/7 culture of the modern world, an increasing number of people report routine reduced quality of sleep and several studies have correlated sleep deprivation with weight gain. The underlying cause of increased obesity risk from sleep disruption is unclear but may relate to changes in appetite, metabolism, mo-



tivation, physical activity or a combination of factors.

Dr Christian Benedict from Uppsala University, Sweden and his group have conducted a number of human studies to investigate how sleep loss may affect energy metabolism. These human studies have measured and imaged behavioural, physiological and biochemical responses to food following acute sleep deprivation. The behavioural data reveal that metabolically healthy, sleep-deprived human subjects prefer larger food portions, seek more calories, exhibit signs of increased food-related impulsivity, experience more pleasure from food, and expend less energy.

The group's physiological studies indicate that sleep loss shifts the hormonal balance from hormones that promote fullness (satiety), such as GLP-1, to those that promote hunger, such as ghrelin. Sleep restriction also increased levels of endocannabinoids, which is known to have appetite-promoting effects. Further work from Dr Benedict's team shows that acute sleep loss alters the balance of gut bacteria, which has been widely implicated as key for maintaining a healthy metabolism. The same study also found reduced sensitivity to insulin after sleep loss.

Dr Christian Benedict remarked: "Since perturbed sleep is such a common feature of modern life, these studies show it is no surprise that metabolic disorders, such as obesity are also on the rise."

Although Dr Benedict's work has shed light on how short periods of sleep loss can affect energy metabolism, longer-term studies are needed to validate these findings. The group are now investigating longer-term effects and also whether extending sleep in habitual short sleepers can restore these alterations in appetite and energy metabolism.

Dr Christian Benedict said: "My studies suggest that sleep loss favours weight gain in humans. It may also be concluded that improving sleep could be a promising lifestyle intervention to reduce the risk of future weight gain."

● doi:10.1530/endoabs.49.S28.1



Professor Sulaiman Al Zuhair

UAEU research collaboration unlocks potential new medicine breakthrough

The process of making medicine from microalgae – and potentially developing new treatments for some of the world's most serious diseases – could be boosted through a new discovery by an international research partnership that includes UAEU scientists.

A scientific research group affiliated to the university's Chemical and Petroleum Engineering Department and the School of Biological Sciences at the University of Essex in the UK has devised a mechanism to extract proteins and pigments from microalgae, which can be used in the manufacture of medicine.

Microalgae proteins and pigments have been effectively extracted using an enzymatic technique. Aligning with an intensive global focus on extracting medicinal material from natural sources, the group's research is now turning to testing the effectiveness of the proteins and substances extracted through their method in treating cancer and bacterial diseases, which paves the way for the manufacture of this innovative strand of medicine.

Professor Sulaiman Al Zuhair, of UAEU's Chemical and Petroleum Engineering Department, explained that research funded by medicine companies around the world is currently looking to invent and produce new, non-chemical treatment options that reduce the risk of potentially harmful side-effects of the chemically synthesized conventional medicine. For the project he is involved in, he says, microalgae – a single-cell organism – were considered to

present a potential opportunity for medical discovery.

"Specific types of microalgae are used in the manufacture of medicine, which is our main subject in this scientific research," he said.

"We evaluated the effectiveness of enzymatic treatment resulting from implementing the extracted proteins and pigments from microalgae, and compared innovative and organic natural extraction technique with traditional treatments, such as ultrasound waves and high-pressured water."

According to Professor Al Zuhair, enzymatic treatment has seen "many positive and successful results" from using the proteins extracted from the microalgae, which was not exposed to high temperatures. The ongoing research project, he says, is the latest step in a long relationship between UAEU scientists and studies of microalgae.

"These studies started in the Chemical and Petroleum Engineering Department in UAEU's College of Engineering in 2010, for the purpose of producing biodiesel," he said. "The research group succeeded in increasing the percentage of oil components from 12% to 70%."

During deliberations and discussions in front of the research group from the School of Biological Sciences at the University of Essex, the different research parties agreed to consider and focus on other components present in the algae, in particular the proteins and colorful substances, for the purpose of using them in the manufacture of medicine." MEH



Participants in the partnership between UK Lebanon Tech Hub and the American University of Beirut to develop a novel non-invasive blood glucose-monitoring device.

Tech hub partnership with AUB develops novel blood glucose monitoring device

A partnership between UK Lebanon Tech Hub and the American University of Beirut to develop a first-of-its-kind non-invasive blood glucose-monitoring device is receiving praise for its research and innovation and is being hailed as an optimistic sign of what Lebanon is capable of in its move towards a knowledge economy.

UK Lebanon Tech Hub (UKLTH) announced that it will fund the research and development of ediamond (Electromagnetic Diabetes Monitoring Device): a one of its kind non-invasive blood glucose-monitoring device, which is being developed by the Maroun Semaan faculty of Engineering and Architecture and the Faculty of Medicine at the American University of Beirut (AUB).

The partnership was agreed at a formal

signing ceremony in May, which was attended by Nicolas Sehnaoui, Chairman of the board of the UKLTH, Dr Fadlo R. Khuri, President of AUB and Dr Mohamed Harajli, Provost of AUB, in addition to AUB Deans of Medicine and Engineering and Architecture and senior executives.

ediamond is a continuous glucose monitoring wearable device that will enable diabetic patients to check their glucose levels without needing to come

into contact with their blood stream, i.e. through conventional methods such as repeatedly pricking their finger with a needle throughout the day. The lead investigators of ediamond are Dr Joseph Costantine and Dr Rouwaida Kanj from the Maroun Semaan Faculty of Engineering and Architecture, and Dr Assaad Eid from the Faculty of Medicine.

Sehnaoui, Chairman of the UK Lebanon Tech Hub, said: "The goal of

One of the most efficient ways to do business is to have the initial ideas come out from the academic institutions. If you look at Silicon Valley, New Jersey, New York, and Pennsylvania, most of the companies have intimate ties with great universities.

this collaboration is to produce a one-of-its-kind non-invasive blood glucose monitoring device that will make monitoring as easy as checking the time of day.

“With 15% of the world’s population suffering from diabetes we believe this device, which uses advanced electromagnetic theory, could make a profound difference to the lives of hundreds of millions of people. We hope, in particular, to empower those patients who lack diabetes management capabilities.”

President Khuri emphasized the importance of universities as centres of research for innovation and technology start-ups. He said:

“One of the most efficient ways to do business is to have the initial ideas come out from the academic institutions. If you look at Silicon Valley, New Jersey, New York, and Pennsylvania, most of the companies have intimate ties with great universities.”

The collaboration between the UKLTH and AUB demonstrates UKLTH’s commitment to supporting applied research projects through the recently set up International Research Centre (IRC).

The IRC was set up to play a key role in boosting investment in R&D in Lebanon and the wider MENA region, in particular by developing links between universities and entrepreneurs. Arab countries still lag considerably behind

other knowledge economies in terms of investment in R&D. According to the UNESCO Institute of Statistics, Arab countries only allocated a maximum of 0.7% of their GDP to R&D whilst EU countries allocated up to 3.2 % and Japan allocated 3.6%.

However, the UKLTH believes Lebanon has great potential to develop a world leading knowledge economy from greater investment in R&D. Lebanon ranks 4th out of 144 countries in mathematics and science education according to the World Economic Forum’s Global Information Technology Report. Also, more than 11% of the student population study engineering while 9% study computer and information technology. This has led to Lebanon having the highest number of engineers per capita in the world.

Lebanon’s entrepreneurial ecosystem is developing fast, which is demonstrated by Lebanon ICT sector’s 8% annual growth over the last five years and the expansion of the market to US\$ 400 million by 2015, according to a recent report by the UK Lebanon Tech Hub. This has helped position Lebanon in the Top 20 entrepreneurial nations of the world in 2015 (Global Entrepreneurship Monitor). At the same time, Lebanon has many universities with dedicated research policies. Based on the most recent QS University Rankings, Lebanon had three universities in the top 20 universities of the Arab region, including the American University of Beirut, whose Faculties of Medicine and Engineering and Architecture are ranked among the top in the MENA region.

Sehnaoui also highlighted how this partnership with AUB is a great platform for further collaborations. He added: “We would like to create a direct link between the UKLTH and AUB by connecting our start-ups with AUB students. This will enable the students to gain first-hand knowledge of life at a start-up and hopefully spark their inner entrepreneur. It will also benefit our start-ups by providing them with interns to support their efforts.

“We would also like to create a simple incentive programme for professors from around the world to visit AUB as adjunct


We would also like to create a simple incentive programme for professors from around the world to visit AUB as adjunct professors. Part of the programme will include being able to sit on the board of directors of our start-ups to offer valuable advice. This will benefit both parties as it will provide great international experience for the visiting professors, and our start-ups will have the advantage of participating in board meetings.

professors. Part of the programme will include being able to sit on the board of directors of our start-ups to offer valuable advice. This will benefit both parties as it will provide great international experience for the visiting professors, and our start-ups will have the advantage of participating in board meetings.”

Sehnaoui also shared his optimism that Lebanon will become a technological hub a few years down the line, saying that he believes in the capabilities of the Lebanese people in terms of innovation and creation.

“It’s all about the will and the passion, and I am very passionate about this.

“We live in fantastic times because of the exponential growth of Information Technology, which opens great possibilities for R&D. We live in fantastic times, we are fantastic people, and AUB is a fantastic university, so we can create fantastic things.”

■ More information about the UK Lebanon Tech Hub (UKLTH) can be found at: www.uklehub.com/en/Home 

The American University of Beirut Medical Center

A year of accomplishments in a nutshell



AUBMC's new medical centre

For the past century and a half, the Faculty of Medicine at the American University of Beirut (AUBFM) has been a driver of the historical evolution of medicine in Lebanon and the region. Innovation, initiative, and sheer controlled risk-taking have marked the growth of the Faculty, ever since its humble beginnings one year after the inauguration of the Syrian Protestant College in 1866.

Among AUBFM's more than 4300 graduates are luminaries in every specialty and leaders in many of the researches conducted worldwide. AUBFM remains the premier medical, educational, and research hub in the Middle East and has more recently established itself as a world-class research institution, with an eye toward making an ever-greater difference in the region.

A legacy of 150 years

To mark its tremendous legacy, and with "Purpose. Passion. Compassion." as its slogan for the year 2017, AUBFM planned yearlong events composed of medical conferences, distinguished speaker series, national campaigns, basic life support and awareness activities, community outreach events and, of course, alumni chapter celebrations around the world. And perhaps the highlight of these events was The Middle East Medical Assembly (MEMA) which was held in May 2017. Proving to be of great success, MEMA presented the first global congress on conflict medicine, focusing on the management of conflict related injuries including, but not limited to, the pathological, psychological, nursing, nephrological, surgical, oncological, and social manifestations of war wounds.

2020 Vision, promise and progress

Launched in 2010, the 2020 Vision is an impactful plan for AUB's Medical Center

(AUBMC) and healthcare in Lebanon and the region. The vision has proven to be strategic, with clear goals and intricate implementation processes. Since its launching, it has generated a significant amount of local, regional and global support. To successfully integrate their ambitious plans and programs for growth and expansion, a major facility expansion was proposed for the new AUBMC 2020 Medical Complex.

Seven years after the launching of the vision, AUBMC has achieved significant progress of this unique and health-transforming vision. Throughout the past years, the medical center witnessed the establishment of state-of-the-art buildings, the latest of which is the Halim and Aida Daniel Academic and Clinical Center (ACC), the first facility in the region to focus on patient care, education, and research and which is expected to welcome patients in 2018. In addition, the facility has expanded to include several centers of excellence in oncology, neuroscience, multiple sclerosis, and children's' cancer, as well as new clinical programs, services, and units. The Faculty of Medicine has also been acclaimed for the recruitment of over 150 top-caliber, highly specialized and accomplished physicians and scientists; hence, reversing the brain drain.


Moving forward, AUBMC will soon be launching their New Medical Center Expansion (NMCE) Project. The new building will make available an additional 150

beds, satisfy the need for OR procedures, develop revenue generating uses, and allow for Cancer & Pediatric Hospital development opportunities

The legacy continues

A key aspect for the successful implementation of the AUBMC 2020 Vision is accreditation. AUBMC is the first medical institution in the Middle East to have earned five international accreditations of Joint Commission International (JCI) for the fourth time in a row, Magnet, College of American Pathologists (CAP), Joint Accreditation Committee for EBMT and ISCT Europe (JACIE), and Accreditation Council for Graduate Medical Education – International (ACGME-I). This is testament to its superior standards in patient-centered care, nursing, pathology/ laboratory services, and medical education.

Additionally, it received the honor of the Meritorious Outcomes with the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP).

In 2017, AUBMC Food Services Department has also earned the Safety Q Platinum certification (QPA) granted by Boecker Food Safety. To add to its accomplishments, the Nuclear Medicine Division at AUBMC has successfully undergone the International QUANUM Audit by the International Atomic Energy Agency (IAEA), Department of Technical Cooperation, Department of Nuclear Sciences and Applications. 



Opening in 2018, the Halim and Aida Daniel Academic and Clinical Center (ACC) will be the first facility in the region to focus on patient care, education, and research all in one place.



Clemenceau Medical Center provides advanced healthcare in a luxury setting



Clemenceau Medical Center (CMC) is a unique private 160-bed medical center that combines luxury and technology by integrating avant-garde treatment and technology, 5-star luxury setting, a healing environment, a medium for continuous medical education and knowledge transfer, experienced and specialized top professionals, all under one roof. Located in Beirut, Lebanon, CMC's affiliation with Johns Hopkins Medicine and multiple accreditations by Joint Commission International (JCI), enables the medical center to offer its patients superior healthcare services embedded within a culture of excellence and relentless commitment for high quality patient care.

Their aim is to set a new concept in the regional healthcare industry through positioning Clemenceau Medical Center as one of premium quality, providing private medical services that suit different patients' needs. The medical services offered by CMC are geared towards attracting patients from Lebanon, the region and the world seeking medical/healthcare assistance with high quality standards.

CMC's mission and the three pillars on which the medical center was built upon are Safety, Caring, and Excellence. Their adherence to patient-centered care revolves around introducing and optimizing new services and medical specialties by implementing the latest medical trends and purchasing the latest medical equipment, so as to ensure superior quality medical services with reasonable global prices to patients, both local and international.

CMC Centers of Excellence include clinical and non-clinical teams and entities providing leadership, best practices, research, support and training for all medical specialties including

Neurosurgery, Women's Center, Digestive Center, Urology & Prostate center, Orthopedic and Spine Center, and Heart Center with the highly advanced TAVI (trans-catheter aortic valve implantation) procedure; state-of-the-art Cancer Center with the most advanced Varian Truebeam radiation therapy; cutting edge truly integrated Operating Theatres with ORI system, multi-disciplinary OR infrastructure solutions, and the minimally



invasive daVinci Robotics Surgical System. Moreover, CMC is committed to providing a safe and excellent service by developing a culture that is centered on a five-star customer services much like the services that patients expect to see in the hotel industry. CMC goes to great lengths to be sure that their patients feel comfortable and safe during their entire hospital stay. Furthermore, their services reflect their high-level physicians and healthcare staff, as they are the beating heart of the institution. Hence, CMC targets distinguished physicians practicing abroad to join the center via a rigorous hiring and headhunting process.

Expansion abroad

From world-class medical excellence

and elegant surroundings to personalized care and services, Clemenceau Medicine International (CMI) is committed to extending the CMC brand and advancing Clemenceau Medicine's mission of patient care both regionally and internationally.

Since 2008, CMI has followed a targeted course of expansion, launching hospitals and medical centers in major regional city centers and destinations around the Middle East, with the aim of being recognized as the organization that manages the finest hospitals, diagnostic centers and clinics wherever they are located.

All CMC-affiliated hospitals will have the Clemenceau Medicine culture of international standards and relentless commitment to patient care deeply instilled, from the way they are architecturally designed to the manner in which they are operated and managed. All medical centers will pursue innovation in healthcare and work hard to perfect the healthcare experience though the latest trends and the highest standards of medical services and hospitality.

Currently, they are developing projects in Riyadh and Dubai.

The importance of these hospitals and what sets them apart from the rest of the region is that they operate within the Clemenceau Medicine Network, which is an assimilated network of centers of excellence for clinical and wellness services, innovation, medical education, training and research. The CMI network benefits from the expertise of Clemenceau Medical Center's medical, nursing and administrative staff which is characterized by their international expertise through continuous education and exchange of knowledge with Johns Hopkins International. MEH



IN A HEALING ENVIRONMENT EVERYTHING FEELS BETTER.

CMC provides its patients not only with the most advanced health care and state-of-the-art equipment but with highly qualified medical staff and a team of doctors renowned for their medical leadership in their respective fields. Working in harmony to guarantee accuracy in diagnosis and the best available treatments, our medical staff will exert all efforts to leave you feeling like you are in the best of hands.





Lebanese American University Medical Center – committed to excellence

The Lebanese American University Medical Center-Rizk Hospital in Beirut offers its patients and the community a wide range of medical, surgical and diagnostic healthcare services. As the integration with The Gilbert and Rose-Marie Chagoury School of Medicine evolves, and necessary resources are in place, the hospital will operate several Clinical Centers of Excellence.

LAU Medical Center – Rizk Hospital currently operates the following medical departments and divisions: Surgery; Medical Lab, Pathology and Forensic Medicine; Psychiatry; Obstetrics & Gynecology; ENT; Anesthesiology; Internal Medicine; Diagnostic Imaging & Interventional Therapeutics; Ophthalmology; Pediatrics; and Dermatology.

The Lebanese American University Medical Center-Rizk Hospital was originally established in 1925 as a private family-owned clinic. In 1957 the Rizk Hospital was opened and was one of the first modern hospitals in Beirut and all of Lebanon. Over the next several decades,

the hospital was expanded with more buildings so that by 1997 it provided a spacious environment for the provision of advanced healthcare.

In 2009, the Rizk family sold the hospital to Medical Care Holding, in which the Lebanese American University (LAU) possesses controlling interests. The hospital was renamed University Medical Center – Rizk Hospital and it now serves as the primary teaching hospital for LAU's schools of Medicine, Nursing, and Pharmacy.

Surgery

The hospital provides a wide variety of surgical procedures including bariatric,

orthopedic, plastic, transplant and oncological surgery, among others.

Obs-Gyn

The Obs-Gyn department offers a range of services including Gynecologic Oncology, Maternal and Fetal Medicine, Reproductive Medicine and Infertility; and Minimally Invasive Gynecologic Surgery.

In addition to medical and surgical services, LAU Medical Center – Rizk Hospital also offers the following services: Blood bank; Central Laboratory; Eye Center; Pharmacy; Radiology; Sports Medicine and; Physical Therapy.

■ For more information, visit:

www.laumcrh.com 

Centers of Excellence

LAU Medical Center plans to operate the following Centers of Excellence:

- Adolescent & Pediatric Medicine
- Cancer Center
- Cardio-Vascular Center
- Center for Clinical Research
- Diabetes and Obesity
- Geriatrics Center
- Multidisciplinary Minimally Invasive Surgery Center
- Musculoskeletal & Sports Medicine
- Neuroscience Center
- Organ Transplantation Center
- Women's Health Center

Mission, Vision and Values

The LAU Medical Center – Rizk Hospital is guided by a strong and unwavering commitment to achieve their mission and fulfill their vision. Physicians and employees embrace an ethical set of values that defines who they are.

Mission

LAU Medical Center – Rizk Hospital is committed to excellence in patient care, clinical outcomes, academics and research.

Vision

LAU Medical Center – Rizk Hospital will be the premiere academic medical center in the Middle East by delivering outstanding, innovative, patient-centered care in partnership with superior health professionals.

Values

“**Respect** – The basic dignity of the Human Person is the guiding principle in all our policies, procedures and interactions. Human life at every step of development and decline is precious and worthy of respect.

“**Integrity** – Integrity means that we are consistently truthful, that we observe ethical standards, and that we promptly acknowledge errors.

“**Compassion** – Compassion is the way we share deep concern, love, and care toward each person.

“**Excellence** – Excellence is the result of our willingness to be creative, and to seek new approaches to improve the quality of our work. Excellence is our way of demonstrating that we can always be more, and we can always be better.”



King Hussein Cancer Center expansion doubles capacity



Middle East Health speaks to **Dr Asem Mansour**, CEO/Director General, King Hussein Cancer Center in Amman about the hospital, their care for Syrian refugees and center's new extension.



Middle East Health: Do you receive foreign patients at the hospital?

Dr Asem Mansour: Yes, KHCC treats patients from almost 20 different Arabic countries. However, its focus, during the last period, was dedicated to many underprivileged patients coming from conflict countries such as Palestine, Iraq, Syria, Yemen and Sudan who would not otherwise be able to receive the life-saving cancer treatment they need.

MEH: What percentage of your inpatients are they?

Dr Asem Mansour: Foreign patients make approximately 27% from total KHCC inpatients

MEH: Which procedures are they mostly seeking?

Dr Asem Mansour: They are seeking a comprehensive state-of-the-art treatment within a

wide range of procedures covering areas from consultation and second opinion, to chemotherapy or radiotherapy, which are not available in their countries, up to complex procedures in terms of complicated operations and Bone Marrow Transplant (BMT).

MEH: Why do they choose this hospital?

Dr Asem Mansour: There are many reasons:

- We provide comprehensive cancer care: covering all medical specialties
- Our multidisciplinary approach in offering medical decisions which are taken by a full team of physicians based on an in-depth study of each case individually
- Patients are able to obtain direct consultation from the largest cancer treatment centers in the world
- Treatment focuses on the individual needs of each patient including: dedicated

areas for children and women, family halls and others

- Our convenient location and availability of accommodation at reasonable cost is attractive
- There is an ease of communication in Arabic, which is spoken fluently by all staff
- There is cultural convergence with regards dietary habits, language, religious beliefs
- Our medical care costs are very reasonable medical compared to other hospitals within the EU and the USA

MEH: Is the hospital engaging in any specific marketing to attract foreign patients?

Dr Asem Mansour: The KHCC is currently serving patients in Jordan and the Middle East region. However, and due to the full capacity rate that the center has

continuously experienced in the previous years, it did not engage in any specific marketing strategies for the attraction of foreign patients. Now that the expansion is complete, we will be looking into possible marketing strategies that would assist in the attraction of foreign patients. The center's excellent reputation and its continuous efforts to improve its quality of health care and services is what makes most of the patients seek treatment at KHCC. And now that the capacity has doubled, hopefully, we will be able to take more patients in, whether from Jordan or the region, and significantly reduce the referral refusal cases.

MEH: Is the hospital providing assistance to Syrian refugees?

Dr Asem Mansour: Actually, KHCC has provided and continues to provide assistance to cancer patients from the Syrian refugees in the scattered camps in Jordan. KHCC has set up a voluntary Fund to cover the treatment of Syrian refugees. Most donations come from individuals (wealthy donors) or organizations from Jordan and abroad, but still insufficient. KHCC provided the necessary assistance and treatment to about 400 Syrian refugees, which cost the center US\$12 million.

MEH: What type of assistance are you providing?

Dr Asem Mansour:

- Comprehensive treatment
- Financial support for free accommodation, transportation, logistics, etc.
- Psychosocial support
- Inclusion of pediatric patients in a "Back to School" program in order for them not to miss their right to continue learning while receiving their treatments at KHCC

MEH: Have there been any recent developments at the hospital that you can tell us about?

Dr Asem Mansour: The King Hussein Cancer Center's recent development is its expansion. This expansion consists of two new towers; one for inpatients and the other for outpatients which will lead to doubling the capacity of the existing Center and providing improved and integrated space for patient care, research and education. These new cutting-edge facilities will

enable us to become the main medical hub in the Middle East for comprehensive cancer treatment and care.

The 13-floor Inpatient Tower includes:

- 179 additional patient beds (single occupancy rooms)
- An expanded Diagnostic Imaging and Radiotherapy Unit
- An expanded Bone Marrow Transplantation Unit
- Adult and Pediatric Specialty ICUs
- Floors specifically dedicated to pediatric patient wards
- Floors specifically dedicated to adult patient wards

In addition to specialized outpatient clinics, the 10-floor Outpatient Building will have:

- The first public cord bank in Jordan
- The Khalid Shoman Educational Center and Auditorium. This comprehensive educational center will include a skills lab, seminar rooms, a physician's library and a social interactive lounge.
- Dedicated spaces for women and children, including a Women's Health



Center and an extensive pediatric section to cope with the rising number of pediatric cancer cases.

- A cutting-edge Cell Therapy and Applied Genomics Department, including state-of-the-art stem cell labs to raise the research capacity of the Center

The new expansion will allow us to offer double the amount of bone marrow transplants to meet the rise in demand for treatment. In addition, the new expansion will house more ICUs so that we can continue to offer highly specialized, around-the-clock care. **MEH**

Cancer Support

The fight against cancer needs your support. You can donate, volunteer and provide support in numerous ways. To find out more about this, visit: <http://www.khcc.jo/section/how-you-can-help-0>



Specialty Hospital in Jordan, one of the top 10 hospitals in medical tourism worldwide

Middle East Health: Please give us a brief about the Specialty Hospital in Jordan.

Eng. Shereen Abu Manneh - Head of Marketing and Business Development:

The Specialty Hospital is a leading private teaching hospital, located in Amman - Jordan. It is fully equipped to provide a full range of in-patient and out-patient diagnostic, therapeutic medical and surgical procedures. Its capacity is 265 beds, with 1000 qualified employees and serves 750 consultants who are dedicated to provide high quality care to our patients.

During the past 24 years the hospital has provided the highest quality care to more than 4.4 million patients, including 460,000 in-patient admissions, 920,000 ER visits and 172,000 operations for patients.

MEH: Do you receive foreign patients at the Specialty Hospital?

S.A.M.: Yes, the Specialty Hospital is well known in the region for treating foreign patients. We receive patients from more than 50 countries. Specialty Hospital is the first and only hospital in Jordan to achieve the Medical Tourism Certification from MTQUA. Recently the Specialty Hospital was ranked in the top 10 hospitals for medical tourism worldwide.

MEH: Do you have a special department for foreign patients?

S.A.M.: There is an International Office dedicated to facilitate treatment of foreign patients. The office connects patients with

the specialist prior to the patient's travel. The specialist will give initial diagnosis and a treatment plan with the length of stay and the estimated cost of treatment.

This office assists foreign patients with the issuing of visas, if required, transportation, accommodation, flight reservation, airport pick-up, admission and treatment, until the patient is discharged. They also provide and a tour of Jordan at the request of patients and their companions. The staff at the International Office will follow up with patients after they have returned to their country.

MEH: Which countries do they come from? And what procedures do they seek?

S.A.M.: Most foreign patients come from the GCC countries and from Iraq, Palestine, Oman, Sudan, Chad and other countries.

Medical tourists mainly seek major surgeries at the Specialty Hospital including cardiac, pediatric cardiac, bariatric surgeries, kidney transplant, orthopedic, dental surgeries, IVF and other sophisticated procedures. In addition to that some choose to come for medical checkups.

MEH: Why do they choose Specialty Hospital?

S.A.M.: The Specialty Hospital provides full range of procedures by highly qualified staff and using the latest technology; it was the first hospital in Jordan to provide Hyper-Baric Oxygen therapy and MRI 3 Tesla. And recently the radiology department

expanded to have the first CT 512 slices in Jordan and the first Silent MRI.

In addition to having no waiting time, patients also receive high quality care since. The Specialty Hospital is one of the most awarded and accredited hospitals internationally. It is accredited by The Joint Commission International (JCIA) for three times, and accredited 3 times by the Health Care Accreditation Council (HCAC). Specialty Hospital is the first and only hospital in Jordan to achieve the Medical Tourism Certification from MTQUA and was ranked from the top 10 hospitals in medical tourism worldwide.

Also the Specialty Hospital is first and only hospital to achieve King Abdullah II Award for Excellence for two consecutive cycles. In 2012 the hospital was awarded by Arabia500 for being from the top 500 companies in the growth rate in the past 3 years in the region. The hospital commitment to social responsibility to serve the local and the neighboring community was crowned by receiving CSR Arabia Award.

In addition to; MECCAward, Prince Faisal Award, ISO 9001, Occupational Health and Safety OHSAS 18001, Environmental Safety ISO14001, Hazardous Analysis and Critical Control Points HACCP for food safety, and quality management system for medical laboratories ISO 15189. In addition to all of that the Specialty Hospital was recognized from the Arab Hospitals Federation as The Best Hospital in The Arab World in Patient Centered Care. MEH

THE SPECIALTY HOSPITAL
Amman - Jordan



المستشفى التخصصي
عمان - الأردن



WHY SPECIALTY HOSPITAL?

- It is the only hospital awarded by "King Abdullah II Award for Excellence" and for two cycles
- It is accredited by the **JCI** for **three consecutive cycle**
- More than **1000** highly trained professionals dedicated for your care
- It is the only hospital in Jordan to achieve **Medical Tourism Certification** from **MTQUA** and was ranked from the **top 10 hospitals** in medical tourism worldwide
- One of most well known **medical tourism** destinations in the region
- High **quality care** and **cost competitive**
- Luxurious suites for **VIP patients**



Jordan - Amman - Shmeisani

info@specialty-hospital.com



Specialty Hospital - Jordan

Tel : +962 6 2001111

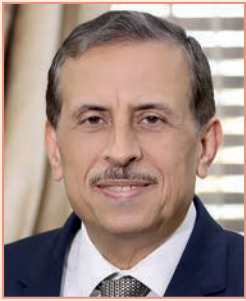
www.specialty-hospital.com



@myhospital

Interview

Attracting foreign patients with advanced medical expertise



Jordan has achieved great strides in the medical tourism industry over the past several years. Serving as a safe haven in the region, the kingdom is considered the number one medical tourism destination in the MENA region. *Middle East Health* spoke to **Dr Fawzi Al-Hammouri**, Chairman of the Private Hospitals Association of Jordan, about the association and medical tourism in Jordan. Dr Al-Hammouri is Honorary President of the Global Healthcare Travel Council and a key player in the medical tourism sector in the region.

Middle East Health: What is the role of the Private Hospitals Association in promoting Jordan as a medical tourism destination?

Dr Fawzi Al-Hammouri: The Private Hospitals Association (PHA), was established in 1984 to represent the country's private hospitals and raise their reputation. PHA works diligently to promote and defend the rights of Jordan's private hospitals.

Due to Jordan's high reputation as a medical tourism hub, we have been invited to present Jordan's 'success story' in many medical tourism conferences and forums internationally, where we have shared our experience and journey with other emerging medical tourism destinations.

MEH: Why is Jordan attractive to foreign patients?

Dr Fawzi Al-Hammouri: With no less than 65 private hospitals, many boasting cutting edge facilities and first-rate physicians, Jordan is considered in the top league in the global medical tourism market.

Since the early seventies Jordan has been regarded as a pioneer for performing many medical procedures in the Arab world for the first time. These achievements have made Jordan well known for its medical expertise and an attractive destination for foreign medical patients.

Jordanian physicians and surgeons have a very good reputation. The Jordanian Government decided that education and investment in its human capital will be the way to build the future of our country, so you

will find that Jordan leads the region in the number of physicians, nurses, pharmacists and engineers per capita. For example, Jordan has 29 physicians and 33 nurses and 16 pharmacists per 10,000 population. We also invested in scholarships for our doctors to get post graduate training and certificates from USA, UK, Canada, Germany and many other countries.

There is also a positive investment environment in Jordan, which has led to the private sector building hospitals. More than 60% of hospitals in Jordan are private, and they are well equipped with the latest medical technology. Diagnostic and therapeutic procedures are now easily available for patients at low cost with no waiting time and without compromising the quality of care, which is crucial for travelling patients.

Our hospitals apply international quality standards. At present, 10 Jordanian hospitals are accredited by the Joint Commission International (JCI), with many others in the process of obtaining this accreditation and 25 hospitals are accredited by the Health Care Accreditation Council (HCAC).

Jordan boasts significant expertise in a variety of medical specialties such as kidney transplant, bone marrow transplant, oncology, paediatrics, geriatrics, cardiac surgery, orthopaedic procedures, cosmetic surgery, dental procedures, IVE, psychiatry and drug addiction, to name a few.

Jordan has certain characteristics that favour it as a medical tourism destination, such as a high level of security and

stability compared to other countries in the region.

Jordan's climate is another attractive point as in most days of the year the weather is moderate, in addition to that Jordan has numerous tourist attractions and archaeological sites, several of which are UNESCO World Heritage Sites, such as the historic city of Petra.

Jordan had the largest natural spa on earth which is the Dead Sea the lowest point on earth, which has healing powers for many diseases such as psoriasis and pulmonary diseases.

MEH: Can you tell us about some of the achievements of the Private Hospitals Association?

Dr Fawzi Al-Hammouri: We at PHA are keen to keep Jordan as the number one medical tourism destination in the MENA region. As a result, Jordan manages to attract 250,000 international patients annually, with revenue of more than \$1.2 billion. Those patients come from 62 countries, mainly from the traditional markets such as Saudi Arabia, Iraq, Yemen, Sudan, Libya, Palestine, Syria, Bahrain, Oman and United Arab Emirates, in addition to few non-traditional markets such as the USA, Kazakhstan, Ukraine, Russia, Chad and Nigeria.

On the back of PHA initiatives, Jordan was awarded: The Destination of The Year 2014 by *International Medical Travel Journal* (IMTJ). In October 2015, I was elected as the president of the Global Healthcare Travel Council for two years. **MEH**

مركز الحسين للسرطان – الأردن

من أهم مراكز الشرق الأوسط المختصة في علاج المصابين بجميع أنواع السرطانات من الأطفال والكبار

من ميزات مركز الحسين للسرطان



الشمولية في علاج مرضى السرطان: حيث يتضمن كافة الاختصاصات الطبية.



إمكانية أخذ الاستشارات المباشرة من أكبر مراكز علاج مرضى السرطان في العالم.



تكاليف علاج معتدلة مقارنة بالمستشفيات الأخرى في الاتحاد الأوروبي والولايات المتحدة الأمريكية.



إتباع المعايير العالمية في رعاية المرضى.



منهجية متعددة الاختصاصات في تقديم العلاج: يتم اتخاذ قرارات العلاج من قبل فريق متكامل وإجراء دراسة معمقة لكل حالة على حدة.



رعاية تركز على احتياجات كل مريض: مساحات تلبي احتياجات المرضى، بما يشمل مناطق مخصصة للأطفال والنساء، وقاعات للعائلات وغيرها.

الاعتمادات والشراكات الدولية



اعتماد الكلية الأمريكية لأخصائي الأمراض الوحيد في المنطقة الحاصل على هذا الاعتماد



اعتماد اللجنة المشتركة الدولية شهادة برامج الرعاية الإكلينيكية الوحيد في العالم النامي والسادس خارج الولايات المتحدة الأمريكية

شريك استراتيجي



St. Jude Children's Research Hospital

مؤسسة شقيقة

MD Anderson Cancer Center

+962 (6) 55 44 960

f t y i n | www.khcc.jo

مؤسسة الحسين للسرطان
مركز الحسين للسرطان





Promoting healthcare for humanity

The 70th World Health Assembly was held in Geneva from 22-31 May, during which a new Director-General was elected and a wide range of important global public health issues discussed and resolutions adopted. *Middle East Health* reports.

In her final opening address to the World Health Assembly as Director-General, Dr Margaret Chan offered some advice to delegates “as you continue to shape the future of this Organization”.

She called on the Health Assembly to make “reducing inequalities” a guiding ethical principle. “WHO stands for fairness,” she said. Countries should also work to improve collection of health data and make health strategies more accountable.

Protecting scientific evidence should form “the bedrock of policy”, said Dr Chan, citing vaccine refusal as one of the reasons that the “tremendous potential of vaccines is not yet fully realized”.

She stressed the importance of continued innovation, citing the research partnership between WHO and others to produce an effective and highly affordable meningitis A vaccine that has transformed the lives of millions of people in Africa. “Meeting the ambitious targets in the Sustainable Development Goals depends on innovation,” she said.

She then asked governments and partners to safeguard WHO’s integrity in all stakeholder engagements. “The Framework for engagement with non-state ac-

tors is a prime instrument for doing so,” and to “listen to civil society”: “Civil society organizations are best placed to hold governments and businesses, like the tobacco, food and alcohol industries, accountable. They are the ones who can give the people who suffer the most a face and a voice.”

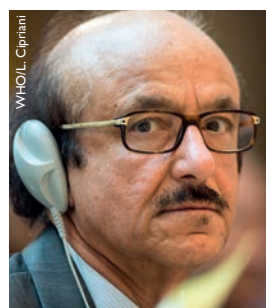
In closing, Dr Chan asked government representatives to: “Remember the people...Behind every number is a person who defines our common humanity and deserves our compassion, especially when suffering or premature death can be prevented.”

Resolutions

Delegates at the World Health Assembly reached a number of new agreements including on dementia; immunization; refugee and migrant health; substandard and falsified medical products; the world drug problem; childhood obesity; pandemic influenza, and the health workforce, among others.

Dementia

Delegates at the World Health Assembly



Dr Mahmoud M Fikri, WHO Regional Director for the Eastern Mediterranean listens to translation of discussions at the World Health Assembly



Dr Hanan Mohamed Al-Kuwari of Qatar chairs Committee A at the World Health Assembly

endorsed a global action plan on the public health response to dementia 2017-2025 and committed to developing ambitious national strategies and implementation plans. The global plan aims to improve the lives of people with dementia, their families and the people who care for them, while

Our shared humanity

Listen to Dr Tedros Adhanom Ghebreyesus's acceptance speech for the director-general position at the WHO. It's 12 minutes – everyone in healthcare should watch this.

<https://www.youtube.com/watch?v=5oUdOYARcRA>

decreasing the impact of dementia on communities and countries. Areas for action include: reducing the risk of dementia; diagnosis, treatment and care; research and innovative technologies; and development of supportive environments for carers.

They called on the WHO Secretariat to offer technical support, tools and guidance to Member States as they develop national and subnational plans and to draw up a global research agenda for dementia. Delegates recognized the importance of WHO's Global Dementia Observatory as a system for monitoring progress both within countries and at the global level.

Delegates emphasized the need to integrate health and social care approaches, and to align actions to tackle dementia with those for other aspects of mental health, as well as noncommunicable diseases and ageing. They also highlighted the importance of ensuring respect for the human rights of people living with dementia, both when developing plans and when implementing them.

Worldwide, around 47 million people have dementia, with nearly 9.9 million new cases each year. Nearly 60% of people with dementia live in low- and middle-income countries.

Immunization

Delegates agreed to strengthen immunization to achieve the goals of the Global Vaccine Action Plan (GVAP). In 2012, the Health Assembly endorsed GVAP, a commitment to ensure that no one misses out on vital immunization by 2020. However, progress towards the targets laid out in that plan is off track. Halfway through the decade covered by the plan, more than 19 million children were still missing out on basic immunizations.

The resolution urges Member States to strengthen the governance and leadership of national immunization programmes. It also calls on them to improve monitoring and surveillance systems to ensure that up-to-date data guides policy and programmatic decisions to optimize performance and impact. It calls on countries to expand immunization services beyond infancy; mobilize domestic financing, and strengthen interna-

tional cooperation to achieve GVAP goals.

It requests the WHO Secretariat to continue supporting countries to achieve regional and global vaccination goals. It recommends scaling up advocacy efforts to improve understanding of the value of vaccines and of the urgent need to meet the GVAP goals. The Secretariat will report back in 2020 and 2022 on achievements against the 2020 goals and targets.

Immunization averts an estimated 2 to 3

million deaths every year from diphtheria, tetanus, pertussis (whooping cough), and measles. An additional 1.5 million deaths could be avoided if global vaccination coverage were improved.

Refugee and migrant health

Delegates asked the Director-General to provide advice to countries in order to promote the health of refugees and migrants, and to gather evidence that will contribute



Dr Tedros Adhanom Ghebreyesus, the new Director-General of WHO

World Health Assembly elects Dr Tedros Adhanom Ghebreyesus as new WHO Director-General

The World Health Assembly elected Dr Tedros Adhanom Ghebreyesus as the new Director-General of WHO on 23 May. He succeeds Dr Margaret Chan, who has been WHO's Director-General since 1 January 2007.

Dr Tedros Adhanom Ghebreyesus was nominated by the Government of Ethiopia, and begins his five-year term on 1 July 2017.

Prior to his election as WHO's next Director-General, Dr Tedros Adhanom Ghebreyesus served as Minister of Foreign Affairs, Ethiopia from 2012–2016 and as Minister of Health, Ethiopia from 2005–2012. He has also served as chair of the Board of the Global Fund to Fight AIDS, Tuberculosis and Malaria; as chair of the Roll Back Malaria (RBM) Partnership Board; and as co-chair of the Board of the Partnership for Maternal, Newborn and Child Health.

As Minister of Health, Ethiopia, Dr Tedros Adhanom Ghebreyesus led a comprehensive reform effort of the country's health system, including the expansion of the country's health infrastructure, creating 3500 health centres and 16,000 health posts; expanded the health workforce by 38,000 health extension workers; and initiated financing mechanisms to expand health insurance coverage. As Minister of Foreign Affairs, he led the effort to negotiate the Addis Ababa Action Agenda, in which 193 countries committed to the financing necessary to achieve the Sustainable Development Goals.

As Chair of the Global Fund and of RBM, Dr Tedros Adhanom Ghebreyesus secured record funding for the two organizations and created the Global Malaria Action Plan, which expanded RBM's reach beyond Africa to Asia and Latin America. **MEH**

to a draft global action to be considered at the 72nd World Health Assembly in 2019. They also encouraged Member States to use the framework of priorities and guiding principles to promote the health of refugees and migrants developed by WHO, in collaboration with IOM and UNHCR, to inform discussions among Member States and partners engaged in the development of the UN global compact on refugees and the UN global compact for safe, orderly and regular migration.

There are an estimated 1 billion migrants in the world – one in seven of the world's population. This rapid increase of population movement has important public health implications, and requires an adequate response from the health sector. International human rights standards and conventions exist to protect the rights of migrants and refugees, including their right to health. But many refugees and migrants often lack access to health services and financial protection for health.

Health problems faced by newly-arrived refugees and migrants can include accidental injuries, hypothermia, burns, cardiovascular events, pregnancy and delivery-related complications. Women and girls frequently face specific challenges, particularly in maternal, newborn and child health, sexual and reproductive health, and violence. Children are prone to acute infections such as respiratory infections and diarrhoea because of poor living conditions and deprivation during migration and forced displacement. Lack of hygiene can lead to skin infections.

Refugees and migrants are also at risk of psychosocial disorders, drug abuse, nutrition disorders, alcoholism and exposure to violence. Those with noncommunicable diseases (NCDs) can also suffer interruption of care, due either to lack of access or to the decimation of health care systems and providers.

Substandard and falsified medical products

“Substandard” medical products (also called “out of specification”) are authorized by national regulatory authorities, but fail to meet either national or international quality standards or specifications – or in some cases, both. “Falsified” medical products deliberately or fraudulently misrepresent their identity, composition or source.

The Assembly also agreed a definition of

“unregistered or unlicensed medical products”. These have not been assessed or approved by the relevant national or regional regulatory authority for the market in which they are marketed, distributed or used.

The new terminology aims to establish a common understanding of what is meant by substandard and falsified medical products and to facilitate a more thorough and accurate comparison and analysis of data. It focuses solely on the public health implications of substandard and falsified products, and does not cover the protection of intellectual property rights.

Substandard and falsified medical products can harm patients and fail to treat the diseases for which they were intended. They lead to loss of confidence in medicines, healthcare providers and health systems, and affect every region of the world. Anti-malarials and antibiotics are amongst the most commonly reported substandard and falsified medical products, but all types of medicines can be substandard and falsified. They can be found in illegal street markets, via unregulated websites, and in pharmacies, clinics and hospitals.

Delegates agreed to adopt the new name of “substandard and falsified” (SF) medical products for what have until now been known as “substandard/spurious/falsely-labelled/falsified/counterfeit (SSFFC)” medical products.

The world drug problem

Delegates agreed on the need for intensified efforts to help Member States address the world drug problem. They asked the WHO Secretariat to strengthen its collaboration with the United Nations Office on Drugs and Crime and the International Narcotics Control Board to implement the health-related recommendations in the outcome document of the 2016 Special Session of the United Nations General Assembly on the world drug problem (UNGASS).

It has been 26 years since the Health Assembly made a decision on this topic. The Secretariat is asked to report back on progress in 2018, 2020 and 2022.

According to WHO's latest estimates, psychoactive drug use is responsible for more than 450,000 deaths each year. The drug-attributable disease burden accounts for about 1.5% of the global burden of dis-

ease. Furthermore, injecting drug use accounts for an estimated 30% of new HIV infections outside sub-Saharan Africa and contributes significantly to hepatitis B and C epidemics in all regions.

Childhood obesity

Delegates welcomed a plan to implement recommendations made by the WHO Commission on Ending Childhood Obesity. The recommendations aim to reverse the rising trend of children and adolescents becoming overweight and obese. The implementation plan highlights the importance of tackling environments that facilitate access to and promotion of unhealthy foods and make it hard for children to be physically active. It focuses on preventing obesity throughout the life course, from the earliest years.

The implementation plan aims to help countries to fulfil commitments on addressing obesity that they have already made. These include pledges contained in the WHO global action plan for the prevention and control of NCDs, the comprehensive implementation plan for maternal, infant and young child nutrition and as part of the 2030 Agenda for Sustainable Development.

The implementation plan stresses encouraging infants and young children to choose healthy foods through supportive policies and interventions, including taxation, marketing and labelling. The plan focuses on supporting and building healthy habits that last through the life course. It also highlights the need for shaping school environments and curricula as well as community environments to support healthy lifestyle choices – including the taking of physical exercise.

The plan includes recommendations on interventions to treat overweight and obesity in children, plus measures to prevent unhealthy weight gain in infants and young children.

Pandemic Influenza

Delegates reaffirmed the critical role played by the Pandemic Influenza Preparedness Framework's (PIP) as a specialized international instrument that facilitates expeditious access to influenza viruses of human pandemic potential, risk analysis and the expeditious, fair and equitable sharing of vaccines and other benefits.

They emphasized the importance of pri-



Recognition for accomplishments in public health

International action by Cuba to support emergencies, including disease outbreaks such as Ebola – and lifelong dedication to reducing the hepatitis burden in Mauritania and Mongolia – gain recognition on the world health stage.

The prizes, established in the name of eminent health professionals, are awarded for accomplishments in public health. Every year, national health administrations and former prize recipients submit nominations. The WHO Executive Board, in its January session, designates the winners based on recommendations made by the selection panel of each foundation awarding a prize.

This year's winners were presented with their awards on 26 May during the plenary meeting of the Seventieth World Health Assembly.

The United Arab Emirates Health Foundation Prize of US\$20,000 went to Professor Lô Boubou Baïdy, 61, of Mauritania, for his significant contribution to the establishment of the national blood transfusion centres and laboratory services, as well as his fight against viral hepatitis, HIV/AIDS and other sexually transmitted infections.

The 2017 Sasakawa Health Prize of \$30,000 for outstanding innovative work in health development, has been awarded to Dr Rinchin Arslan for his remarkable lifelong contribution to the advancement of primary health care in Mongolia and specifically his work in fighting viral hepatitis.

The Dr Lee Jong-wook Memorial Prize for Public Health of \$100,000 was awarded to the Henry Reeve International Medical Brigade (Cuba).

Established in 2005 by more than 1500 Cuban health professionals, the Henry Reeve Brigade is integrated into the medical cooperation unit of the Ministry of Public Health of Cuba.

Cuba's international medical emergency response experience began over 40 years before the establishment of the Henry Reeve Brigade, when physicians and nurses trained in disaster medicine and infectious disease containment, were dispatched to Chile in 1960 after a catastrophic earthquake. This marked the beginning of Cuba's internationalist outlook and health cooperation. **MEH**

oritizing and supporting global pandemic influenza preparedness and response, including through the strengthening of domestic seasonal influenza virus surveillance, manufacturing and regulatory capacities and international coordination and collaboration through the Global Influenza Surveillance and Response System (GISRS) to identify and share influenza viruses with pandemic potential rapidly.

The Health Assembly agreed that the WHO secretariat should comprehensively analyse, in consultation with Member States and relevant stakeholders, including the GISRS, the implications of amending the definition of PIP biological materials to include genetic sequence data and expanding the PIP Framework to include seasonal influenza. The delegates further agreed that the PIP Framework model has potential to be used for other pathogens.

The PIP Framework was set up in 2011 to introduce greater equity and solidarity among nations when the next pandemic

strikes. The PIP Framework provides WHO with real-time access to approximately 10% of global vaccine production, enabling the Organization to send life-saving doses to developing countries in need.

Health Workforce

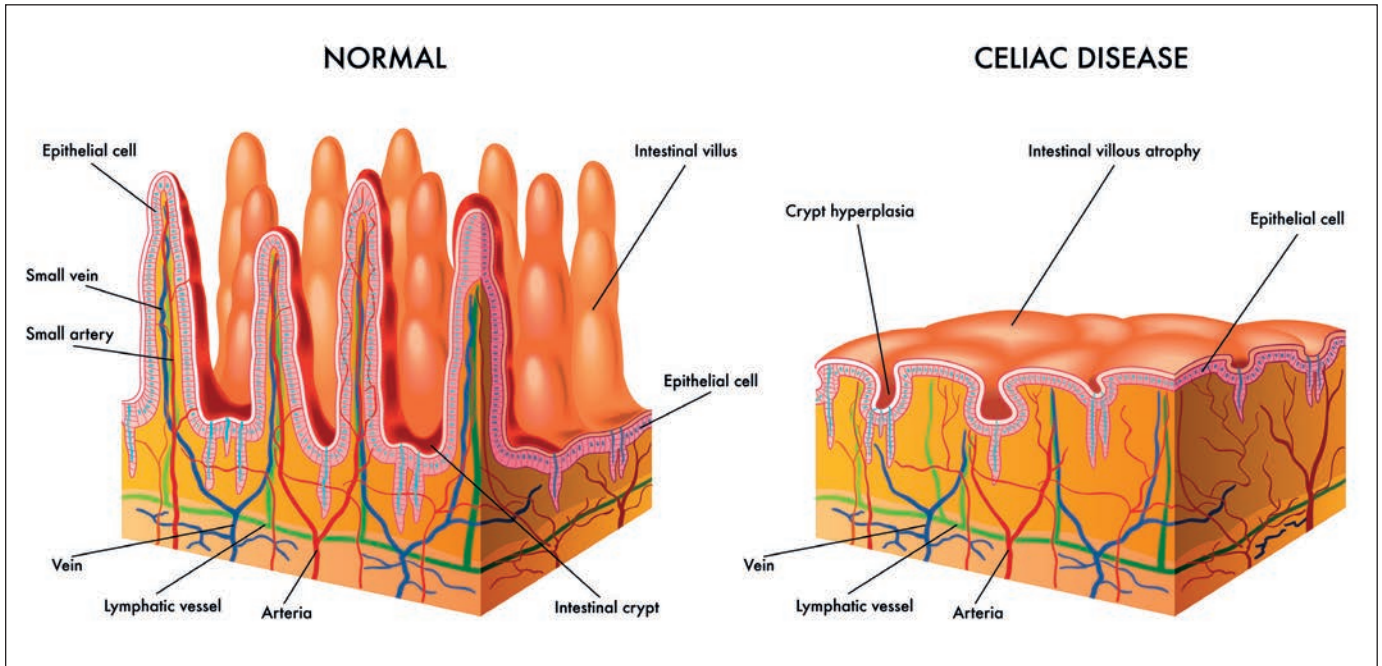
The Health Assembly agreed to a five-year action plan under which WHO will collaborate with the International Labour Organization, and the Organization for Economic Cooperation and Development in working with governments and key stakeholders to address the global health and social workforce shortfall and contribute to international efforts to achieve the Sustainable Development Goals.

The plan calls on countries to view the health and social workforce as an investment, rather than a cost, and take advantage of the economic benefits of growth in the health and social sector. It outlines how ILO, OECD and WHO will take intersectoral action on five fronts: galvanizing political support; strengthening data

and evidence; transforming and scaling up the education, skills and decent jobs of health and social workers; increasing resources to build the health and social workforces; and maximizing the multiple benefits that can be obtained from international health worker mobility.

It also focuses on maximizing women's economic empowerment and participation. It addresses occupational health and safety, protection and security of the health and social workforce in all settings. It also covers the reform of service models towards the efficient provision of care, particularly in underserved areas.

The action plan supports the WHO Global Strategy on Human Resources for Health: Workforce 2030. It will facilitate implementation of the recommendations of the United Nations Secretary General's High-Level Commission on Health Employment and Economic Growth, which found that, as populations grow and change, the global demand for health workers will double by 2030. **MEH**



Celiac disease affects the lining of the intestine

Future treatment modalities in Celiac Disease



By Dr Rajeev Tomar

Celiac Disease (CD) is an immune-mediated systemic disorder elicited by gluten and related prolamines in genetically susceptible individuals and characterized by the presence of a variable combination of

gluten-dependent clinical manifestations, CD-specific antibodies, HLA-DQ2 or HLA-DQ8 haplotypes, and enteropathy. CD-specific antibodies comprise autoantibodies against TG2, including endomysial antibodies (EMA), and antibodies against deamidated forms of gliadin peptides (DGP).

This is a serious issue in children, as undiagnosed celiac disease can lead to growth retardation, anaemia, etc. Moreover, people with celiac disease have genes that also predispose them to other autoimmune disorders, like autoimmune thyroiditis. Having one autoimmune condition increases the chances of having another autoimmune condition. Furthermore, it has been suggested that the chance of developing other autoimmune disorders is increased, when diagnosis of coeliac disease is delayed, hence all chil-

dren with CD are screened on an annual basis for other autoimmune diseases.

Pathogenesis

Gluten is a general term used to describe a mixture of wheat storage proteins (prolamins and glutenins). However other cereals have proteins that exert a toxic effect for CD patients; toxic prolamins include gliadin in wheat, secalin in rye and hordein in barley. These protein domains are resistant to degradation by gastric, pancreatic and proteases in the human intestinal brush border membrane thereby allowing them to remain intact within the intestinal lumen after ingestion. In individuals with CD, these peptides then enter the lamina propria, triggering chronic inflammatory changes. Gliadin peptides cross the intestinal barrier by both active transport (transcellular) processes and via paracellular mechanisms.

It is notable that gliadin peptides in their native form are not toxic. In order for gluten peptides to cause inflammation, they must first be altered by the enzyme tissue transglutaminase (tTG) which is normally present in nearly all organs and is increased in areas of inflammation. In the submucosa of the intestine, tTG deamidates gluten peptides, changing peptide shape and charge. These altered gluten peptides are then able to bind tightly to HLA-DQ2 and HLA-DQ8 molecules on antigen-presenting cells. This binding triggers an inflammatory reaction causing lymphocyte infiltration, villous atrophy and the production of antibodies to gliadin and tTG.

Symptoms

CD is a multi-organ autoimmune disease. The symptoms are variable and can be classified into the following:

- The Gastrointestinal symptoms include chronic or intermittent diarrhoea, failure to thrive, weight loss, stunted growth, chronic abdominal pain, chronic constipation, chronic fatigue, recurrent aphthous ulcers, abnormal liver tests, etc.
- Extra intestinal symptoms include- non-specific poor appetite, growth failure, iron deficiency anaemia
Central nervous system: ataxia, seizures, depression.
- Heart: Carditis
- Skin: dermatitis herpetiformis, hair loss
- Reproductive system: miscarriage infertility
- Bone: osteoporosis, fractures, arthritis
- Dental anomalies

One should have a low threshold to screen for CD in children because of the various presentations.

Treatment

Standard current treatment is a gluten free diet for life. However, approximately 7-30% of patients fail to respond to a gluten-free diet. This may result from either inadvertent or intentional eating of foods containing gluten. Moreover, nongluten-containing grains are not fortified as wheat flour is. As a result, patients on a gluten-free diet for 10 years or more were shown to be deficient in vitamins. This has led

Study finds Celiac Disease and Anorexia Nervosa diagnoses linked

A large-scale study in May 2017 *Pediatrics* suggests patients diagnosed with Celiac Disease, an inflammatory digestive disorder triggered by gluten, before age 19 were 4.5 times more likely to have previously been diagnosed with Anorexia Nervosa.

The study (published online April 3) looked at 17,959 women whose celiac disease was confirmed with biopsies in Sweden between 1969 and 2008.

Researchers also found that adults previously diagnosed with Celiac Disease had double the rate of subsequently developing anorexia nervosa, a disorder in which patients severely limit the amount of food they eat. The researchers said several factors may contribute to the apparent bidirectional association between the two disorders. One is that patients with celiac disease might have been inaccurately diagnosed with Anorexia Nervosa, or vice versa, because chronic gastrointestinal problems and disordered eating patterns may be closely tied.

They said the positive association between the two diseases should spur a careful initial assessment and follow-up of patients with these illnesses.

● doi: 10.1542/peds.2016-4367

to research in new non-dietary treatment modalities for patient with CD.

New possible future treatment modalities

Emerging research for the treatment of celiac disease has focused on three areas: To decrease gluten exposure, to modify intestinal permeability and to modulate immune activation

1. **To decrease gluten exposure** – This could be achieved with genetically engineering grains by eliminating immunogenic gluten fragments. However, the large number of peptide epitopes located in different genetic loci of the wheat genome makes this approach challenging. Moreover, potential challenges exist since

the genetic modification of food is controversial and is not regarded favourably by the public. Another approach is the use of synthetic polymers that bind and neutralize gliadin. These have recently been studied and experimentally eliminate gliadin.

Enzymatic degradation of the large, immunogenic gliadin peptides into small nontoxic fragments.

This can be performed by prolyl endopeptidases. These are proteases, found primarily in plants and microorganisms, able to degrade the Proline-rich gluten peptides into smaller, less immunogenic fragments.

Alternatively, in recent trial in Italy, selected Probiotic Lactobacilli have the capacity to hydrolyse Gluten Peptides during simulated gastrointestinal digestion.

Enzyme therapy is attractive; however, it is complicated because gluten must be completely prevented from interacting with the mucosa. Any remaining gluten peptides may lead to intestinal inflammation

2. To modify intestinal permeability

Intercellular tight junctions are altered in celiac disease. This could be another therapeutic target used to prevent the migration of luminal gluten peptides across the intestinal epithelium. Zonulin, an endogenous peptide involved in tight junction regulation, is amplified in celiac disease and increases intestinal permeability. AT-1001 is a peptide that inhibits the action of zonulin. Clinical trials have shown no increase in GI symptoms when challenged with gluten in patients given AT-1001. Further phase II studies are currently underway.

3. To modulate immune activation

This may be achieved by preventing gliadin deamination through the inhibition of tissue transglutaminase, by preventing HLA presentation through blocking the HLA DQ2 or DQ8 molecules, or by modulating cytokine production.

(i) BL-7010 is a non-absorbable, orally available polymer which has a high affinity for gliadins and by sequestering gliadins, it effectively masks them from enzymatic degradation and prevents the formation of immunogenic peptides that trigger the immune system. This significantly reduces the immune response triggered by gluten. BL-7010 is excreted with gliadin from the digestive tract and does not get absorbed into the blood. A Phase I/II study with BL-7010 was successfully completed in 2014. When taken orally, it was demonstrated that it prevents the degradation of gliadin, which causes the over-reactive immune response. With gliadin still intact, immune cells are not triggered to form, which prevents the harmful immune response those with celiac disease would usually experience.

(ii) AMG 714 is an investigational anti-IL-15 monoclonal antibody being studied for the treatment of gluten-free diet non-responsive celiac disease

(NRCD) and refractory celiac disease. IL-15 is considered to have a central role in celiac disease and to be a key driver of the generation of aberrant and malignant intraepithelial lymphocytes (IELs).

Vaccine

Nexvax2, a therapeutic vaccine currently in clinical trials, is intended to protect against the effects of gluten exposure in HLA-DQ2.5+ patients with celiac disease.

Approximately 90% of celiac disease patients carry the HLA-DQ2.5 gene. ImmusanT, the biotech company that developed the vaccine says, currently, there is no pharmaceutical treatment for celiac disease and the only method of management is to maintain a gluten-free diet (GFD). Effective implementation of a GFD is onerous and often impractical. Persistent intestinal injury and frequent digestive symptoms in many patients are evidence of ongoing gluten exposure. ImmusanT is developing Nexvax2, an epitope-specific immuno-therapy (ESIT) that consists of three immunodominant peptides, designed to protect against gluten exposure.

Phase 1b trials of Nexvax2 were completed in February this year. Phase 2 trials are planned by ImmusanT.

Mesenchymal stem cells as potential therapeutic approaches in celiac disease

The emerging area of cellular therapy for CD is mainly based on the stem cell therapy, which has the advantage of targeting multiple pathways. All the differentiated epithelial cells of the intestine derived from a single intestinal stem cell (ISC) (CD133+/Lgr5+ crypt cell) compartment which resides at the crypt base. Mesenchymal stem cells (MSCs) are multi-potent stromal cells that can differentiate into a variety of cell types. More studies are required to study further methodological variables such as the route, doses and intervals of administration, etc. for the best approach before therapeutic prospect of using MSCs as the clinical therapy.

Emerging research for the treatment of celiac disease has focused on three areas: To decrease gluten exposure, to modify intestinal permeability and to modulate immune activation.


Conclusion

With these and other therapies currently being researched, patients with celiac disease should have a positive outlook on the future of celiac disease treatment.

The Author

Dr Rajeev Tomar is Medical Director of KCH Clinics Abu Dhabi, Head of Paediatrics, Consultant Paediatrician and Paediatric Hepatologist at KCH Clinics Abu Dhabi.

References

1. European Society for Pediatric Gastroenterology, Hepatology, and Nutrition Guidelines for the Diagnosis of Coeliac Disease, S. Husby et al. (JPGN 2012; 54: 136–160)
2. Selected Probiotic Lactobacilli Have the Capacity to Hydrolyze Gluten Peptides During Simulated Gastro-Intestinal Digestion.
3. Francavilla R, Appl Environ Microbiol. 2017 May 12
4. New and developing therapies for celiac disease; Christina A. Ther Adv Gastroenterol (2009) 2(5) 303_309
5. Epitope-specific immunotherapy targeting CD4-positive T cells in coeliac disease: two randomised, double-blind, placebo-controlled phase 1 studies.
6. Mesenchymal stem cells as potential therapeutic approaches in celiac disease, Ali Moheb-Alian; Gastroenterol Hepatol Bed Bench. 2016 Dec; 9 (Suppl1):S1-S7. 



Private Patient Unit

ROYAL NATIONAL ORTHOPAEDIC HOSPITAL



WORLD CLASS EXPERTS IN ORTHOPAEDIC CARE

The Royal National Orthopaedic Hospital (RNOH) is known throughout the world for their expertise, standards of care and research success.

The RNOH is the United Kingdom's largest orthopaedic hospital. Providing a full range of neuro-musculoskeletal healthcare, the RNOH is seen by many as a world leader in the field of orthopaedics.

As a specialist centre, our care is focused specifically on people with neuro-musculoskeletal conditions, including children and adults, ranging from acute spinal injury or complex bone tumours to orthopaedic surgery and medicine. This means our doctors, nurses and other healthcare staff are experts in their chosen field, many having moved here from across the UK, Europe and beyond, to practice their skills surrounded by the very best in their profession.

Our highly specialised consultants see their patients in our private facilities, managed on a day-to-day basis by a nursing team trained in orthopaedic care. Every private patient can be confident that they will have access to the most comprehensive range of advanced surgical, medical and diagnostic facilities that are available from a leading specialist NHS Hospital.

To find out more visit
www.rnohppu.com
or call on +44 (0)20 8909 5712

Smartphones: small size, big problem

Research has shown that when children watch too much television, their risk of obesity increases. However, more and more screen time is coming from other devices, like tablets and smartphones, and the impact of these devices has not been researched as much. In a new study published in *The Journal of Pediatrics*, researchers found that children who reported spending more time on screen devices and watching television engaged in behaviours that can lead to obesity.

Dr Erica L. Kenney and Dr Steven L. Gortmaker from the Harvard T.H. Chan School of Public Health studied data from the 2013 and 2015 waves of the Youth Risk Behavior Surveillance System, which included 24,800 adolescents in grades 9-12. The survey gathered data on the following: hours spent on screen devices (including smartphones, tablets, computers, and videogames) and watching television, hours of sleep on an average school night, number of sugar-sweetened beverages consumed in the previous 7 days, and frequency of physical activity (at least 60 minutes per day) for the past 7 days.

The researchers found that almost 20% of US adolescents

spent more than 5 hours a day on smartphones, tablets, computers, and videogames compared with only 8% watching more than 5 hours a day of television. Watching too much television continued to be associated with obesity and poor diet among adolescents. However, the researchers also found that adolescents who spent more than 5 hours a day on screen devices were twice as likely to drink a sugary drink each day and not get enough sleep or physical activity, and were about 43% more likely to have obesity compared with adolescents who did not spend time on these devices.

Although this study cannot conclude definitively that using screen devices is causing higher rates of obesity, the findings are cause for concern. According to Dr Kenney: "This study would suggest that limiting children's and adolescents' engagement with other screen devices may be as important for health as limiting television time."

Until more research is done, clinicians may want to encourage families to set limits for both television and other screen devices. [MCH](#)

The next 7 great achievements from paediatric research

Advances in pediatric research have significantly reduced deaths and improved the quality of life for families worldwide over prior decades. Researchers are now poised to achieve even greater medical accomplishments, buoyed by the use of new technology-based tools, including electronic health records that will assist in longitudinal data collection, according to an article published by the American Academy of Pediatrics (AAP).

"The Next Seven Achievements in Pediatric Research," published in the May 2017 *Pediatrics*, reflects on the progress that has been made and predicts the next great research breakthroughs for children's health. The article emphasizes the need for continued federal support and focus on child health research. Emerging new risks such as the Zika virus, obesity epidemic and exposure to adverse childhood experiences threaten to shorten the lifespans of the next generation without a science-based approach, the authors state.

"We must continue the momentum that

has brought us life-saving immunizations, reduced infant deaths and increased life expectancy for children because of newly discovered treatments and preventive measures," said Tina Cheng, MD, MPH, FAAP, lead author. "We are on the edge of exciting new initiatives that can move forward only with support for research, physician training and data collection improvements."

In 2015, the AAP Committee on Pediatric Research highlighted seven great achievements in paediatric research, which were chosen from responses to a survey of paediatric professional organization board members. The seven success stories cited were: preventing disease with life-saving immunizations; reducing sudden infant death with a "Back to Sleep" campaign; finding a cure for Acute Lymphoblastic Leukemia; helping premature babies breathe with a specific therapy called surfactant; preventing Human Immunodeficiency Virus transmission from mother to baby; increasing the life expect-

tancy for children with Sickle Cell Anemia and Cystic Fibrosis; and saving lives with car seats and seat belts.

The next seven great achievements, the authors predict, will be:

- More paediatric immunizations to prevent emerging and persistent diseases
- Cancer immunotherapy
- Genomic discoveries to predict, prevent and more effectively treat disease
- Recognizing foetal and childhood origins of adult disease before effective early intervention
- Understanding how social and environmental conditions affect health to guide population health efforts
- Quality improvement initiatives in medical care
- Implementation of research knowledge to reduce global poverty

Yet the paediatric research field faces challenges, such as the unique effort needed to include children and teens in clinical research.

• doi: 10.1542/peds.2016-3803

Mr Tom Quick of the Royal National Orthopaedic Hospital is an expert in the treatment of Erbs Palsy or Birth Brachial Plexus Palsy (BBPP)



Treatment for Erbs Palsy – birth injuries of the brachial plexus

■ By Mr Tom Quick, FRCS

The surgeons at the Royal National Orthopaedic Hospital (RNOH) Peripheral Nerve Injury Unit (PNI), Mr Tom Quick and his colleagues, Dr Marco Sinisi and Mr Mike Fox, offer a full range of treatment options for the injury known as Erbs Palsy or Birth Brachial Plexus Palsy (BBPP). Their service is focused on a functional improvement for the patient from birth, through adolescence to adulthood.

Wilhelm Heinrich Erb was a Bavarian nerve doctor of the late 19th Century. He gave his name to an injury of the nerves of the brachial plexus which happens at the time of birth: Erb's Palsy. There is much we have learnt about this injury since then.

The nerves of the arm leave the spine at five levels (like floors of a building). These nerve 'roots' are made up of hundreds of thousands of nerve cells which then all intermingle at a major junction called the brachial plexus. The injury of a Birth Brachial Plexus Palsy (BBPP) is one of the stretching forces of the delivery. Nerves can cope with some stretch but too much damages them. The damage can be quite mild (conduction block) which can recover completely and quite quickly, or be partially or completely snapped (rupture) or pulled clean from the spinal cord (avulsion).

The nerve injury in BBPP

Alongside precise and expert examination of the child I also use neurophysiology to make this assessment. Neurophysiology is medical circuit testing. This study is able to provide information not just on the condition of the nerves but also on how likely they are to recover.

Primary Brachial Plexus surgery

This is an operation on the nerves of the brachial plexus in the neck to free them from the scar tissue which forms after the nerves are damaged. Then if necessary I might have to take spare nerves from the child's arm or leg and splice them (nerve grafting) into the brachial plexus or re-route (nerve transfer) some other undamaged nerves from nearby.

The most important feature to understand about nerve surgery is that it is not like rewiring a light bulb: But more like planting a vine – it has to grow and it does this slowly. Surgery allows recovery to take place it doesn't actually repair the function of the nerves directly. Following nerve surgery there is often no sign of improvement for many months and full improvement not for a number of years after surgery.

The damage of the nerves is one problem, but this problem always leaves im-


balance in the function of the muscle, the growth of the bones and muscles and the way the body learns to use the arm, thus it can continue to cause problems throughout all of childhood.

The shoulder in BBPP

The most common problem in BBPP is one that affects the shoulder; the problem of shoulder dysplasia. This condition leads to a series of events that leads to shoulder joint subluxation and then full dislocation of the shoulder joint. At the RNOH the PNI unit is highly experienced in an operation called an anterior release, which corrects and rebalances the early stage of the problem. Later presenting cases (over age 4-6) often require an operation which was developed here at the RNOH called a glenoplasty where the bone of the shoulder joint is reshaped to improve function.

The forearm and hand

In BBPP there is often involvement of the arm further down than the shoulder and elbow. Joint releases, tendon transfers, nerve transfers, osteotomies are all utilised in specific cases.

■ Private patient enquiries can be made via the website: www.mohppu.com 

Precarious beginning leads to promising future

Nemours duPont CT Surgeon, Dr. Christian Pizarro, performs lifesaving surgery

At 34 weeks and 1 day, Felice Curley delivered beautiful twin boys. Tyrus (Twin A) and Hezakah (Twin B) weighed in at 4.7 lbs and 4.9 lbs, respectively. In the neonatal intensive care unit (NICU) at their local community hospital, the preemies received the special care and attention they needed.

However, after a few days, Hezakah, still in the NICU, began exhibiting breathing difficulty. The clinicians caring for Hezakah were convinced that he had developed some type of pulmonary condition and began a series of different treatments to ameliorate the symptoms. Unfortunately, these interventions failed and Hezakah began deteriorating rapidly. He was quickly transferred to a larger medical center for care. Once Hezakah arrived at the facility, the providers there quickly realized they were not equipped to properly help this very sick infant. Because of this, preparations were made to transfer Hezakah to Nemours/Alfred I. duPont Hospital for Children, a tertiary care center. Though 80 miles away, it was clear to medical personnel that transporting Hezakah there was the only way to save his life.

While in transit, Hezakah was put on life-sustaining ECMO by the Nemours Transport Team. Upon arriving at Nemours/Alfred I. duPont Hospital for Children, Hezakah was transferred to the NICU. In the NICU, pulmonary etiology was ruled out. It was determined that Hezakah had a complex cardiac abnormality. Hezakah was diagnosed with a rare congenital cardiac condition called Total Anomalous Pulmonary Venous Return/Repair (TAPVR). This heart defect occurs in the first eight weeks of pregnancy and causes the vessels

that bring oxygen-rich blood back to the heart from the lungs to be improperly connected. Babies with this heart defect can't supply oxygenated blood to the body after birth. Instead, they will have a mixture of oxygenated and de-oxygenated blood in circulation – a situation that is fatal. More specifically, in TAPVR, the four pulmonary veins do not connect normally to the left atrium. Instead, the pulmonary veins drain abnormally to the right atrium through an abnormal connection.

At approximately 22 days old, Hezakah needed heart surgery to live. According to the team at Nemours/Alfred I. duPont Hospital for Children, the chances of Hezakah surviving the surgery were less than 50%. Despite the odds, Dr. Christian Pizarro, a world-renowned pediatric cardiothoracic surgeon at Nemours/Alfred I. duPont Hospital for Children, surgically reconnected the pulmonary veins to the left atrium. While Hezakah recovered in the CICU, the transport team who brought him to Nemours/Alfred I. duPont Hospital for Children, and who kept him alive on that trip, stopped by to check on him.

Felice Curley was astounded by the outpouring of care and concern her family received. She commented: "Long after the surgery was done, Dr. Pizarro continued to check in on my son, always taking the time to answer my questions and always genuinely interested in us as a family. That's what has made my experience

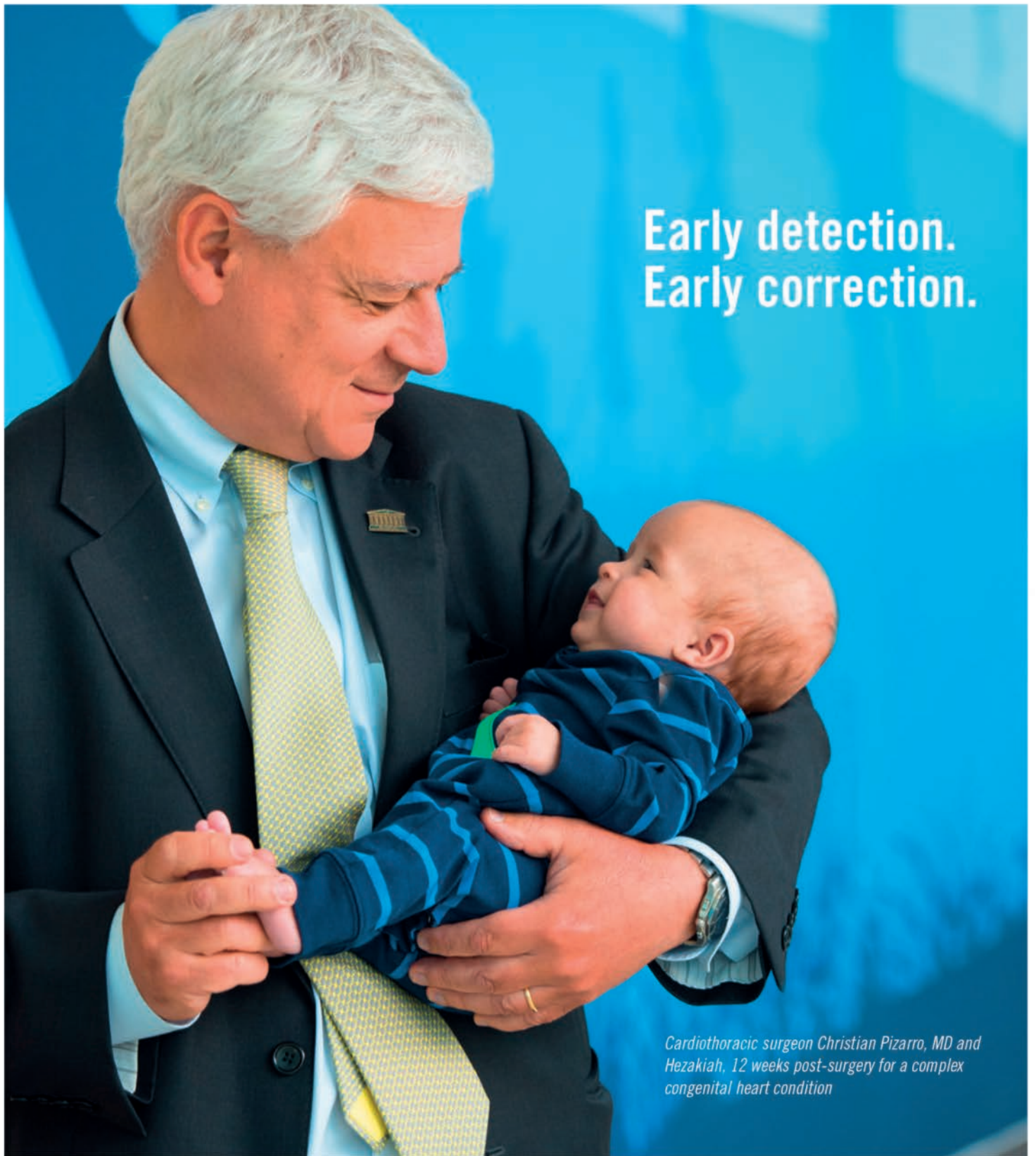
great. It's the whole team here. The social worker, psychologist, speech therapist, the transport team, the nutritionist, and child life who consoled and helped my two older children to understand what had happened to their brothers. And, of course, without Dr. Pizarro's expertise, my son wouldn't be here. I think this [Nemours/Alfred I. duPont Hospital for Children] is the greatest hospital!"

Now at 12 weeks old, Tyrus weighs in at a robust 10 lbs, and Hezakah isn't far behind at 7 lbs, 14 oz. He's learning how to suck so that he can gain weight more quickly and get stronger. Felice Curley says he is progressing nicely with the help of a speech therapist and other therapy services experts.

Thanks in large part to the expertise and support of the entire team at Nemours/Alfred I. duPont Hospital for Children, Hezakah has a bright future ahead. **MEH**



Dr. Christian Pizarro holds baby Curley



Early detection.
Early correction.

*Cardiothoracic surgeon Christian Pizarro, MD and
Hezakiah, 12 weeks post-surgery for a complex
congenital heart condition*

Lifesaving care for kids

At the Nemours Cardiac Center, we believe that even the most complicated forms of congenital heart disease can be successfully treated when detected early. Under the leadership of world-renowned pediatric cardiothoracic surgeon Christian Pizarro, MD, **our outcomes are among the best in the nation.** With precise diagnosis, immediate repair and superior care coordination, Nemours Cardiac Center offers children everywhere the best chance for a long and active life.

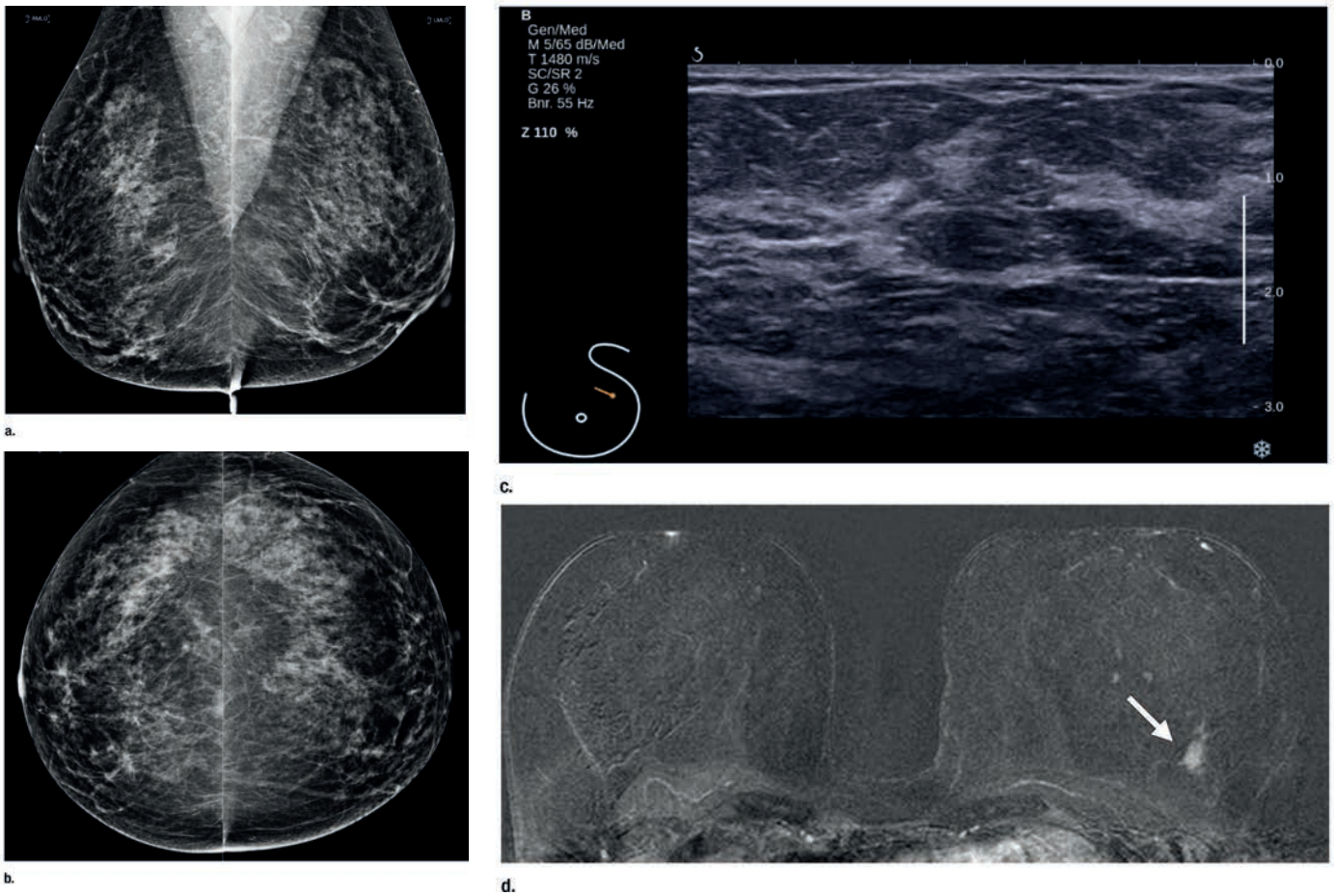
To learn more, contact the International Medicine Program at +1 (302) 651-4993.

© 2017. The Nemours Foundation. ® Nemours is a registered trademark of The Nemours Foundation.

Nemours[®]

**Alfred I. duPont
Hospital for Children**

Your child. Our promise.



Images in a 55-year-old screening participant. (a, b) Normal digital full-field mediolateral oblique (a) and craniocaudal (b) mammograms (BI-RADS category I) show a heterogeneously dense breast (ACR category C). (c) Screening ultrasound image shows normal findings (BI-RADS category I). (d) MR-guided biopsy enabled us to confirm the presence of an invasive high-grade triple-negative cancer (no special type [NST], pT1b, N0, M0). (d) Breast MR image shows a suspicious enhancing mass (arrow) in the left breast (BI-RADS category 5).E

Screening MRI benefits women at average risk of breast cancer

MRI screening improves early diagnosis of breast cancer in all women – not only those at high risk – according to a new study from Germany published online in the journal *Radiology*.

MRI has long been known as an effective breast cancer screening modality that offers better sensitivity than mammography and ultrasound. Currently, guidelines reserve breast MRI screening for women who have a strong family history or other specific breast cancer risk factors. MRI screening has not been considered necessary for women at average risk, and there has been resistance to expansion of MRI into this population due, in part, to concern over higher costs.

However, with breast cancer remaining a major cause of cancer death in women, there is good reason to pursue the search for improved screening methods, according to the study’s lead author, Christiane Kuhl, M.D., chair of the Department of Radiology at RWTH Aachen University in Aachen, Germany.

Between 2005 and 2013, Dr Kuhl and colleagues studied breast MRI’s impact on 2,120 women, ages 40 to 70, with less than a 15% lifetime risk of breast cancer. The women had normal screening mammograms and, in the case of those with dense breast tissue, normal screening ultrasound. Breast MRI detected 60 additional breast cancers, including 40 invasive cancers, for an over-

all supplemental cancer detection rate of 15.5 per 1,000 women. Of the 60 cancers detected in the study group over the observation period (7,007 screening rounds), 59 were found only using MRI, one was found also by mammography, and none by mammography or ultrasound alone.

According to Dr Kuhl, the results suggest that MRI can serve as a useful supplemental screening tool for women at average risk, especially those with dense mammographic tissue, and that MRI is superior to supplemental ultrasound for this purpose.

The results also highlight the ability of MRI in the detection of more aggressive types of cancer.

“The faster a cancer grows and the bet-



Christiane Kuhl, M.D.

ter it is in seeding metastases, the better will it be picked up early by MRI,” Dr Kuhl said. “In our cohort, cancers found by MRI alone exhibited features of rapid growth at pathology.”

This ability is especially important in women with dense breast tissue in which aggressive cancers may be missed on mammography. Left undetected, these cancers will grow to become clinically palpable cancers, also known as interval cancers. The new study showed that, consistent with previous research, breast MRI can depict these rapidly growing cancers with high reliability.

According to Dr Kuhl, interval cancers exhibit an adverse biologic profile and are the main driver of breast cancer mortality. Additional cancers detected by MRI screening in the study had a skewed distribution towards a higher-than-normal prevalence or incidence of rapidly growing (grade 3) cancers.

“The interval cancer rate in our study was zero percent. Not a single cancer was undetected that became palpable,” she said. “This suggests that MRI finds breast cancers that also mammography would find, but MRI detects them earlier, and it finds the cancers which, if MRI had not been done, would have progressed to interval cancers.”

● doi: 10.1148/radiol.2016161444

The results suggest that MRI can serve as a useful supplemental screening tool for women at average risk, especially those with dense mammographic tissue, and that MRI is superior to supplemental ultrasound for this purpose.

Neuroimaging technique may predict autism among high-risk infants

Functional connectivity magnetic resonance imaging (fcMRI) may predict which high-risk, 6-month old infants will develop autism spectrum disorder by age 2 years, according to a study funded by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) and the US National Institute of Mental Health (NIMH), two components of the National Institutes of Health. The study is published in the June 7, 2017, issue of *Science Translational Medicine*.

In the United States autism affects roughly 1 out of every 68 children. Siblings of children diagnosed with autism are at higher risk of developing the disorder. Although early diagnosis and intervention can help improve outcomes for children with autism, there currently is no method to diagnose the disease before children show symptoms.

“Previous findings suggest that brain-related changes occur in autism before behavioural symptoms emerge,” said Diana Bianchi, M.D., NICHD Director. “If future studies confirm these results, detecting brain differences may enable physicians to diagnose and treat autism earlier than they do today.”

In the current study, a research team at the University of North Carolina at Chapel Hill and Washington University School of Medicine in St. Louis focused on the brain’s functional connectivity -- how regions of the brain work together during different tasks and during rest. Using fcMRI, the researchers scanned 59 high-risk, 6-month-old infants while they slept naturally. The children were deemed high-risk because they have older siblings with autism. At age 2 years, 11 of the 59 infants in this group were diagnosed with autism.

The researchers used a computer-based technology called machine learning, which trains itself to look for differences that can separate the neuroimaging results into two groups -- autism or non-autism -- and predict future diagnoses. One analysis predicted each infant’s future diagnosis by using the other 58 infants’ data to train the computer program. This method identified 82% of the infants who would go on to have autism (9 out of 11), and it correctly identified all of the infants who did not develop autism. In another analysis that tested how well the results could apply to other cases, the computer program predicted diagnoses for groups of 10 infants, at an accuracy rate of 93%.

“Although the findings are early-stage, the study suggests that in the future, neuroimaging may be a useful tool to diagnose autism or help health care providers evaluate a child’s risk of developing the disorder,” said Joshua Gordon, M.D., Ph.D., NIMH Director.

Overall, the team found 974 functional connections in the brains of 6-month-olds that were associated with autism-related behaviours. The authors propose that a single neuroimaging scan may accurately predict autism among high-risk infants, but caution that the findings need to be replicated in a larger group.

● doi: 10.1126/scitranslmed.aag2882 (2017)

Middle East healthcare needs to develop leadership to meet the four major challenges facing the international industry



By Dr Stephen Brookes

The Middle East healthcare sector is vibrant and active, and continues to attract investment as private and public-sector investors build the new capacity needed to serve a growing population of citizens and residents, and international healthcare tourists.

The global industry still faces a number of challenges; the first and foremost, according to the World Economic Forum, is the spiraling cost of healthcare delivery, which is reaching unsustainable levels. With the rising cost comes the need to transform the industry and improve efficiencies, patient outcomes, and financial sustainability. Success factors include sharing and learning from international practice and experience, global perspectives, and individual and collective leadership.

Healthcare is arguably the world's largest industry and is transforming rapidly. Healthcare systems are being continuously modernized and reformed, whether public, private or hybrid systems. The need to demonstrate improved outcomes will continue. Transformational change will be needed more than ever, with a focus on health outcomes based on an evidence-based approach.

With changing demographics and new

technologies, leaders will need to be more adaptive and prepared to be creative and opportunistic, within an appropriate risk assessment climate. These issues present a significant leadership challenge within healthcare systems.

The opportunity to learn from other systems offers real benefits to healthcare leadership, in equipping leaders and managers with cutting-edge knowledge and practice from around the world whilst retaining a strong emphasis on regional, national and local systems and practices, putting the patient at the heart of all that healthcare leaders do.

Healthcare leadership exists at multiple levels with each level defining the type of leadership required through a collective vision. It is most certainly collective at the level of the patient, as often the health and well-being of the carers and nuclear family depends on this.

Collective leadership must build the capacity and capability of the people within the healthcare system through improved skills and the development of appropriate behaviours. The focus should be on how you lead within a *collective* healthcare system, always putting the patient first.

Given the global nature of healthcare leadership, leaders need to adapt to changing markets and the potential for change in a complex and uncertain world.

Leaders who are unable to do this will remain rooted in the traditional form of leadership and continue to face difficulties currently associated with cost, quality and access, with patients isolated from the leadership decisions and practices. The concept of the patient 'as leader' is starting to emerge.

There are four major global leadership challenges faced by healthcare systems across the world: Universal access to different levels of healthcare in a timely, cost-effective and seamless manner; giving prevention as much priority as treatment and recognising long term benefits; delivering

The University of Manchester's new part-time MSc International Healthcare Leadership addresses four global healthcare leadership challenges.


healthcare across a range of public/private and hybrid systems, and; integrating care across diverse primary, secondary and tertiary providers.

In the GCC, there are many similarities in the healthcare systems of member states, but there are also differences. The balance between public and private provision of healthcare is one such difference, although they are ultimately working towards a common standard of health and well-being.

In a complex healthcare environment, leaders need to focus at different levels. This forms the basis of a unique international leadership master's programme where the learning will help leaders achieve this.

The University of Manchester's new part-time MSc International Healthcare Leadership addresses these four global healthcare leadership challenges, and concentrates on applying learning to the practice of healthcare leadership and service improvement focusing always on evidence-based outcomes.

The Author

Dr Stephen Brookes is senior fellow in public policy and management and specialises in leadership and organisational development with a special focus on healthcare management, The University of Manchester 

CosmeSurge works closely with Emirates Hospital for the treatment of breast cancer

CosmeSurge cooperates daily with Emirates Hospital specialists who are part of their Breast Program. Dr Dora Evangelidou, the Plastic and Reconstructive Surgeon at CosmeSurge, said: "It is shown by many studies that the basis of excellence in breast cancer treatment and recovery is the care given by a multidisciplinary team."

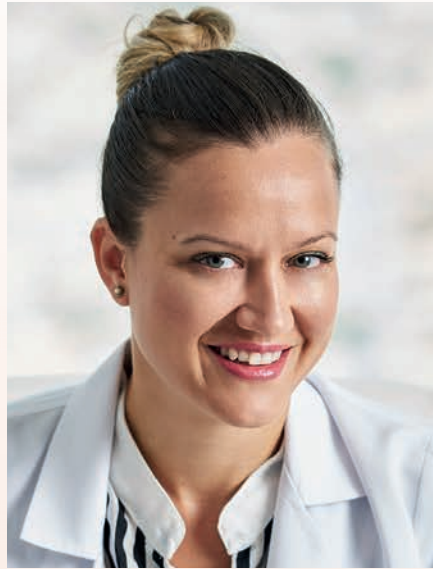
"When a patient needs a removal of the breast or even breast conserving surgery, in most cases we offer immediate reconstruction using techniques tailored to the individual. Our breast surgeons cooperate with plastic-reconstructive surgeons to get the best cosmetic results," he said.

"Breast reconstruction, frequently begins at the time of removal of the breast. In our hands, each patient discusses her reconstructive options with her plastic surgeon before surgery. Our policy at CosmeSurge and Emirates Hospital is to ensure complete awareness of breast reconstruction options and this can be achieved with a single visit to our Plastic and Reconstructive Surgery department. Our breast surgeon and our reconstructive surgeon will then make a coordinated plan for each patient's treatment."

Usually, the two main choices are between using the patient's own tissue for reconstruction or using implants. Frequently implant reconstruction is performed in two stages starting with an expander at the time of removal of the breast. Less frequently and if a small breast is desired, a permanent implant is placed at the time of the removal of the breast.

"We always advise patients to see a plastic surgeon about reconstruction as soon as she considers treatment that includes the possibility of surgery to remove a breast. It is also possible to see a plastic surgeon after they have begun or even completed treatment for breast cancer. However, some options are best if carried out with cooperation between the surgeon who removes the breast and the surgeon who will begin reconstruction at the time of removal of the breast."

Dr Evangelidou added: "Often when we hear about plastic surgery, we think of cosmetic procedures such as tummy tuck and



Dr Dora Evangelidou



Dr Serife Simsek

breast augmentation, but it should be remembered that the field of plastic surgery also focuses on reconstruction. Actually, reconstructive plastic surgery is the root and the

backbone of what we know today as cosmetic surgery. It is really impressive how a simple reconstructive procedure has the power to improve a life. That is indeed priceless." MEH

Breast cancer

Breast cancer is the most common cancer in women. One in eight women will be diagnosed with breast cancer over the course of her lifetime. Breast cancer which is diagnosed in the early stages can be treated successfully. A woman's risk of breast cancer increases if she has a first-degree relative (mother, sister, daughter) who has breast cancer history.

About 5-10% of breast cancers can be linked to gene mutations (abnormal changes) inherited from one's mother or father. Mutations of the BRCA1 and BRCA2 genes are the most common. About 85% of breast cancers occur in women who have no family history of breast cancer. Symptoms of breast cancer include: a lump in the breast, swelling of the breast, skin irritation or dimpling, breast pain, the nipple turning inward, redness or thickening of skin on the breast, a bloody or clear nipple discharge other than breast milk, or a lump in the underarm area.

It's important to get any changes in the breast diagnosed promptly by a breast surgeon. Early breast cancer diagnosis increases the chance of a successful treatment. Regular screening, increased awareness helps with this.

Surgery is usually the first-line treatment of breast cancer. The patient and surgeon decide together on the type of surgery based on the disease stage and tumour characteristics. Breast conserving surgery is also an option in some cases. Chemotherapy and radiation therapy can be used to destroy cancer cells that may remain in the breast after surgery. Hormonal therapy is used to treat hormone-receptor-positive breast cancers by reducing the amount of estrogen or blocking its action.

The needs right now and in the future

Dr Khalid Elsheikh, Deputy Programme Manager for Iraq, Syria, Jordan and Turkey, and **Dounia Dekhili**, Programme Manager for Iraq, Syria, Jordan and Turkey, are both members of MSF's operational cell based in United Arab Emirates, and it's from there that they manage some of MSF's activities in Syria. In early April, they agreed to discuss the way MSF works in Syria after six years of war, the challenges faced, the changes and the constants.

Question: When were you last in Syria and what was your objective there?

■ **Dr Khalid Elsheikh:** I was last there in 2014. I was conducting an exploratory trip to evaluate the medical needs) along with two colleagues – a surgeon and a nurse. The needs were vast, particularly among internally displaced people, but it was impossible to act on them. Every day and every night we were shelled, it seemed to be targeted. The area where we stayed, along with the hospital where we conducted evaluations, had never come under attack before, and suddenly there was a period of intense bombardment in a localised area. We even moved our accommodation to a new area, and once again we came under fire from missiles. It became clear that our presence put the local population in danger, and we made the decision to withdraw. I felt lucky after that – it really was just a matter of luck that we weren't hit.

Question: You've been to different projects in Syria a number of times, including projects in Aleppo and Idlib. Have you ever witnessed one of the mass casualty events we see so often in the media?

■ **Dr Khalid Elsheikh:** I'm a General Practitioner by training and my role in Syria was as an Emergency Coordinator rather than as a medical responder. However, I did witness some mass casualty events, and during these I took responsibility for triage. During these events, there were huge influxes of people, and it was incredibly crowded. People are desperate in these times – being responsible for triage can mean telling people that their loved ones can't be treated – desperate families would bring someone who had already died

and insist on their receiving treatment. When there are so many others who need urgent attention, we have to continue. But it's very difficult trying to explain why someone can't be taken to the operating theatre when their loved ones insist.

Question: What are the primary medical concerns in Syria right now?

■ **Dr Khalid Elsheikh:** The victims of war are highlighted in the media – we are confronted with horrifying images of people killed and injured in bombings – but these are the direct victims. We hear very little about the indirect victims. Currently, there are huge numbers of people with chronic diseases without medication; there are people who are sick, but won't seek help as they fear hospitals may be targeted by military attacks.

Most of the health facilities now functioning were created in a state of emergency. As large facilities are so frequently targeted, medical staff tend to work in converted shops, houses or farms. Often we have to work in poor conditions, with a lack of supplies. The most vulnerable demographic right now is women and children, and the lack of routine vaccination (against preventable diseases like measles, rubella, tetanus or pneumonia) is a serious concern. MSF seems to be the only organisation providing routine vaccinations right now.

Question: What are the long-term implications for healthcare in Syria?

■ **Dr Khalid Elsheikh:** We save the lives we can, but the fact is that people need more than saving. They need physiotherapy to help them walk again, they need reconstructive surgery to help



Dr Khalid Elsheikh



Dounia Dekhili

them regain mobility and perform everyday tasks. So many people will now suffer from disabilities. This new generation growing up will be particularly vulnerable to disease, because they simply didn't receive the routine vaccinations they needed. In medical circles, people discuss the eradication of things like Polio – but that's just not realistic when so many young people will go without the protection they need. Aside from the physical issues, an enormous people will now have to live with post-traumatic stress disorder. They will have to learn to live, to work and to interact with others, after witnessing stunning brutality and widespread carnage. These things can't be underestimated.

Question: How does the situation in Syria compare to working in other armed conflicts?

■ **Dounia Dekhili:** What's different here is that we have been forced to stay away from such a catastrophe, with zero ability to negotiate humanitarian space, for such a long period of time. The last time I was there was in May 2013, visiting two of our medical facilities in Atma and Qabasin soon after they were opened. Our project in Qabasin closed in October 2014. We had already evacuated the expatriate team following staff kidnappings by the so-called 'Islamic State' (IS) earlier in the year. The kidnappings actually occurred far from Qabasin, but there were so many armed groups operating at the time, that it became difficult to tell who was who, and who it was possible to negotiate with. Initially it was possible to negotiate with certain groups, and they gave us space to work, even IS. But this diminished rapidly, and we were never able to negotiate with the government in Damascus. Crossing the border with Turkey became very complicated in the summer of 2013. We withdrew expatriate staff from Atma on February 2014. Since the evacuation of expatriate staff, we have relied on working with our Syrian colleagues through remote management.

Question: How effective is this remote management of medical facilities?

■ **Dounia Dekhili:** Our Syrian colleagues are sustaining the projects remarkably well under the circumstances. To qualify that statement, it's important to understand that the majority of medical staff now working inside Syria were not trained to work in a war zone, but they have had to learn as they work. This is not ideal, and medical staff at MSF are usually expected to have a good level of experience before they even begin their training for emergency situations. There is a big difference between medical work in a secure, well-staffed and well-equipped environment, and frontline medical work. So, the fact that the staff inside Syria continue to save lives, with remote training, guidance and assessment, is amazing. However, this approach comes with problems. Without being there in person, it's very difficult to assess the level of danger our staff experience. This is extremely frustrating.



This image from October 2016 shows 11-year-old Mohamed who has shrapnel wounds to his head and body after airstrikes on east Aleppo's Al Maadi neighbourhood. He had been in hospital for four weeks, but could not be discharged as his wounds needed to be drained regularly. As a result of his injury, Mohamed lost awareness of his surroundings and could no longer speak. The surgery he needed was not available in east Aleppo. (Names have been changed).

Question: Did you ever witness the trauma we hear so much about in the media?

■ **Dounia Dekhili:** I remember when the hospital in Atma first opened – we could hear the shelling. At that time the frontline was about 15km away. When we heard the shelling, the teams would prepare for mass casualties. Sometimes military helicopters would fly over, and the fear in our patients was palpable. In fact, any time a plane or a helicopter flew over, people would become nervous. When the situation posed a more imminent threat, we would gather our staff and patients into a small, slightly more secure room.

The first patient I saw, and one that I won't forget, was a 12-year-old boy, wounded by shrapnel. It's always a shock to see civilian casualties in war, but some stay with you.

The further away the frontline moved from the hospital, the more internally displaced people would come to the hospital for assistance, and the more burns patients we received, as a result of living conditions in displacement camps. Apart from that, Syria used to have a good health system, so people used to receiving healthcare suddenly didn't know where to turn. Earlier on in the conflict, we had plans to open more paediatric facilities, and centres for mothers and children. But the opportunity for this diminished.

Question: How do the staff cope with the constant threat of warfare, aren't they scared?

■ **Dounia Dekhili:** Unfortunately, people become used to it – it becomes normal for them. But then you have events like the recent chemical attacks (04.04.2017) and understandably, staff become worried. We put staff psychologists in place so that our colleagues have someone to turn to, but obviously working remotely means we can only offer a phone line. It's not ideal, but people do use it. When more parties became involved in the war, notably when the Russian intervention began, the bombing intensified. People were certainly scared after that.

A lot has changed in this war, but the one constant has been the total disregard for civilian protection. Not just from the warring countries, but those who refuse to give refuge.

Question: What do you think hasn't been said, that is worth saying?

■ **Dounia Dekhili:** We see a lot of images and reports on military action, a lot of discussions on the war itself, but very few reports on the mass displacement and human costs that go beyond numbers. There isn't a human face to this war. MSF

MSF regional branch office in UAE

MSF has been in the UAE since 1992, under the patronage of His Excellency Sheikh Nahyan Bin Mubarak Al Nahyan and is a member of International Humanitarian City (IHC). MSF's work in the UAE includes support for medical humanitarian assistance and operations in Iraq, Syria, Jordan, Turkey, Yemen and Lebanon. In addition, MSF UAE is the primary logistical hub providing medical assistance to people based in Afghanistan, which remains one of MSF's largest operational programmes, with 2,303 full-time staff and 366,000 outpatient consultations held in 2015.

● Visit: www.msf-me.org



KIMES 2017 – the largest show in its 33-year history

The 33rd edition of South Korea's largest medical expo – Korea International Medical & Hospital Equipment Show (KIMES 2017) – took place at the COEX (Convention & Exhibition Center) in Seoul from 16-19 March under theme “Smarter, Easier, Healthier”.

The organizers – Korea E & Ex Inc., Korea Medical Devices Industrial Coop. Association and the Korea Medical Device Industry Association – say the purpose of the event is to provide assistance to the further development of the medical equipment industries in Korea and neighbouring countries, as well as the promotion of trade in medical equipment, on both the domestic and international fronts.

This year was KIMES's biggest show in its 33-year history and comes on the back of growth of more than 10% annually in the medical device industry in the past decade in Korea.

KIMES 2017 attracted 226 companies from 61 countries. Exhibitors came from around the world including 579 Korea manufacturers, USA 125, Japan 62, Germany 88, China 154 and many others.

The show highlighted the increasingly important role played by domestic companies, Samsung, Listem, DK Medical, BIT Computer and Alpinion, among others. In addition, global brands such as Fuji, GE, Philips, Shimadzu, Toshiba also had a big showing at the event.

The event was attended by more than 73,000 visitors and more than 3,500 overseas buyers from 92 countries.

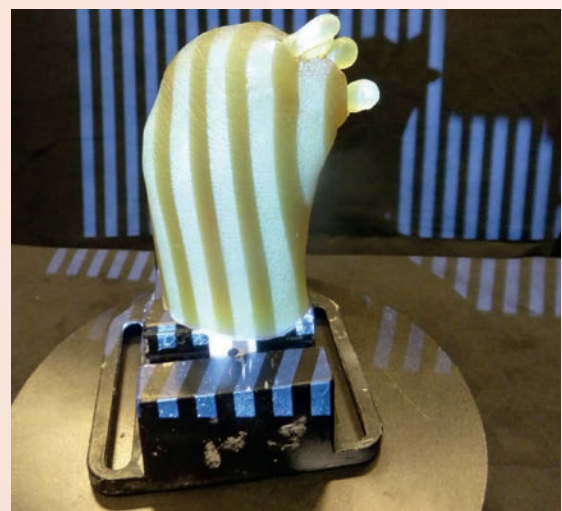
At the event, the organisers set up a Global Bio & Medical Plaza which served as the principal platform for facilitating cooperation and trading between Korean and overseas companies in the bio and medical industries.

Run concurrently with the expo were 180 sessions of seminars covering topics such as government policies on the medical devices market and new medical device technologies.

SMARTTECH

SMARTTECH and its Korean distributor, the KAIS Company, presented for the first time their 3D-scanning technologies dedicated to medicine, called scan3Dmed.

Due to growing interest from health and security sectors, SMARTTECH designed a new device for medicine. 3D scanning is an innovative technology used on a daily basis in industry, however it is still very new in medicine. Non-industrial specialists require a user-friendly 3D scanner that delivers reliable and accurate results. There's no time for long preparation of the 3D scanner before taking measurements of the patient. SMARTTECH technology allows both fast measurement and plug & scan process, meaning that the scanner is ready to work straight out of the box. This



is possible due to the manufacturer's permanent calibration that assures metrologically referential results.

Scan3Dmed is unique in that it can create a comprehensive 3D digital representation of

the patient. Accumulated records can be infinitely duplicated and shared with research centres around the world, revolutionizing the way of obtaining data in medicine.

Touchscreen technology allows comfortable work without any sophisticated measurement knowledge from the operator. The intuitive software interface helps provide data analysis with full understanding from the doctor's side as well as the patient's side. Integrated CPU eliminates the need of having a separated computer to operate the device.

Using the panoramically merged results, the doctor can create a virtual model of the body and then do all types of measurements, that can become very helpful during treatment planning. The device's new multithreaded SMARTTECH software, data calculation and precise analysis can be done in a single visit of the patient.

● <http://smarttech3dscanner.com/>

Person Medical

Person Medical specialises in manufacturing autoclaves and EO gas sterilizers and with their 20 years of experience they have recently launched a series of low temperature plasma sterilizers, HPS35/50/80L.

The HPS Series of plasma sterilisers are the most secure sterilizers, replacing current EO gas and formalin sterilizers which use dangerous materials (sterilant) for their sterilization. While harmful components that impact the human body and the environment are discharged during the emission process of EO gas and formalin

sterilization, the HPS Series are harmless and eco-friendly plasma sterilizers that decompose hydrogen peroxide into water and oxygen after completion of the sterilization process.

The HPS Series provides an optimized sterilization environment to instruments vulnerable to heat and moisture. Three different sterilization cycles in the HPS series are programmed to fit the length and characteristics of heat-sensitive medical devices and surgical instruments.

The chamber is made of aluminium alloy that enables perfect sterilization by maximizing the transfer of heat to sterilized instruments.

The HPS Series plasma sterilizers can complete all process within a minimum of 28 minutes while EO gas and formalin sterilizers require at least 12 hours of sterilization and aeration for usage. The HPS Series is economical as they facilitate rapid processing and reduce the cost of operation.

HPS Series are installed using ordinary power supply (AC220V) and can be installed anywhere in a hospital as an exhaust pipe or a drain line are not required due to it having no toxic material.

● www.personmedi.co.kr

Samsung Medison – innovation in ultrasound

Samsung Medison had a large booth to showcase their many new medical devices and equipment.

The company introduced a number of advanced imaging software packages for their ultrasound machines. 'Crystal Clear Cycle' enables diagnoses of foetus health and women's diseases, which can happen during six recurring circumstances of 'family planning, measurement of foetal development, foetal abnormality test, diagnosis of foetal image, delivery, and the diagnosis of breast/female cancer.

With the detailed imaging software technology of Samsung Medison, which has provided ob-gyn ultrasound devices for many years, 'Crystal Clear Cycle' is expected to be utilized in various ob-gyn diagnoses from pregnancy to women's diseases. Crystal Clear Cycle of Samsung Medison helps diagnose ovarian cancer by applying 'ADNEX,' a risk model for the diagnoses

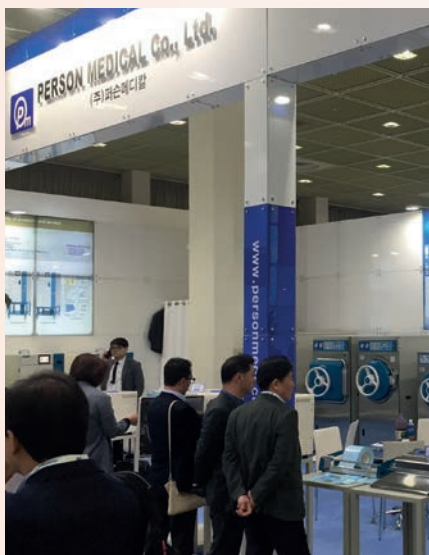


of adnexal tumors, which was presented by the IOTA (International Ovarian Tumour Analysis). 'IOTA-ADNEX' is equipped in the ultrasound for the first time in the industry. Crystal Clear Cycle can predict the risk of benign/malignant ovarian tumors with nine variables. When it is malignant, the risk will be divided into borderline, stage I, end stage, or metastatic cancer.

'Crystal Vue' offers advanced technology in the field of foetal imaging. Applying 3D volume rendering technology, Crystal Vue can show not only the surface area of the uterus but also the internal tissues. It also delivers analytical information to help distinguish the bone and the surrounding soft tissues. Also included is 'Crystal Vue Flow', a further advanced version of Crystal Vue. Crystal Vue Flow provides information on the foetus and placenta with additional information on blood flow on the surface and internal tissues of uterus region.

Samsung Medison also developed 'E-Cervix', which will help diagnose the risk of premature birth. By measuring the elasticity ratio of inside and outside entrance of the cervix, which can be caused by the internal vibration inside the tissues including surrounding blood vessel, by the trembling of tissues, or by the foetal movement, it quantifies the risk of premature birth, which will help ob-gyn doctors diagnose the risk of premature birth.

● www.samsungmedison.com



On the pulse

Timesco reusable laryngoscopes and preloaded single use handles

Timesco Healthcare Ltd, England, has been at the forefront of laryngoscopes design, manufacture and innovative developments in intubation for over five decades.

Complete ranges of reusable “Optima”, “Sirius” laryngoscopes systems covering from neonate to adult intubation, as well as specialist, Robert Shaw, Seward, and difficult intubation “Eclipse” tilting tip blades are available.

Timesco’s range of laryngoscopes has been further upgraded by addition of LED light for the reusable and single use handles.

Timesco manufactures the world’s number one single use disposable fibre optic la-

ryngoscopes system “Callisto”, which is complemented with Callisto single use and Optima reusable LED handles.

The single use Callisto range has been expanded with the addition of Callisto Flare LED single use dry cell and preloaded handles which are supplied complete with batteries. The Callisto Flare LED handles are available individually and also paired with the Callisto blades as handle and blade packs, ready to use.

We have regional distribution in the Mid-



dle East and have an office in Dubai, manager Mr Misbah Jabbar, email: misbah.jabbar@timesco.com, phone: 00971 508 451019.

Timesco is an ISO, FDA, CE and SFDA registered company.

● For more information please visit: www.timesco.com

Siemens launches new SPECT/CT

Siemens Healthineers has launched the Symbia Intevo Bold SPECT/CT – a system that combines the company’s single-photon emission computed tomography (SPECT) technologies with new, high-performance CT capabilities to enable a wide range of clinical applications. These new CT options help make even challenging exams a matter of clinical routine.

Available on a Siemens Healthineers SPECT/CT system for the first time, the SAFIRE (Sinogram Affirmed Iterative Reconstruction) algorithm delivers excellent CT image quality while reducing patient radiation dose by as much as 60%. SAFIRE enables fast image reconstruction for easy implementation into a facility’s clinical routine. Additionally, SAFIRE reduces noise while maintaining detail visualization.

Also available for the first time on any of the company’s SPECT/CT systems, the iMAR³ (Iterative Metal Artifact Reduction) algorithm reduces metal-related artifacts caused by metallic materials, such as orthopedic and dental implants. With this capability, customers can not only curb or eliminate artifact-induced distortion in CT images but also apply the CT images for attenuation correction to provide



a more enhanced, accurate SPECT image.

The optional IVR (interleaved volume reconstruction) feature of Symbia Intevo Bold reconstructs overlapping CT images up to 32 slices to extract the maximum amount of diagnostic information from measured data, enabling evaluation of small structures such as lesions or fractures. IVR improves spatial resolution in the z-direction of all CT scans, regardless of pitch.

The single-source dual energy capability of Symbia Intevo Bold employs two sequential spiral CT scans operating at different kV levels to combine tissue information with disease morphology, improving image quality. Post-processing applications with the company’s syngo Dual Energy software include monoenergetic,

Calculi Characterization, and gout.

In addition to these CT-optimizing features, the Symbia Intevo Bold SPECT/CT system offers established cutting-edge capabilities in SPECT imaging. For example, xSPECT Quant quantification technology enables automated, accurate, and reproducible quantification of not only Technetium-99m – the most common isotope in SPECT imaging – but also Iodine-123, Lutetium-177, and Indium-111. This capability extends the use of advanced SPECT quantification from general nuclear medicine and bone studies to indications including neurological disorders, neuroendocrine tumors, and prostate cancer.

● For more information, visit: www.siemens-healthineers.com

Dickies® LabCoat with CERTAINTY Antimicrobial Technology™

Newly launched in the market, Dickies Medical Lab coats are made with our Certainty and Certainty PLUS antimicrobial fabric.

CERTAINTY PLUS™ features antimicrobial and fluid barrier fabric technologies. The combined technologies are available in durable, breathable, soft, comfortable and in fashionable range of lab coat for men, women and unisex.

The advanced technologies in CERTAINTY provide odour control and feature fluid resistance that causes many fluids to bead up and roll off the apparel. Products with CERTAINTY PLUS are enhanced with a revolutionary fabric technology that uses nanotechnology to create fluid and stain resistance without clogging the fabric weave or compromising the look, feel or comfort of the fabric.

Healthcare workers and other scrubs-wearing professionals often work long hours in conditions that can produce undesirable fluids and odours. Now healthcare professionals can choose lab coats that resist liquids, feature antimicrobial fabric technology, remain naturally soft and breathe

- To order: Products available on www.souq.com
- For more info: www.dickiesmedical.com / Williamson-Dickie Middle East FZE 04 887 8223



Abbott brings Sekisui CP3000 coagulation system to Middle East

Abbott announced that the Sekisui CP3000 coagulation system, a fully automated analyzer that tests bleeding and clotting function in blood, is now available in Europe, the Middle East, and Asia Pacific. Abbott is the exclusive global distributor of the CP3000 coagulation system in the US, Europe and other countries that recognize CE Mark.

The CP3000 coagulation system seamlessly integrates with Abbott's suite of informatics solutions, which help accelerate efficiency in high test volume laboratories where resources may be limited and space and time is at a premium. Capabilities like Abbott's Ali-iQ informatics and service offerings streamline operations and provide intelligent laboratory insights through common reporting and dashboard views, make it easy for healthcare providers to read and interpret patient results. The system also connects to the ACCELERATOR a3600 automation track, which provides additional flexibility to meet the needs of the laboratory.

Delays in coagulation testing are often related to sample errors and manual errors in the testing process. CP3000 coagulation system provides automated, standardized sample management, and can flag unsuitable samples at the start of testing. The system offers an expanded menu of barcoded reagents to reduce data entry errors. With a unique ability to visualize and automate Mixing Studies, the CP3000 coagulation system can help clinicians quickly interpret results.

- For more information, visit: www.corelaboratory.abbott/int/en/offerings/segments/coagulation-seg



13-16 NOVEMBER 2017
DÜSSELDORF GERMANY

www.medica-tradefair.com

WORLD FORUM FOR MEDICINE

Every year in November MEDICA provides an exceptional experience for experts from around the world. The World Forum for Medicine presents a broad product spectrum from some 5,000 exhibitors.

Take advantage of MEDICA and its special products for your area of expertise, too.

BE PART OF THE NO. 1!



IFP Emirates LLC
P.O.Box 117772 _ Garhoud Area
The Arcade Building _ Mezzanine Floor, M02
DUBAI
Tel. (00971 4) 2822 543 _ Fax (00971 4) 2824 573
e-mail: info@ifpemirates.com _ Internet: www.ifpemirates.com


Messe
Düsseldorf

Image captured from video
- Ajiboye et al, Restoration
of reaching and grasping
movements through
brain-controlled muscle
stimulation in a person with
tetraplegia: a proof-of-concept
demonstration. Copyright
(2017), with permission from
Elsevier.



Neuro-prosthesis reconnects brain to muscles to restore functional arm movements to man with complete paralysis

A system that decodes brain signals and transmits them to sensors in the arm has allowed a man paralysed from the shoulders down to regain movement in his hand and arm, according to the first study to report results for this new technology, published in *The Lancet*.

Although only tested with one participant, the study is a major advance and the first to restore brain-controlled reaching and grasping in a person with complete paralysis. The technology, which is only for experimental use in the USA, circumvents rather than repairs spinal injuries, meaning the participant relies on the device being implanted and switched on to move.

“Our research is at an early stage, but we believe that this neuro-prosthesis could offer individuals with paralysis the possibility of regaining arm and hand functions to perform day-to-day activities, offering them greater independence,” said lead author Dr Bolu Ajiboye, Case Western Reserve University, USA. “So far it has helped a man with tetraplegia to reach and grasp, meaning he could feed himself and drink. With further development, we believe the technology could give more accurate control, allowing a wider range of actions, which could begin to transform the lives of people living with paralysis.”

Injuries to the spinal cord often cause loss of muscle function and paralysis, with injuries affecting the vertebrae in the neck region usually causing full paralysis of all four limbs.

Previous research has used similar

elements of the neuro-prosthesis. For example, a brain-computer interface linked to electrodes on the skin has helped a person with less severe paralysis open and close his hand, while other studies have allowed participants to control a robotic arm using their brain signals. However, this is the first to restore reaching and grasping via the system in a person with a chronic spinal cord injury.

In this study, a 53-year-old man who had been paralysed below the shoulders for eight years underwent surgery to have the neuro-prosthesis fitted.

This involved brain surgery to place sensors in the motor cortex area of his brain responsible for hand movement – creating a brain-computer interface that learnt which movements his brain signals were instructing for. This initial stage took four months and included training using a virtual reality arm.

He then underwent another procedure placing 36 muscle stimulating electrodes into his upper and lower arm, including four that helped restore finger and thumb, wrist, elbow and shoulder movements. These were switched on 17 days after the procedure, and began stimulating the muscles for eight hours a week over 18 weeks to improve strength, movement and reduce muscle fatigue.

The researchers then wired the brain-computer interface to the electrical stimulators in his arm, using a decoder (mathematical algorithm) to translate his brain signals into commands for the electrodes in his arm. The electrodes

stimulated the muscles to produce contractions, helping the participant intuitively complete the movements he was thinking of. The system also involved an arm support to stop gravity simply pulling his arm down.

During his training, the participant described how he controlled the neuro-prosthesis: “It’s probably a good thing that I’m making it move without having to really concentrate hard at it. I just think ‘out’ and it just goes.”

After 12 months of having the neuro-prosthesis fitted, the participant was asked to complete day-to-day tasks, including drinking a cup of coffee and feeding himself. First of all, he observed while his arm completed the action under computer control. During this, he thought about making the same movement so that the system could recognise the corresponding brain signals. The two systems were then linked and he was able to use it to drink a coffee and feed himself.

“Although similar systems have been used before, none of them have been as easy to adopt for day-to-day use and they have not been able to restore both reaching and grasping actions,” said Dr Ajiboye. “Our system builds on muscle stimulating electrode technology that is already available and will continue to improve with the development of new fully implanted and wireless brain-computer interface systems. This could lead to enhanced performance of the neuro-prosthesis with better speed, precision and control.”

● doi: 10.1016/S0140-6736(17)30601-3

Agenda

Selected schedule of regional medical meetings, conferences and exhibitions

Event	Date / City	Contact
■ September 2017		
1st GCC Patient Experience Summit	18 - 19 September 2017 Abu Dhabi, U.A.E.	https://fleming.events/en/events/pharma/gcc-patient-experience-summit
8th Arab Diabetes Forum	20-22 September, 2017 Cairo, Egypt	www.arabicdiabeticforum.com
International Conference on Fungal Diseases & Control	25 – 27 September, 2017 Dubai, UAE	www.fungalinfections.conferenceseries.com
11th Global Ophthalmologists Annual Meeting	25 – 27 September, 2017 Dubai, UAE	http://annualmeeting.conferenceseries.com/ophthalmologists
10th World Pediatric Congress	28 – 29 September, 2017 Dubai, UAE	www.pediatriccongress.conferenceseries.com/
23rd World Nurse Practitioner Conference	28 – 29 September, 2017 Dubai, UAE	http://nursepractitioner.nursingconference.com/middleeast
■ October 2017		
7th International Conference and Exhibition on Traditional & Alternative Medicine	3 – 6 October, 2017 Dubai, UAE	www.traditionalmedicine.conferenceseries.com
The Fifth Clinical Congress & AACE Annual Gulf Chapter Meeting	5-7 October, 2017 Dubai, UAE	http://am.aacegulf.org
3rd World Congress on Climate Change and Global Warming	16 - 17 October, 2017 Dubai, UAE	www.climatechange.conferenceseries.com/asiapacific
4th International Conference on Rhinology and Otolaryngology	18 – 20 October, 2017 Dubai, UAE	www.otolaryngology.conferenceseries.com
8th Emirates Cardiac Society Conference	19-21 October, 2017 Dubai, UAE	http://ecs-acc.com
14th Global Obesity Meeting	23 – 24 October, 2017 Dubai, UAE	www.obesitymeeting.conferenceseries.com



Agenda

Selected schedule of regional medical meetings, conferences and exhibitions

Event	Date / City	Contact
10th International Conference on Neuropharmacology and Neuropharmaceuticals	23 – 24 October, 2017 Dubai, UAE	www.neuro.pharmaceuticalconferences.com/middleeast/
2017 ISAM (International Society of Addiction Medicine) Conference: Addiction Medicine New Frontier	26 – 20 October, 2017 Abi Dhabi, UAE	www.isam2017abudhabi.ae
■ November 2017		
8th Global Obesity Conference	14 – 15 November, 2017 Dubai, UAE	www.obesitymeeting.conferenceseries.com
8th World Congress on Healthcare and Medical Tourism	17 – 18 November, 2017 Dubai, UAE	www.healthcare.global-summit.com/middleeast/
5th International Conference on Physiotherapy	27 – 28 November, 2017 Dubai, UAE	www.physiotherapy.conferenceseries.com
International Conference on Cancer Diagnostics	27 – 28 November, 2017 Dubai, UAE	www.cancerdiagnostics.conferenceseries.com/middleeast
22nd Global Vaccines & Vaccination Summit	30 November- 1 December, 2017 Dubai, UAE	www.vaccines.global-summit.com/middleeast
■ December 2017		
World Vaccine Summit and Expo	4-6 December, 2017 Dubai, UAE	http://worldvaccinesummit.com/
Global Cancer Meet and Expo	4-6 December, 2017 Dubai, UAE	https://globalcancermeet.com
29th World Psychiatrist Meet	7-9 December, 2017 Dubai, UAE	http://psychiatrist.conferenceseries.com
25th Global Diabetes Summit and Medicare Expo	11 – 12 December, 2017 Dubai, UAE	www.diabetesexpo.com/middleeast
10th International Conference on Gastroenterology	14 – 15 December, 2017 Dubai, UAE	www.gastroenterology.conferenceseries.com/asiapacific
7th International Society of Nephrology	13-16 December, 2017 Dubai, UAE	www.nephrology.emanae.com



List your conference:

If you have upcoming conference/exhibition details which you would like to list in the agenda, please email the details to the editor: editor@MiddleEastHealthMag.com

Special features*
in the next issue of
Middle East Health:

- Hospital Services
- Sports Medicine/Orthopaedics
- Imaging- Xray

- Middle East Monitor
- Worldwide Monitor
- The Laboratory
- Product news

Advertising

For advertising queries, please contact the sales and marketing department in Dubai:

Tel: +9714 391 4775

Email: marketing@middleeasthealthmag.com

For international contacts, please see masthead at front of magazine.

Subscriptions

Subscribe online at:

www.MiddleEastHealthMag.com

or call: +971 4 391 4775

Editorial

For editorial queries, submission of articles, product news or press releases, please contact the editorial department in Dubai:

Tel: +971 4 391 4775

Email: editor@middleeasthealthmag.com

Middle East Health is the region's only independent English-language medical trade magazine. It is the oldest and most well-established medical trade magazine in the region having served the healthcare industry for more than 40 years.

* Features may be subject to change.

Website

www.MiddleEastHealthMag.com

Under the Patronage of His Highness Sheikh Hamdan bin Rashid Al Maktoum
Deputy Ruler of Dubai, Minister of Finance and President of the Dubai Health Authority



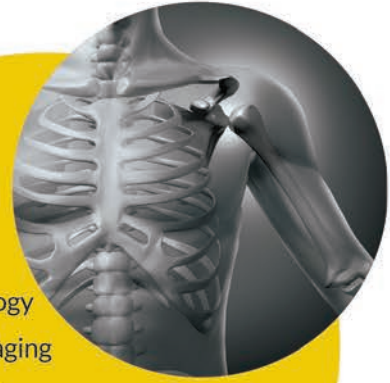
ANNUAL™
**RADIOLOGY
MEETING**
IN UAE

5 | 6 | 7 November 2017
Dubai International Convention & Exhibition Centre

Be part of the
**leading radiology &
diagnostic imaging event**
in the region.



- Body Imaging
- Cardiac Imaging
- Chest Imaging
- Interventional Imaging
- Musculoskeletal Imaging
- Pancreas Imaging



- Neuroradiology
- Pediatric Imaging
- Radiography
- Functional MRI
- Women Imaging



CME Hours
Accredited

Comprehensive Scientific Program



Breast Imaging Summit.
RSNA & ESR session.
Dedicated radiographer session.

Cutting-Edge Technology



Discover the latest
innovation in radiology &
diagnostic imaging.

Organised by



In collaboration with



Official Airline



radiologyuae.com

INDEX Holding Headquarters, Road # D-62, Opposite Nad Al Hamar
P.O. Box: 13636, Dubai, United Arab Emirates, Tel: +971 4 520 8888, Fax: +971 4 338 4193
Email: info@radiology.ae, Website: index.ae

Radiology_UAE



**BEST
CHILDREN'S
HOSPITALS**

U.S. News

A WORLD REPORT

RANKED IN 10 SPECIALTIES

2015-16

Giving new hope to children with metabolic disease

Children's Hospital of Pittsburgh of UPMC is a leading international center for liver transplantation as a treatment for metabolic disease.

As one of the top ten pediatric hospitals in the United States, as ranked by *U.S. News & World Report*, Children's Hospital of Pittsburgh of UPMC is a pioneer in the field of liver transplantation, which has proven to be a life-changing solution for patients with metabolic disease.

Liver transplantation can dramatically reduce symptoms, and in cases like maple syrup urine disease (MSUD), can provide a cure.

Liver transplantation is more than a lifesaving procedure; it's also an attractive approach for improving quality of life for many patients with metabolic disease. In 2004, we developed the protocol for liver transplantation for MSUD. Today, we've performed more transplants on patients with MSUD than any other center in the world. That's more than 65 patients with a 100-percent survival rate. All of these patients show normal liver function, have avoided the risk of neurological complications, and enjoy an unrestricted diet.

We've performed more liver transplants for patients with metabolic disease than any other transplant center.

Since the inception of our program in 1981, our world-renowned experts have performed more than 1,700 liver transplants — that's more than any other center in the United States — with survival rates that exceed national averages. Additionally, we've performed more than 320 liver transplants for patients with metabolic disease, which is more than any other center, including adult facilities. Also, we're leaders in living-donor liver transplants, which eliminate wait times for a deceased donor and can provide excellent outcomes.

Find out more about our excellent outcomes and extraordinary care.

Our experience, expertise, and commitment to innovation and compassionate care are reasons why patients and families from around the world travel to Children's Hospital of Pittsburgh of UPMC. For a free phone consultation with one of our experts on liver transplantation as a therapeutic option for metabolic disease, please visit www.chp.edu/metabolic or send an email to international@chp.edu

Sources: Internal data, Hillman Center for Pediatric Transplantation; Scientific Registry of Transplant Recipients (www.srtr.org), December 2015 release.

