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Middle East HEALTH

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July - August 2018

Health of the World

WHO agrees ambitious plan to save 29 million lives

Palestine refugees

Latest reports call for increased support for health care

Paediatric oncology

New drug halves hearing loss following cancer treatment

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- Cure for thalassemia on the horizon
- WHO plans to rid trans-fats from global food supply
- Universal influenza vaccine trial begins in US

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Prognosis

Protecting public health

The World Health Organisation held their annual World Health Assembly in Geneva in May where they discussed and endorsed a range of programmes to improve public health around the world. In this issue we report on some of the key public health issues raised at the Assembly and the efforts being made by the WHO to combat the spread of disease around the world. I am always surprised when talking to people in general about the work of the WHO, how few people are aware of the important role this organization plays in maintaining and improving global public health. The WHO clearly does not get the credit they deserve for the many lives they save on a daily basis. The WHO plays an essential role in ensuring cohesion and cooperation among countries when combatting the spread of disease. Epidemics know no boundaries both political and economic and without the comprehensive activities of the WHO many, many more people would die from these diseases.

While on the subject of the WHO, we welcome the recent appointment of Dr Ahmed Al-Mandhari of Oman as the new Regional Director for the WHO Eastern Mediterranean Region. We ask that all countries in the region give him their full support as he takes on the difficult task of ensuring public health programmes are implemented by the respective countries to protect the good health of their people.

Also in this issue, we look at two recent reports by UNRWA and the organization Medical Aid for Palestinians regarding the poor health conditions of Palestine refugees in the region. For too long they have been marginalized through no choice of their own and it is high time that greater efforts are made by wealthy countries in the region to improve their status, living conditions and healthcare. UNRWA is doing remarkable work, but with severely stretched resources it is not sufficient. The plight of Palestine refugees can no longer be ignored. They desperately need more assistance.

As usual in each issue of *Middle East Health*, you will find a variety of medical news, product reviews and briefs on some of the latest medical research that has relevance to healthcare issues affecting the region.

Wishing you good health.

Callan Emery
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DEPARTMENT OF HEALTH

GCC Patient Experience Summit

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"Aligning operational technology with organizational goals to deliver enhanced patient experience"

After the success of last year, **2nd Annual GCC Patient Experience Summit (18 – 19 September 2018),** proudly hosted by Fleming. will again create a unique platform for knowledge sharing, networking with top-notch healthcare professionals, and getting a glimpse into practical C-level insights as well as hands-on case studies. This region's only forum dedicated to patient experience will feature CEOs, Patient Relations Directors, and Service Excellence Officers and Heads of IT from organizations such as Avivo Group, Aster DM Healthcare, Al Salama Group, Al Zahra Pvt. Hospital, King Fahad Specialist Hospital Dammam and many others.

Themed "Aligning operational technology with organizational goals to deliver enhanced patient experience," the summit aims to offer access to a unique learning opportunity that sets the tone for establishing excellence benchmarks, effective communication and leadership strategies in customized care delivery.

middle east monitor

Update from around the region

Medical workers shot in Gaza

According to the Gaza Ministry of Health, an Israeli sniper fatally shot 21-year-old paramedic Razan al-Najjar inside Gaza near the separation fence on June 1, 2018. A medical volunteer with al-Najjar when she was shot, said al-Najjar was clearly identifiable as a medical volunteer and aiding injured demonstrators.

United Nations officials and agencies have expressed their outrage at the killing of al-Najjar.

"Healthcare workers must be allowed to perform their duties without fear of death or injury," said the Humanitarian Coordinator, Jamie McGoldrick. "The killing of a clearly-identified medical staffer by security forces during a demonstration is particularly reprehensible. It is difficult to see how it squares with Israel's obligation as occupying power to ensure the welfare of the population of Gaza."

These latest incidents come on top of an already-staggering number of attacks on healthcare personnel reported between 30 March and 27 May: 245 health workers and 40 ambulances have been affected by such attacks, according to data provided by the Palestinian Ministry of Health, the Palestinian Red Crescent Society, PMRS and the Union of Health Work Committees. Many of these were hit by live ammunition.

"Reports indicate that Razan was assisting injured demonstrators and wearing her first responder clothing, clearly distinguishing her as a healthcare worker even from a distance," said James Heenan, Head of Office, Office of the United Nations High Commissioner for Human Rights in the occupied Palestinian territory (oPt). "Reports suggest that she was shot in the back about 100 metres from the fence. Under international human rights law, which applies in this context along with international humanitarian law, lethal force may only be used as a last resort and when there is an imminent threat of death or serious injury. It is very difficult to see how Razan posed such a threat to heavily-armed, well-protected Israeli forces in defensive positions on the other side of the fence."

On May 14, 2018, an Israeli sniper shot Dr Tarek Loubani in the leg near the separation fence. He is one of 25 medical workers and first-responders injured by live fire in demonstrations in Gaza between March 30 and June 2, according to Gaza's Health Ministry. According to a report by Human Rights Watch, when shot, he too was clearly identifiable as a doctor, and that most paramedics were wearing bright, fluorescent jackets. There were no protests, fire, or smoke in his immediate vicinity, and he and his colleagues were standing still and talking. According to the report, one hour later, the paramedic who had rushed to his aid, Musa Abuhassanin, was shot in the chest and killed by Israeli fire while assisting in another rescue.

These shootings take place during an overall health crisis in Gaza, worsened by its decade-long closure by Israel.

Human Rights Watch says the closure, exacerbated by Egypt's usually sealed border to the south, as well as disputes between the Palestinian Authority and Hamas, has left medical facilities struggling to operate due to severe lack of electricity and shortages of medicines. Hospitals rely on generators to get them through power cuts, but they are prone to malfunction. Israel blocks many critically ill residents from accessing care outside Gaza, leaving them few options but to seek care at overstretched hospitals and clinics in Gaza.

The World Health Organization (WHO) has called for the protection of health workers and patients at all times. Dr Gerald Rockenschaub, Head of the WHO office in the oPt, stated: "Such attacks on health care must not happen and we need to enhance our efforts to ensure the protection of our frontline health workers. There are clear obligations to safeguard healthcare under international law and these must be respected."

MSF cholera centre in Yemen hit by airstrike

On 11 June an airstrike hit a newly constructed MSF cholera treatment centre (CTC) in Abs, Yemen. The facility was empty at the time because it had not yet received any cholera patients. No staff or patients were injured or killed. The CTC is located about one kilometre from the MSF-supported Abs Rural Hospital, a 147-bed hospital that serves a population of more than 1 million people. Markings on the roof of the compound clearly identified the CTC as a healthcare facility. The airstrike has now rendered the CTC non-functional. MSF reported that it had temporarily frozen its activities in Abs until the safety of its staff and patients is guaranteed, in line with security protocol.

João Martins, MSF´s Head of Mission in Yemen said: "This attack on an MSF cholera treatment centre (CTC) by the Saudi and Emirati-led coalition (SELC) shows complete disrespect for medical facilities and patients. Whether intentional or a result of negligence, it is totally unacceptable. The compound was clearly marked as a health facility and its coordinates were shared with the SELC. With only half of health facilities in Yemen fully functional, nearly 10 million people in acute need, and an anticipated outbreak of cholera, the CTC had been built to save lives. MSF has temporarily frozen its activities in Abs until the safety of its staff and patients is guaranteed."

Women and children's hospital in Idlib bombed

A report by Union of Medical Care and Relief Organizations (UOSSM) says on June 10, a wave of airstrikes in Idlib, Syria left at least 10 dead including two children and over 18 injured. Al Nour Women and Children's hospital was hit by airstrikes, suffered heavy damage and was put out of service. The facility serves a population of 35,000.

Dr Ghanem Tayara, Chairman of UOSSM International and Birmingham GP said: "These attacks against children and the continued targeting of medical facilities must stop. We urge and plead with all military actors to pursue channels of de-escalation and non-violence."

Cleveland Clinic Abu Dhabi surgeons perform innovative lung procedure

A multidisciplinary team of surgeons and imaging experts at Cleveland Clinic Abu Dhabi has developed a new, minimally in-

vasive procedure to locate and cut out a tumour hidden deep inside a patient's lung.

The technique was developed by Dr Redha Souilamas, Chair of Thoracic Surgery at Cleveland Clinic Abu Dhabi's Heart & Vascular Institute, and is believed to be a world first because it used ultrasound imaging to perform the surgery *in vivo*.

For the 35-year-old Emirati male patient, this innovative approach ensured he did not have to undergo traditional open surgery to remove the tumour, which had been found while he was being treated for another condition.

Dr Souilamas explained: "Ultrasound is very easy to use on the heart, liver and other areas, but when it is used in the lungs, the air prevents the ultrasound from taking clear images. We collapsed the lung completely and were able to see everything clearly on the screen through the small ultrasound cannula, which meant we could locate the nodule deep in the lung, localize it and cut it out in vivo through a small incision on the left side of the patient's chest.

"I had been thinking about how to properly deliver this type of surgery for six years. Only one other experimental clinical study had been done on humans using a similar method but it was ex vivo, done from outside the body after the lung was removed," he added.

"We had already performed this hybrid approach using a CT scan for nodule localization and resection for peripheral nodules, but when the nodule is deep in the lung, ultrasound is more effective."

The new, hybrid approach uses video-assisted thoracoscopy (VATS) to locate the tumour and remove it. This type of procedure means less pain for the patient, as well as a shorter hospital stay and recovery time compared with traditional surgery.

The tumour removal, known as a lung nodule hybrid management with intrathoracic ultrasound surgery, took just under two hours and the patient was discharged three days later.

Dr Souilamas led the surgical team, which included Dr Thomas Bartel, Section Head of Invasive Cardiology in the hospital's Heart & Vascular Institute, and Dr Hicham Abada, Chair of Interventional Radiology in the Imaging Institute.

"Cleveland Clinic Abu Dhabi's cutting-edge facilities and expertise have enabled us to develop this world-first procedure, which has the potential to become the standard for lung surgeries like this one. We're proud to be able to bring this innovative therapy to the UAE, with the hope it will help lung patients here, in the region and the wider world," he concluded.

UAE unveils draft law on assisted reproduction

The UAE Ministry of Health and Prevention (MOHAP) has unveiled a draft law approved by the UAE Cabinet on medical assistance for reproduction. The draft law allows embryo, egg and sperm freezing and aims to give hope to those who experience difficulty reproducing by increasing their chances of getting pregnant.

Dr Amin Hussein Al Amiri, Assistant Undersecretary for Public Health Policy and Licensing, explained that medical assistance for reproduction includes the identification of medical tools and methods that will assist in pregnancy and childbirth without natural contact, which includes clinical and biological interventions to facilitate conception.

The draft law stipulates the establishment of a national advisory committee to provide recommendations and proposals related to the field of medical assistance centres for reproduction.

Special controls have been put in place for the removal of samples of fertilized eggs or gametes or their entry into the country as well as research, while maintaining the previous ban on the commercial use of fertilized eggs and gametes or introducing non-therapeutic genetic modifications.

In the short term, the proposed legislation will contribute to the development of the legal framework for healthcare practices in the country where the licensing, monitoring and inspection will be distributed between the Ministry and the other health authorities according to their medical specialties.

Moreover, the proposed legislation will lead to the development of medical assistance services for reproduction in the country. The law includes all techniques and methods used in this field, taking into account the needs of the community and its intended contribution to the growth of such medical services offered by various fertility centres in the country.

Dr Amin Hussein Al Amiri, Assistant Undersecretary for Public Health Policy and Licensing, UAE

For its long-term impact, the proposed legislation will help strengthen UAE's healthcare system, which will have a positive impact on public health.

He noted the UAE has advanced fertility centres and facilities on par with leading international centres. The first beneficiaries of the project will be patients suffering from sterility. Couples will also benefit from the freezing eggs, sperm or embryos.

Doctors warn of risk to vision posed by sunny, dusty conditions

As the UAE enters the hottest part of its summer, doctors at Cleveland Clinic Abu Dhabi are warning residents of the effect that sunny, dry and dusty conditions can have on their eyes.

A pterygium is a preventable eye condition caused by chronic exposure of the eye to sunlight, heat and dust. Characterized by an abnormal growth of mucus membrane over the front of the eyeball, pterygia can cause irritation, redness and tearing. Left untreated, the condition can obscure a person's vision by growing over the pupil or causing a change in the way the eye focuses.

Globally, pterygia are estimated to affect around one in 10 people, and the condition is particularly prevalent in the Middle East, given the sunny, dry and dusty conditions in

Dr Brian Armstrong, ophthalmologist, Cleveland Clinic Abu Dhabi

the region. The condition is most common in adult men.

"Pterygia are particularly common in the UAE as it is closely linked to sunny, dry, and dusty conditions. The condition is preventable by protecting your eyes from sunlight as well as wind and dust by wearing sunglasses. I urge people to get screened so that we can help them manage the condition or even prevent it from developing," says Dr Brian Armstrong, an ophthalmologist at Cleveland Clinic Abu Dhabi.

Pterygia can be diagnosed by a trained ophthalmologist following a simple examination of the patient's eye. Most cases can be managed by prescribing artificial tears to lubricate the surface of the eye. Once diagnosed, patients should schedule a check-up every six to 12 months to monitor for progression of the condition.

Should a patient's condition progress to the point that it interferes with their vision, either due to astigmatism or growth over the pupil, they can be referred for surgery to remove the growth from the surface of their eye.

"Pterygia can be very uncomfortable and, as it progresses, can threaten eyesight. Once it develops, we can prescribe medication to manage the condition and, in advanced cases, we can perform surgery to remove the growth from a patient's eye. Protecting your eyes is a simple way to avoid needing treatment and the discomfort that the condition can cause," says Dr Armstrong.

Cleveland Clinic Abu Dhabi's Eye Institute offers state-of-the-art digital imaging, laser and surgical procedures, and is one of the five Centers of Excellence at Cleveland Clinic Abu Dhabi. The Institute provides medical and surgical treatments ranging from laser vision correction (including LASIK and SMILE) to procedures for more serious ophthalmic conditions including uveitis and diabetic eye disorders, in both adults and children.

Cure for thalassemia on the horizon

World Thalassemia Day was marked on 8 May with a leading expert in treating the debilitating genetic disorder saying 2018 could be the year everything changes. Dr Rabi Hanna, M.D., a specialist in paediatric haematology, oncology, and blood and bone marrow transplantation at Cleveland Clinic in the United States, says a series of recent breakthroughs in gene therapy means a cure for thalassemia is now almost within reach.

Based on recently published research data, he says the cure may already exist.

"Gene therapy has held out the prospect of a cure for several years, with great steps forward being made in basic science, and now we are seeing the first research projects in this field emerge as workable treatments," said Dr Hanna.

"In recent months we have seen positive research data published from trials in human subjects, where gene therapy is working, where the results are lasting, and where feared side-effects are not materializing. I am hopeful that we can realistically look forward to seeing these move into a treatment setting in the foreseeable future."

Thalassemia is an inherited disease that causes abnormalities of the patient's haemoglobin. Its effects range from anaemia to bone problems and an enlarged spleen. Analysis of the global burden of thalassemia estimates that around 280 million people have the disease worldwide, including around 439,000 with a severe form of it, and it resulted in 16,800 deaths in 2015.

Thalassemia is most common in Middle Eastern, Mediterranean, South Asian and African populations, and is often included in pre-marriage genetic screening. The most common treatment for severe cases is regular blood transfusions to relieve the symptoms, which continue for life and have side-effects. The only cure currently available for thalassemia is a bone marrow transplant, which is only possible for a small proportion of patients.

Dr Rabi Hanna, M.D., a specialist in paediatric haematology, oncology, and blood and bone marrow transplantation at Cleveland Clinic in the United States.

Into this scenario, gene therapy is presenting several new possibilities, to treat and even cure the disease by altering the pieces of genetic code that cause it.

In one current trial at six centres around world, patients with beta thalassemia had immature stem cells retrieved from their bone marrow. Researchers then isolated these in the laboratory and used a harmless virus to infect the cells with a copy of the normal globin gene. Chemotherapy cleared the patients' marrow of the diseased genes, then the genetically altered cells were reintroduced into the bloodstream. The cells found their own way back into the bone marrow, where they matured into red blood cells producing healthy haemoglobin.

Results published in the *New England Journal of Medicine* show the treatment has dramatically reduced the number of blood transfusions each patient needs. As of April, patients had been monitored for up to 42 months since treatment. In the case of the most severe cases, the number of transfusions since the gene therapy has fallen by 74%, while many of the patients with less severe disease have not needed any blood transfusions since treatment.

"It will take a little more time for these advances to become available as treatments, but we are clearly at the point where breakthroughs in research are translating into breakthroughs in treatment, and that offers real hope to many of the patients suffering from thalassemia today," said Dr Hanna. MEH

worldwide monitor

Update from around the globe

Eriona Hysolli, Ph.D., who is working with George Church, Ph.D., at the institute to recode protein coding sequences in the human genome using Cellectis' TALEN technology.

Harvard's Wyss Institute partners with Cellectis to recode the human genome

The Wyss Institute for Biologically Inspired Engineering at Harvard University and Cellectis, a clinical-stage biopharmaceutical company focused on developing immunotherapies based on gene-edited allogeneic CAR T-cells (UCART), announced in May that they will collaborate to further advance the Wyss Institute's efforts to recode the entire genome of cell lines derived from humans and other species, and to develop new tools and methods facilitating this goal. The cell lines would be engineered to resist debilitating viral infections while carrying out their normal functions, or even perform entirely new functions.

The Recode project lays the technical foundation to extensively and functionally modify existing genomes in cells and whole organisms, and aims to convert them into research tools as well as clinical and biotechnological products.

The collaboration was announced at the Genome Project-write 2018 Scientific Working Meeting, conducted by the Center of Excellence for Engineering Biology, as part of the first grand-scale, community-wide GP-write project to develop such ultra-safe cells.

Previously, the research group led by George Church, Core Faculty member at the Wyss Institute, Professor of Genetics at Harvard Medical School (HMS) and of Health Sciences and Technology at Harvard and the Massachusetts Institute of Technology (MIT), published on efforts to radically recode the bacterium E. coli's genome. The researchers reduced the number of codons – the sequence units in the DNA that encode the amino acids the bacterium's proteins are composed of – from 64 to 63. This caused the recoded bacteria to become resistant to most viruses and to be 'biocontained' in their intended laboratory environments since their survival can be linked to chemicals not found in the wild.

Building on these accomplishments, Church said: "The Recode project aims to create ultra-safe human cells that are resistant to infection with all viruses and prions. These cells and the technologies we are developing along the way will enable more effective ways to manufacture protein therapeutics, vaccines, cell therapies and transplantable organs."

Under the collaboration with Cellectis, Church and his team will be given access to the company's TALEN gene editing technology. TALENs, short for transcription activator-like effector nucleases, are genome engineering enzymes that can introduce changes into the DNA code with high specificity and across an entire genome, and they can be multiplexed to make multiple changes at a time.

"In the Recode project, our capabilities to edit genomes and invent new tools for high-level multiplexing of these efforts perfectly align with Cellectis' expertise and strengths. Cellectis' TALEN gene editing technology will contribute much to the success of this project," said Church.

All protein-coding DNA sequences in a cell's genome consist of triplet codons containing three of the four basic nucleotide bases known in shorthand as A, T, G and C. In addition, the beginning of a protein-coding DNA sequence is signalled by a START codon and its end with a STOP codon to enable the appropriate translation of DNA into the proteins' amino acid sequences. As most amino acids are redundantly encoded by two to six different codons, Church and his team seek to compress the codon usage for specific amino acids from six down to four codons.

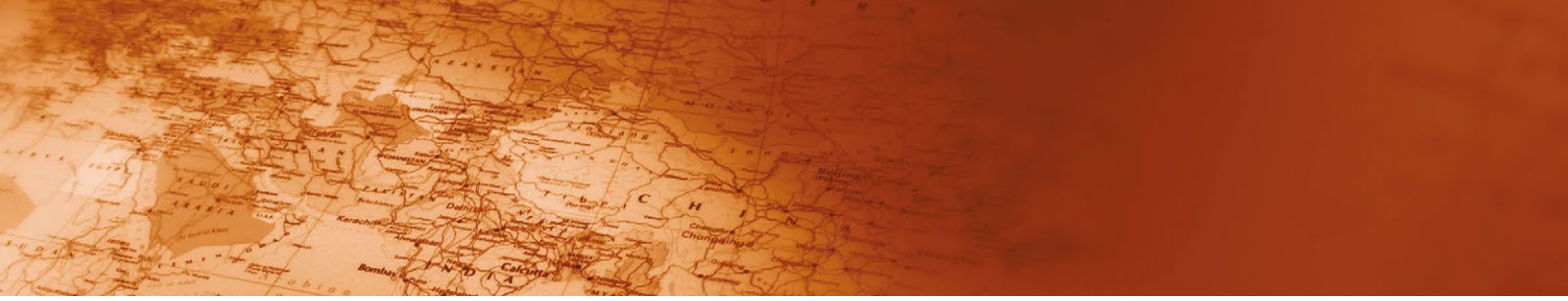
To achieve this, the team will deploy sequence-tailored TALEN enzymes to help modify codons at 400,000 locations across the protein-coding regions of the human genome. The lab can then delete the genes encoding the RNA molecules known as transfer RNAs that the cells previously required during their protein synthesis to add amino acids corresponding to the eliminated codons.

"We are looking forward to collaborating with the Wyss Institute and George Church's group on this very exciting Recode project using Cellectis' technology to recode the entire genome of human and other species cell lines," said Dr André Choulika, Chief Executive Officer of Cellectis. "The precision, the performance and the flexibility of TALEN technology makes it the optimal gene editing platform for such a cutting-edge project."

This simplification of the protein-encoding portion of the genome may prevent viruses, which need the full repertoire of codons to produce their own proteins, from hijacking the host cells' protein-synthesizing machinery. It may also allow researchers to re-purpose eliminated amino acid codons for the incorporation of nonstandard synthetic amino acids that can enable new protein functions and provide a reliable means of containing recoded cell lines in laboratory or industrial environments.

BMJ Best Practice and Your.MD enter strategic partnership for AI medical validation

BMJ Best Practice, ranked one of the best clinical decision support tools for health professionals worldwide, has entered into a



strategic partnership with Your.MD, an evidence-based AI platform designed to help people find personalised and safe health information online, for the independent validation of their medical data models.

The team at BMJ Best Practice has extensive experience in the sourcing, reviewing and validating of the latest clinical evidence which has been at the heart of the Best Practice service for the medical profession worldwide for over a decade.

Your.MD has developed an AI platform designed to understand the individual probability of any individual to suffer from a condition, to provide safe health information and direct users towards vetted providers of products or services that can help them.

A crucial and growing challenge for emergent AI systems is the ability to demonstrate the safety and transparency of their algorithms, data and information. The lack of an existing regulatory framework for AI Health services poses clear risks for users and potential partner companies interested in leveraging these promising solutions.

Sharon Cooper, Chief Digital Officer of BMJ commented: "Personalised medicine is fundamental to the future of healthcare, and I expect AI to play an essential role in delivering a healthcare service to everyone, everywhere, but the challenges in ensuring a safe, trusted service are not to be underestimated. BMJ has a simple mission, to 'advance healthcare worldwide', and partnerships such as our relationship with Your.MD are key to enabling us to learn and grow as a digital business to deliver on that mission".

Your.MD, the company that has been defining the space of direct-to-users AI health systems since the launch of its first AI Health Chatbot in November 2015, has always placed safety and transparency at the core of its strategy and decided to follow a self-regulatory approach based on external third-party validations:

- The AI algorithms developed by Your.MD have been reviewed and assessed by Optimity Advisors, a leading international health consultancy and Professor Maarten de Vos, Director of Oxford Biodesign at the University of Oxford;
- The medical data used by the AI algorithms are now going to be validated by BMJ Best Practice;
- The information provided to end-users is based on content licensed from NHS Choices;
- The processes used by Your.MD to deliver the service follow the NHS clinical safety guidelines and are certified (CE Mark).

Matteo Berlucchi, CEO and Co-founder of Your.MD said: "Trust is the biggest challenge for any AI system but for healthcare in particular. How can you trust the information or advice you receive from an AI system? Are the algorithms designed in an unbiased way? Are the data used to train the AI of the necessary quality? At Your.MD we believe we have designed one of the best AI platforms in the world to help in achieving Universal Healthcare, one of the Sustainable Development Goals set by the UN for 2030. Now we want to show that our software, data and processes are of the standard required to be able to deliver our vision and BMJ is the ideal partner to help us achieve this ambitious goal".

- Your.MD is a free service that uses Artificial Intelligence to give safe health information to help everyone in the world make the best choices for their health. For more information visit: *www.your.md/about/*

Largest cholera vaccine drive in history to tackle outbreaks in Africa

A spate of cholera outbreaks across Africa has prompted the largest cholera vaccination drive in history, with more than two million people across the continent set to receive oral cholera vaccine (OCV).

The vaccines, funded by Gavi, the Vaccine Alliance, were sourced from the global stockpile and are being used to carry out five major campaigns in Zambia, Uganda, Malawi, South Sudan and Nigeria. The campaigns, due to be completed by mid-June, are being implemented by the respective Ministries of Health supported by the World Health Organization (WHO) and partners of the Global Task Force on Cholera Control (GTFCC), and mostly in reaction to recent cholera outbreaks.

In the 15 years between 1997 and 2012 just 1.5 million doses of cholera vaccines were used worldwide. In 2017 alone almost 11 million were used, from Sierra Leone to Somalia to Bangladesh. In the first four months of 2018 over 15 million doses have already been approved for use worldwide.

"This is an unprecedented response to a spike in cholera outbreaks across Africa," said Dr Seth Berkley, CEO of Gavi, the Vaccine Alliance. "We have worked hard to ensure there is now enough vaccine supply to keep the global stockpile topped up and ready for most eventualities. However with more and more people now succumbing to this terrible, preventable disease, the need for improved water and sanitation – the only long-term, sustainable solution to cholera outbreaks – has never been clearer."

Through its Regional Office for Africa, WHO regularly provides technical and operational support to countries often affected by cholera in Africa. In particular, since the beginning of 2018 WHO has led on providing technical expertise and guidance, working closely with Ministries of Health in the five countries to plan and implement the campaigns with different partners. This is part of a global push to reduce cholera deaths by 90% by 2030.

"Oral cholera vaccines are a key weapon in our fight against cholera," said Dr Tedros Adhanom Ghebreyesus, WHO Director-General. "But there are many other things we need to do to keep people safe. WHO and our partners are saving lives every day by improving access to clean water and sanitation, establishing treatment centres, delivering supplies, distributing public health guidance, training health workers, and working with communities on prevention."

The burden of cholera remains high in many African countries. As of 7 May many countries are facing cholera outbreaks, with at least 12 areas or countries reporting active cholera transmission in sub-Saharan Africa. Recent developments in the use of OCVs show that the strong mobilisation of countries and partners can effectively tackle the disease when tools for prevention and control are readily available.

"Every rainy season, cholera springs up and brings devastation to communities across Africa," said Dr Matshidiso Moeti, WHO's Regional Director for Africa. "With this historic cholera vaccination drive, countries in the region are demonstrating their commitment to stopping cholera from claiming more lives. We need to build on this momentum through a multisectoral approach and ensure that everyone has access to clean water and sanitation, no matter where they are located."

UNAIDS calls for bold action to end TB and AIDS

To mark World TB Day on 24 March, UNAIDS called on all partners to take unprecedented and bold action to advance efforts to end tuberculosis (TB) and AIDS by 2030.

TB continues to be the top infectious killer worldwide, claiming more than 4500 lives a day. TB is also the leading cause of death among people living with HIV, causing one in three AIDS-related deaths. In 2016, 1.7 million people died from TB, including around 374,000 people living with HIV.

"The world has the resources to end the interlinked epidemics of tuberculosis and HIV, but political commitment and country action are lacking," said Michel Sidibé, UNAIDS Executive Director. "Political, religious and civil society leaders need to step up to guarantee everyone the right to breathe, to live free from tuberculosis and AIDS."

TB is preventable and curable; however, persistent challenges remain. Many of these challenges are also faced by the HIV response and can be effectively addressed if programmes are integrated. They include unequal access to services, with the most marginalized people still out of reach, the need to access education, housing and basic services to prevent, diagnose and treat TB and HIV through local healthcare services and community healthcare workers, the need to strengthen health systems and the urgent need to mobilize resources in programming, research and development.

To address the challenges and push forward the response to TB and HIV, UNAIDS has outlined five important actions for partners:

- Give a new impetus to the response to TB and HIV by impelling political, religious and civil society leaders to champion the universal right to live free from TB and HIV, building on existing rights and health and social movements.
- Empower communities to demand their right to health. Affected communities must call on governments to improve living standards, including by accessing nutritious food, breathing clean air, completing their education and fostering an enabling economic environment, all of which will help to reduce the burden of TB and HIV.
- Ensure rights-promoting and non-discriminatory service delivery for all, especially for people at higher risk of TB and HIV, such as children and marginalized populations, to protect them against catastrophic health expenditures in the context of universal health coverage. Thus, duty of care extends beyond health to include safe workplaces and places of detention.
- Engage ministers of finance to approach health as an investment, not an expenditure. While the above actions carry some financial outlays, assessments of returns on investment in health have demonstrated their long-term value to societies and economies. An efficient and effective response to HIV and TB will require working across all ministries and sectors to mobilize sufficient domestic financing to strengthen health systems.
- Innovate for new medicines and vaccines. Greater partnerships between the public and private sectors are urgently needed to accelerate innovation that leads to the discovery, development and rapid uptake of new tools to prevent and treat TB and HIV, as are strategies for shorter and less-toxic TB regimens. Ending the global TB and HIV epidemics is possible. HIV is preventable and effective and affordable treatment is available. TB is preventable, treatable and in most cases curable.

Progress has been made – deaths from TB among people living with HIV declined by 33% between 2005 and 2015 as prevention, testing and treatment have improved and increased. However, there is still much more work to be done.

In September 2018, world leaders will come together at the United Nations in New York, United States of America, for the first-ever United Nations General Assembly High-Level Meeting on Tuberculosis. This meeting will be an important opportunity for countries to adopt a progressive, visionary and actionable political declaration on TB.

"The United Nations High-Level Meeting on Tuberculosis could provide the political, social and financial momentum needed to end TB," said Sidibé. "This year could be the most important since Robert Koch discovered the cause of TB136 years ago, but only if we all show leadership."

UNAIDS urges all partners to ensure that TB is elevated on global, regional, national and subnational political and social agendas, that TB and HIV are addressed in unison and that partners combine robust efforts to end TB and HIV by 2030 as part of the Sustainable Development Goals.

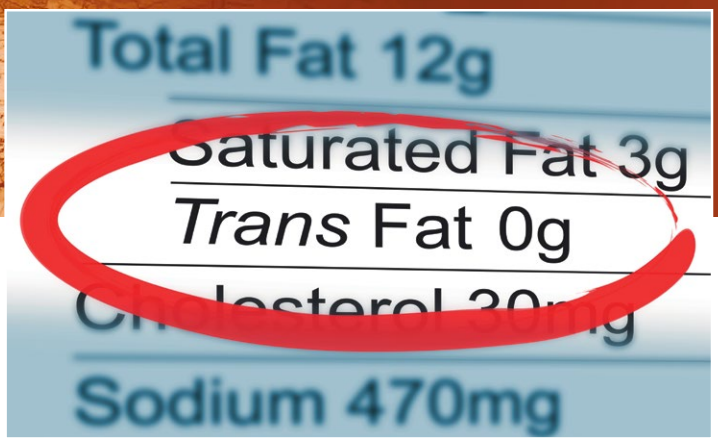
WHO launches plan to eliminate industrially-produced *trans*-fatty acids from global food supply

The World Health Organization (WHO) on May 14 released REPLACE, a step-by-step guide for the elimination of industrially-produced *trans*-fatty acids from the global food supply.

Eliminating trans fats is key to protecting health and saving lives: WHO estimates that every year, trans fat intake leads to more than 500,000 deaths of people from cardiovascular disease.

Industrially-produced trans fats are contained in hardened vegetable fats, such as margarine and ghee, and are often present in snack food, baked foods, and fried foods. Manufacturers often use them as they have a longer shelf life than other fats. But healthier alternatives can be used that would not affect taste or cost of food.

"WHO calls on governments to use the REPLACE action package to eliminate industrially-produced *trans*-fatty acids from the food supply," said WHO Direc-



tor-General, Dr Tedros Adhanom Ghebreyesus. "Implementing the six strategic actions in the REPLACE package will help achieve the elimination of trans-fat, and represent a major victory in the global fight against cardiovascular disease."

REPLACE provides six strategic actions to ensure the prompt, complete, and sustained elimination of industrially-produced trans fats from the food supply:

- **Review** dietary sources of industrially-produced trans fats and the landscape for required policy change.
- **Promote** the replacement of industrially-produced trans fats with healthier fats and oils.
- **Legislate** or enact regulatory actions to eliminate industrially-produced trans fats.
- **Assess** and monitor trans fats content in the food supply and changes in trans-fat consumption in the population.
- **Create** awareness of the negative health impact of trans fats among policy makers, producers, suppliers, and the public.
- **Enforce** compliance of policies and regulations.

Several high-income countries have virtually eliminated industrially-produced trans fats through legally imposed limits on the amount that can be contained in packaged food. Some governments have implemented nationwide bans on partially hydrogenated oils, the main source of industrially-produced trans fats.

In Denmark, the first country to mandate restrictions on industrially-produced trans fats, the trans-fat content of food products declined dramatically and cardiovascular disease deaths declined more quickly than in comparable OECD countries.

"New York City eliminated industrially-produced trans-fat a decade ago, following Denmark's lead," said Dr Tom Frieden, President and CEO of Resolve to Save Lives, an initiative of Vital Strategies. "Trans-fat is an unnecessary toxic chemical that kills, and there's no reason people around the world should continue to be exposed."

Action is needed in low- and middle-income countries, where controls of use of industrially-produced trans fats are often weaker, to ensure that the benefits are felt equally around the world.

"Why should our children have such an unsafe ingredient in their foods?" asks Dr Tedros. "The world is now embarking on the UN Decade of Action on Nutrition, using it as a driver for improved access to healthy food and nutrition. WHO is also using this milestone to work with governments, the food industry, academia and civil society to make food systems healthier for future generations, including by eliminating industrially-produced trans fats."

There are two main sources for trans fats: natural sources (in the dairy products and meat of ruminants such as cows and sheep) and industrially-produced sources (partially hydrogenated oils).

Partially hydrogenated oils were first introduced into the food supply in the early 20th century as a replacement for butter, and became more popular in the 1950s through 1970s with the discovery of the negative health impacts of saturated fatty acids. Partially hydrogenated oils are primarily used for deep frying and as an ingredient in baked goods; they can be replaced in both.

- WHO REPLACE initiative: *www.who.int/nutrition/topics/replace-transfat*

WHO releases new International Classification of Diseases

The World Health Organization (WHO) is has released its new International Classification of Diseases (ICD-11).

The ICD is the foundation for identifying health trends and statistics worldwide, and contains around 55,000 unique codes for injuries, diseases and causes of death. It provides a common language that allows health professionals to share health information across the globe.

"The ICD is a product that WHO is truly proud of," said Dr Tedros Adhanom Ghebreyesus, WHO Director-General. "It enables us to understand so much about what makes people get sick and die, and to take action to prevent suffering and save lives."

ICD-11, which has been over a decade in the making, provides significant improvements on previous versions. For the first time, it is completely electronic and has a much more user-friendly format. And there has been unprecedented involvement of health care workers who have joined collaborative meetings and submitted proposals. The ICD team in WHO headquarters has received over 10,000 proposals for revisions.

ICD-11 will be presented at the World Health Assembly in May 2019 for adoption by Member States, and will come into effect on 1 January 2022. This release is an advance preview that will allow countries to plan how to use the new version, prepare translations, and train health professionals all over the country.

The ICD is also used by health insurers whose reimbursements depend on ICD coding; national health programme managers; data collection specialists; and others who track progress in global health and determine the allocation of health resources.

The new ICD-11 also reflects progress in medicine and advances in scientific understanding. For example, the codes relating to antimicrobial resistance are more closely in line with the Global Antimicrobial Resistance Surveillance System (GLASS).

The new ICD also includes new chapters, one on traditional medicine: although millions of people use traditional medicine worldwide, it has never been classified in this system. Another new chapter on sexual health brings together conditions that were previously categorized in other ways (e.g. gender incongruence was listed under mental health conditions) or described differently. Gaming disorder has been added to the section on addictive disorders.

"A key principle in this revision was to simplify the coding structure and electronic tooling – this will allow healthcare professionals to more easily and completely record conditions," says Dr Robert Jakob, Team Leader, Classifications Terminologies and Standards, WHO. MEH

the laboratory

Medical research news from around the world

Gut microbiome affects liver's antitumour immune function

Scientists have found a connection between bacteria in the gut and antitumor immune responses in the liver. Their study, published online May 24, 2018 in *Science*, was led by researchers in the Center for Cancer Research (CCR) at the US National Cancer Institute (NCI). It showed that bacteria found in the gut of mice affect the liver's antitumor immune function. The findings have implications for understanding the mechanisms that lead to liver cancer and for therapeutic approaches to treat them.

"What we found using different tumour models is that if you treat mice with antibiotics and thereby deplete certain bacteria, you can change the composition of immune cells of the liver, affecting tumour growth in the liver," said Tim Greten, M.D., of NCI's CCR, who led the study. "This is a great example of how what we learn from basic research can give us insight into cancer and possible treatments."

The microbiome is the collection of bacteria and other microorganisms that live in or on the body. In humans, the greatest proportion of the body's total microbiome is in the gut. Despite extensive research into the relationship between the gut microbiome and cancer, the role of gut bacteria in the formation of liver cancer has remained poorly understood.

To investigate whether gut bacteria affect the development of tumours in the liver, Dr Greten and his team carried out a series of experiments with mice. They used three mouse models of liver cancer, and found that when they depleted gut bacteria using an antibiotic "cocktail," the mice that had the antibiotics developed fewer and smaller liver tumours and had reduced metastasis to the liver.

The investigators next studied the immune cells in the liver to understand how the depletion of gut bacteria suppressed tumour growth in the liver of the antibiotic-treated mice. Antibiotic treatment increased the numbers of a type of immune cell called NKT cells in the livers of the mice. Further experiments showed that, in all three mouse models, the reduction in liver tumour growth that resulted from antibiotic treatment was dependent on these NKT cells. Next, they found that the accumulation of the NKT cells in the liver resulted from an increase in the expression of a protein called CXCL16 on cells that line the inside of capillaries in the liver.

"We asked ourselves, why do mice treated with antibiotics have more CXCL16 production in these endothelial cells?" Dr Greten said. "That was the critical point, when we found that bile acids can control the expression of CXCL16. We then did further studies, and found that if we treat mice with bile acids, we can actually change the number of NKT cells in the liver, and thereby the number of tumours in the liver."

Bile acids are formed in the liver and help break down fats during digestion.

Finally, the investigators found that one bacterial species, *Clostridium scindens*, controls metabolism of bile acids in the mouse gut – and ultimately CXCL16 expression, NKT cell accumulation, and tumour growth in the liver.

Dr Greten explained that while many studies have shown an association between gut bacteria and immune response, this study is significant in that it identifies not just a correlation, but a complete mechanism of how bacteria affect the immune response in liver. In the same study, the researchers found that bile acids also control the expression of the CXCL16 protein in the liver of humans and wrote that, though these results are preliminary, the novel mechanism described in this study could potentially apply to cancer patients.

- **doi** 10.1126/science.aan5931

UAE researchers develop novel hair test to detect vitamin D deficiency

Researchers at the United Arab Emirates University (UAEU) have found an innovative hair test to easily detect vitamin D in the human body. Blood tests have been used universally for the determination of vitamin D deficiency. But by analyzing a small sample of hair from the crown of a human head, the amount of vitamin D can also be found, allowing for early detection of vitamin D-related diseases.

"Vitamin D deficiency is a huge problem in the UAE because there is a lot of sunshine but we are always indoors and people do not expose themselves to sunlight," said Dr Iltaf Shah, assistant professor of Biochemistry in the Department of Chemistry, College of Science at the university. "UV B radiation changes sunlight to make vitamin D on our skin. It goes through our livers and kidneys to transform to other metabolites of vitamin D."

The major disadvantages of vitamin D blood analysis is that it only provides short term information for vitamin D levels in the body. Due to fluctuations in the blood levels of the forms of me-

tabolite found in the hair called 25-hydroxyvitamin D, it is also very difficult to estimate the actual seasonal variations in 25-hydroxyvitamin D levels for a longer period of time. Hair analysis, on the other hand, provides a wider window of detection, from a month to a year, and the full history of vitamin D absorption and homeostasis in the body.

Recent research shows that vitamin D deficiency is related to many diseases, such as obesity, rickets, osteomalacia, cancer and Alzheimer's disease. "If you have sufficient levels of vitamin D in your blood, you will have less chance of getting these diseases at a later stage in life," he said. "People are still exploring it."

Not many studies have been conducted in the Middle East, especially in the UAE, as to find ways to tackle this global epidemic. "People are suffering from vitamin D deficiency and the current tests are not enough to give a clear picture," Dr Shah said. "The deficiency of vitamin D can have serious consequences, mainly in pregnant women, lactating women, in neonates and children that can develop rickets and osteomalacia."

Vitamin D helps in the absorption and mineralization of our bones, with minerals like calcium, phosphorus and magnesium.

Recently, Daman, the biggest insurance provider in the UAE, announced it would not cover a vitamin D test due to the high cost of analysis. "That's why it's really important to investigate and find new innovative and cheaper techniques for vitamin D determination," he added. "So we thought to come up with another technique, a 'vitamin D hair', which is non-invasive as there is no need to draw blood, no worry of infection as hair could be easily collected, stored and transported, as compared to blood samples."

The process of vitamin D extraction from hair involves decontamination – removing hair colour and other contaminants sticking to the hair, grinding the hair into powder and ultrasonication, which uses sound waves to break the hair powder further, releasing vitamin D. Extraction then takes places, using an organic solvent.

The sample is then placed in a glass test tube where nitrogen gas is used to dry it. Methanol is added to re-dissolve the sample, which is then injected into a Liquid chromatography tandem mass spectrometry instrument (LC-MSMS), which unveils the mass of the compound to be able to identify and quantitate it. "We can then see how much vitamin D is in the hair sample," Dr Shah said. "We tried to find out if we could measure up to 10 metabolites of vitamin D, but we were only able to detect one major metabolite called 25-hydroxyvitamin D. As per our knowledge, the vitamin D hair test is a new innovative test that nobody has done before."

"Using segmental analysis, vitamin D hair test can give a longer-term profile of vitamin D, from a month up to a year," he added. "In the blood, the cut-off limits for vitamin D deficiency are already set. But because vitamin D hair test is a new test and we just developed it, we don't know the cut-off levels for vitamin D deficiency yet. This is the next step, where a very high cohort of hair samples will be tried, and cut-off levels for vitamin D deficiency will be determined."

Dr Shah hopes to file a patent for the test in the near future.

Immunotherapy leads to complete regression of breast cancer

A novel approach to immunotherapy developed by researchers at the US National Cancer Institute (NCI) has led to the complete regression of breast cancer in a patient who was unresponsive to all other treatments. This patient received the treatment in a clinical trial led by Steven A. Rosenberg, M.D., Ph.D., chief of the Surgery Branch at NCI's Center for Cancer Research (CCR), and the findings were published June 4, 2018 in *Nature Medicine*.

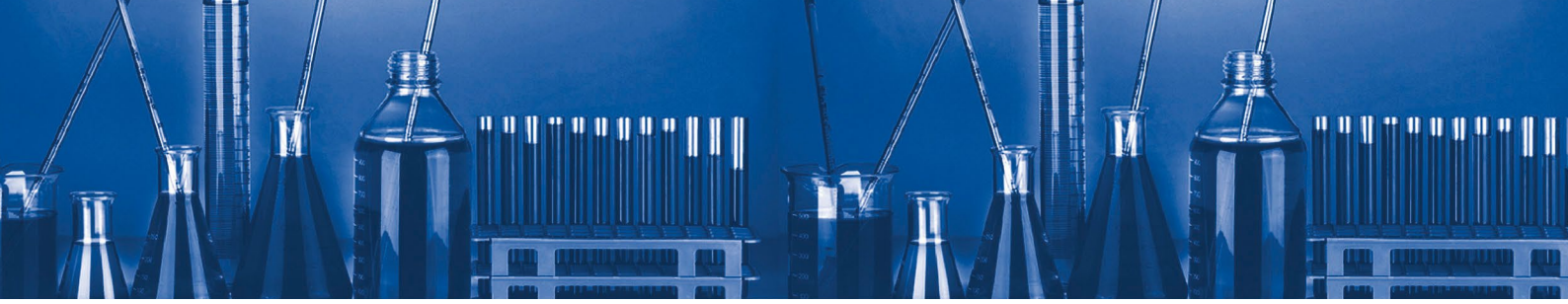
"We've developed a high-throughput method to identify mutations present in a cancer that are recognized by the immune system," Dr Rosenberg said. "This research is experimental right now. But because this new approach to immunotherapy is dependent on mutations, not on cancer type, it is in a sense a blueprint we can use for the treatment of many types of cancer."

The new immunotherapy approach is a modified form of adoptive cell transfer (ACT). ACT has been effective in treating melanoma, which has high levels of somatic, or acquired, mutations. However, it has been less effective with some common epithelial cancers, or cancers that start in the lining of organs, that have lower levels of mutations, such as stomach, oesophageal, ovarian, and breast cancers.

In an ongoing phase 2 clinical trial, the investigators are developing a form of ACT that uses tumour-infiltrating lymphocytes (TILs) that specifically target tumour cell mutations to see if they can shrink tumours in patients with these common epithelial cancers. As with other forms of ACT, the selected TILs are grown to large numbers in the laboratory and are then infused back into the patient (who has in the meantime undergone treatment to deplete remaining lymphocytes) to create a stronger immune response against the tumour.

A patient with metastatic breast cancer came to the trial after receiving multiple treatments, including several chemotherapy and hormonal treatments, that had not stopped her cancer from progressing. To treat her, the researchers sequenced DNA and RNA from one of her tumours, as well as normal tissue to see which mutations were unique to her cancer, and identified 62 different mutations in her tumour cells.

The researchers then tested different TILs from the patient to find those that recognized one or more of these mutated proteins. TILs recognized four of the mutant proteins, and the TILs then were expanded and infused back into the patient. She was also given the checkpoint inhibitor pembrolizumab to prevent the possible inactivation of the infused T cells by factors in the tumour microenvironment.



After the treatment, all of this patient's cancer disappeared and has not returned more than 22 months later.

"This is an illustrative case report that highlights, once again, the power of immunotherapy," said Tom Misteli, Ph.D., director of CCR at NCI. "If confirmed in a larger study, it promises to further extend the reach of this T-cell therapy to a broader spectrum of cancers."

Investigators have seen similar results using mutation-targeted TIL treatment for patients in the same trial with other epithelial cancers, including liver cancer and colorectal cancer. Dr Rosenberg explained that results like this in patients with solid epithelial tumours are important because ACT has not been as successful with these kinds of cancers as with other types that have more mutations.

He said the "big picture" here is this kind of treatment is not cancer-type specific. "All cancers have mutations, and that's what we're attacking with this immunotherapy," he said. "It is ironic that the very mutations that cause the cancer may prove to be the best targets to treat the cancer."

Essential malaria parasite genes revealed

Researchers have exploited a quirk in the genetic make-up of the deadly malaria parasite, Plasmodium falciparum, to create 38,000 mutant strains and then determine which of the organism's genes are essential to its growth and survival. P. falciparum is responsible for about half of all malaria cases and 90 percent of all malaria deaths. New information about the parasite's critical gene repertoire could help investigators prioritize targets for future antimalarial drug development.

The international research team led by John H. Adams, Ph.D., of the University of South Florida, was supported by the US National Institute of Allergy and Infectious Diseases (NIAID), part of the US National Institutes of Health. The study appears in the May 4, 2018 issue of *Science*.

The complete genetic sequence of P. falciparum was determined more than a decade ago, but the functions of most of its genes remain unknown, and until now only a few hundred mutant strains had been created in the lab. The difficulties in manipulating P. falciparum stem in part from the extremely high percentage of adenine or thymine (two of the four chemical building blocks that make up DNA) in its genome. Standard methods for creating mutants rely on more variation in gene sequences and so do not work on P. falciparum. In the new research, Dr Adams and his colleagues created mutated versions of nearly all the parasite's 6,000 genes with a technique that preferentially targets areas rich in adenine and thymine, thus exploiting the very feature that had foiled previous attempts at genetic manipulation.

The team used computational analysis to distinguish non-essential genes (those that could be mutated) from essential, non-mutable ones. About 2,600 were identified as indispensable for growth and survival during the parasite's asexual, blood stage. These included ones associated with P. falciparum's ability to resist antimalaria drugs, highlighting them as high-priority targets for new or improved antimalarial compounds, the researchers note.

- **doi**: 10.1126/science.aap7847 (2018)

Researchers develop merged microscope for unprecedented view inside living cells

Scientists at the National Institute of Biomedical Imaging and Bioengineering (NIBIB) have combined two different microscope technologies to create sharper images of rapidly moving processes inside a cell.

In a paper published in *Nature Methods*, Hari Shroff, Ph.D., chief of NIBIB's lab section on High Resolution Optical Imaging (HROI), describes his new improvements to traditional Total Internal Reflection Fluorescence (TIRF) microscopy. TIRF microscopy illuminates the sample at a sharp angle so that the light reflects back, illuminating only a thin section of the sample that is extremely close to the coverslip. This process creates very high contrast images because it eliminates much of the background, out-of-focus, light that conventional microscopes pick up.

While TIRF microscopy has been used in cell biology for decades, it produces blurry images of small features within cells. In the past, super-resolution microscopy techniques applied to TIRF microscopes have been able to improve the resolution, but such attempts have always compromised speed, making it impossible to clearly image objects that move rapidly. As a result, many cellular processes remain too small or fast to observe.

Shroff and his team realized that if they could take a high-speed, super-resolution microscope and modify it to act like a TIRF microscope, they could obtain the benefits of both. Instant structured illumination microscopy (iSIM), developed by the Shroff lab in 2013, can capture video at 100 frames per second, which is more than 3 times faster than most movies. However, iSIM does not have the contrast that TIRF microscopes do. The team designed a simple "mask" that blocked most of the illumination from the iSIM – mimicking a TIRF microscope. Combining the strengths of both types of microscopy enabled the researchers to observe rapidly moving objects about 10 times faster than other microscopes at similar resolution.

"TIRF microscopy has been around for more than 30 years and it is so useful that it will likely be around for at least the next 30," said Shroff. "Our method improves the spatial resolution of TIRF microscopy without compromising speed – something that no other microscope can do. We hope it helps us clarify high-speed biology that might otherwise be hidden or blurred by other microscopes so that we can better understand how biological processes work."

For example, with the new microscope, Shroff and his team were able to follow rapidly moving Rab11 particles near the plasma membrane of human cells. Attached to molecular cargo that are transported around the cell, these particles move so fast that they are blurred when imaged by other microscopes. They also

used their technique to reveal the dynamics and spatial distribution of HRas, a protein that has been implicated in facilitating the growth of cancerous tumours.

MERS antibody treatment trial gets underway

Enrolment has begun in an early-stage clinical trial testing the safety of two human monoclonal antibodies (mAbs) designed to treat people infected with Middle East respiratory syndrome coronavirus (MERS-CoV). The trial is sponsored by the National Institute of Allergy and Infectious Diseases (NIAID), part of the US National Institutes of Health.

The first recognized case of MERS was reported in Jordan in 2012. Since then, MERS-CoV has spread to 27 countries. As of May, 2,206 laboratory-confirmed cases have been reported to the World Health Organization. Those cases include 787 deaths, a fatality rate of about 36%.

"Currently, we lack specific treatments for MERS," said NIAID Director Anthony S. Fauci, M.D. "Having targeted therapeutics available to treat this unpredictable and frequently fatal respiratory disease would help us reduce MERS-associated deaths and control future outbreaks."

The mAbs, REGN3048 and REGN3051, were discovered and developed by scientists at the biotechnology company Regeneron, headquartered in Tarrytown, New York.

Subsequently, researchers at Regeneron and the University of Maryland School of Medicine demonstrated the ability of the antibodies to neutralize MERS-CoV in a mouse model of MERS.

The new NIAID trial is the first to test these mAbs in people.

The study will enrol 48 healthy adults between the ages of 18 and 45 years at WCCT Global, a clinic in Cypress, California. Participants will be divided into six groups of eight, with two people in each group receiving an inactive placebo and the remaining six receiving both experimental mAbs delivered intravenously. The study is blinded, meaning neither the study staff nor the participants will know whether a placebo or the mAb is being administered. Participants in the initial cohort will receive the lowest dosage of the experimental antibodies, 1.5 milligrams of each mAb per kilogram of the volunteer's weight. Participants in successive cohorts will receive increasing dosages until the highest dosage (75 mg/kg of each mAb) is reached in the sixth group.

Decisions to continue the trial and to administer the escalating doses of mAbs will be made by an independent safety review committee whose members will have access to safety and tolerability data throughout the trial. The SRC will meet at regularly scheduled intervals to determine if any pre-established criteria have been met that would require the trial to be halted. If there are no safety concerns, the trial will proceed to enrol participants into the next higher dosage cohort. The study is expected to be completed by June 2019.

Study overturns conventional view of opioid mechanism of action

A new discovery shows that opioids used to treat pain, such as morphine and oxycodone, produce their effects by binding to receptors inside neurons, contrary to conventional wisdom that they acted only on the same surface receptors as endogenous opioids, which are produced naturally in the brain. However, when researchers funded by the US National Institute on Drug Abuse (NIDA) used a novel molecular probe to test that common assumption, they discovered that medically used opioids also bind to receptors that are not a target for the naturally occurring opioids.

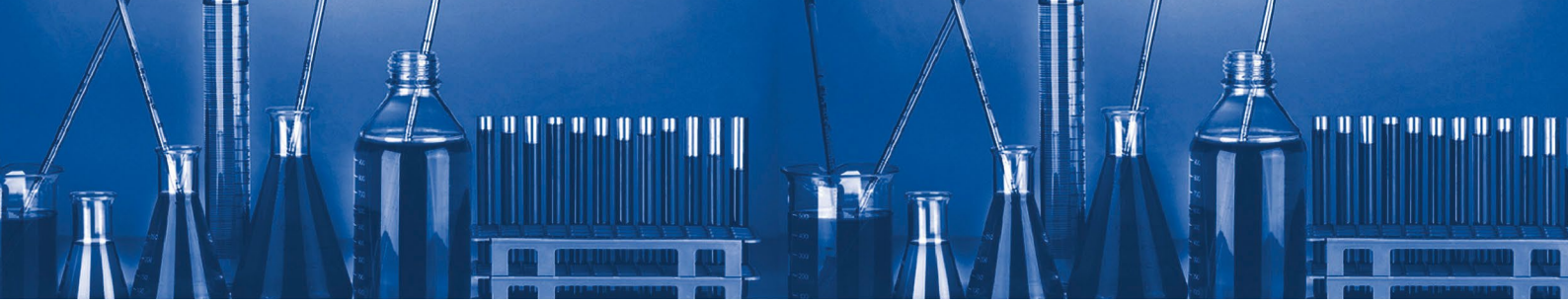
This difference between how medically used and naturally made opioids interact with nerve cells may help guide the design of pain relievers that do not produce addiction or other adverse effects produced by morphine and other opioid medicines.

"This ground-breaking study has uncovered important distinctions between the opioids that our brain makes naturally and therapeutic opioids that can be misused," said NIDA Director Nora D. Volkow, M.D. "This information can be mined to better understand the potential adverse actions of medically prescribed opioids and how to manipulate the endogenous system to achieve optimal therapeutic results without the unhealthy side effects of tolerance, dependence, or addiction."

Naturally occurring opioids and medically used opioids alike bind to the mu-opioid receptor, a member of a widespread family of proteins known as G protein-coupled receptors (GPCRs). Recent advances in understanding the three-dimensional structure of GPCRs have enabled researchers to create a new type of antibody biosensor, called a nanobody, that generates a fluorescent signal when a GPCR is activated. This enables scientists to track chemicals as they move through cells and respond to stimuli.

Using this nanobody, the researchers first showed that when a naturally occurring opioid binds to and activates the mu-receptor on the surface of a neuron, receptor molecules enter the cell inside what is known as an endosome. There, the mu-receptor remains activated over a period of several minutes, which itself was a new discovery, since it was believed that the opioid receptor is only activated on the surface of nerve cells. Proteins that interact with receptors on the cell surface control all sorts of biological processes and provide targets for therapeutic intervention.

With opioid medications, however, the researchers made two additional discoveries. First, there are large differences across a range of clinically relevant opioid drugs in how strongly they induce receptor activation in endosomes. Second, the opioid drugs uniquely induce rapid nanobody signalling, within tens of seconds, in an internal cellular structure known as the Golgi apparatus in the main body of the neuron. Further investigation showed that therapeutic opioids also uniquely activate mu-opioid receptors in related structures, known as Golgi outposts, in the long, branched structures of neurons.



Based on these findings, the researchers hypothesize that current medically used opioids distort the normal time and spatial sequence of mu-opioid receptor activation and signalling. This distortion may provide the mechanistic link that explains the undesired side effects of opioid medicines suggests new avenues for designing agents that do not produce addiction or other adverse effects associated with these drugs.

"This new biosensor opens our eyes to a previously unknown level of diversity and specificity in the cellular actions of opioids," said Dr Miriam Stoeber, the study's first author.

Dr Mark von Zastrow, senior author of the study, added: "We were surprised to see that drugs such as morphine activate opioid receptors in a location at which naturally occurring opioids do not."

- **doi**: 10.1016/j.neuron.2018.04.021

Stem cells show long-term success in treating severe peripheral arterial disease

A long-term study of patients who received stem cells to treat angiitis-induced critical limb ischemia (AICLI) shows the cells to be both safe and effective. The study, published in *Stem Cells Translational Medicine (SCTM)*, could lead to an option for those who suffer from this serious form of peripheral arterial disease (PAD).

AICLI is caused by an inflammation of the blood vessels that leads to a severe blockage in the arteries of the lower or upper extremities. It causes severe pain and impaired mobility, and can even lead to amputation and death. While endovascular and surgical reconstruction are the mainstream treatments for critical limb ischemia (CLI), these classical treatments are unfeasible in approximately 15% to 20% of patients.

Stem cell therapy is a promising option for these otherwise no-option CLI patients. As one of the promising stem cell therapies, purified CD34+ cell transplantation (PuCeT) has shown favourable short-term results, but prior to this new study no one had looked at its long-term outcome.

In the study, researchers at Zhongshan Hospital (affiliated with Fudan University) in Shanghai tracked 27 AICLI patients for five years after each had received an intramuscular injection of PuCeT to treat their disease.

"The primary endpoint – major-amputation-free survival rate – as well as secondary endpoints such as peak pain-free walking time and the scale of the patient's pain, were routinely evaluated during the five-year follow-up period," said Zhihui Dong, M.D., who along with his Department of Vascular Surgery colleague Weiguo Fu, M.D., served as corresponding authors on the study.

The results showed that the major-amputation-free survival rate of these patients was 88.89%, the pain free walking time Increased nearly 6-fold and the level of pain they experienced was reduced by more than half.

"Notably, in 17 patients (65.38%) not only were their limbs saved, but they also fully recovered their labour competence and returned to their original jobs by week 260. PuCeT demonstrated long-term efficacy and durability as a treatment of AICLI, not only in achieving limb salvage but also in recovering the labour competence and improving the patient's quality of life" Dr Fu added.

- **doi**: 10.1002/sctm.17-0252

Universal influenza vaccine trial begins in US

A Phase 2 clinical trial of an investigational universal influenza vaccine intended to protect against multiple strains of the virus has begun in the United States. The study is sponsored by the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health, and is being conducted at four US sites that are part of the NIAID-funded Vaccine and Treatment Evaluation Units (VTEUs). The trial is testing an experimental vaccine called M-001 for safety and its ability to produce potentially broad protective immune responses, both on its own and when followed by a standard, licensed seasonal influenza vaccine.

Influenza viruses mutate constantly, resulting in the emergence of viruses that may not always match those targeted by seasonal and pre-pandemic influenza vaccines. Seasonal influenza vaccines are made anew each year to match the strains predicted to circulate in the upcoming season. To receive the best protection against influenza, people must be vaccinated annually. However, if a particular influenza strain changes in an unanticipated way, or a different strain from that included in the vaccine spreads widely, the seasonal influenza vaccine may not be sufficiently protective.

The new trial is being led by principal investigator Robert L. Atmar, M.D., of Baylor College of Medicine in Houston. The trial will test the M-001 vaccine candidate, developed and produced by BiondVax Pharmaceuticals based in Ness Ziona, Israel. The experimental M-001 vaccine contains antigenic peptide sequences shared among many different influenza viruses. Theoretically, it could protect against many current and emerging strains of influenza. Six previous clinical trials involving a total of 698 participants conducted by BiondVax in Israel and Europe indicated that the vaccine candidate was safe, well-tolerated and produced an immune response to a broad range of influenza strains.

The new study will enrol up to 120 healthy volunteers between the ages of 18 and 49 years. Participants will be assigned randomly to receive either two doses of the experimental vaccine or a placebo. They will be vaccinated twice, receiving one dose (1 mg; 0.4 millilitres) of M-001 or placebo via intramuscular injection on the first day and a second dose 22 days later. Approximately 172 days later, all participants will receive an approved seasonal influenza vaccine. During periodic additional clinic visits throughout the course of the study, blood will be drawn from study volunteers to evaluate their immune responses to both the experimental vaccine and to the seasonal vaccine. Each participant will be followed for approximately seven months.

- For more information about the study, go to ClinicalTrials.gov, using the identifier NCT03058692 <*https://clinicaltrials.gov/ct2/show/NCT03058692*>. MEH

Dr Ahmed Al-Mandhari is new Regional Director for the WHO Eastern Mediterranean Region

The World Health Organization's Executive Board has appointed Dr Ahmed Al-Mandhari of Oman as Regional Director for the WHO Eastern Mediterranean Region (EMR), following his nomination by a special session of the Regional Committee for the Eastern Mediterranean on 19 May 2018. Dr Al-Mandhari began his appointment for a term of five years and eight months on 1 June 2018.

In his acceptance speech, Dr Al-Mandhari extended his thanks and appreciation to the members of the WHO Executive Board and the Regional Committee for his nomination and appointment as WHO Regional Director, and for giving him an opportunity to implement his agenda for change towards a stronger and healthier Eastern Mediterranean Region.

"I will begin working with countries immediately because I believe WHO should be very close to its Member States. Facilitating that presence is one of my top priorities. No tangible change can be made if we are far away from the areas where change is needed," said Dr Al-Mandhari.

The new WHO Regional Director noted that the EMR is passing through a critical era, marked by natural and manmade crises which have led to destruction of infrastructure and a deterioration in the health and living conditions of many people, particularly displaced populations and refugees. He emphasized that every effort must be made and all available resources mobilized to find appropriate solutions to these challenges.

Dr Al-Mandhari named the UN's Sustainable Developmental Goals, universal health coverage, the International Health Regulations (2005) and the Thirteenth General Program of Work of WHO, among the key forces that would drive interventions during his term.

Top priority

He also identified four top-priority technical areas for his agenda: tackling health emergencies including disease outbreaks; improving control of communicable and non-communicable diseases and their risk factors; strengthening health systems to achieve universal health coverage through a primary healthcare approach, with a special emphasis on family practice; and improving maternal and child health.

Dr Ahmed Al-Mandhari of Oman has been appointed Regional Director for the WHO Eastern Mediterranean Region

Furthermore, he emphasised that no effort should be spared to strengthen coordination and collaboration mechanisms with UN agencies, developmental partners and non-governmental organizations.

"My goal is to see WHO full of life, energy and enthusiasm. I would like to see staff at different levels of this Organization working together as a strong, productive team to provide the highest level of support to Member States," he said.

Background

Dr Al-Mandhari has made a substantial positive contribution to the development and modernization of Oman's health system, which has witnessed qualitative improvements in recent years, particularly in areas such as patient safety.

A specialist in family and community medicine, Dr Al Mandhari was Head of Quality Management and Development at Sultan Qaboos University Hospital from 2005 to 2006, followed by Deputy Director-General for Clinical Affairs until 2010. In 2013, he was appointed Director-General of Sultan Qaboos University Hospital, later becoming Director-General of the Quality Assurance Centre at the Ministry of Health. Dr Al-Mandhari has also worked as a senior consultant in family medicine and public health in Oman since 2009.

Dr Al Mandhari's research papers have been widely published and he serves on the editorial boards of several journals, including the *Middle East Journal of Family Medicine*, in addition to working as a reviewer for various medical journals. He has served on scientific and professional committees and lectured in various academic institutions in the fields of quality management, patient safety, family medicine and public health.

Dr Al-Mandhari obtained a BSc in Health Sciences (1990), followed by an MD in Medicine and Surgery (1993) from Sultan Qaboos University in Oman. In 1996, he gained a Diploma in Tropical Medicine and Hygiene from the Liverpool School of Tropical Medicine in the United Kingdom and was awarded the Royal Fellowship for Family Doctors in 1998. In 2002, he obtained a PhD in Quality Management in Health Care from the Liverpool School of Tropical Medicine. Dr Al-Mandhari oversaw the Fellowship Programme in the Department of Family and Community Medicine (FAMCO) at Sultan Qaboos University from 2003 to 2006. IMEH

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Babies with cerebral palsy can be helped with early rehabilitation

More than 17 million people worldwide suffer from cerebral palsy (brain paralysis), a disorder of the musculoskeletal system. This disorder develops due to a brain injury that may occur during pregnancy, birth or the neonatal period. In many cases, however, the exact cause is unknown. The brain injury adversely affects muscle and body movements of children. This can also be accompanied with other health issues, such as problems in speaking, sight, hearing, as well as learning difficulties. **Professor Memet Özek**, a paediatric neurosurgery specialist at Acıbadem Altunizade Hospital, Turkey, looks at cerebral palsy and the importance of early rehabilitation.

Prof. M. Memet Ozek, M.D
Division of Pediatric Neurosurgery
Acıbadem Healthcare Group, Turkey

Baby born blue

Complications that develop in babies, such as brain hemorrhages, lack of blood and oxygen supply, and infection of the brain due to an infection in the mother are listed as pregnancy problems that cause cerebral palsy. The causes that lead to the disorder after birth consist of infections such as meningitis and severe head traumas. In Turkey, the most common cause of cerebral palsy in a baby is lack of sufficient oxygen supply during birth. The brain tissues of babies who are born blue, as well as babies whose umbilical cords get stuck around their necks and babies who are unable to cry right after birth, are the ones left with insufficient oxygen supply. It causes permanent damage to the brain and leads to cerebral palsy.

The severity of spasticity

Cerebral palsy, which affects muscle control and body movements in children, has varying characteristics and types which depend on the area of the brain where the injury occurs. In cerebral palsy-associated spasticity, children suffering from the disorder experience severe stiffness in their arms and legs. Since the restriction of movements depend on which area of the brain is injured, some children only have stiffness in their arms while others have it in both arms and legs.

Milestones in development

It is possible to detect abnormalities in normal movements of babies born with cerebral palsy; therefore, families need to observe their children very carefully. The arm and leg movements of babies with the disorder are very limited or out of control, and the limbs hang loose. Furthermore, it is observed that these children also have limited capacity for movement due to spasticity, which is stiffness of muscles. Delays in gaining head and body control and sitting up, referred to as milestones in a baby's development, are the first signals families should watch out for. Babies should be able to control their heads at three months. Furthermore, they should be able to sit up without support when they are 7 or 8 months old. Parents who that their children are failing to develop according to this natural course should consult a specialist immediately.

Early stage rehabilitation

Even if the brain injury cannot be treated completely, a well-planned treatment can help patients lead an independent life. However, early diagnosis is critically important for such treatment. Any delays can lead to serious risks.

The treatment approach varies with the condition of the patient. Starting rehabilitation procedures in the early stage is particularly important. At this point, it is essential to make use of the shape-changing capability of the brain, referred to as neuroplasticity, without wasting any time. It is possible to transfer the functions of the cells in the damaged area to the surrounding cells in the brain of a developing baby. This, however, can only be done through early stage rehabilitation.

Therefore, the rehabilitation procedures for premature babies who are born with brain hemorrhages before the end of the 30-week period and who face a serious risk for cerebral palsy, can be started even while the baby is still in the incubator. However, MRI scanning is a must for definitive diagnosis in babies with high risk of cerebral palsy.

Daily physiotherapy

Since a child's development is very rapid in the first three years of his life, rehabilitation in this period can yield very effective results. Daily physiotherapy in the first three years for children with mild spasticity, in particular, can in many cases almost completely resolve the disorder. This enables these children to live independent lives.

The brain injury causing cerebral palsy is not progressive. However, the movement abnormalities in children who do not receive treatment as they grow are progressive. In cases of cerebral palsy where spasticity cannot be alleviated with rehabilitation methods, it is essential to resort to surgical intervention without delay. Otherwise, it is possible for the condition and the related problems to become worse as the child grows. MEH

Pediatric Neurosurgery Center

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Rana, 6 years old

As soon as CP was diagnosed, we decided to make the surgery to improve her motor abilities. Then we started a therapy to enhance cognitive skills such us learning, speech and social and emotional development. There can be nothing more beautiful in life than to see our daughter thrives like all children."

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Family finds a heart – and home – at Montefiore

Four-year-old Wadeem Alghamdi recently underwent a heart transplant at Children's Hospital at Montefiore (CHAM), one of Montefiore System's four Centers of Excellence. CHAM, in the Bronx, New York, has ranked as one of *U.S. News & World Report's* Best Children's Hospitals for 10 consecutive years.

The success story of this vibrant little girl illustrates the wrap-around care she and her family received through Montefiore's International Department and CHAM.

Wadeem spent much of her first three years of life as a hospital inpatient under the care of Ahmed Jamjoom, MD, Section Head, Cardiothoracic Surgery, KFSH & Research Centre, Jeddah.

Dr. Jamjoom says: "Wadeem was born missing the main vein that brings blood from the lower body back to the heart. In addition, she had only half a heart, a very small left lung and problems with her airway. This required her to undergo multiple cardiac operations since birth."

After her last heart surgery, Wadeem was unable to breathe on her own and needed a tracheostomy to support her breathing. She clung to life, even during a crisis when her kidneys began to fail and Wadeem slipped into a coma. Her mother thought: "She is dying in front of us."

Wadeem stabilized and in early 2016, the Saudi Embassy contacted Montefiore's International Department about her case. Judy Aschner, MD, Physician-in-Chief, CHAM, and Drs. Giles Peek and Daphne T. Hsu, Co-Directors of the Pediatric Heart Center, led an expedited review of Wadeem's case with a team of CHAM's renowned experts in cardiac and pediatric medicine, returning a treatment plan to the embassy within 24 hours.

Wadeem's parents note: "We came because your response was so different from any other hospital."

Once the embassy approved the plan, Montefiore's International Department contacted Wadeem's parents immediately to coordinate the family's needs, including air ambulance transport to Montefiore, convenient family housing, translation service and more. Montefiore is sensitive to language and cultural differences, helping patients and families navigate them even before arrival.

When Wadeem was admitted to CHAM, Child Life specialists were prepared to help her adjust to her new surroundings. As treatment progressed, her parents were overjoyed to see her stand and walk for the first time in her life. Her mother, Haneen Alghamdi, describes her as being "like someone freed from a prison".

During this time, Dr. Peter Semczuk, Montefiore Senior Vice President and Executive Director, Moses Campus, hosted a visit by the attaché of the Saudi Health Mission, arranging for him to meet key members of Wadeem's medical team at CHAM. The attaché was struck by the authentic warmth and care for the family.

As her mother says: "I have to be honest – everyone treats Wadeem like a daughter."

Wadeem was designated Stage 8 on the transplant list in January 2017. On June 11, she received her new heart. She was discharged six weeks later. Wadeem is doing well on her antirejection medications and is undergoing gradual weaning from her tracheostomy. Wadeem's treatment plan calls for occupational, physical and speech therapy, followed by airway reconstruction in 4 to 6 months.

CHAM is one of only a few U.S. hospitals to offer this procedure to pediatric patients, and this procedure is available only in the U.S.

Dr. Jamjoom remarked: "Luckily we were able to transfer Wadeem to Montefiore. What was done in CHAM is a miracle; God bless you all."

The Alghamdi family began this journey with Montefiore bringing together services to address Wadeem's complex medical requirements along with practical and social needs. Creating a feeling of safety and security is an integral part of Montefiore's services to international families. Montefiore brings patients from around the globe and wraps them in world-class care. As the Alghamdis have said: "Montefiore feels like home. It's a place to land."

- For more information or to discover more about CHAM's premier international program, please contact Irene G. Gebrael, PhD, Director, Montefiore International Department at:
igebrael@montefiore.org
or +1 646-531-6542 (call, text or WhatsApp)
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We knew her case was high risk, but we never wavered in our determination to help her get her life back. Every detail of the complex heart transplant was taken care of—from arranging her transportation to the hospital to putting her safely on the road to recovery. Read Wadeem's story in this issue. Share the joy of her family and learn about the door-to-door care that brings patients from around the world to Montefiore.

Discover more reasons why Children's Hospital at Montefiore has been designated one of *U.S. News & World Report's* Best Children's Hospitals 10 years in a row and is one of the cornerstones of our world-renowned international program.

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Children's Hospital at Montefiore is consistently ranked nationally by *U.S. News & World Report* in areas including Cancer, Diabetes and Endocrinology, Gastroenterology and Gastrointestinal Surgery, Neonatology, Nephrology, Orthopaedics and Urology.

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Research suggests a 15-minute 'Daily Mile' could enhance health of the world's children

Policymakers should consider introducing The Daily Mile to improve the health and fitness of schoolchildren around the world, according to new research led by the Universities of Stirling and Edinburgh.

The first study of the Daily Mile initiative – which involves children taking a 15-minute break from class to do physical activity – has confirmed it improves fitness, body composition and activity levels in participants.

The findings indicate The Daily Mile can help combat global problems such as low physical activity, high sedentary behaviour, declining fitness levels and high levels of obesity.

The study was jointly led by Dr Colin Moran and Dr Naomi Brooks, of the University of Stirling's Faculty of Health Sciences and Sport, and Dr Josie Booth, of the University of Edinburgh's Moray House School of Education. Dr Moran said: "Our research observed positive changes in children who participated in The Daily Mile intervention, compared to our control school where the scheme was not introduced.

"It suggests that The Daily Mile is a worthwhile intervention to introduce in schools and that it should be considered for inclusion in government policy, both at home and abroad."

The Daily Mile was founded in February 2012 by Elaine Wyllie, the then headteacher of St Ninians Primary School in Stirling, to improve the fitness of her pupils. Children are encouraged to run, jog or walk around their school grounds during a 15-minute break from class, which is in addition to normal intervals and physical education lessons.

Wyllie said: "I founded The Daily Mile as I became concerned about the lack of physical fitness displayed by pupils and wanted to find a solution. The Daily Mile started with my simple belief that it would help children lead more active lives and to encourage the development of healthy habits in their futures.


Marcus Hansson

"With my pupils I saw that 15 minutes of daily activity rapidly improved pupils' fitness, health and concentration in the classroom.

"I am delighted that this new research underlines what I found and I look forward to the day when every school does The Daily Mile."

There has been interest from the UK Government and the scheme has attracted the attention of other countries, with the Netherlands, Belgium and parts of the USA among those to have already adopted the approach.

The research team conducted their research at two primary schools within the Stirling Council area, with 391 pupils, aged between four and 12, participating. Each child underwent an initial assessment and then a follow-up later in the academic year. Between times, one school implemented The Daily Mile, while pupils at the other – known as the control school – followed their usual curriculum.

Children wore accelerometers to record their average daily minutes of moderate to vigorous intensity physical activity (MVPA) and average daily sedentary behaviour. They also had skinfold measurements taken to check body fat, and were assessed on their performance at a multistage fitness test (known as a bleep test ▶

Sensory-based food education encourages children to eat vegetables, berries and fruit

Sensory-based food education given to 3–5 year-old children in the kindergarten increases their willingness to choose vegetables, berries and fruit, according to a new study from the University of Eastern Finland. Sensory-based food education offers new tools for promoting healthy dietary habits in early childhood education and care. The findings were published in *Public Health Nutrition*.

The researchers used the sensory-based food education method Sapere, which makes use of children's natural way of relying on all of the five senses when learning new things: by looking at, smelling, tasting, touching and listening to new things. In the Sapere method, children are given an active role around food, and they are encouraged to share their sensory experiences. Sensory-based food education is well suited to the everyday life of kindergartens, where children eat several meals every day and participate in pedagogically oriented group activities.

Kindergartens have a variety of methods to choose from when delivering food education. For example, they can introduce different vegetables, berries and fruit to children in hands-on sessions, they can involve children in baking and cooking, and they can offer children opportunities for growing their own vegetables in the kindergarten backyard. Food-related themes can also be included in books and games.

"There are several different ways to do this. However, it always starts from sensory-based learning, child-orientation and child engagement. Doing and experiencing things together is also an important aspect," says Researcher, Nutritionist Kaisa Kähkönen from the University of Eastern Finland.

The researchers compared children in different kindergarten groups. Some were offered sensory-based food education, while others weren't. Children were offered a snack buffet containing different vegetables, berries and fruit to choose from, and the researchers took photos of their plates to analyse their willingness to choose and eat these food items.

The findings show that sensory-based food education given in kindergarten increased children's willingness to choose vegetables, berries and fruit – especially among children whose mothers have a lower educational background. On average, children of lower educated parents tend to eat less vegetables, berries and fruit. This is how food education given in the kindergarten can help even out dietary differences between families.

"Another interesting finding is that the Sapere food education method also seems to improve the eating atmosphere in kindergarten groups. This encouraged children who, according to their parents, were picky eaters, to choose a more diverse selection of vegetables, berries and fruit on their plate," Kähkönen explains.

Positive and personal food-related experiences gained in the kindergarten can help modify dietary preferences in a direction that is beneficial for health. Dietary preferences learned in early childhood often stick with a person all the way to adolescence and adulthood.

The Institute of Public Health and Clinical Nutrition at the University of Eastern Finland studies how food education in early childhood can promote good nutrition among children and promote the establishment of healthy dietary habits.

The study was carried out in collaboration between researchers from the Universities of Eastern Finland and Jyväskylä. The study was funded by the Jenny and Antti Wihuri Foundation.

- **doi**: 10.1017/S1368980018001106 MEH

(continued from p24.)

or shuttle run), where they ran between cones 20 metres apart between bleeps.

After correcting for age and gender, the team witnessed significant improvements in the intervention school, relative to the control school.

Revealing the findings of the research, Dr Brooks explained: "We observed a relative increase of 9.1 minutes per day in terms of MPVA and a relative decrease of 18.2 minutes per day in sedentary time. Children at the intervention school covered, on average, 39.1 metres more during the shuttle run, while their body composition improved too."

There were similar results when the data was adjusted to additionally account for socioeconomic circumstances.

Dr Booth said: "Schools can help support pupils to be more active by taking part in The Daily Mile. The benefits of an active lifestyle are wide reaching and important for education as well as for health."

• **doi**: 10.1186/s12916-018-1049-z MEH

High vitamin D levels linked to lower cholesterol in children

There is a link between higher serum vitamin D levels and lower plasma cholesterol levels in primary school children, new research from the University of Eastern Finland shows.

Children whose serum 25-hydroxyvitamin D levels exceeded 80 nmol/l had lower plasma total and low-density lipoprotein (LDL) cholesterol levels than children whose serum 25-hydroxyvitamin D levels were below 50 nmol/l, which is often regarded as a threshold value for vitamin D sufficiency. 25-hydroxyvitamin D is the major circulating form of vitamin D. The findings were reported in one of the leading journals of endocrinology, the *Journal of Clinical Endocrinology and Metabolism*.

Vitamin D is known to be essential for bone metabolism, and low serum 25(OH) D levels increase the risk of rickets, osteomalacia, and osteopenia. Vitamin D may also improve plasma lipid levels and have beneficial impact on other risk factors of cardiovascular diseases. However, evidence on these other health effects of vitamin D is still scarce and partially conflicting, and therefore not a sufficient basis for giving recommendations.

Lifestyle factors, such as healthy diet, physical activity, and spending time outdoors leading to the production of vitamin D in the skin, may be linked to both higher serum vitamin D levels and lower plasma lipid levels. The researchers found that the link between higher serum vitamin D levels and lower plasma cholesterol levels was independent of body adiposity, dietary factors, physical activity, parental education, and daylength prior to blood sampling. Moreover, hereditary factors that have previously been linked to serum vitamin D levels did not modify the observed association. More research is needed to uncover the reasons behind the inverse association of serum vitamin D with plasma lipid levels.

The new findings provide support for the importance of following recommendations for vitamin D intake, which vary from country to country. The most important dietary sources of vitamin D are vitamin D fortified products such as dairy products and spreads, and fish. In addition to the dietary intake, vitamin D supplement use is also recommended for the general population in several countries. The recommended use of vitamin D supplements varies a lot among these countries (mostly 5-50 µg/d, corresponding to 200-2000 IU/d) depending on age group and other factors. Vitamin D is synthetized endogenously in the skin in the presence of UV-radiation from the sun. However, in northern latitudes, the exposure to sunlight alone is inadequate to maintain sufficient serum 25(OH)D levels, especially during the winter.

The study was part of the Physical Activity and Nutrition in Children (PANIC) Study, which is a lifestyle intervention study in the Institute of Biomedicine at the University of Eastern Finland. A total of 512 children aged 6 to 8 years participated in the baseline measurements in 2007–2009, constituting a representative sample of their age group. The PANIC Study produces scientifically valuable information on children's lifestyles, health, and well-being.

• **doi**: 10.1210/jc.2018-00335. [Epub ahead of print]. MEH

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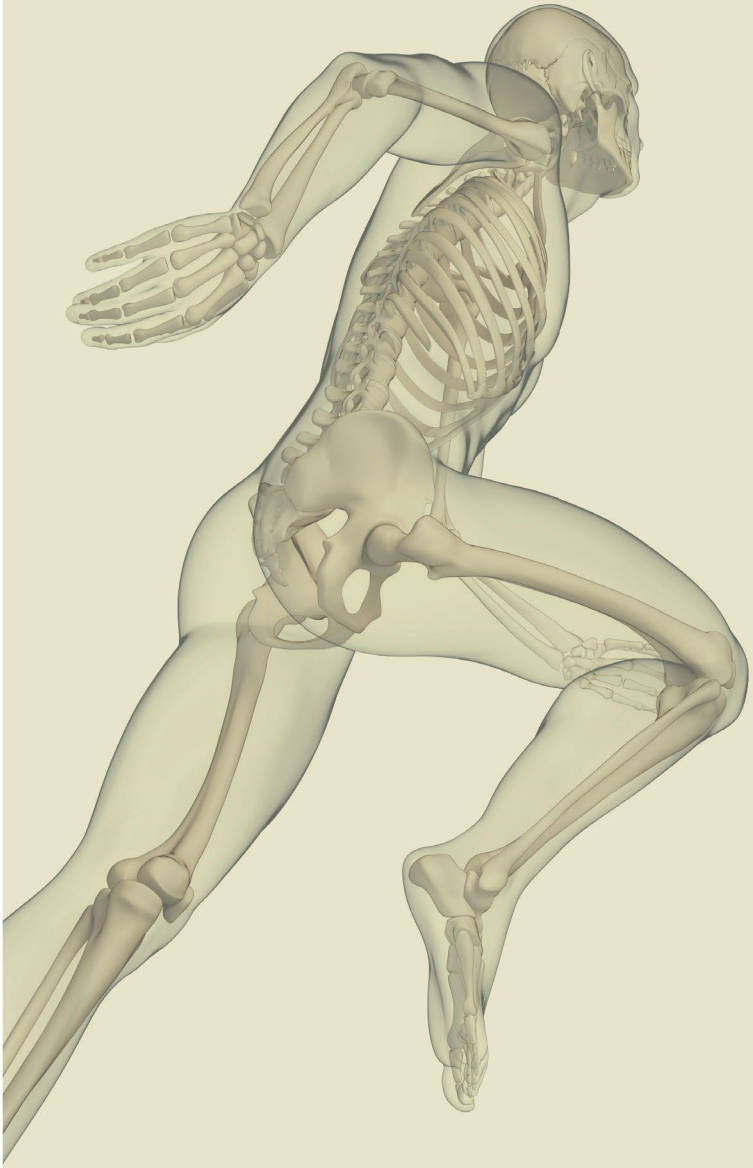

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New drug halves hearing loss in children following cancer treatment

Giving the drug sodium thiosulphate after chemotherapy reduces hearing loss in children treated for liver cancer, according to findings published in the *New England Journal of Medicine*.

Results from the Cancer Research UK funded SIOPEL-6 clinical trial show that giving sodium thiosulphate (STS), after a type of chemotherapy called cisplatin, reduces hearing loss by nearly 50% in children treated for hepatoblastoma*, a childhood liver cancer.

This is a major step forward in minimising the number of children left with debilitating and long-term side effects after being treated for cancer.

Dr Penelope Brock, trial lead and paediatric consultant at Great Ormond Street Hospital, said: "We're lucky to have such an effective treatment for this type of liver cancer. But like many cancer treatments, there can also be long term side effects. For children treated with cisplatin alone, a huge proportion are left with permanent hearing loss, which can be utterly debilitating. Even mild hearing loss can severely impact a child's future development. Key consonants are heard at high frequencies like 's,' 'h,' and 'f', and their loss can be particularly difficult for children who haven't yet developed speech.

"This treatment combination could help ensure that parents aren't faced with an upsetting scenario where successful cancer treatment comes at the cost of their child's hearing."

109 children took part in the trial, which was led by researchers at Great Ormond Street Hospital, and had either cisplatin alone or cisplatin followed by STS 6 hours later. While 63% of children given cisplatin alone suffered a degree of hearing loss, this was only the case for one third (33%) of children also given STS, meaning their risk of this side effect was reduced by 48%.

Importantly, there was no difference in overall survival or incidence of cancer returning, meaning the treatment was just as effective if children were given STS.

Professor Pam Kearns, Cancer Research UK's expert on children's cancers at the University of Birmingham, said: "No child should have to suffer a disability as a result of their cancer treatment. Hearing is precious and we're delighted to see that we can safeguard the future development of more children, without compromising the chance of curing their cancer."

Cisplatin is a very effective treatment for many cancers including hepatoblastoma, for which survival has improved dramatically. However, around two thirds of children treated with this drug are left with some hearing loss. This is because while cisplatin is rapidly removed from the body following treatment, it is retained in and damages the cochlea.

Preclinical and clinical research, by a team led by Dr Ed Neuwelt at Oregon Health and Science University, had previously shown that STS could prevent hearing loss caused by cisplatin. Scientists then determined how to delay when STS was given to patients to avoid any interference with cisplatin's effect on their tumour.

In light of these latest results, STS could become part of a new standard of care for treating hepatoblastoma, and researchers are also looking at whether it could work for other children's cancers where cisplatin is used as part of treatment. The next step is to get marketing authorisation from the U.S. Food and Drug Administration (FDA) and European Medicines Agency (EMA). It has already received a breakthrough therapy designation by the FDA and will be filed under a Paediatric Use Marketing Application in the EU.

- **doi**: 10.1056/NEJMoa1801109 MEH

Honey may reduce injury in children who have swallowed button batteries

Ingestion of button batteries, which are frequently found in the household setting, can rapidly lead to caustic oesophageal injury in infants and children. A new study published in *The Laryngoscope* found that drinking honey or Carafate (a cherry- flavoured duodenal ulcer prescription) may help reduce oesophageal damage.

In experiments conducted on cadavers and live animals, both honey and Carafate provided a physical barrier and neutralized the tissue pH increase associated with battery ingestion; they both reduced injury severity compared with other common household liquids, including apple juice, orange juice, sodas, sports drinks, and maple syrup.

"An oesophageal button battery can quickly cause significant injury. We have identified protective interventions for both the household and hospital setting that can reduce injury severity," said co-principal investigator Dr Kris Jatana, Associate Professor and Director of Pediatric Otolaryngology Quality Improvement at Nationwide Children's Hospital, in Columbus, Ohio, US. "Our results will change the practice guidelines for how medical professionals acutely manage button battery ingestion."

- **doi**: 10.1002/lary.27312 MEH

New reports highlight poor health conditions of Palestine refugees in Lebanon

In May this year the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) released its annual Health Report for 2017 which provides information on the health situation of Palestine refugees in the Agency's five fields of operation – Jordan, Lebanon, the West Bank, including East Jerusalem, Gaza and Syria, as well as the UNRWA health programme.

This annual report coincides with the 70th anniversary of the mass displacement of Palestinians known as "the Nakba" or "the Catastrophe". Between 1947 and 1949, at least 750,000 Palestinians were expelled from or fled their homes in historic Palestine during the violent events related to the creation of the state of Israel. Seventy years later, Palestine refugees – including those initially displaced and their descendants – are still living the Nakba.

This anniversary puts the spotlight on the world's longest standing protracted refugee crisis, and is a reminder that the population of over 5.3 million Palestine refugees registered with UNRWA continue to live amidst conflict, violence and occupation, and aspire to a just and lasting solution to their plight.

The report charts 68 years of progress in the Agency's Health Programme and its evolution to meet the changing health needs of Palestine refugees. In 2017, about three million registered Palestine refugees received health services free of charge at 143 UNRWA primary health care centres, which provided some 9.2 million medical consultations.

Commenting on the report, Dr Akihiro Seita, UNRWA Director of Health, says: "Protecting and promoting the health of registered Palestine refugees, is at the heart of our mandate, enabling them to achieve the highest attainable level of health until a just and lasting resolution of the Palestine refugee issue is achieved, based on UN resolutions and international law.

Dr Akihiro Seita, UNRWA Director of Health

"Our health services are literally life-saving in places like Syria, where the conflict has just entered its eighth year, as well as in the occupied Palestinian territory including East Jerusalem, which saw the 50th anniversary of the Israeli occupation in 2017, and in Gaza which has now been under more than a decade of blockade."

The report underlines UNRWA's commitment to universal health coverage in its free-of-charge services made available to all Palestine refugees. It also shows that UNRWA continued to maintain strong maternal and child health indictors, such as vaccination coverage, early registration for preventive care and the percentage of pregnant women attending at least four antenatal case visits. In addition, during 2017 screening and outreach activities for non-communicable diseases were strengthened.

Refugees in Lebanon

A separate report – Health in exile: Barriers to the health and dignity of Palestine refugees in Lebanon – published in May this year by Medical Aid for Palestinians (MAP), looks specifically at the plight of Palestine refugees in Lebanon.

According to UNRWA there are more than 450,000 Palestine refugees in Lebanon, although, the MAP report notes that a recent census by the Lebanese Government's Lebanese-Palestinian Dialogue Committee recorded a Palestinian population of 174,000 living in 12 refugee camps and 156 informal "gatherings" across the country. This is the first-ever census of its kind in Lebanon, the results of which were published in December 2017. The census report notes that another 18,601 Palestinians have fled the conflict in neighbouring Syria to camps in Lebanon.

Census

The census result is much lower than the


Al_Jazeera

Many of the residents of Bourj el-Barajneh near Beirut have spent their entire lives in the refugee camp.

469,331 people registered in Lebanon with the UNRWA. In an effort to explain this discrepancy, spokeswoman Huda Samra told AFP: "UNRWA does not have a headcount of Palestine refugees who are currently residing in Lebanon. What we have as an agency are official registration records for the number of registered Palestine refugees in Lebanon. If someone registered with UNRWA in Lebanon decided to live outside Lebanon, they don't notify us," she said.

Interestingly, the census found that the Palestine refugee population is split evenly between men and women, but nearly half of the total are 24 years of age or younger.

Announcing the results of the census in December last year, Prime Minister Saad Hariri said Lebanon had a "duty" towards Palestinians.

"Over the past decades, the social and humanitarian problems faced by Palestine refugees have accumulated, and the reality in the camps has become tragic on all levels," Hariri said.

However, he insisted Lebanon would, under no circumstances, accept their naturalisation.

Camp conditions

According to the MAP report, Lebanon's Palestinian camps suffer serious problems, with varying degrees of poverty, overcrowding, unemployment, poor housing conditions, lack of infrastructure, limited essential services and poor sanitary conditions making them among the worst in the region. Among the five UNRWA fields, Lebanon has the highest percentage of Palestine refugees living in abject poverty.

Palestine refugees in Lebanon do not enjoy several important rights; for example, they cannot work in as many as 20 professions. Because they are not formally citizens of another state, Palestine refugees are unable to claim the same rights as other foreigners living and working in Lebanon.

The MAP report notes that Palestine refugees in Lebanon are one of the most chronically marginalised refugee populations in the region, including in terms of access to healthcare.

International law

The MAP report refers to International law, as stated in the International Covenants on Civil and Political Rights and on Economic, Social and Cultural Rights, which emphasizes that rights are to be exercised without discrimination on grounds such as "national or social origin, property or other status". It criticizes the Lebanese Government, noting that "Palestinian refugees suffer a range of discriminatory policies and practices which undermine their enjoyment of these rights and compound their suffering".

Healthcare of refugees

The MAP report looks in detail at the healthcare of Palestine refugees in Lebanon and notes that they have very little access to quality healthcare.

"The Lebanese state does not provide them with any such services, and private treatment is prohibitively expensive. UNRWA is the main provider of healthcare services, with a network of 27 primary healthcare and other centres across Lebanon with universal and almost entirely free services for Palestine refugees. Its services are chronically overstretched, however, and doctor-patient consultation times average 2.45 minutes," the report's authors say.

The report states that secondary care – specialist consultation and treatment – is provided by the Palestinian Red Crescent Society (PRCS), which has five of its own hospitals and contracts services at others. Tertiary care, which includes hospitalisation and complex surgery, is largely provided by specific Lebanese hospitals. However, as only 5.5% of the Palestine refugees in Lebanon have health insurance, they are largely dependent on UNRWA and other sources for the payment of hospitalisation fees. UNRWA provides financial coverage for all such treatment through the PRCS and other contracted hospitals. UNRWA covers 90% of secondary hospital services and 60% of the very high costs of tertiary treatment at the contracted Lebanese hospitals. PRCS services themselves are found to be inadequately funded, with low salaries and shortages of staff and medical equipment.

According to the MAP report, out-of-pocket payment remains a significant financial burden for Palestine refugees. To meet the total costs, patients and their families need to approach relatives, neighbours, political parties, NGOs and others for financial support without which the patient – unless a Palestine refugee from Syria or beneficiary of UNRWA's "Social Safety Net" programme – will not receive the necessary treatment and care.

The report highlights a number healthcare issues that need to be addressed. These include maternal and child health, communicable and noncommunicable diseases, mental and psychosocial health, and disability, which the authors say is chronically under-resourced.

AUB, UNRWA survey

A 2016 survey on the socioeconomic status of Palestine refugees in Lebanon by the American University of Beirut (AUB) and UNRWA, notes that although the infant mortality rate among Palestine refugees in Lebanon is on a par with other UNRWA areas of operation, still-birth and perinatal and maternal mortality rates are the highest.

Due to poor housing conditions, overcrowding and lack of proper sanitation and infrastructure in the camps, communicable diseases are common among the refugee population. Almost two-thirds of Palestine refugees in Lebanon report acute, communicable illnesses such as bacterial and viral infections. Hypertension, chronic pulmonary disease, and diabetes are the leading causes of NCDs among the refugee popula-

> Over the past decades, the social and humanitarian problems faced by Palestine refugees have accumulated, and the reality in the camps has become tragic on all levels.

tion. NCDs are now probably the leading cause of deaths for Palestine refugees in Lebanon, driven by inhibited access to a healthy lifestyle, including a good diet and exercise opportunities.

A 2014 UNRWA report notes that mental health problems are common among refugee populations who are impacted by conflict and displacement, poverty and social exclusion. Over half of the Palestine refugee population in Lebanon surveyed in the 2015 AUB-UNRWA study reported poor mental health.

More than one in five Palestine refugees in Lebanon has specific disability needs and their lack of access to adequate services has a major impact on their overall health and living conditions. Three out of every 10 Palestinian children with a disability are not enrolled in school. Health outcomes may unravel further given that the highest prevalence of communicable and noncommunicable disease and functional disability is among the Palestine refugees who never attended school.

The report notes that the UN Committee on the Rights of the Child has urged Lebanon to adopt "urgent measures" concerning children with disabilities. The Committee highlighted discrimination, ineffective integration and inadequate health and other services for these children, particularly Palestinians, as well as Syrians.

Call to action

In response to the findings in the report, the MAP issued the following calls to action:

- Increase support for healthcare providers including UNRWA as well as local and international NGOs to fill immediate gaps in healthcare provision for Palestinian refugee communities;
- Work with service providers – UNRWA, the Palestine Red Crescent Society, NGOs and others – to ensure that healthcare provision for Palestinian refugees is affordable, appropriate, sustainable and comprehensive; and
- Ensure that aid and development initiatives aimed at addressing the humanitarian needs of Palestinian refugees consult with these communities and uphold their right to self-determination.

Nahr al-Bared Palestinian refugee camp, near Tripoli, Lebanon

Sources:

- UNRWA annual report 2017 *https://tinyurl.com/y8qure55*
- Health in exile – Medical Aid for Palestinian Refugees *https://tinyurl.com/y97n4hpu*
- Profiling the vulnerability of Palestine refugees from Syria living in Lebanon *https://tinyurl.com/y7rvols9*
- Lebanon census *https://tinyurl.com/y8br4xu3* MEH

Donations to UNRWA

Earlier this year the United Arab Emirates, the Kingdom of Saudi Arabia and Qatar made significant donations to UNRWA. These come as UNRWA faces the most serious financial crisis in its history, affected in part by a reduction in funding from the United States.

A US$50 million donation was announced by Saudi King Salman Bin Abdulaziz Al Saud.

Sheikh Khalifah Bin Zayed Al Nahyan, President of the UAE, also donated $50 million to UNRWA earlier this year. UNRWA Commissioner-General Pierre Krähenbühl commended the support, saying: "The UAE is a valued and dynamic partner, standing with UNRWA and for the dignity and rights of Palestine Refugees. I am immensely grateful for this outstanding announcement, which confirms the UAE's commitment to our mandate and the preservation of hope for Palestine Refugees."

Sheikh Mohammed bin Abdulrahman bin Jassim Al-Thani, Deputy Prime Minister and Minister of Foreign Affairs, Qatar, also announced a donation of $50 million. Qatar's donation is being used to sustain the Agency's education services in all five fields of operations.

LAU Medical Center-Rizk Hospital launches Comprehensive Stroke Center

The Gilbert & Rose-Marie Chagoury School of Medicine and LAU Medical Center-Rizk Hospital have launched the Comprehensive Stroke Center, located at the hospital's campus in the heart of Beirut, Lebanon.

The combination of multidisciplinary professional expertise, state-of-the-art equipment and patient-centred clinical care is unique for the country and the region.

Stroke is a major cause of preventable death in Lebanon and the leading cause of disability, according to Dr Michel Mawad, Dean of the Gilbert and Rose-Marie Chagoury School of Medicine. Dr Mawad is a world-renowned specialist in cerebrovascular disease. He estimates that over the next decade around 6000 patients per year will fall victim to stroke in Lebanon.

A stroke occurs when blood supply to the brain is interrupted, either because of a blocked artery or a ruptured blood vessel, depriving the organ of oxygen and nutrients. If blood flow is cut off for more than a few seconds, brain cells begin to die. The longer the brain suffers from interruption in blood flow, the greater the risks of permanent disability or death.

The risk of stroke increases with age, poor diet, bad habits of lifestyle, or the presence of certain congenital diseases. While strokes are more common in men, they tend to be more fatal in women.

"Time is of the essence when treating a stroke," says Dr Mawad. "The best way to treat patients is within comprehensive stroke centres, with dedicated multidisciplinary stroke teams. And that is what we have here."

Indeed, the centre is staffed by an integrated team of neurologists, interventional surgeons, critical care specialists, anaesthesiologists, neurosurgeons and physiotherapists, available to ensure prompt multidisciplinary care 24 hours a day, seven days a week. It also features specialized medical equipment not readily available elsewhere in the region, including a state-of-the-art Biplane Interventional & Angiography suite manufactured by Siemens Healthineers and designed specifically for the early diagnosis and treatment of acute stroke.

The centre's location in the LAU Medical Center-Rizk Hospital provides patients with quick access to high-tech resources on-site, including a helicopter pad, which can get patients to the help they need when every second counts. Patients also benefit from the hospital's strong relationships with rehabilitation centres across the country.

"Innovation drives everything we do – it is immersed in our DNA," said LAU President Joseph G. Jabbra of the center. "Everything we do revolves around the path of ongoing innovation. This is absolutely crucial for the education and training of our medical students." It is the duty of the university and LAU Medical Center-Rizk Hospital to use innovation to give back, Jabbra added. "Saving lives is at the top of the scale when it comes to serving our community."

CEO of LAU Medical Center-Rizk Hospital Sami Rizk says the Comprehensive Stroke Center is the latest in a long line of firsts from the medical centre over the decades, including the first blood transfusion and kidney transplant in Lebanon. "This stroke centre is part of a master plan toward innovation and treatment with passion and care," he said.

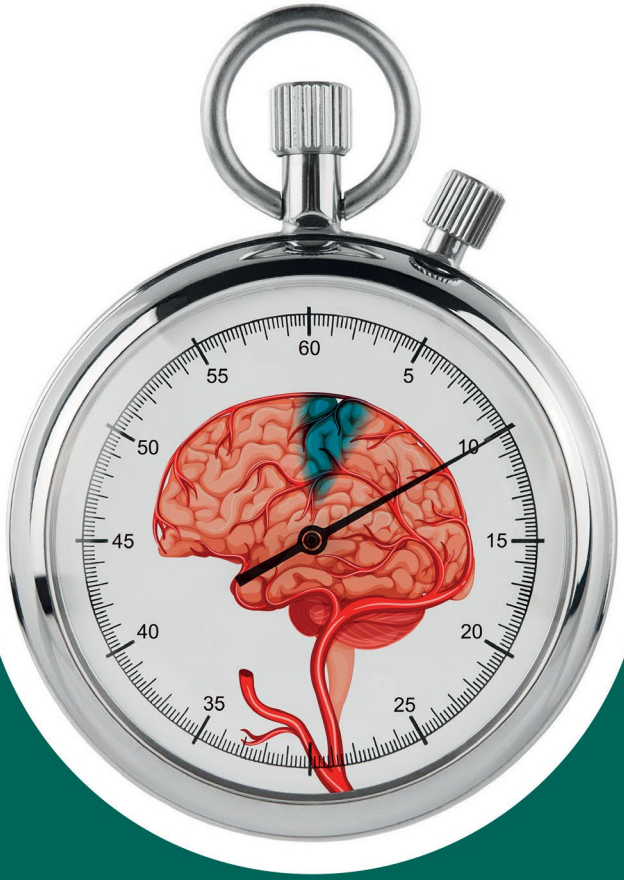
"We are able to guarantee the highest quality and most efficient care to ensure successful treatment and recovery for people of all backgrounds," he added.

"The brain is the most precious organ God has given us," Dr. Mawad said. "It is the organ that makes us think, that makes us lov e, that makes us compassionate, that makes us intelligent, that makes us productive. So do everything you can to protect your brain. The best stroke you can have is the stroke you have never had." MEH

LAU
Gilbert and Rose-Marie Chagoury
School of Medicine

LAU Medical Center
المركز الطبّي للجامعة اللبنانية الأميركية - مستشفى رزق
Lebanese American University Medical Center-Rizk Hospital

The First Comprehensive Stroke Center of the LAU Medical Center-Rizk Hospital



"Time is Brain"; Act Fast

A multidisciplinary care facility with state-of-the-art technology launched under the auspices of the Dean of the Gilbert and Rose-Marie Chagoury School of Medicine **Dr. Michel Mawad**, a world-renowned specialist in neurology and cerebrovascular disease.

LAU Medical Center-Rizk Hospital | Ground Floor – Building D | Zahar St., Achrafieh, Beirut, Lebanon
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Major study shows prostate MRI is more precise for cancer diagnosis

A large international study has shown that an MRI scan can reduce the number of invasive prostate biopsies by up to 28%. The PRECISION1 trial shows that using MRI to target prostate biopsies leads to more of the harmful prostate cancers, and fewer harmless cancers being diagnosed. Given that more than a million men in Europe undergo a prostate biopsy every year, the authors believe that this work could change clinical practice. The results were presented in March this year at the European Association of Urology Congress in Copenhagen, with simultaneous publication in the *New England Journal of Medicine*.

Commenting on the importance of the research, Dr Veeru Kasivisvanathan of University College London and first author of the study, said: "PRECISION is the first international multi-centre randomised trial to show the benefits of using MRI at the start of the prostate cancer diagnosis process.

"In men who need to have investigation for prostate cancer for the first time, PRECISION shows that using an MRI to identify suspected cancer in the prostate and performing a prostate biopsy targeted to the MRI information, leads to more cancers being diagnosed than the standard way that we have been performing prostate biopsy for the last 25 years."

Inaccurate biopsies

Prostate cancer is currently diagnosed by examining biopsy samples taken from the prostate via a procedure called TRUS (TRansrectal UltraSound guided prostate biopsy). This means taking around 10-12 samples from the prostate using a probe with a special needle. The ultrasound-guided procedure means inserting a probe into the anus under local anaesthetic. It is uncomfortable, costly, and carries a slight risk of infection, but because it involves estimating the position of a possible tumour, it also means that tumours are often missed. The PRECISION study investigates whether an MRI scan can avoid the need for biopsy in some patients, or give better diagnostic information where a biopsy is necessary.

We need time to digest the study, but at first reading it looks like it has the potential to change clinical practice.

The study

Researchers from 23 centres randomly allocated 500 men to be examined either with a standard 10-12 core TRUS biopsy, or with an initial MRI scan followed by a targeted biopsy if the MRI showed an abnormality. The main aim was to assess what proportion of men were diagnosed with clinically significant prostate cancer (defined as a Gleason Grade of ≥3+4) which is harmful cancer that is desirable to find. It also aimed to assess the proportion of men who were diagnosed with clinically insignificant cancer (Gleason Grade 3+3)

Comment

Although not involved in the study, Professor Hein Van Poppel, (EAU Adjunct Secretary General, University Hospitals of the Leuven), commented: "This is a significant study. Prostate cancer can only really be confirmed by a biopsy, which is invasive and, like almost all medical procedures, caries some risk of side-effects. Of course, in the majority of men who have a biopsy no cancer is found. This work shows that using MRI to decide whether or not to perform a biopsy has the potential to save around a quarter of a million European men each year from going through the biopsy procedure, and so may be cost-effective in the long run. MRI use also shows up small aggressive cancers at a curable stage, and allows us to delay or simply not perform biopsies for some cancers which will not turn out to be dangerous. We need time to digest the study, but at first reading it looks like it has the potential to change clinical practice."

One in four men with suspected prostate cancer could avoid unnecessary biopsy if given an MRI scan first

Giving men with suspected prostate cancer an MRI scan could improve diagnosis and save those who do not have aggressive cancers from having an unnecessary biopsy, according to a study published February 2017 in *The Lancet*.

The study estimates that adding the extra test could help one in four (27%) men avoid an unnecessary biopsy and reduce the number of men who are overdiagnosed – diagnosed with a cancer that does not go on to cause any harm during their lifetime – by 5%.

Typically, men undergo a biopsy of their prostate if they experience symptoms of prostate cancer or have a prostate specific antigen (PSA) test showing high levels of the PSA protein in their blood. In Europe alone, one million prostate biopsies are conducted each year. However, the PSA test is not always accurate, which means that many men undergo unnecessary biopsies.

"Prostate cancer has aggressive and harmless forms. Our current biopsy test can be inaccurate because the tissue samples are taken at random. This means it cannot confirm whether a cancer is aggressive or not and can miss aggressive cancers that are actually there. Because of this some men with no cancer or harmless cancers are sometimes given the wrong diagnosis and are then treated even though this offers no survival benefit and can often cause side effects. On top of these errors in diagnosis, the current biopsy test can cause side effects such as bleeding, pain and serious infections," said lead author, Dr Hashim Ahmed, UCL, UK.

Multi-parametric MRI (MP-MRI) scans provide information about the cancer's size, how densely packed its cells are and how well connected to the bloodstream it is, so could help differentiate between aggressive and harmless cancers.

In this study, 576 men with suspected prostate cancer were given an MP-MRI scan followed by two types of biopsy in 11 NHS hospitals in the United Kingdom. Firstly, they underwent a template prostate mapping (TPM) biopsy, which was used as a control to compare the accuracy of the MP-MRI and standard biopsy against. The second biopsy was the standard transrectal ultrasound-guided (TRUS) biopsy – the most commonly used biopsy for diagnosing prostate cancer.

The TPM biopsy found that less than half of the men in the study (40%) had aggressive cancer.

Of these, the MP-MRI scan correctly diagnosed almost all of the aggressive cancers (93%), whereas the TRUS biopsy correctly diagnosed only half (48%). Further, for men who had a negative MP-MRI scan, nine out of 10 (89%) had either no cancer or a harmless cancer.

MRI before biopsy

Because of this, the researchers suggest that MP-MRI could be used before TRUS biopsy to identify those who have harmless cancers and do not need a biopsy immediately. This group could instead continue to be monitored by their doctors, while those thought to have aggressive cancers could then have their MP-MRI scan result confirmed by the TRUS biopsy. Overall, this would reduce overdiagnosis while improving detection of aggressive cancers.

"Our results show that MP-MRI should be used before biopsy. Our study found that using the two tests could reduce overdiagnosis of harmless cancers by 5%, prevent one in four men having an unnecessary biopsy, and improve the detection of aggressive cancers from 48% to 93%," said Dr Ahmed. "While combining the two tests gives better results than biopsy alone, this is still not 100% accurate so it would be important that men would still be monitored after their MP-MRI scan. Biopsies will still be needed if an MP-MRI scan shows suspected cancer too, but the scan could help to guide the biopsy so that fewer and better biopsies are taken."

During the study there were 44 serious adverse events, with eight cases of sepsis caused by a urinary tract infection and 58 cases of urinary retention. These were a result of the biopsies rather than the MP-MRI scan, and are symptoms commonly seen in the clinic as a result of the standard biopsy.

Limitations of the study include that giving the TPM biopsy before the TRUS biopsy may have caused swelling and changes to the prostate tissue which could affect the accuracy of the TRUS biopsy. In addition, more research is needed into the cost-effectiveness of this approach, how it affects hospital capacity and ensuring there are enough radiologists to conduct the MP-MRI in the NHS.

• doi: 10.1016/S0140-6736(16)32401-1

which is desirable to avoid as it doesn't benefit from treatment.

The researchers found that 71 (28%) of the 252 men in the MRI arm of the study avoided the need for a subsequent biopsy. Of those who needed a biopsy, the researchers detected clinically significant cancer in 95 (38%) of the 252 men, compared with 64 (26%) of the 248 men who received only the TRUS biopsy.

"This shows that a diagnostic pathway with initial MRI assessment followed by biopsy when required, can not only reduce the overall number of biopsies performed, but can give more accurate results than TRUS-biopsy alone. We also found that patients who had MRI had fewer side effects than those who just had the standard TRUS biopsy. This is because the MRI allows some men to avoid biopsy and in those who need one, is able to better indicate which area of the prostate needs to be investigated, so you don't need to randomly sample the whole prostate and can use fewer biopsy cores," said Dr Kasivisvanathan.

Dr Caroline Moore, Reader in Urology at University College London and senior author of the study commented: "We compared standard prostate biopsy to the use of MRI, offering targeted biopsies to only those men who had a suspicious MRI. The MRI pathway detected more harmful cancers that needed treatment, and it reduced overdiagnosis of harmless cancers, even though fewer men had a biopsy in the MRI arm."

Professor Mark Emberton of University College London noted that this this study was the first to allow men to avoid a biopsy. "If high quality MRI can be achieved across Europe, then over a quarter of the 1 million men who currently undergo a biopsy could safely avoid it," he added.

Diagnostic process

Several elements need to be considered for MRI to be generally adopted in the diagnostic process. As Dr Kasivisvanathan, who was

awarded a National Institute for Health Research (NIHR), Research Doctoral Fellowship to carry out the study, said:

"The ability to perform good quality MRI and the ability to interpret the MRI information are specialist skills. We will therefore need appropriate training for clinicians to use the technology and changes in health services to increase availability and capacity to perform prostate MRI. In the long-term, this new diagnostic pathway can be cost-effective. Costs can be saved by the reduction in the number of men undergoing biopsy in the first place, by the earlier diagnosis of harmful cancers and in the avoidance of the diagnosis of harmless cancers"

• doi: 10.1056/NEJMoa1801993 MEH

Researchers develop Nano MRI lamp for smarter MRI diagnosis

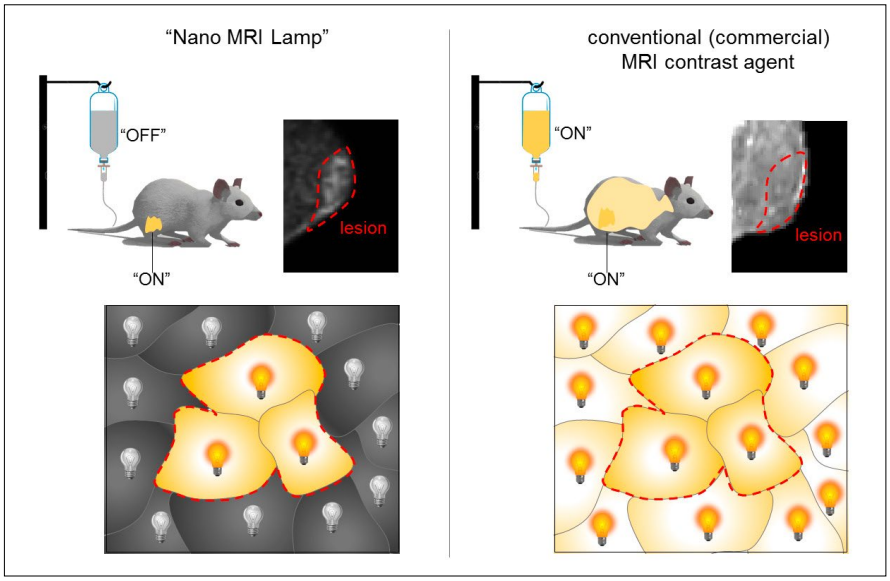
A research team led by Jinwoo Cheon at the Center for Nanomedicine, at the Institute for Basic Science (IBS), in South Korea, has developed the Nano MRI Lamp: A new technology platform that tunes the magnetic resonance imaging (MRI) signals "ON" only in the presence of the targeted disease. The technology has the potential to overcome the limitations of existing MRI contrast agents.

The study is published in Nature Materials.

MRI is an increasingly popular non-invasive technique for diagnosis and, importantly, does not use harmful radiation. Some tissues show a natural contrast on MRI, but for some specific types of imaging, patients are administered a MRI contrast agent to enhance the difference between the target area and the rest of the body.

"Typical MRI contrast agents, like gadolinium, are injected in an "ON" state and distributed across the whole biological system with relatively large background signal," explains Cheon. "We found a new principle to switch the MRI contrast agent "ON" only in the location of the target." IBS scientists discovered how to switch the signal ON/OFF by using the Nano MRI Lamp.

The Nano MRI Lamp technology consists of two magnetic materials: A quencher (magnetic nanoparticle) and an enhancer (MRI contrast agent). The switch is due to the distance between the two. When the two materials are at a critical distance, farther than 7 nanometers (nm), the MRI signal is "ON", whereas when they are placed closer than 7 nm, the MRI signal is "OFF". The researchers named this phenomenon Magnetic REsonance Tuning (MRET), which is analogous to the powerful optical sensing technique called Fluorescence Resonance Energy Transfer (FRET).



Differences between Nano MRI Lamp and the conventional MRI contrast agent. (Left) Nano MRI Lamp is turned "ON" only when it encounters the cancer-related molecule. Therefore, the diseased area is clearly distinguished from the other tissues in the MRI image. (Right) The existing MRI contrast agents are always turned "ON", regardless of the presence of the target molecule, making it difficult to differentiate between the cancer area and surrounding tissues.

The researchers tested the Nano MRI Lamp for cancer diagnosis. They detected the presence of an enzyme that can induce tumour metastasis, MMP-2 (matrix metalloproteinase-2) in mice with cancer. They connected the two magnetic materials with a linker that is naturally cleaved by MMP-2. Since the linker keeps the two materials close to each other, the MRI signal was "OFF". However, in the presence of the cancer, the linker is cleaved by MMP-2, which cause the two materials to be separated and the MRI signal switched "ON". Therefore, the MRI signal indicated the location of MMP-2, and the tumour. The scientists also found that the brightness of the MRI signal correlates with the concentration of MMP-2 in the cancerous tissue.

Most importantly, the Nano MRI Lamp remains switched off until it meets a biomarker associated with a specific disease, allowing higher sensitivity. "The current contrast agent is like using a flashlight during a sunny day: Its effect is limited. Instead, this new technology is like using a flash light at night and therefore more useful," explains Cheon.

Beyond cancer diagnosis, the Nano MRI Lamp can, in principle, be applied to investigate a variety of biological events, such as enzymolysis, pH variation, protein-protein interactions, etc. IBS scientists expect that it would be useful for both in vitro and in vivo diagnostics.

"Although we still have a long way to go, we established the principle and believe that the MRET and Nano MRI Lamp can serve as a novel sensing principle to augment the exploration of a wide range of biological systems," says Cheon. MEH

Siemens, KinetiCor co-develop in-bore camera for motion correction in neurological MRI images

Siemens Healthineers and KinetiCor presented the results of their agreement to co-develop technologies for patient monitoring and correction of patient motion in MRI exams at the 26th Annual Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM) in Paris (June 16 – 21, 2018). The collaboration involves the joint development of an MRI in-bore camera system to expand precision medicine. The Kinetic Sensor, an integral part of Siemens Healthineers BioMatrix technology and of the new 1.5 Tesla MRI scanner Magnetom Sola and of the 3T Magnetom Vida system, is the first ever in-bore, real-time patient viewing system, allowing close patient monitoring and prospective motion correction for neurological MRI exams.

The new in-bore camera system helps to significantly reduce motion-related artifacts in MR imaging, enabling diagnostic imaging in the presence of motion, and may help reduce the need for sedation for children and adults who are less able to stay still in the MRI scanner. The sensor employs a 4-camera system which tracks every movement of the patient's head in the scanner.

Real-time motion information from KinetiCor's camera, used in combination with Siemens Healthineers MR pulse sequences with integrated prospective motion correction technologies, enables the imaging to continually adapt to the patient's movements. The resulting product is the new BioMatrix Kinetic Sensor on the latest scanner generation of Siemens Healthineers.

Hawaii Diagnostic Radiology Services, USA, is one of several sites where the Kinetic Sensor is currently employed for research purposes. According to Marshall Miyoshi, HDRS Chief Operating Officer: "The Kinetic Sensor, unlike current motion correction techniques, uses an innovative approach to track motion and correct it in real time. This produces a dramatic improvement in image quality, reducing motion artifacts and providing clearer visualization of the brain with negligible impact on MR technician workflows." MEH

Effects of Eucarbon® tablets on the markers of inflammation and metabolic profile in elderly patients with metabolic syndrome

Eucarbon® for Metabolic Syndrome – Pilot study 2016/2017
Country: Ukraine
Number of patients: 15

Eucarbon® is known for more than 100 years for its original formula which contains only herbal and natural active ingredients. It is a combination of the two anthranoid drugs *folium sennae* and *extractum rhei* (senna and rhubarb), sulfur deparatum (purified sulfur) and the mild adsorbent vegetable charcoal (carbo ligni). Eucarbon® stimulates the entire digestive system, increases colonic motility, yields a mild laxative and spasmolytic effect, and relieves gas pain. It can thus be regarded as a natural intestinal regulator and a detoxifying agent (mild adsorbent).

In multiple clinical studies the efficiency, the safety and the clinical benefits of Eucarbon® tablets were evaluated and proven. Especially the adsorbent activity and detoxifying effect of carbo ligni has been extensively studied in in-vivo studies with various study groups during the last 30 years. It could be demonstrated that carbo ligni adsorbs many chemical entities but does not inhibit the release and properties of the anthraquinone glycosides from Eucarbon® [1-5].

The Metabolic Syndrome

The metabolic syndrome is considered a complex of clinical features driven by a combination of factors including impaired fat accumulation, insulin action and immunity. Its presence leads to an increased risk for cardiovascular disease and type 2 diabetes mellitus in both sexes. Visceral obesity and insulin resistance are considered some of the main factors determining the negative cardiovascular profile in metabolic syndrome[6,8].

A Public Health Challenge

The worldwide prevalence of metabolic syndrome among elderly people is continuously on the rise and represents one of the major public health challenges. The presence of low grade chronic inflammation is proven to be one of its underlying causing factors[7].

Influencing Factors

Obesity

Findings suggest a close linkage between obesity and the presence of low grade chronic inflammation in the adipose tissue which encourages the development of metabolic abnormalities.

Discoveries show that the adipose tissue plays an important role as an active endocrine organ which influences the regulation of metabolism, energy intake, and fat storage in the human body.

The cellular profile and the metabolic role of the adipocyte changes with increasing obesity as the adipose tissue progressively enlarges. As a result, the adipocyte produces a higher concentration of several proinflammatory factors including TNF-alpha as well as interleukin-6 (IL-6)[13-14], [16-17].

Gut microbiome

The gut microbiome further influences metabolic actions through a molecular crosstalk. A gut microbiota is involved in processes concerning the energy homeostasis and in the stimulation of immunity in the host's body.

Alterations in the intestinal microbial composition can result in elevated levels of low-grade inflammation which can change the symbiotic interaction between the gut bacteria and the host. This makes the host susceptible to the development of metabolic disorders[9-11].

Tumor Necrosis Factor-Alpha (TNF-alpha)

TNF-alpha is a pro-inflammatory cytokine (signaling molecules in immune responses) that is associated with the adipocyte dysregulation in metabolic syndrome.

TNF-alpha enhances the synthesis of other inflammatory cytokines like IL-6 while inhibiting the secretion of anti-inflammatory cytokines like adiponectin.

Patients suffering from obesity secrete higher levels of TNF-alpha and it is therefore considered as (1) an indicator for low grade chronic inflammation in the body, and (2) a significant risk factor for the metabolic syndrome[18].

Evidence suggests that TNF-alpha promotes insulin resistance or an impairment of the insulin signaling pathway which encourages the development of long-term metabolic abnormalities such as diabetes mellitus type 2. Some studies demonstrated that obese people exhibit higher concentrations of TNF- alpha as compared to non-obese[19].

To demonstrate the efficacy of Eucarbon® tablets on markers of inflammation and metabolic profile in elderly patients with metabolic syndrome, a pilot study was established.

Aim of the Study

The purpose of the reported study was to determine whether Eucarbon® tablets cause a normalization of the intestinal motility and a reduction in the number of intestinal toxic substances. It was further questioned whether Eucarbon® leads to an improvement in the metabolic profile as well as the inflammatory state in elderly probands.

Patients

A total of 15 elderly patients (the mean age was 67,2 ± 1,6 years) were investigated.

The main inclusion criterion was the presence of metabolic syndrome defined as a subject presenting at least 3 of 5 factors described by the International Diabetic Federation (IDF)[12].

Parameter

Serum-TNF-alpha was measured and used as a biological parameter (amongst others) to assess the status of the proband's metabolic as well as inflammatory profile throughout the study.

Dosage

In the present study Eucarbon® tablets were administered for two weeks per every month during six months. The dose of Eucarbon® was established individually and dependent of bowel movement frequency.

Results

Reduction of pro-inflammatory cytokines

The initial TNF-alpha values were within normal ranges. Yet there was a marked and continuous decline in TNF-alpha from screening to visit 3 after 6 months (from 3,9 ± 0,40 to 1,22 ± 0,3 pg/mL; p< 0,00001). This result could potentially mean that Eucarbon® can have beneficial effects on the metabolic profile of the patients observed.

No change in microbiota

The administration of Eucarbon® for 6 months did not modify the microbiota composition of the elderly patients.

Positive influence on lipid metabolism

However, Eucarbon® intake had a positive dose-dependent influence on lipid metabolism (HDL-C changes) and metabolic markers (metabolic age), implying potential additional areas of application for Eucarbon® besides its well-known laxative, intestinal regulating, and detoxifying potential.

Conclusion

The researchers of this study conclude that Eucarbon® has a good tolerance and suggest that the administration of Eucarbon® makes the ground for the routine use in the clinical practice for elderly patients with metabolic syndrome and chronic constipation. However, further clinical studies and investigations are regarded as necessary to substantiate these findings.

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References

[1] Breier H.Clinical evalutation of Eucarbon®. Biomed.1981; 181; 6: 22-24

[2] Hübner WD, Alken RG.Treatment of patients suffering from constipation with Eucarbon® tablets. Modern Medicine. 2004; 21: 36 – 40

[3] Kairbekov AK, Kaliyeva MM, Baizhigitova NB, Ordakhanova MI. Clinical efficancy and safety of Eucarbon® combined drug in patients with chronic constipation. *Middle East Health* .2016, 44-45

[4] Machavariani A, Maisaia K, Kekelidze N, Schoshiasvili T, Mamulashvili M. Use of Eucarbon® for the treatment of patients suffering from irritable colon syndrome and from constipation.
Modern Medicine. 2003; 20: 1

[5] Schmidbauer CP, Schuster FX. Clearance of the intestine before uroradiology and urosonography-a clinical trial of Eucarbon®. BioMed. 1985; 10: 36-37

[6] M. P. Stern, K. Williams, C. González-Villalpando, K. J. Hunt, and S. M. Haffner, "Does the metabolic-syndrome improve identification of individuals at risk of type 2 diabetes and/or cardiovascular disease?" Diabetes Care, vol. 27, no. 11, pp. 2676–2681, 2004.

[7] Kuk JL, Ardern CI. Age and Sex Differences in the Clustering of Metabolic Syndrome Factors. Association with mortality risk. Diabetes Care. 2010; 33(11): 2457–2461.

[8] Popa C, Netea MG, van Riel PLC M et al. The role of TNF-αin chronic inflammatory conditions, intermediary metabolism, and cardiovascular risk.
The Journal of Lipid Research. 2007; 48: 751-762.

[9] Turnbaugh PJ, Ley RE, Mahowald MA, Magrini V, Mardis ER, Gordon JI.
An obesity-associated gut microbiome with increased capacity for energy harvest. Nature. 2006; 444:1027–31.

[10] Krajmalnik-Brown R, Ilhan ZE, Kang DW, DiBaise JK. Effects of gut microbes on nutrient absorption and energy regulation. Nutr Clin Pract.
2012; 27:201–14.

[11] Turnbaugh PJ, Hamady M, Yatsunenko T, Cantarel BL, Duncan A, Ley RE et al. A core gut microbiome in obese and lean twins. Nature.
2009; 457:480–4.

[12] The IDF consensus worldwide definition of the metabolic syndrome. International Diabetes Federation. 2006.

[13] Hotamisligil GS, Shargill NS, Spiegelman BM. Adipose expression of tumor necrosis factor-alpha: direct role in obesity-linked insulin resistance. Science1993; 259: 87–91.

[14] Samad F, Yamamoto K, Pandey M, Loskutoff DJ. Elevated expression of transforming growth factor-beta in adipose tissue from obese mice. Mol Med1997; 3: 37–48.

[15] Sartipy P, Loskutoff DJ.Monocyte chemoattractant protein 1 in obesity and insulin resistance. Proc Natl Acad Sci U S A 2003; 100: 7265–70.

[16] Horowitz JF, Klein S.Whole body and abdominal lipolytic sensitivity to epinephrine is suppressed in upper body obese women. Am J Physiol Endocrinol Metab2000; 278: E1144–52.

[17] HorowitzJF, CoppackSW, ParamoreD, CryerPE, ZhaoG, Klein S.
Effect of short-term fasting on lipid kinetics in lean and obese women. Am J Physio 1999; 276: E278–84.

[18] J. B. Prins, C. U. Niesler, C. M. Winterford et al., "Tumor necrosis factor-αinduces apoptosis of human adipose cells," Diabetes, vol. 46, no. 12, pp. 1939–1944, 1997.

[19] G. S. Hotamisligil, P. Peraldi, A. Budavari, R. Ellis, M. F. White, and B. M. Spiegelman, "IRS-1-mediated inhibition of insulin receptor tyrosine kinase activity in TNF-αand obesity-induced insulin resistance," Science, vol. 271, no. 5249, pp. 665–668, 1996. MEH

WHO/L. Cipriani

World Health Assembly agrees ambitious 'triple billion' target to save 29 million lives

The World Health Organization's (WHO's) 71st annual World Health Assembly took place from 21 to 26 May 2018 at the Palais des Nations in Geneva, Switzerland. It was attended by nearly 4000 delegates from WHO's 194 Member States and partner organizations. Several key issues affecting global public health were discussed and endorsed by the Assembly, WHO's highest decision-making body. *Middle East Health* reports.

Speaking ahead of the opening of the World Health Assembly, Dr Tedros Adhanom Ghebreyesus, WHO Director-General, said: "This is a pivotal health Assembly. On the occasion of WHO's 70th anniversary, we are celebrating 7 decades of public health progress that have added 25 years to global life expectancy, saved millions of children's lives, and made huge inroads into eradicating deadly diseases such as smallpox and, soon, polio.

"But the latest edition of the World Health Statistics shows just how far we still have to go. Too many people are still

WHO launches Global Action Plan on Physical Activity

On 4 June WHO Director-General Dr Tedros Adhanom Ghebreyesus joined Prime Minister António Costa of Portugal to launch the new "WHO Global action plan on physical activity and health 2018-2030: More active people for a healthier world."

"Being active is critical for health. But in our modern world, this is becoming more and more of a challenge, largely because our cities and communities aren't designed in the right ways," said Dr Tedros. "We need leaders at all levels to help people to take the healthier step. This works best at city level, where most responsibility lies for creating healthier spaces."

Worldwide, one in five adults, and four out of five adolescents (11-17 years), do not do enough physical activity. Girls, women, older adults, poorer people, people with disabilities and chronic diseases, marginalized populations, and indigenous people have fewer opportunities to be active.

Regular physical activity is key to preventing and treating noncommunicable diseases (NCDs) such as heart disease, stroke, diabetes and breast and colon cancer. NCDs are responsible for 71% of all deaths globally, including for the deaths of 15 million people per year aged 30 to 70.

The action plan shows how countries can reduce physical inactivity in adults and adolescents by 15% by 2030. It recommends a set of 20 policy areas, which combined, aim to create more active societies through improving the environments and opportunities for people of all ages and abilities to do more walking, cycling, sport, active recreation, dance and play.

It also calls for support to, for example, training of health care workers and other professionals, stronger data systems, as well as use of digital technologies.

Dr Tedros added: "You don't need to be a professional athlete to choose to be active. Taking the stairs instead of the elevator makes a difference. Or walking or using the bike instead of driving to your neighbourhood bakery. It's the choices we make each and every day that can keep us healthy. Leaders must help make these choices the easy ones."

To support national efforts to implement the plan, WHO is launching an advocacy campaign to promote physical activity, *Let's Be Active: Everyone, Everywhere, Everyday*. This new drive aims to encourage governments and city authorities to make it easier for people to be more physically active, and healthier.

It follows the first *WHO Walk the Talk: The Health for All Challenge* event that attracted more than 4000 people to promote movement and activity for health on 20 May in Geneva, on the eve of the World Health Assembly.

Physical inactivity is more than a health challenge: the financial costs are also enormous. Globally, physical inactivity is estimated to cost US$54 billion in direct health care, of which 57% is incurred by the public sector and an additional US$14 billion is attributable to lost productivity.

World leaders will meet later this year to take action on physical inactivity and other causes of NCDs, and mental disorders, when they take part in the Third United Nations General Assembly High-level Meeting on NCDs, being held on 27 September in New York.

on the WEB WHO – Let's Be Active
www.who.int/ncds/prevention/physical-activity/gappa

WHA endorses Action Plan

Member States endorsed the WHO Global Action Plan on Physical Activity (GAPPA), a new initiative aimed at increasing participation in physical activity by people of all ages and ability to promote health and beat noncommunicable diseases, including heart disease, stroke, diabetes and breast and colon cancer, and support improved mental health and quality of life.

GAPPA provides countries with a prioritized list of policy actions to address the multiple cultural, environmental and individual determinants of physical inactivity. These actions are connected to four objectives that focus on creating active societies, environments, active people and active systems. The plan's goal is a 15% reduction in the global prevalence of physical inactivity in adults and in adolescents by 2030.

dying of preventable diseases, too many people are being pushed into poverty to pay for health care out of their own pockets and too many people are unable to get the health services they need. This is unacceptable," he emphasised.

In response to these challenges, Dr Tedros noted: "We are transforming how we work to achieve our vision of a world in which health is a right for all. We are changing the way we do business," Dr Tedros said.

Delegates agree new five-year strategic plan

World Health Assembly delegates agreed an ambitious new strategic plan for the next five years. The Organization's 13th General Programme of Work (GPW) is designed to help the world achieve the Sustainable Development Goals – with a particular focus on SDG3: ensuring healthy lives and promoting wellbeing for all at all ages by 2030.

It sets three targets: to ensure that by 2023, 1 billion more people benefit from universal health coverage; 1 billion more people are better protected from health emergencies; and 1 billion more people en-

joy better health and wellbeing. WHO estimates that achieving this "triple billion" target could save 29 million lives.

Speaking to the Health Assembly, Dr Tedros told delegates that the new strategic plan was ambitious because "it must be".

Delegates noted that the Organization will need to make a number of strategic shifts in order to achieve these targets, notably to step up its public health leadership; focus on impact in countries; and ensure that people can access authoritative and strategic information on matters that affect people's health.

Dr Tedros Adhanom Ghebreyesus, WHO Director-General.

Key issues

Following is a brief overview of some of the key issues discussed and endorsed at the 71st World Health Assembly.

Health conditions in the occupied Palestinian territory

The Health Assembly discussed the health conditions in the occupied Palestinian territory including east Jerusalem, and the occupied Syrian Golan. Delegates reaffirmed the need for full coverage of health services, recognizing that the acute shortage of financial and medical resources is jeopardizing access of the population to curative and preventive services.

They agreed to ask the Director-General to provide support to the Palestinian health services, including through capacity-building programmes and the development of strategic plans for investments in specific treatment and diagnostic capacities locally. They also requested support for the development of the health system in the occupied Palestinian territory, including east Jerusalem, and for health-related technical assistance to the Syrian population in the occupied Syrian Golan.

Noncommunicable diseases

Health Assembly delegates called for stepped up action in the global fight to beat noncommunicable diseases (NCDs), including urging for participation by heads of state and government at the Third United Nations General Assembly High-level Meeting on the Prevention and Control of NCDs on 27 September 2018.

Member States reiterated that the international community has committed, in line with the Sustainable Development Goals (SDG), to reduce by one-third by 2030 premature deaths from NCDs, primarily cardiovascular disease, cancers, diabetes and chronic respiratory diseases, and to promote mental health and wellbeing. Each year, 15 million people aged 30 to 70 years die from an NCD and the current levels of decline in risk of premature death from NCDs are insufficient to meet the SDG NCD target.

The Assembly recognized that enhanced political leadership is needed to accelerate prevention and control of NCDs, such as by implementing cost-effective and feasible "best buys" and other recommended interventions to prevent and control NCDs. These measures include actions to reduce the main disease risks, namely tobacco use, physical inactivity, harmful use of alcohol and unhealthy diets, as well as air pollution. Health systems must be strengthened by implementing effective measures that better detect people at risk of NCDs and providing drug therapies and services to reduce deaths from heart attacks, stroke and diabetes. Prevention and management of mental disorders also requires urgent action.

Polio transition

Delegates considered WHO's 5-year strategic action plan on polio transition designed to strengthen country health systems impacted by the scaling down and eventual closure of the Global Polio Eradication Initiative (GPEI). The strategic plan was based on the priorities of the national government transition plans, and developed in close collaboration with WHO regional and country offices. The implementation of the plan will require coordination with all country-level and global partners. The plan complements the Africa Immunization Business Case to strengthen immunization systems in the African continent, and also the significant progress made in the integration of the polio functions in the Southeast Asian Region.

The strategy supports country ownership of essential polio functions like surveil-

lance, laboratory networks, and some core infrastructure that are needed to (i) sustain a polio-free world after eradication of polio virus; (ii) strengthen immunization systems, including surveillance for vaccine-preventable diseases; and (iii) strengthen emergency preparedness, detection and response capacity to ensure full implementation of the International Health Regulations. WHO said it is commited to continue providing technical assistance and resource mobilization support to countries engaged in polio transition.

Delegates noted the importance of integrating essential polio functions into national health systems. They proposed that this plan be a "living document" and be revised based on the development of the Programme Budget for 2020-21, and requested an updated report for the 144th Executive Board and the 172nd WHA.

Tuberculosis

Delegates agreed on a resolution urging the WHO Director-General, Member States and partners to continue support to preparations for the high-level meeting of the UN General Assembly on ending tuberculosis in September this year.

The resolution also commits Member States to accelerate their actions to end TB, building on the commitments of the WHO Global Ministerial Conference on Ending TB, held in Moscow in November 2017. It welcomes WHO's efforts to develop a multisectoral accountability framework towards ending TB, and requests the Secretariat to develop a new global strategy for TB research and innovation and supports next steps in its development and use.

Current efforts to implement the World Health Assembly-approved End TB Strategy and to meet the SDG target of ending TB are currently falling short. TB claimed 1.7 million lives in 2016 worldwide, including 0.4 million among people with HIV. TB remains the leading infectious disease killer in the world and is one of the top ten global causes of death. It is hoped that the September meeting will prompt a renewal of high-level political commitment to accelerate action to end TB.

Cholera

Delegates endorsed a resolution urging cholera-affected countries to implement a roadmap that aims to reduce deaths from the disease by 90% by 2030. The resolution also urges WHO to increase its capacity to support countries fighting the disease; strengthen surveillance and reporting of cholera; and reinforce its leadership and coordination of global prevention and control efforts.

Cholera kills an estimated 95,000 people and affects 2.9 million more every year, disproportionally impacting communities already burdened by conflict, lack of infrastructure, poor health systems and malnutrition. Over 2 billion people worldwide still lack access to safe water and are at potential risk of the disease.

'Ending Cholera: A Global Roadmap to 2030' was launched last year by the Global Task Force on Cholera Control (GTFCC) and underscores the need for a coordinated approach to combat the disease with country-level planning for early detection and response to outbreaks, and long-term preventive water, sanitation and hygiene (WaSH) interventions.

Independent Oversight and Advisory Committee Report

Delegates also discussed a report from the Independent Oversight and Advisory Committee for WHO's Health Emergencies (WHE) Programme. The committee said the new programme had put in place the basic structures and systems to guard against the sort of catastrophic failure that occurred with the West Africa Ebola outbreak in 2014-2015, and had brought improved speed and predictability to WHO's work in emergencies.

The committee, which was established following the West Africa outbreak, said that over the last two years, the programme had demonstrated its importance in stopping the spread of infectious pathogens beyond national boundaries, and leading the health response in numerous humanitarian crises. It noted, however, that further progress was still needed.

Access to medicines and vaccines

Delegates asked WHO to elaborate a five-year roadmap to address the global shortage of, and access to, medicines and vaccines, to be presented to the Health Assembly in 2019. Improving access to safe, effective, affordable medicines, vaccines and other health products is key to achieving universal health coverage, and is one of the targets of the Sustainable Development Goals.

> We are transforming how we work to achieve our vision of a world in which health is a right for all. We are changing the way we do business.

Access to essential medicines and other health products was until recently viewed as a challenge predominantly faced by lower income countries. But rising costs of new medicines has put pressure on the ability of all health systems to provide affordable access. Increasing numbers of substandard and falsified medical products further affect access to safe and effective medicines and vaccines. In addition, problems such as antimicrobial resistance and opioid misuse highlight the need to improve appropriate use of medicines.

Digital health

Recognizing the potential of digital technologies to play a major role in improving public health, delegates agreed on a resolution on digital health. The resolution urges Member States to prioritize the development and greater use of digital technologies in health as a means of promoting Universal Health Coverage and advancing the Sustainable Development Goals.

It requests that WHO develop a global strategy on digital health and supports the scale-up of these technologies in countries by providing technical assistance and normative guidance, monitoring trends and promoting best practices to improve access to health services.

The resolution also asks Member States to identify priority areas in which they

> Too many people are still dying of preventable diseases, too many people are being pushed into poverty to pay for health care out of their own pockets and too many people are unable to get the health services they need. This is unacceptable.

would benefit from WHO assistance, such as implementation, evaluation and scale up of digital health services and applications, data security, ethical and legal issues. Examples of existing digital health technologies include systems that track disease outbreaks by using "crowdsourcing" or community reporting; and mobile phone text messages for positive behaviour change for prevention and management of diseases like diabetes.

Pandemic Influenza Framework (PIP) Framework

Delegates considered the report by the Director-General on progress to implement decision WHA70(10) on Review of the Pandemic Influenza Preparedness Framework. The Health Assembly approved all the recommendations in the Director-General's report but requested that the final text of the analysis requested in decision WHA70(10)8b, be submitted to WHA 2019 rather than WHA 2020.

The Pandemic Influenza Preparedness (PIP) Framework brings together Member States, industry, other stakeholders, and WHO to implement an innovative global approach to pandemic influenza preparedness and response. It was adopted by Member States during the World Health Assembly in 2011.

A key principle in the PIP Framework is that fairness and equity must continue to drive global work to prepare for a pandemic response. Thus, the PIP Framework has two objectives: to strengthen the sharing of influenza viruses with pandemic potential and increase access of developing countries to pandemic vaccines, antiviral medicines and other essential response products.

International Health Regulations

Delegates welcomed a proposed five-year global strategic plan to improve public health preparedness and response, through implementation of the International Health Regulations.

WHO, World Bank Group set up Global Preparedness Monitoring Board

The World Health Organization (WHO) and World Bank Group on 24 May launched a new mechanism to strengthen global health security through stringent independent monitoring and regular reporting of preparedness to tackle outbreaks, pandemics, and other emergencies with health consequences.

WHO Director-General Dr Tedros Adhanom Ghebreyesus and World Bank Group President Dr Jim Yong Kim co-led the creation of the Global Preparedness Monitoring Board (GPMB), which was launched on the margins of the 71st Session of the World Health Assembly.

The Board will be co-chaired by Dr Gro Harlem Brundtland, former Prime Minister of Norway and former WHO Director-General, and Elhadj As Sy, Secretary General of the International Federation of the Red Cross and Red Crescent Societies. It will include political leaders, heads of UN agencies and world-class health experts, serving in their individual, independent capacities.

"The ongoing Ebola outbreak in the Democratic Republic of the Congo is a stark reminder that outbreaks can happen anywhere, at any time," said Dr Tedros.

"Part of being prepared is having a means of assessing progress made at all levels, by all actors, identifying gaps, including in financing, and making sure all actors are working together, pulling in the same direction. I'm proud of the work we've done together with the World Bank Group to establish the Global Preparedness Monitoring Board, and delighted that it will be led by such exceptional global health leaders," he added.

Dr Kim said: "For too long, we have allowed a cycle of panic and neglect when it comes to pandemics: we ramp up efforts when there's a serious threat, then quickly forget about them when the threat subsides. With the GPMB, we're taking a large step towards breaking that cycle. The GPMB will help save lives, prevent economic damage, and ensure that we keep pandemic preparedness at the top of the global agenda."

Sy said: "Pandemic preparedness must be as much local as global, and we must meaningfully engage local communities in preparedness, detection, response and recovery to disease outbreaks. I warmly welcome the launch of this Global Preparedness Monitoring Board, and commit to partner with you all. We all need to be accountable to each other on the promises we make, and the results we achieve."

Board co-chair Dr Brundtland added: "With the current Ebola outbreak in the

Dr Jim Yong Kim, World Bank Group President

Democratic Republic of the Congo reminding all of us of the West African outbreak of 2014-15, the importance of being prepared for and resilient to health crises has never been clearer. Though the last two years of progress in improving capacity to respond to such events is encouraging, gaps remain – and it is time to stop talking about them, and start addressing them. It is in view of this that I welcome the establishment of the new Global Preparedness Monitoring Board and am pleased to be co-chairing it. The Board will monitor preparedness activities on a global scale, and will hold all actors, from private and public sectors, accountable for building essential public health capacities, generating sustainable financing and ensuring that necessary research and development is conducted."

The Board will monitor emergency preparedness across national governments, UN agencies, civil society and the private sector. It will report annually on adequacy of financing, progress on relevant research and development, and the strength of health crisis preparedness at the global, regional and national levels.

Building on that report, the Board will advocate at the highest levels for health crisis preparedness. It will ensure that all stakeholders, at all levels and across all sectors, keep these issues on the political agenda and are held accountable for making the world better prepared to respond to outbreaks and emergencies with health consequences.

The Board's Secretariat will be housed at WHO headquarters in Geneva, Switzerland. MEH

The International Health Regulations (IHR) are an international legal instrument that is binding on 196 countries across the globe, including all WHO Member States of WHO. Their aim is to help the international community prevent and respond to acute public health risks that have the potential to cross borders and threaten people worldwide.

The IHR, which entered into force on 15 June 2007, require countries to report certain disease outbreaks and public health events to WHO. The IHR define the rights and obligations of countries to report public health events, and establish a number of procedures that WHO must follow in its work to uphold global public health security.

In 2017, WHO recorded a total of 418 public health events in its event management system: the initial source in reporting 136 of these was national government agencies, including National IHR Focal Points. The new strategy aims to help countries strengthen the core capacities they need to implement the regulations, including more reporting through IHR. MEH

Collaborative leadership essential to building a world-class healthcare system in the region

By **Dr Stephen Brookes**

Healthcare – arguably the world's largest industry – is undergoing dramatic global transformation, including within the Middle East. The GCC healthcare sector continues to expand to meet the rising demand for care from a growing and ageing population of citizens, residents (and visitors), which is also facing the chronic lifestyle related conditions that pose significant public health challenges, from diabetes to obesity and cardiovascular disease.

But according to Alpen Capital's GCC Healthcare Industry report 2018, the regional industry also faces rising costs and a lack of availability of healthcare professionals – the skilled physicians and nurses who provide the patient care at the heart of the industry.

To this list of skilled professionals, we should add the essential healthcare leaders who are needed to lead the regional industry through its transformation as it continues to build new capacity, shifts the care delivery model to public-private partnerships, focuses on wellness and prevention rather than sickness, and integrates digital technology and other innovations (from automation to Artificial Intelligence) to help improve patient care and safety, whilst managing costs.

Profound transformation in a conservative and sensitive environment such as patient care will always present significant leadership and organisational challenges.

However, leadership is an essential component for success across all healthcare systems, individual institutions and at every departmental level, clinical and administrative, and always with a clear focus on the patient.

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 *leader* leads within a *collective* healthcare system, always putting the patient first.

Healthcare leaders who are unable to adapt to the changing industry needs will continue to face the same difficulties of cost, quality and access, with patients remaining isolated from the leadership decisions and practices. The concept of the patient 'as leader' is already starting to emerge.

Every healthcare system across the world faces the same four major global leadership challenges - 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 healthcare across a range of public/private and hybrid systems; integrating care across diverse primary, secondary and tertiary providers.

These four leadership challenges are the focus of a new MSc International Healthcare Leadership programme delivered in a part-time blended learning format for experienced clinicians and managers already in general management; leaders in healthcare who need to enhance their leadership skills; and managers who need practical preparation before moving into clinical, project, specialist or business leadership positions. It is designed to equip leaders and managers with the latest knowledge and global healthcare best practice, and to help facilitate experienced managers transfer their skills into the healthcare economy, while they continue to work. The flexible study programme can be completed in two years and also includes regular face to face workshops in Dubai.

• **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. MEH

Addressing healthcare challenges through effective partnership

By **Maher Abouzeid**
President & CEO, Eastern Growth Markets at GE Healthcare

In almost any healthcare setting, it's taken for granted that teamwork and collaboration are required to deliver the best medical care.

Think about it. The emergency department, the operating room, intensive care units, and even primary care wellness visits – they all involve at least a handful of professionals working together to serve the patient.

If in a hospital or clinic setting the best outcome is delivered when we start putting the patient at the center of our activities, then it is no surprise that partnerships, teamwork and collaboration are required to address the broad-based healthcare challenges facing the region.

Diverse regional needs

In the GCC, a burgeoning population and the emergence of a middle class has brought new challenges, including an increase in 'lifestyle diseases' ranging from obesity and diabetes to cardiovascular disease and cancer.

Here, there is an urgent need for a sustainable healthcare delivery model in which quality care is delivered while controlling cost. Over the past decade, in efforts to ensure broader access to healthcare, governments have increased healthcare spending from an average of 2% to 4% of GDP. However, improvements in the quality of care have not kept pace and consequently, partnerships between the public and private sector are becoming a necessity now more than ever.

For Lebanon, Jordan and Egypt, where there is a vibrant private sector. Their biggest challenge is securing universal healthcare coverage while managing costs by improving efficiency and productivity. In turn, these cost savings allow them to upgrade their national healthcare infrastructure, keeping up with the latest technology. We have recently observed major interest to invest in Egypt from GCC-based private providers, who are drawn by an expected strong return on investment resulting from high patient flow fueled by the large and growing population of nearly 100 million.

Iraq, Syria and Yemen are in the process of rebuilding their healthcare delivery models, with Iraq leading the way as their Ministry of Health upgrades existing hospitals and purchases services from newly created private providers.

Public-private partnerships

Public-private partnerships (PPPs) are gaining momentum driven by the public sector's need to improve quality of care while managing costs. The private sector is well-equipped to play an active role in transforming healthcare delivery, helping the public sector move away from the costly capital investment model to one in which high quality, efficient healthcare is provided without the large capital cost.

There are several significant PPPs in this region, including an impressive project in Turkey that will see the development of 29 healthcare facilities, including large medical cities. It will add more than 22,000 beds in a program that will see private EPC's fund, build, equip and service these facilities on behalf of the government for a period of more than 20 years. The operators will be paid on a fee-for-service basis combined with meeting other performance criteria.

PPP works best in an environment of transparency and where there is confidence that the projects will run for the long term.

A great example of this transformation is in the Kingdom of Saudi Arabia, where the Ministry of Health is preparing an RFP to partner with the private sector to run radiology departments across their network of hospitals.

Another PPP example, this one in the UAE, involves GE Healthcare and our local partner Abu Dhabi International Medical Services (ADI) managing radiology departments in 12 MoHP hospitals. The project, known as UNISON, is actively revamping service delivery, reducing waiting time and improving patient experience.

Of course, these PPPs, by definition, reflect the need for collaboration and partnership among many players.

Digital transformation

The intersection of healthcare and digital, big data, artificial intelligence, cybersecurity data protection, and the relevant laws and regulations covering the protection and movement of patient information, are the subject of much debate.

Getting the supporting legislation right is essential, because the benefits of digital healthcare are huge.

Initially, healthcare was drawn by the possibility of using big data to improve efficiencies and productivity, and to lower costs. But now, the industry is waking up to the potential of harvesting available data in delivering value-based, outcome-driven care, and shaping the future of personalized medicine and treatment. At a broader level, predictive data analytics have the potential to revolutionize population health management.

A live example is the work that GE Healthcare and Roche Diagnostics have started doing around oncology and personalized medicine, combining the in vivo with in vitro, diagnostic imaging, lab results and genomic sequencing to produce a personalized treatment plan, secure faster clinical outcome, reduce cost and improve patient experience.

From digitizing data to analytics, from value outcomes to bundle pay, from a fully public system to true PPP, there is no doubt that healthcare is witnessing a massive transformation and success is dependent on full partnership and collaboration between all the stakeholders. MEH

Dubai – the emergence of a healthcare hub

The healthcare industry impacts the lives of millions worldwide. Often what distinguishes developed nations from their counterparts is the standard of their healthcare. Dubai Healthcare City is the world's largest healthcare free zone and reflects the tremendous growth the UAE's healthcare sector has experienced over the past decade.

A report published by MENA Research Partners reveals the UAE healthcare sector has grown by 10% a year since 2015 and is projected to be worth over Dh103 billion (US$28 billion) by 2021.

Dubai is also focusing efforts on attracting and hosting medical business events. Arab Health, a homegrown healthcare exhibition that has grown to become one of the world's largest such events, is testament to the growing significance of medical business events. Taking place annually at Dubai World Trade Centre, Arab Health attracts more than 130,000 healthcare professionals from around the world.

With healthcare experts across the region increasingly participating in medical business events, Dubai is well placed to act as a vehicle to attract global business and partnerships. The city is plays an important role in facilitating conversations that are poised to result in major breakthroughs in the healthcare sector.

In 2010, His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai, launched the UAE Vision 2021, aimed to position the UAE among the best countries in the world. Healthcare is a key pillar of UAE's Vision 2021, placing importance on preventive medicine and diminishing lifestyle-related diseases, such as diabetes, cancer and cardiovascular disease. This will to ensure citizens enjoy a longer and healthier life. Long-term initiatives aligned with UAE's Vision 2021, such as accreditation of all public and private hospitals, are being adopted to steer the journey towards the city becoming a major hub for healthcare.

Dubai is also paving the way for medical discoveries that will help shape the city's healthcare offering, as well as the nation's and the region's healthcare systems.

Dubai Plan 2021 is one of the many key initiatives dedicated to the betterment of society and the progress of the population in Dubai. It assesses the living experience of people in the city and its visitors as a result of their interaction with the environment, economic and social services provided. One of its aspirations is to create a more health-conscious population and a strong healthcare system, which will further enhance the quality of life for both residents and tourists within the city.

Issam AbdulRahim Kazim, Chief Executive Officer of Dubai Corporation

To support this ambition, Dubai Healthcare City has committed to becoming an internationally recognised destination of choice for quality healthcare and an integrated centre of excellence for clinical and wellness services, medical education and research. To further shape advances and discoveries in Dubai and the UAE's healthcare sector, Mohammed Bin Rashid University of Medicine and Health Sciences was established on an integrated platform that supports healthcare education, research and clinical practice and aims to become a leading medical and health sciences university.

Dubai Business Events (DBE) – a division of Dubai Tourism and the city's

> We are keen to build on the city's success and provide support in achieving the government's ambition to transform Dubai into a global medical hub by attracting key conferences within the medical sector.

official convention bureau – has been focused on attracting regional and international business events that support Dubai's ambition to become a knowledge economy and an ideal destination to host business events to facilitate global progression across diverse industries, including healthcare and medicine.

Issam Kazim, CEO of Dubai Corporation for Tourism and Commerce Marketing, says: "Over the past decade, Dubai's healthcare offering has evolved tremendously, and the city is home to world-class medical facilities and healthcare experts. We are keen to build on the city's success and provide support in achieving the government's ambition to transform Dubai into a global medical hub by attracting key conferences within the medical sector. Dubai Business Events (DBE) is aligned with local stakeholders and relevant authorities, including the Dubai Health Authority (DHA), to ensure that the medical business events that are being targeted, support their work in bringing significant medical topics to the forefront in an effort to aid discovery and improve the quality of life."

Additionally, through the support of DBE's Al Safeer Ambassador Programme – a network of more than 350 prominent industry experts, including local scientists, healthcare professionals, business people and government officials – members work together to leverage their global connections and influence to bring medical business events, meetings and conferences to Dubai.

Major medical events

In the coming years, Dubai will host a number of significant medical business events, including the Congress of the International Federation of Health Information Management Associations in 2019, the World Down Syndrome Congress in 2020 and the International Conference on Emergency Medicine scheduled for 2021. Upcoming medical business events in Dubai will see thousands of medical professionals from around the world arrive with the sole purpose of discussing breakthroughs and spreading awareness about key medical topics.

Among the major medical business events coming to Dubai in 2018 is the World Congress of Cardiology and Cardiovascular Health, taking place in the city for a second time. Dubai Business Events worked with the Emirates Cardiac Society (ECS) to win a bid to bring the event back to Dubai, with Gulf Heart Association. The congress is expected to attract professional attendees from more than 110 countries, representing not only the fields of cardiology and cardiovascular health, but also areas such as paediatrics, nursing, interventional medicine, nephrology and endocrinology.

Professor Abdullah Shehab, President of the Emirates Cardiac Society, says: "We are honoured to encourage any collaboration that can empower the medical events field in UAE and also be an ambassador for the UAE beyond our borders through our presence at international conferences like the American College of Cardiology Congress and the European Society of Cardiology Congress.

"This event will put Dubai in the spotlight for new innovations in addition to what the society is working on, including events and projects with international associations and societies to highlight the cardiology community in UAE."

Key business events stakeholders in Dubai are gearing up for an influx of medical business events that are set to take place in the city over the next few years. Venues, planners and organisers understand the big impact and are on board with Dubai's strategy to bring healthcare-related events that will support conversations and drive global change.

Mahir Julfar, SVP – Venue Services Management, Dubai World Trade Centre, says: "With over 35-years legacy of driving the region's events sector, Dubai World Trade Centre creates, attracts and grows industry-leading events that aid in the development of business in the region. As Dubai's healthcare industry continues to develop, DWTC will continue to offer a strategic platform for meaningful conversations across this sector, to drive growth and reaffirm Dubai's position as a leading worldwide healthcare destination to do business."

As Dubai progresses towards the UAE Vision 2021, medical business events are set to act as accelerators that will enable industry progression and result in life-saving medical breakthroughs. MEH

A healthcare prescription for the GCC

By **Tristan de Boysson**
Co-head, Corporate Investment – MENA, Investcorp

By **Rabih Khouri**
Managing Director, Corporate Investment – MENA, Investcorp

The healthcare industry across the GCC is in the midst of a transition, one that will help improve the operating environment, reduce costs and increase opportunities across the value chain. However, there are several areas of improvement that need to be addressed for the industry to reach global standards.

Our exposure to and examination of the industry has resulted in identifying four crucial areas of improvement. These are:

(1) Insufficient access

Healthcare supply in the Gulf still lags behind international benchmarks. The number of beds per 1,000 inhabitants ranges between 1.3 to 2.2 in the GCC compared to 2.8 in the US and the UK and 6.2 in France and Germany. The number of nurses per 1,000 inhabitants is only 3.1 in the UAE and 5.2 in Saudi Arabia, compared to the UK and the US which have 8.4 and 9.9 nurses per 1,000 inhabitants, respectively. The healthcare undersupply is even more pronounced for tertiary care hospitals and specialized facilities. There is also a lack of specialized long-term care facilities in the GCC.

(2) Uneven quality

The outcome of care compared with spending in the GCC is below that of equivalent health systems in other regions, according to the Economist Intelligence Unit. Quality of primary and secondary care is uneven, while the quality of tertiary and quaternary care is generally substandard. To compensate for this, GCC governments send many patients abroad for treatment of complex cases, such as oncology and orthopedics.

(3) High costs

Issues of inadequate supply and quality result in unnecessary waste for local governments. Estimates of GCC spending on medical travel, for instance, are as high as $12 billion a year. Similarly, the cost of patients who need long-term care but instead reside in general hospitals is significantly higher than if they were in a longterm care facility. This is a crucial issue, since government budgets are under pressure while demand for healthcare continues to rise.

(4) Funding

GCC governments pay on average for 70% of all healthcare bills and private-sector payers and providers remain relatively underrepresented. Funding this healthcare bill is increasingly challenging in the current environment of lower oil prices and reduced government budgets. Given this "new normal" for the GCC, governments might be tempted to impose a copay so aggressive that it would deprive the public of access to critical services, or to reduce reimbursement rates to institutions, a step that could discourage the kind of investment needed to address gaps in quality and access.

Synthesizing the experience of healthcare providers, payers and regulators both in the region and from more mature markets, we highlight six areas that should be tackled to build scenarios that benefit all participants: payers, providers and patients. These are:

(1) Wellness and prevention

Prevention and early diagnosis are widely recognized as effective levers to reduce healthcare costs and improve clinical outcomes. Today, GCC countries spend only $31 to $131 per capita per year on preventive care, compared to roughly $400 to $500 per capita in Western countries.

Diabetes is an example of a common illness in the GCC that could benefit from prevention and early diagnosis. The cost of treatment of diabetes at a later stage, when complications are more likely, is 18 times higher than early stage treatment.

On wellness and prevention, three priorities emerge for GCC countries:

1. Improve lifestyle and eating habits
2. Promote screening and health checks
3. Foster primary care

(2) Specialization

Generalists dominate across the GCC, with little specialization, medical spe-

cialty or segmentation. Most private hospitals offer secondary care specialists, but few offer the specialized equipment and expertise of a tertiary hospital, or the experimental medicines and procedures and specialized surgeries of quaternary centers. Increased specialization, however, would provide many proven benefits.

On specialization, four priorities emerge for GCC countries:

1. Create payment schemes
2. Foster partnerships with Western institutions
3. Invest in medical cities
4. Limit licenses to generalist hospitals

(3) Consolidation and scale

The private sector remains somewhat fragmented in the GCC. The top five private hospital groups in Saudi, for example, account for just one-fourth of all private beds, and the top five in the UAE make up 40%, while similarly sized Western markets are much more consolidated.

Consolidation can improve quality, as well as reduce cost. The scale of medical facilities operating as centers of excellence permits investment in advanced medical equipment and attraction of high-level medical talent.

The pursuit of scale via expansion or consolidation has commenced in parts of the GCC. This includes the expansion moves of NMC Healthcare, Dr. Sulaiman Al Habib Medical Center and the Saudi German Hospitals group into new geographies, as well as Mediclinic International's acquisition of Al Noor Hospitals Group, Emirates Healthcare Holdings, Dubai Mall Medical Centre, the Meadows clinic and Arabian Ranches clinic in the UAE. Among laboratories, examples include the acquisition of PHD by Al Borg agreement in the UAE.

On consolidation, two priorities emerge for GCC healthcare authorities:

1. Greenlight mergers
2. Increase medical quality standards in areas such as laboratory diagnostics in order to favor and support the emergence of large-scale players

(4) Privatization

All GCC governments are planning a larger role for their private healthcare sector in the future and expect that to improve medical service and reduce costs. The UAE and KSA lead in mandating all private-sector employers to provide private health insurance.

Private players can help public providers and the overall system become more efficient, using techniques already proven, like the outsourcing of non-core medical services such as hospital diagnostic labs and revenue-cycle management services such as billing. Partnerships between private and public providers can also be a powerful way to support privatization.

(5) Incentivization

The fast growth of healthcare costs has led some governments to try value-based care systems designed to align payer and provider interests and motivate good behavior. This is still unexplored in the GCC, but should be a key focus over the next decade.

There are a number of ways by which private insurance payers and regulators can support incentivization.

- Payers can explore and implement more sophisticated incentive payment systems
- Payers and providers can be partially or fully integrated
- Regulators across the GCC should continue their crackdown on unethical practices

(6) Co-operation

In the GCC, attempts to build centers of excellence have had only mixed success so far. Attracting talent is the biggest challenge because no single country has a large enough healthcare system to provide the steady flow of cases that top-quality physicians require. The way to address this is increased cooperation among GCC countries in order to achieve critical mass.

Such a system would require improved physician mobility, which is currently a challenge. Today, physicians get a visa for only one country and then find, for example, that they cannot perform surgery in another GCC state as a visiting doctor.

Another example of fruitful cooperation is ramping up the role of the GCC's pooled purchasing program for medicine, equipment and supplies. The council of GCC health ministers could also make it more efficient by allowing the private sector to play a role.

Joint planning could certainly improve investment in capital-intensive technology. Proton-beam therapy for cancer treatment, for example, is a hugely capital-intensive, expensive technology that targets some, but not all, types of cancer. Several protonbeam therapy centers are due to open across the GCC over the next five years, but only one, in Saudi, is likely to have enough patients to break even.

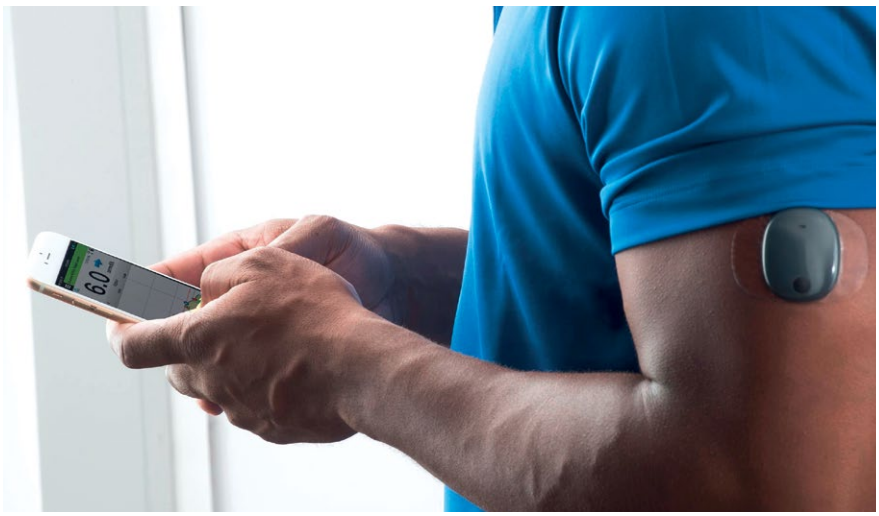
As the GCC undertakes changes in the delivery of healthcare, there are successful models to learn from and great opportunities for progress. Indeed, the countries of the GCC are already carefully examining strategies to address rising health costs and quality concerns. The challenge will be in the internal support behind the reforms, the actual implementation of the reforms as well as the follow through.

Commenting on the white paper, Tristan de Boysson, Co-Head of Corporate Investment for MENA at Investcorp, said: "The GCC healthcare industry is undergoing a much-needed transformation, mainly driven by the pressure on governments to shift the burden of funding to the private sector and the rise of the patient as a 'consumer' of healthcare services. The change is creating plenty of opportunities, and the buildup of a more complete eco-system."

Commenting on the paper, Rabih Khouri, Managing Director, Corporate Investment MENA at Investcorp said: "Encouraging steps have already been taking place to help take the GCC healthcare industry to global standards. The magnitude of the transformation is highest in Saudi Arabia, where new regulations are being prepared as well as a substantial privatization programme. I believe the transformation will considerably raise the standards of healthcare and better meet the population's expectations." MEH

New glucose monitoring system provides up to 90 days continuous monitoring

US company Senseonics has received US FDA approval for their Eversense Continuous Glucose Monitoring (CGM) system. The system is the first and only CGM system to feature an implantable glucose sensor and provide long-term continuous monitoring for up to three months.



The Eversense System addresses many of the barriers to CGM use. The system consists of a fluorescence-based sensor, a smart transmitter worn over the sensor to facilitate data communication, and a mobile app for displaying glucose values, trends and alerts. The sensor, which is inserted subcutaneously in the upper arm by a physician via a brief in-office procedure, lasts up to three months, thereby eliminating the need for patients to self-administer the weekly or biweekly sensor insertions required by traditional CGM systems.

The system's smart transmitter is light, discreet, and comfortable to wear. Interpreting glucose data from the sensor and sending it to the system's mobile application via Bluetooth, the smart transmitter provides on-body vibratory alerts for discretion and added safety, and is the only CGM transmitter that can be removed and recharged without discarding the sensor.

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

Siemens' new Acuson Sequoia ultrasound developed for scanning obese patients

Siemens Healthineers has launched a new ultrasound system, the Acuson Sequoia – a general ultrasound imaging system developed in response to one of the most prevalent challenges in ultrasound imaging today: the imaging of obese patients with consistency and clarity. With its new Deep Abdominal Transducer (DAX), a new high-powered architecture, and innovative updates to elastography and contrast-enhanced ultrasound, the new Acuson Sequoia produces penetration up to 40cm.

The Acuson Sequoia is built to adapt to the "BioAcoustic Variations" of each patient, characteristics that include tissue density, stiffness, and absorption. It provides high-resolution InFocus imaging throughout the entire field of view, from the near field to the far field, in real-time. Therefore, there is no need to adjust the focal point of the scan, resulting in faster scan time without compromising frame rates and resolution.

In addition to increased rates of obesity, prevalence of liver disease is also on the rise. Clinicians utilize ultrasound elastography to determine shear wave speed, a parameter correlated with tissue stiffness in the liver which can correlate to chronic disease progression. Imaging in these patients can be challenging, particularly in larger patients where the signals are attenuated. The power architecture of the new Acuson Sequoia significantly improves the energy capacity available for shear wave elastography, enabling imaging at greater depths and a reduction in image variability.

The BioAcoustic technology of Acuson Sequoia also improves Contrast Enhanced Ultrasound (CEUS) bubble longevity. Contrast enhanced ultrasound uses microbubble-based contrast agents to improve the visualization and assessment of lesions. With the new Acuson Sequoia system, the view time of contrast agents is significantly longer, allowing clinicians more time to scan for additional incidental lesions.

- For more information, visit: *www.siemens-healthineers.com/sequoia*

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To find out more visit **www.okime.ae/dicom**

Words matter: Stigmatizing language in medical records may affect patient care

A Johns Hopkins study found that physicians who use stigmatizing language in their patients' medical records may affect the care those patients get for years to come.

When doctors read notes and descriptions from previous medical visits, says the study, published in the May edition of *The Journal of General Internal Medicine*, the language in those notes may play a role in how that patient is treated, as well as how aggressively the patient's pain is managed.

Mary Catherine Beach, M.D., M.P.H., designed the study to determine whether the language and descriptions used in patient records can perpetuate bias among physicians. More than 400 physicians-in-training – medical students and residents – were presented with one of two vignettes about a hypothetical patient, a 28-year-old man with sickle cell disease and chronic hip pain.

While the vignettes contained medically identical information, one used neutral language to describe the patient and his condition, while the other vignette contained nonessential language that implied various value judgements.

Beach and her research colleagues found that physicians-in-training who read the stigmatizing patient chart notes were significantly more likely to have a negative attitude toward the patient than those who read the chart containing more neutral language.

And not only did their attitudes change – so did their treatment plans. Those physicians-in-training who had read the stigmatizing chart note decided to treat the patient's pain less aggressively.

Every clinician encounter with a patient is documented in a chart note. Symptoms, patient history, vital signs, test results, clinicians' assessments and treatment plans are all part of the medical record.

"This record may be the only source of information a new clinician has about some patients," says Beach. "We have to question the assumption that the medical record always represents an objective space."

The study's participants were introduced to the hypothetical Mr. R., an African-American man whose condition necessitates the use of a wheelchair. Both vignettes begin with Mr. R. visiting the hospital emergency department with a painful condition known as a vaso-occlusive crisis, common among patients with sickle cell disease. Among the standard treatments for this condition are opioids to treat pain and oxygen to combat the effects of sickled red blood cells' inability to oxygenate organs.

Examples of the differing notes on the hypothetical patient

- "He has about 8-10 pain crises a year, for which he typically requires opioid pain medication in the ED."
- "He is narcotic dependent and in our ED frequently."

.....

- "He spent yesterday afternoon with friends and wheeled himself around more than usual, which caused dehydration due to the heat."
- "Yesterday afternoon, he was hanging out with friends outside McDonald's where he wheeled himself around more than usual and got dehydrated due to the heat."

.....

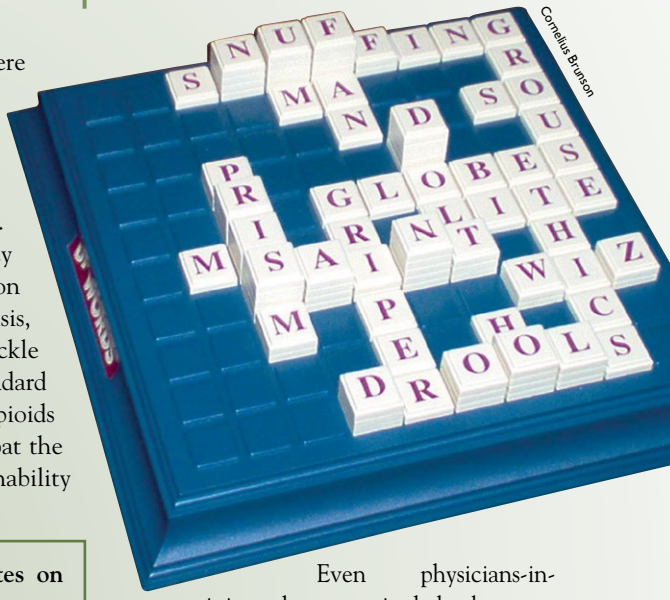
- "The pain is not alleviated by his home pain medication regimen."
- "The pain has not been helped by any of the narcotic medications he says he has already taken."

.....

- "He is in obvious distress."
- "He appears to be in distress."

.....

- "His girlfriend is by his side but will need to go home soon."
- "His girlfriend is lying on the bed with shoes on and requests a bus token to go home."



Even physicians-in-training who recognized the language as stigmatizing were more likely to form more negative opinions about the patient and to treat that patient's pain less aggressively.

"There is growing evidence that the language used to communicate in health care reflects and influences clinician attitudes toward their patients," says Anna Goddu, a Johns Hopkins University School of Medicine student who co-authored the study. "Medical records are an important and overlooked pathway by which bias may be propagated from one clinician to another, further entrenching health care disparities."

Goddu and her co-authors are encouraged by one particular result of the study.

"When prompted, the participants seemed able to reflect on how the words used in the chart notes communicated respect and empathy for the patient," she says. "To us, this seems like a promising point of intervention."

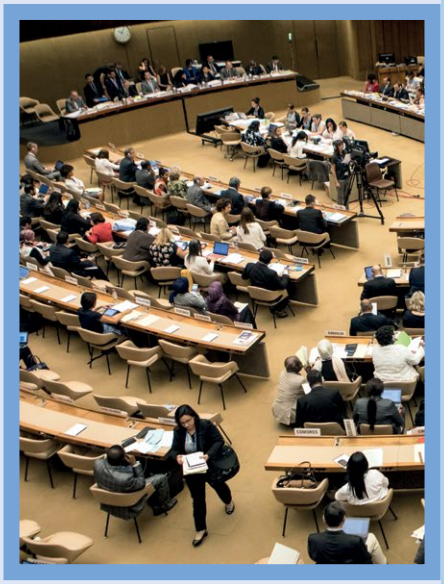
Goddu says that, while the topic deserves more research, she hopes this study opens some eyes.

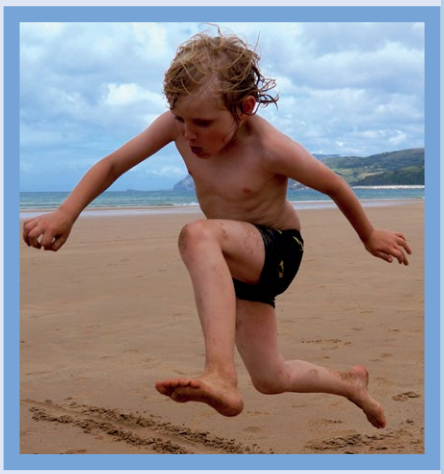
"I hope our study makes clinicians think twice before including certain, nonessential points about a patient's history or demeanour in the medical record," she says. MEH

Agenda

Selected schedule of regional medical meetings, conferences and exhibitions

Event	Date / City	Contact
July 2018		
29th International Conference on Public Mental Health & Neurosciences	16-18 July 2018 Dubai, UAE	*https://mental-health.neurologyconference.com*
22nd World Nutrition and Pediatrics Healthcare Conference	16-18 July 2018 Dubai, UAE	*https://nutrition.pediatricsconferences.com*
August 2018		
Middle East Obesity, Bariatric Surgery and Endocrinology Congress	6-7 August 2017 Abu Dhabi, UAE	*https://obesity-middleeast.conferenceseries.com*
28th International Conference on Cardiology and Healthcare	9-11 August 2017 Abu Dhabi, UAE	*https://healthcare.cardiologymeeting.com*
9th International Conference on Food Safety and Health	30-31 August 2018 Dubai, UAE	*https://foodsafety.nutritionalconference.com*
September 2018		
20th World Conference on Pharmaceutical Chemistry and Drug Design	3-5 September 2018 Dubai, UAE	*https://drug-chemistry.pharmaceuticalconferences.com*
Egy Health Expo	9-12 September, Cairo, Egypt	*www.egyhealthexpo.com*
2nd International Conference on Prevention and Control of Infection	13-15 September 2018, Dubai, UAE	*https://go.evvnt.com/221370-0*
4th International Anesthesia and Pain Medicine Conference	17-18 September 2018 Dubai, UAE	*https://anesthesiology.conferenceseries.com*
1st Emirates Pediatric Hematology & Oncology Conference	21 September 2018, Dubai, UAE	*https://go.evvnt.com/235755-0*
3rd Conference on Breast and Cervical Cancer	27-28 September 2018 Abu Dhabi, UAE	*https://breast-cervical.cancersummit.org*
Fourth Annual MENA International Orthopaedic Congress	27-29 September 2018, Dubai, UAE	*http://www.ptmg.com/meeting-details/-358277*
4th Annual MENA Women's Health Congress	27-29 September 2018 Dubai, UAE	*https://go.evvnt.com/238554-0*
October 2018		
3rd Middle East International Dermatology & Aesthetic Medicine Conference & Exhibition	4-6 October 2018, Dubai, UAE	*www.meidamconf.com*
14th Conference on Infectious Diseases, Prevention and Control	14-15 October 2018, Abu Dhabi, UAE	*https://infectious-diseases.conferenceseries.com*





Agenda

Selected schedule of regional medical meetings, conferences and exhibitions

Event	Date / City	Contact
5th International Conference on Hypertension and Healthcare	18-19 October 2018, Abu Dhabi, UAE	*https://hypertension.cardiologymeeting.com*
Abu Dhabi International Mental Health Conference	19-20 October 2018, Abu Dhabi, UAE	*https://go.evvnt.com/219604-2*
Thyroid Masterclass	19 October 2018 Abu Dhabi, UAE	*http://www.icldc.ae/event/thyroid-masterclass#Home*
AHIMA World Congress (AWC) Healthcare Information Summit	25-26 October 2018, Abu Dhabi, UAE	*https://go.evvnt.com/221370-0*
November 2018		
5th World Holistic Nursing Conference	5-7 November 2018, Abu Dhabi, UAE	*https://holistic.nursingconference.com*
International Patient Experience Symposium	12-14 November 2018, Abu Dhabi, UAE	*https://pxsymposium.com*
7th International Conference on Chronic Obstructive Pulmonary Disease (COPD)	15-16 November 2018, Dubai, UAE	*https://copd.healthconferences.org*
International Paediatric Medical Congress	15-17 November 2018, Dubai, UAE	*https://go.evvnt.com/235756-0*
Advanced Medicine Congress	16 -17 November 2018 Abu Dhabi, UAE	*http://www.icldc.ae/event/advanced-medicine-congress#Home*
December 2018		
12th International Conference on Orthopedics and Sports Medicine	10-11 December 2018, Dubai, UAE	*https://orthopaedics.healthconferences.org*
19th Annual Conference on Inhalation Toxicology	13-14 December 2018, Dubai, UAE	*https://inhalationtoxicology.conferenceseries.com*
13th Annual Conference on Dementia and Alzheimer's Disease	13-15 December 2018, Abu Dhabi, UAE	*https://dementia.neuroconferences.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*

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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.

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