Middle East HEALTH

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November-December 2015

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Global health targets

Health is a key part of 2030 UN Sustainable Development Goals

Malaria reduction a major success of Millennium Development Goals

Medical travel

Turkey aims to become major player in lucrative health tourism market

Oncology research

Virus common in cattle linked to breast cancer

In the News:

- Three researchers share Nobel Prize for Medicine
- Johns Hopkins, Mayo experts suggest upgrades to heart disease guidelines
- Insomnia ranks 2nd after cold as most common health complaint internationally
- Three antibiotics in combination shown to kill MRSA

Bahrain BD3, **Egypt** £E40, **Iran** IRR75, **Iraq** IQD9,400, **Jordan** JD5, **Kuwait** KD3, **Lebanon** LBP12,000, **Oman** RO3, **Qatar** QR30, **Saudi Arabia** SR30, **Syria** £S400, **UAE** Dh30, **Yemen** YR1,600

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Prognosis

Sustainable Development Goals

This year the ambitious Millennium Development Goals end their 15-year run. In 2000 when these goals were drawn up at the UN Millennium Summit they appeared almost unachievable, yet now several of them have been met or exceeded. The reduction in malaria is perhaps the best example of success, with malaria death rates plunging by 60% since 2000. As Dr Margaret Chan, Director-General of WHO, put it – it's a sign that these strategies are on target.

Following on from the MDGs, the UN has developed a new set of targets – the Sustainable Development Goals (or SDGs) to be achieved by 2030. These now also seem incredibly ambitious and include achieving universal health coverage, reducing death from air, water and soil pollution, among others. It will be fascinating to follow the road that international and national organisations take to achieving these. Read the report on page 34.

Along with this issue, we include our annual supplement showcasing leading hospitals in the United States, where they report on their initiatives to attract and treat patients from the Middle East. They offer some of the most cutting edge treatments in the world and in many cases lead the way in medical research.

Also in this issue we publish a number of important news reports – such as the dire situation in Yemen and Syria, the winners of the Nobel Prize for Medicine and World Mental Health Day.

In our medical research news section, we report on a potentially groundbreaking finding by researchers at UC Berkeley. They have linked bovine leukaemia virus (BLV), a cancer-causing virus prevalent in cattle, with human breast cancer. They note that if BLV were proven to be a cause of breast cancer, it could change the way we currently look at breast cancer control.

As usual you will find more news, reviews and interviews in this issue.

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

Middle East Health website
www.MiddleEastHealthMag.com

ATLAS Print

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

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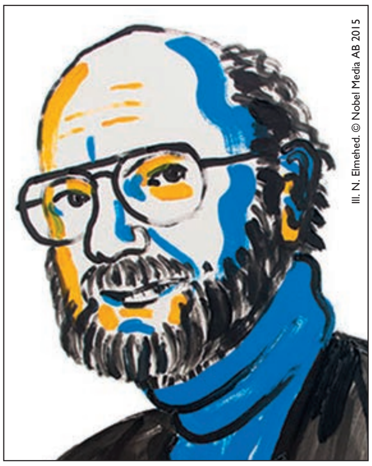

William C. Campbell – Research Fellow Emeritus at Drew University, Madison, NJ, USA

Satoshi Omura – Professor Emeritus at Kitasato University, Tokyo, Japan

Youyou Tu – Chief Professor at the China Academy of Traditional Chinese Medicine, Beijing, China

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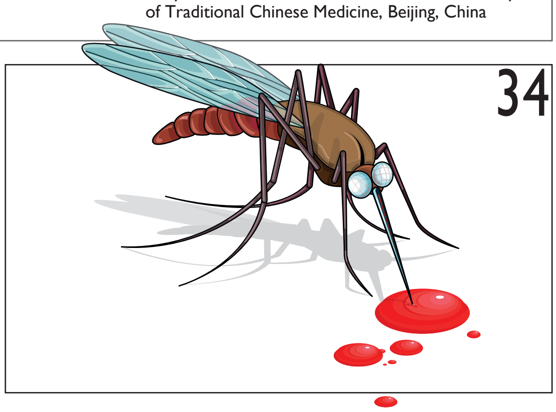

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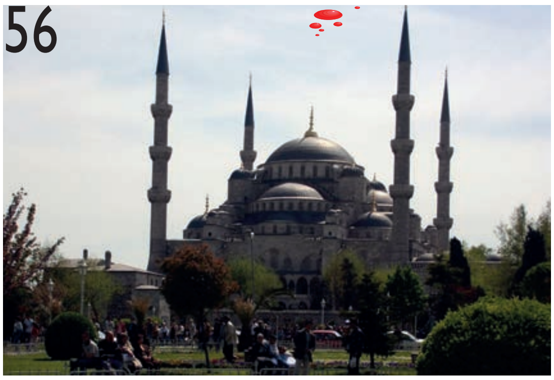

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middle east monitor

Update from around the region

WHO work in Syria continues amid conflict and lack of funds

Since armed unrest erupted more than 4 years ago in Syria, resulting in huge movements of the population inside the country and spilling into neighbouring countries, WHO has taken a lead role – one that continues in the face of crippling funding shortfalls – to support the displaced.

WHO staff have been working to ensure that:

- life-saving medicines and medical supplies reach Syrians and the region's host populations and governments;
- technical assistance is given to the region's ministries of health, with healthcare workers being trained;
- mass vaccination campaigns are supported; and
- the ability to monitor outbreaks of communicable diseases is boosted.

The numbers are overwhelming: Inside Syria, the conflict, now a civil war – has left 12.2 million people in need of humanitarian assistance, with more than 7.6 million of them internally displaced, according to UNHCR.

More than 4 million Syrians are registered as refugees and are living outside their country, the refugee agency has reported. The 1.1 million Syrians now living in Lebanon represent a third of that country's population. In Jordan, some 600,000 Syrians have found refuge.

"The magnitude of needs continues to escalate," said Dr Nada Al Ward, coordinator of WHO's Emergency Support Team based in Amman. "More than 4 years on and we're seeing the same urgent health needs we saw in 2011, but on a much larger scale – trauma cases, severe mental health needs, communicable and non-communicable diseases, reproductive health issues. More needs to be responded to, despite the challenges."

Though intense fighting and shifting zones of conflict have hindered the ability of health workers to reach some areas, WHO has nevertheless enabled the medical treatment of more than 13.8 million people this year across Syria. Those efforts have included the provision of medical care and life-saving equipment and supplies to such hard-to-reach areas as Aleppo, Ar-Raqqah, Dara'a, Deir ez-Zor and Idleb.

Services provided have included medical consultations, trauma management and general surgeries, regular and caesarean deliveries, eye surgeries, heart catheterization and x-ray and laboratory services through WHO mobile clinics.

WHO cross-border activities from hubs in Turkey and Jordan have increased the organization's assistance to populations in need in Syria.

"Cross-border activities complement WHO efforts inside Syria and target vulnerable communities in the north and south of the country," said Dr Al Ward. "Through this mechanism and UN interagency convoys, we are able to reach even more Syrians in need."

WHO has also been supporting the ministries of health of Jordan and Lebanon to ensure adequate and equitable health care service provision for both Syrian refugees and their host communities. This year, more than 700,000 Syrians were provided with healthcare consultations in Lebanon. In the first 6 months of 2015, more than 34 ,000 Syrian children in Jordan were vaccinated against polio and measles, and more than 46,000 Syrians received secondary mental healthcare consultations. WHO continues to support the provision of medications to treat non-communicable diseases such as cancer, diabetes and hypertension – diseases that represent a major burden of illness for Syrians.

With the conflict in Syria showing no sign of abating, it is unclear how long the emergency health response will be needed in the Middle East. Funds, however, are not keeping pace with the growing needs, and the health sector, drastically underfunded, is struggling to keep health systems from collapsing. The health component of the 2015 Syria response plan (SRP) is only 30% funded, while the health component in the regional refugee and resilience plan (3RP) is only 17% funded.

"It is imperative that the health sector in this region is adequately funded to ensure refugee and host population needs are catered to," said Dr Al Ward. "Migration into Europe may alleviate some of the burden on these countries, but not much. The international community must continue to support the countries doing the heavy lifting."

enritsch.com provides free service to help people achieve wellbeing

A new website has launched which provides a free service to help people to discover, and maintain, a positive state of physical, mental and social wellbeing.

The launched of enritsch.com coincides with World Mental Health Day. Recent findings by the WHO highlight that one in every four, or 25%, of the planet's 7 billion people, suffer from some form of mental illness, including anxiety and depression. This places mental disorders among the leading causes of ill health and disability world-wide.

While various forms of treatment are available, the WHO states that two-thirds of people suffering never seek help. Primarily due to fears of stigma and discrimination, individuals are left with feelings of loneliness and isolation. From children dealing with schoolyard bullying, to executives coping with workplace pressures – the need to put the spotlight on enabling people to attain inner wellbeing, never seemed so timely.

enritsch.com enables people to get help from the privacy of their homes. This free service enables members to access information and a range of resources; seek expert advice; locate, and post reviews on service providers-enabling them to make informed decisions.

Sidra doctor wins top pediatric nephrology award

Dr Ibrahim Shatat, Senior Attending Physician and Medical Director in Pediatric Nephrology and Hypertension at Sidra Medical and Research Center (Sidra) in Doha was voted among the Top Doctors in the Field of Pediatric Nephrology by Castell Connolly – the firm used by *US News and World Reports* to rank top hospitals.

Dr Ibrahim Shatat

As a pediatric nephrologist, Dr Shatat specializes in treating children with kidney or urinary tract diseases; bladder problems; kidney stones or high blood pressure. His specialty also includes kidney transplants and taking care of dialysis patients.

Castle Connolly Medical based its selection process on peer nominations. The Castle Connolly physician-led research team carefully reviews the credentials of every physician being considered for inclusion in *Castle Connolly Guides*, magazine articles and website. The review includes, amongst other factors, scrutiny of medical education; training; board certifications; hospital appointments; administrative posts; professional achievements; malpractice and disciplinary history.

Dr Shatat, who has been at Sidra Medical and Research Center since December 2014, said: "I am delighted that my contributions to the field of pediatric nephrology have been appreciated and acknowledged by my peers in the medical field. I am looking forward to having a similar impact in Qatar and regionally with the world-class team of physicians and healthcare professionals we have here at Sidra."

Before joining Sidra, Dr Shatat was the Chief of Pediatric Nephrology and Hypertension at the Medical University of South Carolina, where he led the division to rank among the top pediatric nephrology programs in the US.

HMC marks World Lymphoma Awareness Day

Lymphoma is the third most common type of cancer in children worldwide and affects about 10% of all children diagnosed with cancer at Hamad Medical Corporation (HMC), according to Dr Naima Al Mulla, Senior Consultant at HMC's Pediatric Hematology and Oncology section based at Hamad General Hospital (HGH).

Speaking on the occasion of World Lymphoma Awareness Day, which is celebrated globally on 15 September every year to raise awareness of the importance of early detection and treatment of this cancer, the HGH cancer expert said: "While the survival rates for childhood cancers are better than those for adult cancers, early diagnosis and treatment are important to avoid the need for significant therapy to treat the cancer and to reduce the risk of a relapse."

Lymphoma develops in certain cells of the immune system known as lymphocytes. The cancer may start from the bone marrow, lymph nodes, spleen, tonsils, thymus or other lymphatic tissues as well as the lymph vessels that connect them. There are two main categories of lymphoma: Hodgkin lymphoma and non-Hodgkin lymphoma. The type of abnormal cells identified in a biopsy sample determines what type of lymphoma is present in a patient.

Dr Al Mulla said symptoms to watch out for include unexplained swelling on the neck, underarm or groin, weight loss, fever, night sweats, weakness, chest pain or trouble breathing, and abdominal swelling. At an advanced stage, lymphoma may present with high fever and weight loss, she said.

About half of all children with lymphoma receiving care at HMC's Pediatric Hematology and Oncology section have Hodgkin lymphoma, while the other half have non-Hodgkin lymphoma which has many different subtypes. The mainstay of therapy for both types of lymphoma is chemotherapy and in both cases at least 90% of patients can be cured when the disease is diagnosed and treated at an early stage.

When treated at an advanced stage, patients with Hodgkin lymphoma have a slightly lessened chance of survival but may need more intensive chemotherapy and in some cases radiotherapy as well. Non-Hodgkin lymphoma, on the other hand, is a more aggressive tumor that quickly develops and spreads to other areas of the body and this can reduce the chance of survival if the cancer is treated at a late stage.

Radiotherapy, which uses high-energy radiation to treat cancer, is not used for non-Hodgkin lymphoma and is used only when necessary for Hodgkin lymphoma (depending on the stage of the disease and the response after chemotherapy cycles) as this type of therapy has certain side effects, including reduced bone growth and an increased risk of secondary cancer in the long term. To avoid unnecessary radiotherapy and in accordance with highly advanced protocols, HMC uses Positron Emission Tomography or PET scanning after chemotherapy to determine whether a patient actually needs radiotherapy as further treatment.

HMC calls for greater awareness of sepsis

In recognition of World Sepsis Day, on 13 September, Qatar's Hamad Medical Corporation (HMC) urged all healthcare professionals and the public to learn more about sepsis, a potentially life-threatening disorder triggered by infection, and the importance of preventing infections that can lead to sepsis.

Director of the Medical Intensive Care Unit (MICU) at Hamad General Hospital (HGH), Dr. Ibrahim Fawzy explained: "Sepsis occurs when chemicals released into the bloodstream - as a response to infection - cause inflammatory responses. This inflammation can stimulate a cascade of changes that can drastically affect multiple organ systems."

"While sepsis can be caused by viral or fungal infections, bacterial infections are by far the most common cause," he added.

The Critical Care team at the MICU is actively involved in raising awareness of six simple steps that include tried and tested guidelines for managing sepsis. Known as the 'Sepsis Six', this bundle of therapies has been associated with decreased mortality, decreased length of stay in hospital, and fewer intensive care bed days. The Sepsis Six Protocol educates staff about sepsis, its causes, symptoms and ways of prevention.

Senior Consultant in MICU and Anesthesia, and the Clinical Lead for the Severe Sepsis Project, Dr Ahmed Labib, highlighted that anyone can develop sepsis. However, the condition is most common and potentially most dangerous in older adults and those with weakened immune systems, such as human immunodeficiency virus (HIV) or leukemia.

Meeting aims to align healthcare regulators and med tech industry

Mecomed, the MENA Devices and Diagnostics Trade Association, hosted the region's first exclusive gathering between healthcare regulators and medical-technology professionals on 30 September 2015 in Dubai. The meeting aimed to better align their positions and help patients gain timely access to high quality life-saving therapies.

The MENA MedTech Regulatory Symposium offered a unique opportunity for the region's MedTech regulatory professionals and leaders to learn directly from healthcare authorities about the latest updates in regional and international regulations of medical devices and diagnostics, and exchange experiences and reports on key regulatory topics. Participants also had the chance to identify focus areas for increasing patient access to safe and innovative therapies.

Mecomed brought together key stakeholders from the region's regulatory authorities to address topics such as quality management, development of regional and global collaborative schemes, pharmacovigilance, clinical trials, and adaptation of regulatory practices to new technologies.

The inaugural event was opened by His Dr Amin Hussain Al Amiri, the Assistant Undersecretary for Public Health Policy and License Sector for UAE Ministry of Health, and Chairman of the UAE Supreme National Blood Transfusion Committee. Dr Al Amiri was joined by key regional healthcare authority figures including, Hussam Mohammed Alaeq, Section Head of Scientific and Technical Review at Saudi Food & Drug Authority, Anan Saleh Abu Hassan, Director Assistant of Medical Devices Directorate and Head of Cosmetics Department at Jordan Food and Drug Administration, and Dr Miriam Boles Kostandy and Dr Noha Osama Mohamed Abdel Monaem from Ministry of Health, Egypt.

Rami Rajab, Mecomed Chairman and VP Governmental Affairs of Sorin Group, said: "The MedTech industry needs to be clear on the steps to follow to ensure they are complying with regulations in each market so patients can have access to treatment in a timely and cost effective manner and what better way to learn than directly from the source."

The event's international speakers included Dr Peter Drechsler, unannounced audits expert and former head of Test Laboratory for Non-Active Medical Devices at TÜV SÜD in Munich, who covered updates on European regulations and unannounced audits, and Joanna Koh, an expert in medical device regulations from Singapore, who presented an introduction and guidance to well-balanced regulatory controls.

"Participants benefited from comprehensive presentations on regional and global issues at stake in the MENA regulatory environment and had the opportunity to engage in panel sessions that enabled in-depth discussions and knowledge sharing such as how European regulations impact on the MENA region," Rajab added.

MENA Stroke Initiative expands across region

World stroke experts gathered 22 October 2015 for the 3rd MENA Stroke Conference in Dubai.

Stroke is the second highest cause of death worldwide and a leading cause of disability – and the MENA region is no exception. At least 20,000 new strokes, 4,000 deaths and 8,000 disabilities occur each year across KSA, and around 210,000 people suffer stroke each year in Egypt.

"Each year over 7,000 people suffer from a stroke in the UAE. These figures are large now, but the projections for the Middle East and North Africa suggest the rate of stroke will nearly double over the next 15 years," said Dr Suhail Al-Rukn, a stroke specialist at Rashid Hospital, Dubai Health Authority, and President of the Emirates Neurology Society.

Dr Suhail Al-Rukn stroke specialist at Rashid Hospital Dubai Health Authority and President of the Emirates Neurology Society

"So it's vital that we address this major health problem now," he added.

The conference featured an update on the 'MENA Stroke Initiative' – a dedicated stroke program from the Emirates Neurology Society supported by Boehringer Ingelheim – that is being rolled out across the region. The initiative aims to tackle the problem head on by making quicker, life-saving treatment available to those affected.

Karim El Alaoui, Managing Director of Boehringer Ingelheim, Middle East, Turkey and Africa (META), said the aim of the initiative was to develop an integrated and sustainable healthcare system that ensures the delivery of comprehensive and excellent services to people experiencing a stroke.

"Over the last 12 months we have 19 sites enrolled in the initiative, which runs in four phases. First a site is established, then enters a progressing phase until it is ready for validation and auditing, and the final phase is certification – after which the stroke unit is up and running independently," he said. "Our vision is to contribute towards a healthy, happy, and safe community."

The sites are in the UAE, KSA, Oman, Bahrain, Kuwait, Lebanon and Egypt with further expansion expected throughout 2016.

"The MENA Stroke Initiative is already starting to make a difference," said Dr Al-Rukn. "Providing access to specialist stroke units means people get the best treatment more quickly. We call this 'the golden hour' – a critical window to treat stroke victims. Not only does this save lives, it can reduce the burden of disability that many stroke survivors experience."

"With regular expert meetings, continued investment in the MENA Stroke Initiative, and activities to increase stroke awareness and prevention I believe it should be possible to slow the rising rate of stroke across the region," he said.

Medcare opens 10th clinic in Dubai

Medcare a premium brand of the Aster DM Healthcare officially launched their 10th multi-speciality medical centre. The new clinic in Dubai Marina is part of an ongoing expansion drive by Medcare to provide quality and specialised healthcare to the community.

Dr Azad Moopen, Chairman of Aster DM Healthcare led the opening ceremony with Ala Atari, CEO of Medcare Hospitals & Medical Centres and Ahmad Bin Eisa Alserkal, Board Member of Dubai Insurance, Board Member of Al Jalila Cultural Centre for Children and Board member of Dubai Autism Center, among other posts.

"Today, we have reached an important milestone with the opening of our 10th clinic within our eight years of existence. Our growth is a testament of our commitment to provide quality healthcare to the community and we intend to widen our reach. Soon, we will be opening more multi-specialty clinics including a dedicated centre for women as well as a Mother & Child Specialty Hospital on Sheikh Zayed Road," said Atari.

The new multi-specialty medical centre provides advanced and comprehensive care. The key services offered in this centre are family medicine, internal medicine, ENT, paediatrics, obstetrics and gynaecology, dermatology, orthopaedic surgery, physiotherapy, X-ray, laboratory and a pharmacy. MEH

worldwide monitor

Update from around the globe

Call to improve health of women, children and adolescents

Societies are failing women, children and adolescents, particularly in the poorest communities around the world, and urgent action is needed to save lives and improve health, say global health experts.

In a special supplement published in September by *The BMJ*, public health experts from around the globe highlight the critical actions and investments that will have the greatest impact on the health and well-being of women, children and adolescents.

The 15 papers in this special supplement outline the current evidence, identify successes as well as critical gaps in progress, and highlight key priorities to end preventable deaths and ensure that women, children and adolescents can thrive and build resilient and prosperous societies.

Dr Marleen Temmerman, Director of WHO Department of Reproductive Health and Research including HRP, and one of the lead authors of the special supplement states, "Clearly business as usual will not work. For women, children and adolescents around the world to survive, thrive and transform our current society to arrive at the future we want, we need radical actions that will result in enormous social, demographic, and economic benefits."

Although great strides have been made in reducing child and maternal mortality by 53% and over 40% respectively since 1990, the authors explain how many more lives can be saved by improving access to essential health interventions.

Vast inequities within and between countries mean that the poorest, most disadvantaged women, children, and adolescents often miss out on life-saving health services and experience serious violations of their human rights.

Some low- and middle-income countries have:

- Up to three times more pregnancies among teenage girls in rural and indigenous populations than in urban populations
- A difference of up to 80% between the richest and poorest people in the proportion of births attended by skilled health personnel
- A gap of at least 18% in the proportion who seek care for children with pneumonia symptoms, between the poorest and richest people and
- A difference of least 25% in access to antenatal care (of at least four visits) between the most and least educated and between the richest and poorest.

"No woman, child or adolescent should face a greater risk of preventable death just because of where they live," says Dr Flavia Bustreo, Assistant Director-General of the World Health Organization. "We know what needs to be done. With the existing evidence, we now have the opportunity to end preventable deaths among all women, children, and adolescents, to vastly improve their health, and to bring about the transformative changes needed to fully realise their human rights and build resilient and prosperous societies."

The papers provide the evidence that has helped inform the development of a new Global Strategy for Women's, Children's and Adolescents' Health, which were launched at the United Nations General Assembly in New York on 26 September 2015.

Scientists create world's largest catalogue of human genetic variation

An international team of scientists from the 1000 Genomes Project Consortium has created the world's largest catalogue of genomic differences among humans, providing researchers with powerful clues to help them establish why some people are susceptible to various diseases. While most differences in peoples' genomes ñ called variants ñ are harmless, some are beneficial, while others contribute to diseases and conditions, ranging from cognitive disabilities to susceptibilities to cancer, obesity, diabetes, heart disease and other disorders. Understanding how genomic variants contribute to disease may help clinicians develop improved diagnostics and treatments, in addition to new methods of prevention.

The National Human Genome Research Institute, part of the US National Institutes of Health, helped fund and direct this international public-private consortium of researchers in the United States, the United Kingdom, China, Germany and Canada.

In two studies published online on 30 September 2015, in *Nature*, investigators examined the genomes of 2,504 people from 26 populations across Africa, East and South Asia, Europe and the Americas.

In the main *Nature* study, investigators identified about 88 million sites in the human genome that vary among people, establishing a database available to researchers as a standard reference for how the genomic make-up of people varies in populations and around the world. The catalogue more than doubles the number of known variant sites in the human genome, and can now be used in a wide range of studies of human biology and medicine, providing the basis for a new understanding of how inherited differences in DNA can contribute to disease risk and drug response.

Of the more than 88 million variable sites identified, about 12 million had common variants that were likely shared by many of the populations. The study showed that the greatest genomic diversity is in African populations, consistent with evidence that humans originated in Africa and that migrations from Africa established other populations around the world.

The 26 populations studied included groups such as the Esan in Nigeria; Colombians in Medellin, Colombia; Iberian populations in Spain; Han Chinese in Beijing; and Sri Lankan Tamil in the United Kingdom. All of the individuals studied for the project consented to broad release of their data, and the data can be used by researchers around the world.

"The 1000 Genomes Project was an ambitious, historically significant effort that has produced a valuable resource about human genomic variation," said Eric Green, M.D., Ph.D., director of NHGRI. "The latest data and insights add to a growing understanding of the patterns of variation in individuals' genomes, and provide a foundation for gaining greater insights into the genomics of human disease."

These reports mark the culmination of the 1000 Genomes Project, which found more than 99% of variants in the human genome that occur at a frequency of at least 1% in the populations studied.

One of the more immediate uses of 1000 Genomes Project data is for genome-wide association studies, which compare the genomes of people with and without a disease to search for regions of the genome that contain genomic variants associated with that disease. Such studies generally find several genomic regions associated with a disease and many variants in each of those regions. Scientists can now combine GWAS data with the more detailed 1000 Genomes Project data to home in on regions affecting disease more precisely. Instead of sequencing the genomes of all the people in a study, which remains expensive, researchers can use the 1000 Genomes Project data to find most of the variants in those regions that are associated with the disease.

"When the 1000 Genomes Project was first launched in 2008, there wasn't much understanding of how rare genomic variants were distributed among populations around the world and their relationship to other variants," said Adam Auton, Ph.D., the main study senior author and principal investigator who until recently was assistant professor of genetics at the Albert Einstein College of Medicine in New York City.

"The 1000 Genomes Project has laid the foundation for others to answer really interesting questions," said Dr Auton. "Everyone now wants to know what these variants tell us about human disease."

New classification system developed for gout

A panel of experts and researchers have developed a new classification system for gout, the most common form of inflammatory arthritis. This new system standardizes the classification of this condition using a variety of evidence-based criteria.

Led by researchers at Boston University School of Medicine (BUSM) and institutions from around the world, the study is a joint publication appearing in two journals simultaneously, *Annals of Rheumatologic Disease and Arthritis & Rheumatology*.

Gout is characterized by the deposition of a specific type of crystal in joint fluid and various tissues. Numerous new drugs are being developed and tested in trials for gout, and some agents have been approved by the US Food and Drug Administration (FDA) and the European Medicines Agency (EMA) in the past few years. These new classification criteria will help standardize how to identify people with gout who should be eligible for enrolment into such trials and other studies.

An international group of investigators with support from the American College of Rheumatology (ACR) and the European League Against Rheumatism (EULAR) developed the classification criteria through a multi-step process. They conducted a systematic review of the literature regarding advanced imaging for gout, conducted a study in which the gold standard to identify gout was presence of monosodium urate crystals, and used a decision analysis scientific approach to generate a comprehensive criteria encompassing multiple domains to guide classification of gout.

"The implications of this new classification are significant as it provides a means for clinical researchers to use validated criteria for enrolment of subjects with gout into studies. This is particularly important for clinical trials which will use these criteria moving forward, and it is anticipated that these will become the standard expected by the FDA and EMA when evaluating gout clinical trials," explained

lead investigator Tuhina Neogi, MD, PhD, associate professor of medicine at BUSM and a rheumatologist at Boston Medical Center.

Johns Hopkins, Mayo experts suggest upgrades to heart disease guidelines

Acknowledging key strengths and "lessons learned", preventive cardiologists from Johns Hopkins and Mayo Clinic have developed a short list of suggested upgrades to the controversial heart disease prevention guidelines issued jointly in 2013 by the American Heart Association and the American College of Cardiology.

The recommendations, published in the 11 August 2015 issue of *Mayo Clinic Proceedings*, are designed, the authors say, to improve subsequent guidelines and clarify key points of confusion related to risk prediction and treatment of heart attacks and strokes.

"Given that heart disease and stroke are top killers worldwide, even small improvements in the way we identify and treat those at risk could yield tremendous benefits both in reducing human suffering and healthcare costs," says lead author Miguel Cainzos-Achirica, M.D., a post-doctoral research fellow in preventive cardiology at the Johns Hopkins University School of Medicine.

Authors of the new report are careful to point out that the guidelines – already scheduled for revision in the next few years – were an important step forward in the quest to improve heart attacks and stroke prevention. Parts of them, however, remain unpopular among frontline clinicians and public health experts alike. And uncertainty or controversy about what constitutes best practice can reduce clinician adherence and dampen patient trust, the authors say.

The most contentious aspect of the guidelines is the predictive accuracy of a risk "calculator" that forecasts a person's likelihood of suffering a heart attack or stroke over a decade.

The guidelines state that in those with high cholesterol but no overt heart disease, preventive statins should be considered — typically as a lifelong therapy — among those whose 10-year risk for suffering a heart attack or stroke is 7.5% or higher. But because the risk-scoring algorithm can overestimate likelihood of heart attack or stroke in many, experts have voiced concerns over the hazard of overtreatment.

Recent studies have shown that, indeed, most clinical calculators, including the one endorsed in the 2013 guidelines, tend to overrate risk. Overreliance on such algorithms can lead to unnecessary treatment with statins. To ensure greater precision, the researchers say, new formulas should estimate risk based on outcomes from modern rather than historical populations. Current calculators base their risk estimates on people from the 1970s and 1980s who had a worse risk profile than modern-day patients. New formulas, the authors say, should be recalibrated regularly to reflect the latest data.

"Electronic medical records put at our fingertips a wealth of new information, so recalibrating risk calculators periodically is not the pipe dream that it was 10 years ago," says senior author Seth Martin, M.D., M.H.S., an assistant professor of medicine at the Johns Hopkins University School of Medicine.

The Johns Hopkins-Mayo group also suggests further "diversifying" risk scores. While current risk-scoring systems account for well-established differences in risk between white and black patients, they are "insensitive" when it comes to patients of other races and ethnicities. Researchers says recent evidence shows starkly different disease patterns among people of Latin American, South Asian or East Asian origin.

"Subtle and not-so-subtle racial and ethnic differences in heart disease should be reflected in how we measure risk and tailor treatment," Martin says.

Additionally, they say, closer attention must be paid to patients with borderline risk scores.

"For those at low or high risk for an event, treatment choices are rather straightforward," Martin says. "But in those with borderline scores, that decision can become a knotty clinical dilemma."

To help solve such dilemmas, the authors say the next set of guidelines can offer a list of tests that clarify a patient's risk and move the needle on treatment choice. For example, coronary calcium scans that visualize calcified deposits inside the heart's arteries could be an excellent tie-breaker, they say, because of mounting evidence showing them to be potent predictors of risk.

New guidelines could also clarify the role of non-statin alternatives to lowering cholesterol. While a healthy lifestyle is both the foundation and a first step to minimizing a patient's overall risk, clinicians are often uncertain if and how soon after a lifestyle modification statins should follow. The next set of guidelines ought to provide greater clarity on what constitutes "successful" lifestyle change, how soon after implementing it patients should be re-evaluated, and when and if drug treatment should be considered. Additionally, the authors say, more clarity is needed on the value of several non-statin cholesterol-lowering drugs.

Another much-needed fix, the authors say, is synchronizing treatment goals for reducing cholesterol.

Current US guidelines urge clinicians to gauge treatment success by calculating the percentage drop in a patient's cholesterol levels. But European and Canadian guidelines call on physicians to aim for a fixed cholesterol number instead. The "percentage" approach is not only discordant with international guidelines, Martin says, but requires confusing and messy arithmetic that often discourages clinicians from using it. Moreover, the authors write, the "percentage" approach has fuelled the misconception that cholesterol levels no longer matter. They do, the authors say. Harmonizing the "percentage drop" and "target number" approach to measuring therapeutic success would go a long way to improving clarity in clinical decisions.

Insomnia ranks 2nd after cold as most common health complaint internationally

Half of people internationally say they have had a cough or cold in the last 12 months and over a quarter report suffering from insomnia or problems sleeping. These are findings from a recent GfK online survey that asked over 27,000 people in 22 countries which health conditions from a given list they had experienced in the past 12 months.

The possible conditions asked about included items such as skin conditions, allergies, vomiting or diarrhoea, diabetes or pre-diabetes and high cholesterol or blood


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pressure. But, internationally, the top five most common conditions that people say they have experienced in the past 12 months are a cold (which was bundled with a cough, sore throat, upper respiratory infection, flu or influenza and was reported by 51%), problems sleeping (27%), muscle or joint pain due to injury or over exertion (25%), weight problems (21%) and migraines or severe headaches (21%).

Looking at the breakdown between men and women, there are some clear gender differences. For almost all the conditions listed, women have higher percentages saying they have experienced these in the last 12 months than men.

Both genders report a cold or cough as being the most common complaint (53% of women and 49% of men), but, for women, the next most common complaint is insomnia (32%), while, for men, it is a tie-breaker between muscle or joint pain due to over-exertion or injury, and insomnia (both standing at 24%). There is also a difference in what items make it into the top five for each gender. For women, migraine or severe headache is their third most common complaint, but does not feature in men's top five list (reported by 27% of women and 15% of men). And for men, heartburn or acid reflux is their fourth most common complaint, but does not feature in the women's top five list - even though more women than men report having experienced it over the last year (19% of men and 21% of women).

WHO warns societal changes needed to manage ageing population

With advances in medicine helping more people to live longer lives, the number of people over the age of 60 is expected to double by 2050 and will require radical societal change, according to a new report released by the WHO for the International Day of Older Persons (1 October).

"Today, most people, even in the poorest countries, are living longer lives," says Dr Margaret Chan, Director-General of WHO. "But this is not enough. We need to ensure these extra years are healthy, meaningful and dignified. Achieving this will not just be good for older people, it will be good for society as a whole."

Contrary to widespread assumptions, the "World report on ageing and health 2015" finds that there is very little evidence that the added years of life are being experienced in better health than was the case for previous generations at the same age. "Unfortunately, 70 does not yet appear to be the new 60," says Dr John Beard, Director of the Department of Ageing and Life Course at WHO. "But it could be. And it should be".

While some older people may indeed be experiencing both longer and healthier lives, these people are likely to have come from more advantaged segments of society. "People from disadvantaged backgrounds, those in poorer countries, those with the fewest opportunities and the fewest resources to call on in older age, are also likely to have the poorest health and the greatest need," says Dr Beard.

The Report stresses that governments must ensure policies that enable older people to continue participating in society and that avoid reinforcing the inequities that often underpin poor health in older age.

The Report rejects the stereotype of older people as frail and dependent and says the many contributions that older people make are often overlooked, while the demands that population ageing will place on society are frequently overemphasised or exaggerated.

The Report emphasises that while some older people will require care and support, older populations in general are very diverse and make multiple contributions to families, communities and society more broadly. It cites research that suggests these contributions far outweigh any investments that might be needed to provide the health services, long- term care and social security that older populations require. And it says policy needs to shift from an emphasis on controlling costs, to a greater focus on enabling older people to do the things that matter to them.

This will be particularly important for women, who comprise the majority of older people and who provide much of the family care for those who can no longer care for themselves. "As we look to the future, we need to appreciate the importance of ageing in the lives of women, particularly in poorer countries," says Dr Flavia Bustreo, WHO Assistant Director-General for Family, Women's and Children's Health. "And we need to think much more about how we can ensure the health of women right across the life course".

But one factor will play a key role in whether the opportunity for ageing societies to reinvent themselves can be realised - the health of these older people.

The Report highlights 3 key areas for action which will require a fundamental shift in the way society thinks about ageing and older people. These actions can give the older people of today and tomorrow the ability to invent new ways of living.

The first is to make the places we live in much more friendly to older people. Good examples can be found in WHO's Global Network of Age-friendly Cities and Communities that currently comprises over 280 members in 33 countries. These range from a project improving the security of older people in the slums of New Delhi to "Men's Sheds" in Australia and Ireland that tackle social isolation and loneliness.

Realigning health systems to the needs of older people will also be crucial. This will require a shift from systems that are designed around curing acute disease, to systems that can provide ongoing care for the chronic conditions that are more prevalent in older age. Initiatives that have already proved successful can be expanded and introduced in other countries. Examples include the establishment of teams composed of different specialists such as physiotherapists, psychologists, nutritionists, occupational therapists, doctors and nurses in Brazil, and the sharing of computerized clinical charts among care institutions in Canada.

Governments also need to develop long-term care systems that can reduce inappropriate use of acute health services and ensure people live their last years with dignity. Families will need support to provide care, freeing up women, who are often the main caregivers for older family members, to play broader roles in society. Even simple strategies like internet-based support for family caregivers in the Netherlands or support to older peoples' associations that provide peer support in Viet Nam hold great promise. MEH

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Medical research news from around the world

Virus common in cattle linked to human breast cancer

UC Berkeley researchers have linked bovine leukaemia virus, a cancer-causing virus prevalent in cattle, with human breast cancer.

In the study, published in September 2015 in the journal *PLOS ONE*, researchers analyzed breast tissue from 239 women for the presence of bovine leukaemia virus (BLV), comparing samples from women who had breast cancer with women who had no history of the disease. They found that 59% of breast cancer samples had evidence of exposure to BLV, as determined by the presence of viral DNA. By contrast, 29% of the tissue samples from women who never had breast cancer showed exposure to BLV.

"The association between BLV infection and breast cancer was surprising to many previous reviewers of the study, but it's important to note that our results do not prove that the virus causes cancer," said study lead author Gertrude Buehring, a professor of virology in the Division of Infectious Diseases and Vaccinology at UC Berkeley's School of Public Health. "However, this is the most important first step. We still need to confirm that the infection with the virus happened before, not after, breast cancer developed, and if so, how."

Bovine leukemia virus infects dairy and beef cattle's blood cells and mammary tissue. The retrovirus is easily transmitted among cattle primarily through infected blood and milk, but it only causes disease in fewer than 5% of infected animals.

A 2007 U.S. Department of Agriculture survey of bulk milk tanks found that 100% of dairy operations with large herds of 500 or more cows tested positive for BLV antibodies. This may not be surprising since milk from one infected cow is mixed in with others. Even dairy operations with small herds of fewer than 100 cows tested positive for BLV 83% of the time.

What had been unclear until recently is whether the virus could be found in humans, something that was confirmed in a study led by Buehring and published 2014 in *Emerging Infectious Diseases*. That paper overturned a long-held belief that the virus could not be transmitted to humans.

"Studies done in the 1970s failed to detect evidence of human infection with BLV," said Buehring. "The tests we have now are more sensitive, but it was still hard to overturn the established dogma that BLV was not transmissible to humans. As a result, there has been little incentive for the cattle industry to set up procedures to contain the spread of the virus."

The new paper takes the earlier findings a step further by showing a higher likelihood of the presence of BLV in breast cancer tissue. When the data was analyzed statistically, the odds of having breast cancer if BLV were present was 3.1 times greater than if BLV was absent.

"This odds ratio is higher than any of the frequently publicized risk factors for breast cancer, such as obesity, alcohol consumption and use of post-menopausal hormones," said Buehring.

There is precedence for viral origins of cancer. Hepatitis B virus is known to cause liver cancer, and the human papillomavirus can lead to cervical and anal cancers. Notably, vaccines have been developed for both those viruses and are routinely used to prevent the cancers associated with them.

"If BLV were proven to be a cause of breast cancer, it could change the way we currently look at breast cancer control," said Buehring. "It could shift the emphasis to prevention of breast cancer, rather than trying to cure or control it after it has already occurred."

Buehring emphasized that this study does not identify how the virus infected the breast tissue samples in their study. The virus could have come through the consumption of unpasteurized milk or undercooked meat, or it could have been transmitted by other humans.

Three antibiotics in combination shown to kill MRSA

Three antibiotics that, individually, are not effective against a drug-resistant staph infection can kill the deadly pathogen when combined as a trio, according to new research.

The researchers, at Washington University School of Medicine in St. Louis, have killed the bug – methicillin-resistant *Staphylococcus aureus* (MRSA) – in test tubes and laboratory mice, and believe the same three-drug strategy may work in people.

"MRSA infections kill 11,000 people each year in the United States, and the pathogen is considered one of the world's worst drug-resistant microbes," said principal investigator Gautam Dantas, PhD, an associate professor of pathology and immunology. "Using the drug combination to treat people has the potential to begin quickly because all three antibiotics are approved by the FDA."

The study is published online 14 September 2015 in the journal *Nature Chemical Biology*.

The three drugs – meropenem, piperacillin and tazobactam – are from a class of antibiotics called beta-lactams that has not been effective against MRSA for decades.

Working with collaborators in the microbiology laboratory at Barnes-Jewish Hospital in St. Louis, Dantas' team tested and genetically analyzed 73 different variants of the MRSA microbe to represent a range of hospital-acquired and community-acquired forms of the pathogen. The researchers treated the various MRSA bugs with the three-drug combination and found that the treatments worked in every case.

Then, in experiments conducted by collaborators at the University of Notre Dame, the team found that the drug combination cured MRSA-infected mice and was as effective against the pathogen as one of the strongest antibiotics on the market.

"Without treatment, these MRSA-infected mice tend to live less than a day, but the three-drug combination cured the mice," Dantas said. "After the treatment, the mice were thriving."

Dantas explained that the drugs, which attack the cell wall of bacteria, work in a synergistic manner, meaning they are more effective combined than each alone.

The researchers also found that the drugs didn't produce resistance in MRSA bacteria – an important finding since more and more bacteria are developing resistance to available drugs.

"This three-drug combination appears to prevent MRSA from becoming resistant to it," Dantas said. "We know all bacteria eventually develop resistance to antibiotics, but this trio buys us some time, potentially a significant amount of time."

Dantas' team also is investigating other antibiotics thought to be ineffective against various bacterial pathogens to see if they, too, may work if used in combination with other drugs.

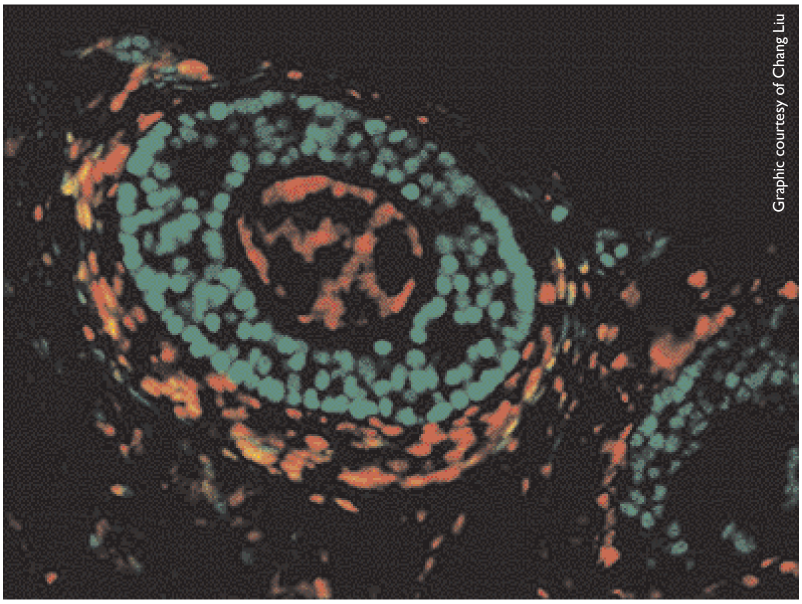
"We started with MRSA because it's such a difficult bug to treat," he said. "But we are optimistic the same type of approach may work against other deadly pathogens, such as Pseudomonas and certain virulent forms of E. coli."

Researchers solve ovarian cell mystery

Scientists at the US National Institutes of Health have solved a long-standing mystery about the origin of one of the cell types that make up the ovary. The team also discovered how ovarian cells share information during development of an ovarian follicle, which holds the maturing egg. Researchers believe this new information on basic ovarian biology will help them better understand the cause of ovarian disorders, such as premature ovarian failure and polycystic ovarian syndrome, conditions that both result in hormone imbalances and infertility in women.

Researchers at the National Institute of Environmental Health Sciences (NIEHS), part of NIH, published the findings online 28 April 2015 in the journal *Nature Communications*. According to NIEHS researcher and corresponding author Humphrey Yao, Ph.D., the ovarian follicle is the basic functional unit of the ovary, which contains the egg surrounded by two distinct cell types, known as granulosa cells and theca cells. Yao said scientists had known the cellular origins of the egg and granulosa cells, but did not know where theca cells came from or what directed their development.

"The answer to this question remained unanswered for decades, but using a technique called lineage tracing, we determined that theca cells in mice come from both inside and outside the ovary, from embryonic tissue called mesenchyme," Yao said. "We don't know why theca cells have two sources, but it tells us something important – a single cell type may actually be made up of different groups of cells."



The ovarian follicle stained above shows the egg (red center), surrounded by the supporting granulosa cells (green) and outer theca cells (red and orange). Yao and his team found that all three must communicate to maintain a healthy follicle.

Without theca cells, women are unable to produce the hormones that sustain follicle growth, he continued. One of the major hormones theca cells produce is androgen, which is widely thought of as a male hormone. But, in a superb example of teamwork, the granulosa cells convert the androgen to estrogen.

As a result of their work, Yao and his colleagues uncovered the molecular signalling system that enables theca cells to make androgen. This communication pathway is derived from granulosa cells and another structure in the ovary called the oocyte, or immature egg cell. The crosstalk between the egg, granulosa cells, and theca cells was an unexpected finding, but one that may provide insight into how ovarian disorders arise.

"The problem starts within the theca cell compartment," said Chang Liu, Ph.D., a visiting fellow in Yao's group and first author on the paper. "Now that we know what makes these cells grow, we can search for possible genetic mutations or environmental factors that affect the process leading to ovarian cell disorders."

For future work, Yao wants to explore the two types of cells that make up theca cells. Since the research has been carried out in mice, Yao will have to determine if the same holds true for humans, but the research may potentially uncover several roles theca cells play in female fertility.

Mobile phone microscope can improve diagnosis of malaria

New technology that transforms a cell phone into a powerful, mobile microscope could significantly improve malaria diagnoses and treatment in developing countries that often lack the resources to address the life-threatening disease, says a Texas A&M University biomedical engineer who has created the tool.

The add-on device, which is similar in look and feel to a protective phone case, makes use of a smart phone's camera features to produce high-resolution images of objects 10 times smaller than the thickness of a human hair, says Gerard Coté, professor of biomedical engineering and director of the Texas A&M Engineering Experiment Station's Center for Remote

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Pioneering technology and techniques, reducing longer term health risks:

The United Kingdom is renowned for its prevalence of ground-breaking techniques and the number of medical consultants pioneering new technology. In 2014 Aspen's Cancer Centre London (Wimbledon) became the first private hospital in London to provide targeted radiotherapy with the Elekta Versa HD linear accelerator system. This system is the latest advancement in radiotherapy technology, and is used in managing a range of cancers in the head and neck, lung, gastro-intestinal system, breast and prostate. The technology also facilitates use of stereotactic radiotherapy (focussed high-dose radiotherapy treatment) for primary tumours or small deposits of secondary disease in bone, brain and other organs. It has the ability to continually reshape the radiation beam to the fine contours of the tumour so an extremely precise, higher dose of radiation can be delivered, reducing treatment times and preserving healthy tissue. This machine has been described by Aspen Healthcare CEO, Des Shiels, as "the cutting edge of the most recent technology in the provision of radiotherapy."

Breast Cancer Treatment Advances

More women are now surviving breast cancer - so much so that new methods of reducing the long-term effects of radiotherapy treatment are now being introduced, using machines such as this at Aspen's Cancer Centre London. Despite an increasing number of cases over the last 30 years, UK deaths from breast cancer have fallen as a result of earlier detection and improved treatment. However, with survivors living longer the long-term effects of radiotherapy treatment are of increasing concern with survivors having up to a one per cent higher risk than average of cardiovascular disease. Dr Anna Kirby, clinical oncologist at the Cancer Centre London says: "There are currently 500,000 breast cancer survivors in the UK. Therefore, even a 1 per cent cardiac mortality affects thousands of women." By 2040 there are forecast to

be 1.7 million UK breast cancer survivors so radiation-related heart disease deaths are likely to increase.

The problem is that radiotherapy for breast cancer commonly also irradiates the left anterior descending coronary artery resulting in an increased risk of heart disease. While improvements in radiotherapy techniques, including heart shielding methods, have reduced non-breast cancer deaths among survivors over the last three to four decades, research shows that rates of major coronary events rise with increased radiation doses to the heart.

Now new radiotherapy technology and methods are appearing that may help reduce deaths from radiation-related heart disease. The most important development is the use of breath-holding techniques. When a patient holds their breath, the heart is pulled backwards and downwards away from the left breast and chest wall area thereby minimising the dose of radiation to the heart and therefore the risk of late radiation-induced heart disease. There are a number of ways to achieve breath-hold but one of these makes use of an active-breathing-controlled device which maintains patients in breath-hold during radiation treatment. Furthermore, new Versa HD technology, developed by medical technology company Elekta and installed last year at the Cancer Centre London continually reshapes the radiation beam to the fine contours of the tumour and/or breast tissue so that radiation can be delivered more accurately and quickly while minimising damage to healthy surrounding tissue. This is particularly useful in women requiring lymph node radiotherapy as part of their breast cancer treatment.

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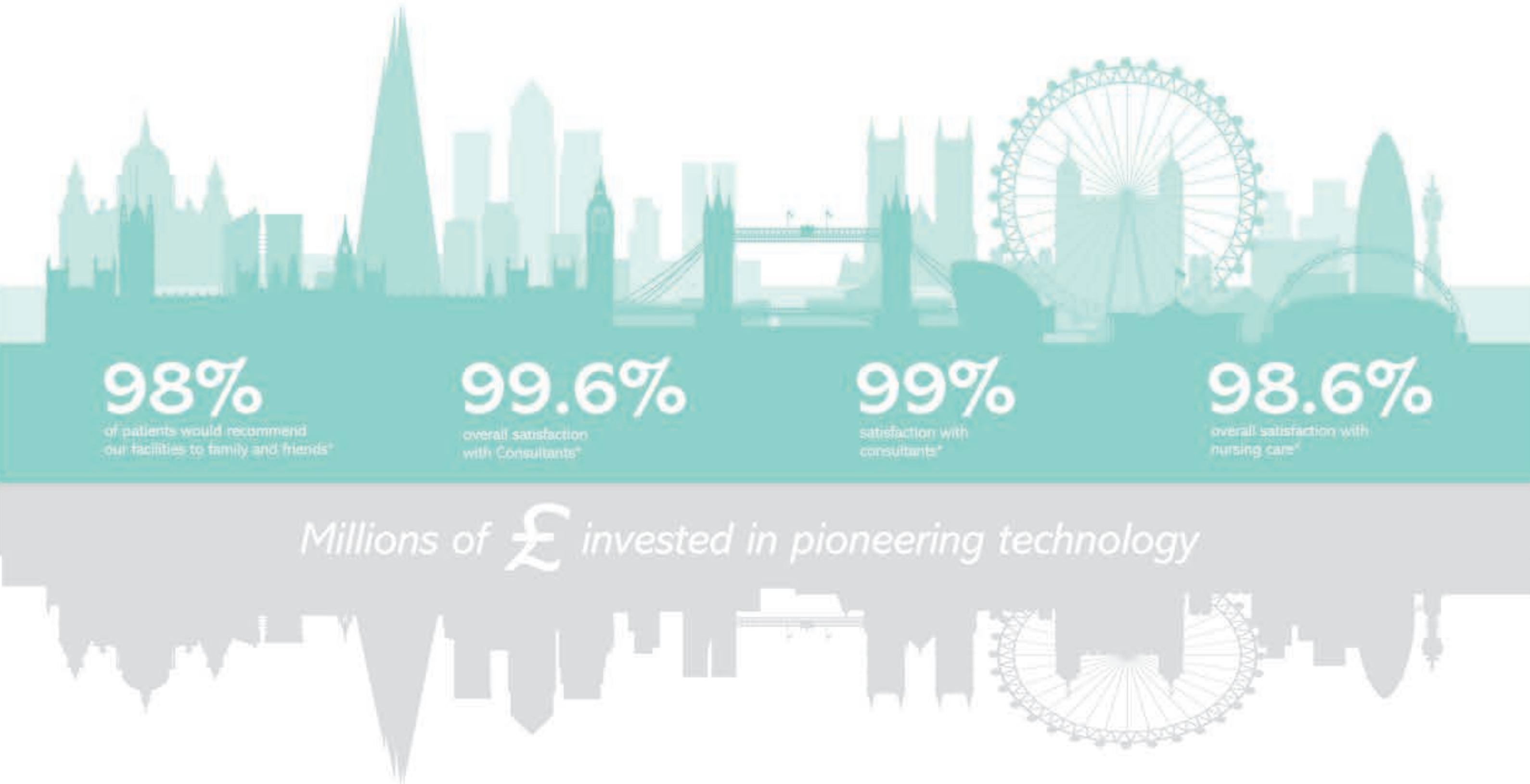

"Using heart-sparing radiotherapy methods including the breath-holding technique approximately halves the radiation dose to the heart," says Dr Kirby. "Assuming there are 1.7 million UK breast cancer survivors in 2040, reducing the mean heart radiation dose (Gy) from 3 to 1Gy could be expected to reduce the number of radiation-related acute coronary events in this population from around 19,500 to 6,000 and the number of deaths from ischaemic heart disease from around 9,000 to 2,000." She concludes: "The use of heart-sparing breast radiotherapy techniques is likely to significantly reduce the incidence of radiation-related cardiovascular disease in survivors of breast cancer."

Brain Tumour Treatment Advances:

The Leeds Gamma Knife Centre, part of Nova Healthcare, is based in one of the largest and most technically advanced cancer treatment centres in Europe (the Leeds Cancer Centre). Gamma Knife® Surgery (Stereotactic radiosurgery) is a non-invasive technique that has proven effective in a wide variety of conditions including benign brain tumours (such as acoustic neuromas and arteriovenous malformations) and also secondary brain metastases. In late 2015, the Gamma Knife Perfexion® will be enhanced by the addition of Elekta's new Icon system meaning the most precise radiosurgery available can be delivered. With stereotactic imaging, online Adaptive DoseControl™, ultra-precise dose delivery and the availability of frameless treatments, Icon is capable of treating virtually any target in the brain, regardless of type, location or volume. As the procedure is non-invasive there is no incision, no pain, and in most cases, no hospitalisation.

Outstanding Customer Service:

While the concepts of quality and comprehensive healthcare are undeniably essential to any patient, the importance of exceptional customer service for the travelling patient cannot be underestimated. As well as first-class medical facilities, Aspen Healthcare private Hospitals and Clinics also offer first-class patient services. These include a concierge service provided by International Patient Coordinators, who may assist overseas patient with anything from arranging travel to and from the hospital, to navigating the healthcare services they require. The patient coordinators are multi-lingual and not only have access to interpreting services, but are also familiar with healthcare services in general, the Consultants and nurses and any cultural considerations that may need to be taken to ensure a smooth and stress-free stay. International patients are offered the support of having their UK-based consultant liaise and communicate with their medical team in their home country, ensuring consistent and continuous care regardless of location.

Quality private healthcare provision is a process of constant evolution and improvement. Aspen Healthcare not only focusses on constantly improving the clinical offering, but also their hospital and clinic infrastructure. They have learnt that investing in all areas, especially in quality, is essential when it comes to patient satisfaction. Through substantial capital investment in existing facilities, they are able to offer their patients the best clinical care, in comfortable, safe and world-class surroundings.

Further information

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Health Technologies and Systems. Coté's development of the instrument, known as a mobile-optical-polarization imaging device (MOPID), is detailed in the online scientific journal *Scientific Reports*, published by *Nature*.

MOPID, Coté explains, is capable of accepting a small cartridge containing a patient's blood-smear sample. The sample is then imaged using polarized light in order to detect the presence of hemozoin crystals, Coté notes. Hemozoin crystals are the byproduct of the malaria parasite, and they occur in the blood of an infected host. As polarized light bounces off of these crystals, they appear as tiny bright dots when observed through the phone's camera lens – enabling an instant, accurate diagnosis.

While polarized light has been the preferred option for malaria detection due to its increased sensitivity, its implementation into mainstream microscopy has been hindered by its complex configurations, maintenance, size and cost – up until now.

"What we've achieved with MOPID is the design of a polarized microscope platform using a cell phone, which can detect birefringence in histological specimens infected with the malaria parasite," Coté says. "It's a simple, low-cost, portable device that we believe is more sensitive than the standard microscope that uses white light and just as accurate as the more costly and complex benchtop version of a polarized microscope."

MOPID could represent a significant advancement in the detection methods for malaria, a disease that the World Health Organization estimates was responsible for 584,000 deaths in 2013, along with an estimated 198 million new cases in that span of time. Given those numbers, a dire need exists for a low-cost, accurate and portable method of detection, particularly in areas of the world with few resources, Coté says. Many of these regions, he notes, suffer from misdiagnoses due to inadequate or even nonexistent medical infrastructures – and the consequences can be devastating. While failure to treat malaria can be fatal, the administering of unnecessary malaria medications as a result of misdiagnoses can results in new, drug-resistant strains of the disease in addition to increasing costs for malaria medications, Coté notes.

Research breakthrough in fight against muscle wasting disease

It is estimated that half of all cancer patients suffer from a muscle wasting syndrome called cachexia. Cancer cachexia impairs quality of life and response to therapy, which increases morbidity and mortality of cancer patients. Currently, there is no approved treatment for muscle wasting but a new study from the Research Institute of the McGill University Health Centre (RI-MUHC) and University of Alberta could be a game changer in improving both patients' quality of life and longevity. The research team discovered a new gene involved in muscle wasting that could be a good target for drug development.

These findings, which have been published in the September 2015 issue of the *FASEB Journal*, (Federation of American Societies for Experimental Biology), could have huge clinical implications as muscle wasting is also associated with other serious illnesses such as HIV/AIDS, heart failure, rheumatoid arthritis and chronic obstructive pulmonary disease and is also a prominent feature of aging.

"We discovered that the gene USP19 appears involved in human muscle wasting and that in mice, once inhibited, it could protect against muscle wasting," says lead author Dr Simon Wing, MUHC endocrinologist and professor of Medicine at McGill University. "Muscle wasting is a huge unmet clinical need. Recent studies show that muscle wasting is much more common in cancer than we think."

In this study, researchers worked with mice models that were lacking the gene USP19 (USP19 KO) and decided to look at two common causes of muscle wasting. They observed whether such mice were resistant to muscle wasting induced by a high level of cortisol – a stress hormone released in your body any time you have a stressful situation such as an illness or a surgery. They also looked at the loss of nerve supply because muscle atrophy can occur following a stroke when people are weak and bedbound. In addition, they looked at USP19 levels in human muscle samples from the most common cancers that cause muscle wasting: lung and gastrointestinal (pancreas, stomach, and colon).

"We found that USP19 KO mice were wasting muscle mass more slowly; in other words, inhibiting USP19 was protecting against both causes of muscle wasting," explains Dr Wing who is also the director of the Experimental Therapeutics and Metabolism Program at the RI-MUHC. "Our results show there was a very good correlation between the expression of this gene in the human muscle samples and other biomarkers that reflect muscle wasting."

According to recent studies, the prevalence of cachexia is high, ranging from 5 to 15% in chronic heart failure or COPD to 60 to 80% in advanced cancer. In all of these chronic conditions, muscle wasting predicts earlier death.

"Cancer patients often present with muscle wasting even prior to their initial cancer diagnosis," says Dr Antonio Vigano, director of the cancer rehabilitation program and cachexia clinic at the MUHC. "In cancer, cachexia also increases your risk of developing toxicity from chemotherapy and other oncological treatments, such as surgery and radiotherapy. At the McGill Nutrition and Performance Laboratory we specialize in cachexia and sarcopenia. By treating these two pathologic conditions through inhibiting the USP19 gene, at an early, rather than late, stage of the cancer trajectory, not only can we potentially improve the quality of life of patients, but also allow them to better tolerate their oncological treatments, to stay at home for a longer period of time, and to prolong their lives."

Do mobile devices affect pacemakers?

In a talk on 'the environmental effects on patients with pacemakers and ICD' at the European Society of Cardiology (ESC) Congress in London in September, Mohammad Amin, from the Cardiac Centre, Bahrain explained: "The reality of modern living is that we're surrounded by multiple devices which communicate with each other wirelessly. Problems can arise when this technology coexists in the same environment as heart devices. Complete avoidance

is impractical, so it's important for patients to get advice before having devices implanted. We reassure them that the environment is safe so long as they stick to a few simple rules and remain vigilant for risks."

Use of pacemakers and ICDs in Europe is still rising. Data from EUCOMED, the organisation representing the European medical device industry, show the number of pacemakers per million inhabitants in Europe rising from 738 in 2005 to 923 in 2012, while the number of defibrillators rose from 70 per million in 2005 to 167 in 2012. Such increases have coincided with similar advances in wireless technologies and sharp rises in background levels of electromagnetic fields.

Because cardiac electronic devices are able to sense electrical activity and use electromagnetic waves for communication, they are susceptible to electromagnetic interference (EMI) from surrounding radiation. While modern cardiac devices have built-in features to protect them from interference, including hermetic shielding and filters designed to reject EMI, interference can still take place.

If devices do detect EMIs, explained Haran Burri, from University Hospital, Geneva, this can result in either inhibition of pacing (ie, no pacing, even in a patient without his own rhythm, which is life threatening), asynchronous pacing (which does not take into account the patient's intrinsic beats) or inappropriate ICD therapy (shocks because the device believes there is an arrhythmia).

Device manufacturers and regulatory authorities currently recommend safety distances of 15 cm between pacemakers or ICDs and mobile phones. Such recommendations are based on studies from over a decade ago, which described EMI between cell phones and pacemakers before the advent of effective filters.

"The device companies continue to issue these recommendations in order to stay conservative, despite voluntary testing of pacemakers and ICDs to ensure compatibility with cell phones without any restrictions of distance," said Burri.

In a study presented earlier this year 308 ICD patients were exposed to electromagnetic fields induced by three common smartphones placed directly above the device. Results showed that one patient was affected by EMI when the patient's MRI-compatible ICD mis-detected electromagnetic waves from two of the smartphones.

"The study needs further investigation and should not lead to hasty conclusions,'

said Burri. “The overwhelming evidence does not show any interference whatsoever between modern pacemakers, ICDs and cell phones.” Burri found no evidence of cell phone interference in his own study in 63 ICD patients. ”Recommendations regarding cell phone use should be evidence based, pragmatic, and allow device patients to live as normally as possible without unnecessary stress.”

While inappropriate ICD shocks and pacemaker inhibition have been associated with prolonged (several minutes) exposure to electromagnetic security systems (such as antishoplifting gates and metal detectors), such problems are rarely seen in exposures lasting 10 to 15 seconds.

“The general advice is for patients to walk briskly across electronic surveillance devices,” said Chi-KeongChing, from National Heart Centre, Singapore. If scanning with a hand-held metal detector is necessary, he adds, patients should warn security staff and ask them not to hold the metal detector near the device any longer than necessary, or ask for an alternative form of personal search.

While portable digital music devices (such as iPods) and headsets (which contain magnets) can interfere with cardiac devices, risks are low. “There aren’t any actual case reports showing adverse events,” said Amin. The general recommendations, he adds, are to keep media players and headsets at least 15 cm from the device and to avoid draping headphones around their neck over the device.

Portable media players also must be turned off when patients go to the clinic for regular device follow-up appointments. “The issue here is that portable media players emit electromagnetic waves in the same range as used for device interrogation. While this doesn’t affect pacemaker function, it can affect interrogation readings,” cautioned Amin.

Whole-body PET scan with new imaging agent can locate hidden blood clots

A novel radiopharmaceutical probe developed at Massachusetts General Hospital (MGH) has the potential of providing physicians with information that could save the lives of patients with ischemic stroke or pulmonary embolism – conditions caused when important blood vessels are blocked by a clot that has travelled from another part of the body. In a report that appears in the October 2015 issue of the journal *Arteriosclerosis*, *Thrombosis and Vascular Biology*, the MGH team describes using this new probe to conduct full-body scans in an animal model.

“We found that, with a single intravenous injection of our clot-finding probe 64Cu-FBP8, we were able to detect blood clots anywhere in the body using a positron emission tomography (PET) scan,” says lead author Francesco Blasi, PharmD, PhD, formerly a research fellow at the Martinos Center for Biomedical Imaging at MGH and now at the University of Torino in Italy. “We also found that the probe may be able to distinguish recently formed clots from older ones – which can indicate the likelihood that a particular clot is the source the clot causing a stroke or pulmonary embolism – and reveal the composition of a clot, which can determine whether it will respond to clot-dissolving treatments.”

The authors note that, although blood clots are a leading cause of illness and death, current imaging techniques for identifying the presence and location of clots only work for particular areas of the body; none is useful for all of the regions from which a clot can originate. Standard practice for identifying the source of a clot that causes a stroke may involve multiple imaging studies – ultrasound, echocardiography, MR or CT angiography – that can be both expensive and time consuming, possibly delaying the use of therapies to prevent a second stroke. Study leader Peter Caravan, PhD, of the Martinos Center and his colleagues have developed several PET imaging agents that target the protein fibrin, which is generated as part of the process of clot formation; and 64Cu-FBP8 appeared to be the most promising.

To test the probe’s ability to find clots anywhere in the body, the investigators induced the formation of clots in the carotid arteries and the femoral veins of a group of rats. Whole-body imaging studies combining 64Cu-FBP8 PET and CT scanning were conducted either one, three or seven days after clot formation. The team members reading the images, who had not been informed of the precise locations where clots had been induced, accurately detected the locations 97% of the time. The intensity of the signal generated by 64Cu-FBP8 decreased with the age of the clot and with the amount of fibrin it contained, as confirmed by pathologic analysis. Caravan notes that, because older clots are more stable, they are less likely to be the source of a clot that caused a stroke. Since clot-dissolving drugs act by targeting fibrin, younger fibrin-rich clots are better candidates for treatment with those agents, the use of which needs to be balanced against the risk of bleeding.

“A clot causing a stroke can arise in the arteries of the neck, from the aorta in the chest, from within the heart or from veins deep within the legs; and knowing if any clot remains at those locations is important because it indicates a higher risk of a second stroke. The patient may be treated differently if that parent clot is still present than if no clot remains,” says Caravan, who is an associate professor of Radiology at Harvard Medical School and co-director of the Institute for Innovation in Imaging at MGH. “A whole-body technique could also determine whether a patient’s shortness of breath is caused by a pulmonary embolism and identify both the source and the extent of the parent clot in the deep veins.”

Caravan and his colleagues will soon be testing 64Cu-FBP8 in human volunteers to better understand how the probe is distributed through the body and how long it remains after injection, information essential to designing studies of its diagnostic effectiveness in patients. Patent rights for the fibrin-binding peptide used in 64Cu-FBP8 have been licensed to Factor 1A, a company co-founded by Caravan. MEH

Health crisis deepening, says WHO

WHO issued a statement late October saying ongoing violence and insecurity continues to limit the delivery of aid in Taiz governorate in Yemen, where more than 3.3 million people, including 300,585 internally displaced persons, are in critical need of health assistance.

"The situation in Taiz is alarming," said WHO Representative in Yemen Dr Ahmed Shadoul. "Hundreds of thousands of innocent civilians need life-saving medicines and health services, food, safe water and fuel. Humanitarian and health needs are increasing and the limited response we have been able to provide is not enough."

In response, WHO has provided 30 metric tons of medicines and medical supplies to Taiz governorate in Yemen, sufficient for 600,000 beneficiaries, including 250,000 people inside Taiz City. The supplies include health kits, including surgical and trauma, diarrheal disease kits, Interagency Emergency Health Kits, and Mother and Child Health Kits. Oxygen cylinders, blood bags and other medical supplies were also distributed to six hospitals, three health centres and one health office in six districts.

In addition, almost one million litres of water are being distributed to Taiz City by WHO, and water quality monitoring is being conducted to reduce the risk of waterborne diseases.

Dengue

Through collaboration with health authorities in Taiz and partner NGO the Charitable Society for Social Welfare, WHO has been controlling a dengue fever outbreak in the Governorate since earlier this year. The medicines that WHO has provided since early September include those used in supportive treatment for dengue fever; since March, more than 1,600 cases of dengue fever have been reported in Taiz governorate. They have also distributed insecticide-treated mosquito nets, educated families on the causes of the diseases, conducted indoor spraying to disrupt breeding grounds

Shortages of fuel and medicines have forced most health units in the villages to shut down, while some hospitals across the governorate have closed their intensive care units. Patients with chronic diseases such as diabetes, kidney disease and cancer are unable to access life-saving essential medicines and dialysis centers due to limited access of health facilities and reduced functionality of others.

Shortages in food have led to a significant increase in prices, with many people now unable to afford basic food items, resulting in increased risk of malnutrition, especially in children. The main water wells providing safe drinking have shut down due to interruptions in power supply and lack of fuel for generators.

"There is so much more we can do for the people of Taiz, but we need unrestricted access so that we can reach more people, and additional funding to allow us to scale up our response," said Dr Shadoul. "Unless we are able to overcome these two challenges, more innocent lives are at risk. I call on all parties to the conflict to allow delivering aid into Taiz, and for the international donor community to support our work. We urgently need US$60 million to continue our life-saving response operations across the country until the end of this year."

Urgent action needed to prevent famine in Yemen

The lack of international action on the crisis in Yemen shows worrying parallels with the delayed response to the famine in Somalia that killed more than a quarter of a million people, Justine Greening, the UK's International Development Secretary warned in September.

The Secretary set out a package of urgent support from the UK including 20 million pounds (US$30.8 million) in new life saving aid. And she highlighted the scale of the growing humanitarian crisis in Yemen, which the UN has warned is now on the brink of famine, urging the international community to act before it is too late.

Justine Greening said: "The world cannot close its eyes to the threat of famine in Yemen. We need urgent action now to prevent thousands of needless deaths. Ultimately, only a ceasefire and a durable political process can resolve this crisis. But in the short term there are practical steps that can and will save lives.

"We need imports of fuel, food and other vital supplies to flow into Yemen in much larger quantities. Aid agencies must get better access within Yemen so they can save lives. And other countries must follow our lead and step up with urgently needed new funding.

Ongoing fighting in Yemen is disrupting the delivery of essential fuel and food to those most in need, putting millions of lives at risk. Four out of every five Yemenis – more than 80% of the population – are in desperate need of humanitarian assistance and nearly 1.5 million people have been displaced by fighting. The UN has warned that across the country six million people face critical food shortages and that 96,000 children are now starving in Hodeidah alone.

Saudi Arabia, the United Arab Emirates and the US have also pledged funds. The funding will go to key partner agencies including the World Food Programme, UNICEF and NGOs operating on the ground via UN OCHA's (Office for the Coordination of Humanitarian Affairs) Yemen Humanitarian Pooled Fund.

MSF in Syria reports spike in civilian war casualties

Makeshift hospitals supported by Médecins Sans Frontières (MSF) in September reported a series of extreme mass-casualty influxes resulting from 20 consecutive days of intense bombing attacks in August on markets and civilian buildings in the besieged communities of East Ghouta, near the Syrian capital. At least 150 patients per day have been treated for war wounds during this period. In parallel, the stranglehold of siege tactics has been both tightened and expanded, with three areas to the north of Damascus, where at least 600,000 people live, newly put under siege.

Thirteen makeshift hospitals that MSF supports in the East Ghouta besieged area report being almost permanently overwhelmed with violent trauma cases from 12 to 31 August. MSF has precise data for the mass casualty influxes at six hospitals, revealing 377 deaths and 1,932 wounded. 104 of the deaths and 546 of the wounded were children under fifteen years old – approximately one in four of the victims.

"This is one of the bloodiest months since the horrific chemical weapons attack in August 2013," says Dr Bart Janssens, MSF Director of Operations. "It is clear that there were at least 150 war-wounded treated per day in East Ghouta during these 20 days of bombing. The hospitals we support are makeshift structures, where getting medicine is a dangerous and challenging endeavour, and it is unthinkable that they would have been able to cope with this intensity of emergency trauma response with such constraints. The Syrian doctors' continued unswerving effort to save lives in these circumstances is deeply inspiring, but the situation that has led to this is totally outrageous."

At the same time, the sieges around Damascus have both tightened and expanded. Three new areas to the north of Damascus – All Tall, Hameh and Qoudsaaya – where at least 600,000 people live have been newly put under siege since 22 July. This means that people are stopped and searched and no medical supplies, food, fuel or other basic essentials are allowed in. And the already-strict siege on areas such as Mouadamiyieh has tightened, meaning that not only are medical items and food blocked, but now all pedestrian traffic in and out is completely impossible. Now more than ever medical evacuations out of most besieged areas are impossible, even for patients who urgently need technically advanced life-saving medical attention.

"The stranglehold of siege means these communities are being deprived of the basic goods that are essential to their survival," says Dr Janssens. "We are aware of around 400 amputations conducted in East Ghouta in August. Many of these people's limbs could have probably been saved if the medical care in besieged areas were not so desperately constrained. Via the medical networks we are still able to get medical supplies through the siege lines, but it is becoming increasingly difficult."

MSF is urgently organising resupply of essential medical items to replenish exhausted pharmacy stocks, including more than 5,000 IV fluid pouches and 1,500 pouches of blood.

> The Syrian doctors' continued unswerving effort to save lives in these circumstances is deeply inspiring, but the situation that has led to this is totally outrageous.

Four million Syrians have fled Syria and millions are refugees in neighbouring countries, while thousands are risking death and detention on the way to Europe. Approximately two million people are under siege in places like East Ghouta where violence and deprivation of basic life necessities are the daily reality.

"August was the worst month we've seen medically," says an MSF-supported hospital director in one of the besieged areas. "Anyone who isn't injured or dead can count themselves lucky. Enough death and siege. Enough blood and misery. Enough." MEH

MSF in Syria

MSF operates six medical facilities in the north of Syria and directly supports more than 100 health posts and field hospitals throughout the country, with a particular focus on the besieged areas. These are mostly makeshift facilities with no MSF staff present, where MSF provides both material support and distance training support to help the Syrian medics cope with the extreme medical needs. This support network has been built up over the past four years. – *www.msf.org*

Preliminary study finds that Ebola virus persists in the semen of some survivors

A growing volume of data from careful clinical observation and testing of people who have recovered from acute Ebola virus disease indicates that the Ebola virus can persist at various sites in the body for many months in some people. Such sites include the inside of the eye, semen, amniotic fluid, the placenta, breast milk and the central nervous system.

A preliminary study on Ebola virus persistence in the semen of male survivors in Sierra Leone, has found that some men still produce semen that test positive on real time – polymerase chain reaction (RT-PCR), a test used to detect Ebola virus genetic material (RNA) – for nine months or longer.

The study, published 15 October 2015 in the *New England Journal of Medicine*, provides the first results of a long-term study being jointly conducted by the Sierra Leone Ministry of Health and Sanitation, Sierra Leone Ministry of Defence, the World Health Organization and the US Centers for Disease Control and Prevention.

The first phase of this study has focused on testing for Ebola virus in semen because of past research showing persistence in that body fluid. Better understanding of viral persistence in semen is important for supporting survivors to recover and to move forward with their lives.

"These results come at a critically important time, reminding us that while Ebola case numbers continue to plummet, Ebola survivors and their families continue to struggle with the effects of the disease. This study provides further evidence that survivors need continued, substantial support for the next 6 to 12 months to meet these challenges and to ensure their partners are not exposed to potential virus," said Bruce Aylward, WHO Director-General's Special Representative on the Ebola Response.

Based on current results, the presence of virus in semen decreases in the months after recovery from Ebola virus disease. However, one participant was still positive 9.5 months after his illness began. It is still not known how long the virus can persist in semen but this study will yield more information about how long it takes for men to clear Ebola virus from semen.

While it is now clear that virus persists longer in semen than previously thought, the risk of people being infected with Ebola by those who have survived the disease is probably low. Although sexual transmission by survivors with persistent virus is a possibility, it appears to be rare.

"EVD survivors who volunteered for this study are doing something good for themselves and their families and are continuing to contribute to the fight against Ebola and our knowledge about this disease," said Yusuf Kabba, National President of the Sierra Leone Association of Ebola Survivors.

Why some study participants had cleared the fragments of Ebola virus from semen earlier than others remains unclear. The US Centers for Disease Control and Prevention in Atlanta is conducting further tests of the samples to determine if the virus is live and potentially infectious.

"Ebola survivors face an increasing number of recognized health complications," said CDC Director Tom Frieden, M.D., M.P.H. "This study provides important new information about the persistence of Ebola virus in semen and helps us make recommendations to survivors and their loved ones to help them stay healthy."

> These results come at a critically important time, reminding us that while Ebola case numbers continue to plummet, Ebola survivors and their families continue to struggle with the effects of the disease.

Until more is known, the more than 8,000 male Ebola survivors across the three countries need appropriate education, counselling and regular testing so they know whether Ebola virus persists in their semen; and the measures they should take to prevent potential exposure of their partners to the virus. Until a male Ebola survivor's semen has twice tested negative, he should abstain from all types of sex or use condoms when engaging in sexual activity. Hands should be washed after any physical contact with semen.

In the current West African outbreak, continued vigilance to identify, provide care for, contain and stop new cases, are key strategies on the road to achieving zero cases. MEH

WHO issues new guidelines on the use of antiretroviral medicines

The World Health Organization (WHO) has released new guidelines on the use of antiretroviral medicines. These have been welcomed by UNAIDS as a significant step towards improving the lives of people living with HIV and reducing the transmission of the virus.

The guidelines recommend that antiretroviral medicines be prescribed to people as soon as possible after their HIV diagnosis regardless of their CD4 count (CD4 is a measure of immune system health).The guidelines also recommend that people at higher risk of HIV infection be given access to pre-exposure prophylaxis (PrEP) as part of a combined HIV prevention strategy.

"These new guidelines and recommendations are a highly significant moment in the AIDS response," said Michel Sidibé, Executive Director of UNAIDS. "The medicines and scientific tools now at our disposal provide us with a real opportunity to save millions of lives over the coming years and to end the AIDS epidemic by 2030."

The WHO guidelines, produced with the support of UNAIDS, are being released following the increased weight of research evidence that has emerged over the past 12 months. This included data from the international randomized clinical trials Temprano and START (Strategic Timing of Antiretroviral Treatment), which found compelling evidence of the benefits of immediately starting antiretroviral therapy. The data from Temprano and START followed a series of research findings over several years demonstrating the health benefits of starting HIV treatment earlier.

"We welcome the early release of this guideline. The two recommendations are critically important to moving us towards the fast-track treatment and prevention goals. Expanding access to treatment and prevention, especially for key populations and adolescent girls, is now a major global health challenge that requires our collective commitment and determination. We must embrace ambition if we are going to end HIV as a public health threat," said Mark Dybul, Executive Director, The Global Fund.

Several research studies among groups at higher risk of HIV infection have also indicated the significant efficacy of PrEP in reducing new HIV infections. The new guidelines recommend that PrEP be offered to anybody at substantial risk of HIV exposure.

The guidelines will also help reinforce the UNAIDS Fast-Track approach, which encompasses a set of targets to be reached by 2020. The targets include 90% of all people living with HIV knowing their HIV status, 90% of people who know their HIV-positive status having access to treatment and 90% of people on treatment having suppressed viral loads. They also include reducing new HIV infections by 75% and achieving zero discrimination.

"We are at a crossroads in the response to AIDS," said Mr Sidibé. "We know what works – now we need to put people first and fully respect their right to health."

UNAIDS reaffirms the importance of respecting a person's right to know their HIV status and to decide whether and when to begin antiretroviral therapy. HIV prevention and treatment decisions must be well-informed and voluntary. Wider and more equitable delivery of antiretroviral therapy and PrEP will require increased efforts to address the social and legal barriers that inhibit access to health services for people living with HIV and for marginalized populations at higher risk of infection.

Chris Beyrer, President, International AIDS Society, said: "Providing antiretroviral treatment upon diagnosis is the best way to preserve the health of people living with HIV and PrEP ensures prevention equity for all. The WHO adoption of these treatment and prevention measures in their guidelines is a major milestone for the HIV/AIDS response. This sends a signal that I hope will inspire governments, funders, and the international community to act now."

on the WEB Guideline on when to start antiretroviral therapy and on pre-exposure prophylaxis for HIV
www.who.int/hiv/pub/guidelines/earlyrelease-arv/en/

William C. Campbell – Research Fellow Emeritus at Drew University, Madison, NJ, USA

Satoshi Omura – Professor Emeritus at Kitasato University, Tokyo, Japan

Youyou Tu – Chief Professor at the China Academy of Traditional Chinese Medicine, Beijing, China

Joint award for discoverers of therapies for parasitic infections and malaria

The 2015 Nobel Prize in Physiology or Medicine was awarded jointly.

One half jointly to William C. Campbell and Satoshi Omura for their discoveries concerning a novel therapy against infections caused by roundworm parasites and the other half to Youyou Tu for her discoveries concerning a novel therapy against Malaria

Diseases caused by parasites have plagued humankind for millennia and constitute a major global health problem. In particular, parasitic diseases affect the world's poorest populations and represent a huge barrier to improving human health and wellbeing. This year's Nobel Laureates have developed therapies that have revolutionized the treatment of some of the most devastating parasitic diseases.

William C. Campbell and Satoshi Omura discovered a new drug, Avermectin, the derivatives of which have radically lowered the incidence of River Blindness and Lymphatic Filariasis, as well as showing efficacy against an expanding number of other parasitic diseases. Youyou Tu discovered Artemisinin, a drug that has significantly reduced the mortality rates for patients suffering from Malaria.

These two discoveries have provided humankind with powerful new means to combat these debilitating diseases that affect hundreds of millions of people annually. The consequences in terms of improved human health and reduced suffering are immeasurable.

Parasites cause devastating diseases

We live in a biologically complex world, which is populated not only by humans and other large animals, but also by a plethora of other organisms, some of which are harmful or deadly to us.

A variety of parasites cause disease. A medically important group are the parasitic worms (helminths), which are estimated to afflict one third of the world's population and are particularly prevalent in sub-Saharan Africa, South Asia and Central and South America. River Blindness and Lymphatic Filariasis are two diseases caused by parasitic worms. As the name implies, River Blindness (Onchocerciasis) ultimately leads to blindness, because of chronic inflammation in the cornea. Lymphatic Filariasis, afflicting more than 100 million people, causes chronic swelling and leads to life-long stigmatizing and disabling clinical symptoms, including Elephantiasis (Lymphedema) and Scrotal Hydrocele.

Malaria has been with humankind for as long as we know. It is a mosquito-borne disease caused by single-cell parasites, which invade red blood cells, causing fever, and in severe cases brain damage and death. More than 3.4 billion of the world's most vulnerable citizens are at risk of contracting Malaria, and each year it claims more than 450 000 lives, predominantly among children.

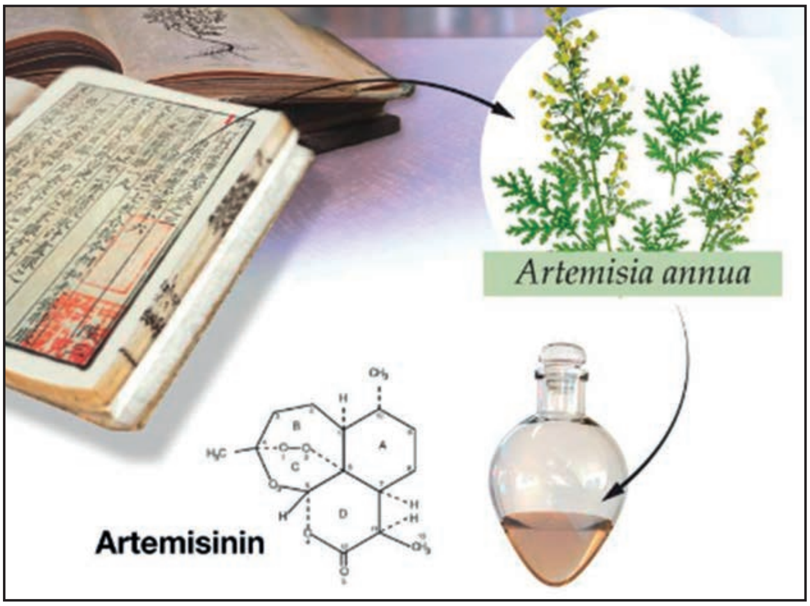
From bacteria and plants to novel anti-parasite therapies

After decades of limited progress in developing durable therapies for parasitic diseases, the discoveries by this year's Laureates radically changed the situation.

Satoshi Omura, a Japanese microbiologist and expert in isolating natural products, focused on a group of bacteria, *Streptomyces*, which lives in the soil and was known to produce a plethora of agents with antibacterial activities (including Streptomycin discovered by Selman Waksman, Nobel Prize 1952). Equipped with extraordinary skills in developing unique methods for large-scale culturing and characterization of these bacteria, Omura isolated new strains of *Streptomyces* from soil samples and successfully cultured them in the laboratory. From many thousand different cultures, he selected about 50 of the most promising, with the intent that they would be further analyzed for their activity against harmful microorganisms

William C. Campbell, an expert in parasite biology working in the USA, acquired Omura's *Streptomyces* cultures and explored their efficacy. Campbell showed that a component from one of the cultures was remarkably efficient against parasites in domestic and farm animals. The bioactive agent was purified and named Avermectin, which was subsequently chemically modified to a more effective compound called Ivermectin. Ivermectin was later tested in humans with parasitic infections and effectively killed parasite larvae (microfilaria). Collectively, Omura and Campbell's contributions led to the discovery of a new class of drugs with extraordinary efficacy against parasitic diseases.

Malaria was traditionally treated by chloroquine or quinine, but with declining success. By the late 1960s, efforts to eradicate Malaria had failed and the disease was on the rise. At that time, Youyou Tu in China turned to traditional herbal medicine to tackle the challenge of developing novel Malaria therapies. From a large-scale screen of herbal remedies in Malaria-infected animals, an extract from the plant *Artemisia annua* emerged as an interesting candidate. However, the results were inconsistent, so Tu revisited the ancient literature and discovered clues that guided her in her quest to successfully extract the active component from *Artemisia annua*. Tu was the first to show that this component, later called Artemisinin, was highly effective against the Malaria parasite, both in infected animals and in humans. Artemisinin represents a new class of antimalarial agents that rapidly kill the Malaria parasites at an early stage of their development, which explains its unprecedented potency in the treatment of severe Malaria.



Youyou Tu searched ancient literature on herbal medicine in her quest to develop novel malaria therapies. The plant Artemisia annua turned out to be an interesting candidate, and Tu developed a purification procedure, which rendered the active agent, Artemisinin, a drug that is remarkably effective against Malaria.

Avermectin, Artemisinin and global health

The discoveries of Avermectin and Artemisinin have fundamentally changed the treatment of parasitic diseases. Today the Avermectin-derivative Ivermectin is used in all parts of the world that are plagued by parasitic diseases. Ivermectin is highly effective against a range of parasites, has limited side effects and is freely available across the globe. The importance of Ivermectin for improving the health and well-being of millions of individuals with River Blindness and Lymphatic Filariasis, primarily in the poorest regions of the world, is immeasurable. Treatment is so successful that these diseases are on the verge of eradication, which would be a major feat in the medical history of humankind. Malaria infects close to 200 million individuals yearly. Artemisinin is used in all Malaria-ridden parts of the world. When used in combination therapy, it is estimated to reduce mortality from Malaria by more than 20% overall and by more than 30% in children. For Africa alone, this means that more than 100,000 lives are saved each year.

The discoveries of Avermectin and Artemisinin have revolutionized therapy for patients suffering from devastating parasitic diseases. Campbell, Omura and Tu have transformed the treatment of parasitic diseases. The global impact of their discoveries and the resulting benefit to mankind are immeasurable. MEH

Dignity and mental health

Thousands of people with mental health conditions around the world are deprived of their human rights. They are not only discriminated against, stigmatised and marginalised but are also subject to emotional and physical abuse in both mental health facilities and the community. Poor quality care due to a lack of qualified health professionals and dilapidated facilities leads to further violations.

The theme for this year's World Mental Health Day, observed on 10 October, is "Dignity in mental health". This year, WHO is raising awareness of what can be done to ensure that people with mental health conditions can continue to live with dignity, through human rights oriented policy and law, training of health professionals, respect for informed consent to treatment, inclusion in decision-making processes, and public information campaigns.

What is dignity?

Dignity refers to an individual's inherent value and worth and is strongly linked to respect, recognition, self-worth and the possibility to make choices. Being able to live a life with dignity stems from the respect of basic human rights including:

- freedom from violence and abuse;
- freedom from discrimination;
- autonomy and self-determination;
- inclusion in community life; and
- participation in policy-making

The dignity of many people with mental health conditions is not respected

- Frequently they are locked up in institutions where they are isolated from society and subject to inhumane and degrading treatment.
- Many are subjected to physical, sexual and emotional abuse and neglect in hospitals and prisons, but also in their communities.
- They are very often deprived of the right to make decisions for themselves. Many are systematically denied the right to make decisions about their mental health care and treatment, where they want to live, and their personal and financial affairs.
- They are denied access to general and mental health care. As a consequence, they are more likely to die prematurely, compared with the general population.
- They are often deprived of access to education and employment opportunities. Stigma and misconceptions about mental health conditions means that people also face discrimination in employment and are denied opportunities to work and make a living. Children with mental health conditions are also frequently excluded from educational opportunities. This leads to marginalisation and exclusion from employment opportunities in later life.
- They are prevented from participating fully in society. They are denied the possibility to take part in public affairs, to vote or stand for public office. They are not given the opportunity to participate in decision-making processes on issues affecting them, such as mental health policy and legislative or service reform. In addition, access to recreational and cultural activities is often denied to people with mental health conditions.

How can we promote the rights and dignity of people with mental health conditions?

In the healthcare system we need to provide better support and care for people with mental health conditions by:

- providing community-based services, encompassing a recovery approach that inspires hope and supports people to achieve their goals and aspirations;
- respecting people's autonomy, including their right to make their own decisions about their treatment and care; and
- ensuring access to good quality care which promotes human rights, is responsive to people's needs, and respects their values, choices and preferences.

In the community we need to:

- support people with mental health conditions to participate in community life, and acknowledge the value of their contribution;
- respect their autonomy to make decisions for themselves, including about their living arrangements and personal and financial matters;
- ensure their access to employment, education, housing, social support and other opportunities; and
- include people in decision-making processes on issues affecting them, including policy, legislation and health service reform relating to mental health.

The QualityRights project

Through the QualityRights project, WHO is committed to ensuring that the dignity of people with mental health conditions is respected all around the world.

WHO QualityRights promotes dignity by:

- Advocating for political and social inclusion – working collaboratively with governments, health professionals, families and people with mental health conditions to ensure that the views of the latter are heard and listened to at policy, service and community levels.
- Promoting a recovery approach to mental health care – This means much more than merely treating or managing symptoms. It is about building the capacity of mental health workers to support people with mental health conditions to realise their hopes and dreams, to work, to enjoy family and friends, and to live a full and rewarding life in their community.
- Supporting human rights training and capacity building – QualityRights has developed training programmes to build the capacity of families and healthcare professionals to understand and promote the rights of people with mental health conditions, and to change attitudes and practices towards them.
- Encouraging the creation and strengthening of peer support and civil society organizations – QualityRights is helping people with mental health conditions and families feel connected through mutually supportive relationships and empowering them to advocate for the rights and dignity of people with mental health conditions. MEH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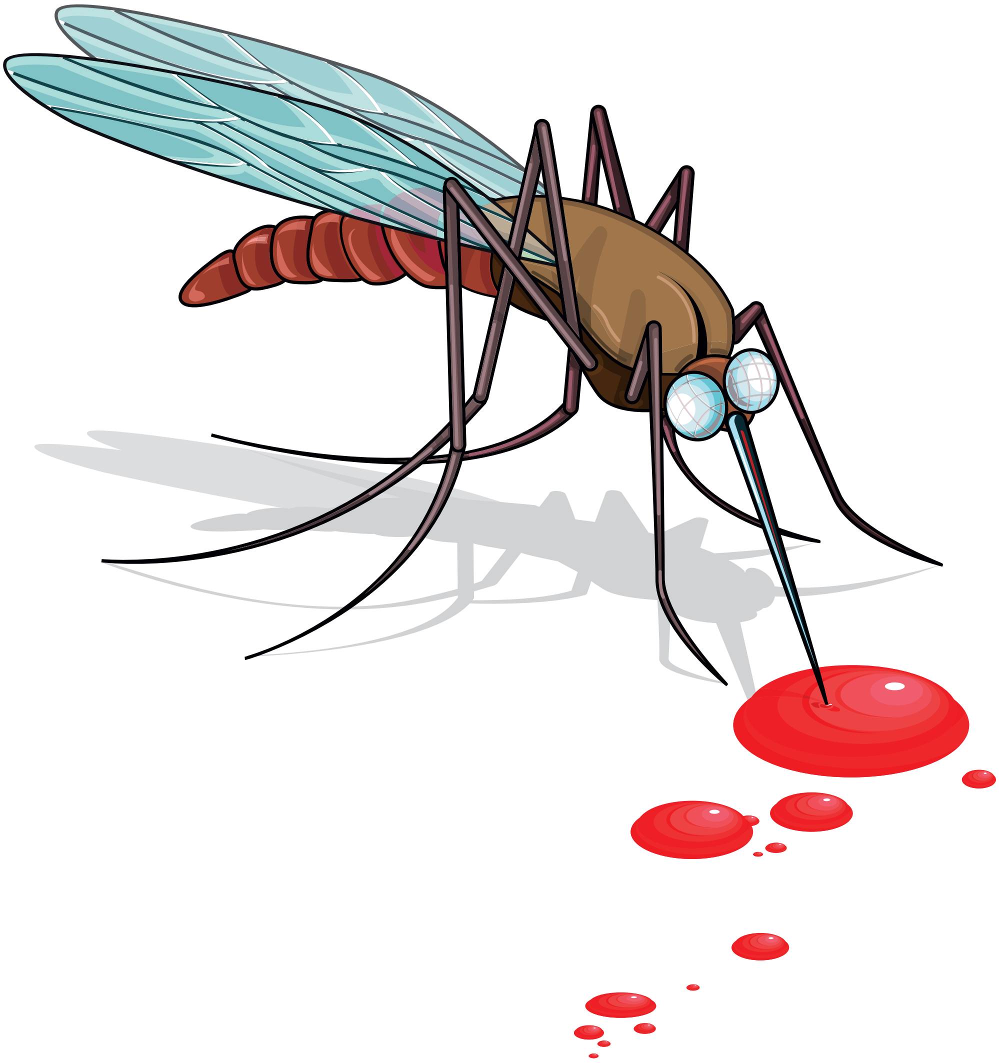

Reversing incidence of malaria – one of the great success stories of the MDGs

Malaria death rates have plunged by 60% since 2000, translating into 6.2 million lives saved, the vast majority of them children, according to a joint WHO-UNICEF report released in September.

The report – "*Achieving the malaria MDG target*" – shows that the malaria Millennium Development Goal (MDG) target to "have halted and begun to reverse the incidence" of malaria by 2015, has been met "convincingly", with new malaria cases dropping by 37% in 15 years.

"Global malaria control is one of the great public health success stories of the past 15 years," said Dr Margaret Chan, Director-General of WHO. "It's a sign that our strategies are on target, and that we can beat this ancient killer, which still claims hundreds of thousands of lives, mostly children, each year."

> "We have to acknowledge tremendous global progress, especially since 2000, when many countries have tripled the rate of reduction of under-five mortality,"

MDGs & SDGs

The Millennium Development Goals (MDGs) are the eight international development goals that were established following the Millennium Summit of the United Nations in 2000, following the adoption of the United Nations Millennium Declaration. All United Nations member states and at least 23 international organizations, committed to help achieve the following Millennium Development Goals by 2015:

1. To eradicate extreme poverty and hunger
2. To achieve universal primary education
3. To promote gender equality
4. To reduce child mortality
5. To improve maternal health
6. To combat HIV/AIDS, malaria, and other diseases
7. To ensure environmental sustainability
8. To develop a global partnership for development

Sustainable Development Goals

Following on from the MDGs, which expire at the end of this year, are the Sustainable Development Goals (SDGs), also called Global Goals and Agenda 2030.

On 25 September 2015, the 193 countries of the UN General Assembly adopted the 2030 Development Agenda titled Transforming our world.

This includes the following goals:

1. End poverty in all its forms everywhere
2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture
3. Ensure healthy lives and promote well-being for all at all ages
4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5. Achieve gender equality and empower all women and girls
6. Ensure availability and sustainable management of water and sanitation for all

7. Ensure access to affordable, reliable, sustainable and modern energy for all
8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
10. Reduce inequality within and among countries
11. Make cities and human settlements inclusive, safe, resilient and sustainable
12. Ensure sustainable consumption and production patterns
13. Take urgent action to combat climate change and its impacts
14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
17. Strengthen the means of implementation and revitalize the global partnership for sustainable development

Goal 3 – Ensure healthy lives and promote well-being for all at all ages

Goal 3 has the following targets:

• By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births

• By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births

• By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

• By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being

• Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol

• By 2020, halve the number of global deaths and injuries from road traffic accidents 3.7

• By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes

• Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all

• By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

• Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate

• Support the research and development of vaccines and medicines for the communicable and noncommunicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all

• Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States

• Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks

An increasing number of countries are on the verge of eliminating malaria. In 2014, 13 countries reported zero cases of the disease and 6 countries reported fewer than 10 cases. The fastest decreases were seen in the Caucasus and Central Asia, which reported zero cases in 2014, and in Eastern Asia.

Journey not over

Despite tremendous progress, malaria remains an acute public health problem in many regions. In 2015 alone, there were an estimated 214 million new cases of malaria, and approximately 438,000 people died of this preventable and treatable disease. About 3.2 billion people – almost half of the world's population – are at risk of malaria.

Some countries continue to carry a disproportionately high share of the global malaria burden. Fifteen countries, mainly in sub-Saharan Africa, accounted for 80% of malaria cases and 78% of deaths globally in 2015.

Children under 5 account for more than two-thirds of all deaths associated with malaria. Between 2000 and 2015, the under 5 malaria death rate fell by 65% or an estimated 5.9 million child lives saved.

"Malaria kills mostly young children, especially those living in the poorest and most remote places. So the best way to celebrate global progress in the fight against it is to recommit ourselves to reaching and treating them," said UNICEF Executive Director Anthony Lake. "We know how to prevent and treat malaria. Since we can do it, we must."

A surge in funding – but not enough

Global bi-lateral and multi-lateral funding for malaria has increased 20-fold since 2000. Domestic investments within malaria-affected countries have also increased year by year.

A number of donor governments have made the fight against malaria a high global health priority. In the United States of America, the President's Malaria Initiative has mobilized hundreds of millions of dollars for treatment and prevention, while the government of the United Kingdom tripled its funding for malaria control between 2008 and 2015.

Many governments have also channelled their investments through the Global Fund to Fight AIDS, Tuberculosis and Malaria, or directly to countries.

"A healthy, prosperous world is in all our interests and the prevention of deadly diseases is one of the smartest investments we can make." said Justine Greening, Secretary of State for International Development of the United Kingdom. "That is why, working with malaria-affected countries and partners like the Global Fund, Britain will continue to provide bednets to millions, tackle resistance to life saving medicines and insecticides, and boost health systems across Africa to help bring an end to this terrible disease."

The surge in funding has led to an unprecedented expansion in the delivery of core interventions across sub-Saharan Africa. Since 2000, approximately 1 billion insecticide-treated bednets (ITNs) have been distributed in Africa. The increased use of rapid diagnostic tests (RDTs) has made it easier to distinguish between malarial and non-malarial fevers, enabling timely and appropriate treatment. Artemisinin-based combination therapies (ACTs) are highly effective against *Plasmodium falciparum*, the most prevalent and ▶

Vision to eradicate malaria

A new report released by the United Nations and the Bill &amp Melinda Gates Foundation presents a vision to eradicate malaria by 2040 that involves new strategies, tools and financing and urges world leaders to expand their commitments to fight a disease that still kills about one child every minute.

The report – *From Aspiration to Action: What Will It Take to End Malaria?* – urges major donors and malaria-affected countries to expand their commitment to the fight against the disease, noting that eradication could save 11 million lives and unlock $2 trillion in economic benefits.

"Over the past 15 years, we have seen tremendous progress in reducing the burden of malaria globally – a direct result of our collective action – and we now stand in the unique position of putting an end to this disease forever," said Ray Chambers, the Secretary-General's Special Envoy for Financing the Health Millennium Development Goals and for Malaria.

"The next five years are vital for setting in motion an ambitious-yet-achievable plan to eradicate malaria by 2040. We must double down on our commitment and move with deliberate haste to bring in new investments, develop new tools, and implement new regional strategies to see our unified goal of a malaria-free world become a reality."

According to a news release on the report, global investment in malaria has jumped in recent years by 2,000% annually – from just $130 million in 2000 to $2.7 billion in 2013 – fundamentally transforming the fight against the disease.

Malaria deaths have fallen dramatically – saving an estimated 6.2 million lives and averting 663 million cases of the disease since 2000 – and more than half of the world's nations are now malaria free. These gains have accounted for 20% of the total progress that the world has made in reducing maternal and child mortality under the Millennium Development Goals, and they have helped convince Asian and African leaders to commit to malaria elimination by 2040.

The challenge, according to Chambers and Bill Gates, is that one billion people remain infected with the malaria parasite, and half of the world's children remain vulnerable to death and disability caused by the disease. Malaria still kills about one child every minute.

They argue that eradication is ultimately the only feasible solution to this challenge, and assert that the alternative to eradication – controlling the disease forever without eliminating it – is biologically and politically untenable.

The report envisions a new approach to eradication that will draw important lessons from past eradication efforts and apply innovative strategies, tools and financing.

"Eradication is the only sustainable solution to malaria," said Mr. Gates. "The alternative would be endless investment in the development of new drugs and insecticides just to stay one step ahead of resistance. The world can't afford that approach."

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lethal malaria parasite affecting humans, but drug resistance is a looming threat which must be prevented.

New research demonstrates the impact of core interventions

New research from the Malaria Atlas Project – a WHO Collaborating Centre based at the University of Oxford – shows that ITNs have been by "far the most important intervention" across Africa, accounting for an estimated 68% of malaria cases prevented since 2000. ACTs and indoor residual spraying contributed to 22% and 10% of cases prevented, respectively. The research, published 16 September 2015 in the journal *Nature*, provides strong support for increasing access to these core interventions in post-2015 malaria control strategies.

The way forward

In May 2015, the World Health Assembly adopted the WHO Global Technical Strategy for Malaria – a new 15-year road map for malaria control. The strategy aims at a further 90% reduction in global malaria incidence and mortality by 2030.

The WHO-UNICEF report notes that these targets can only be achieved with political will, country leadership and significantly increased investment. Annual funding for malaria will need to triple – from US$2.7 billion today to $8.7 billion in 2030.

Other key findings from the report

In 2015, 89% of all malaria cases and 91% of deaths were in sub-Saharan Africa.

- Of the 106 countries and territories with malaria transmission in 2000, 102 are projected to reverse the incidence of malaria by the end of 2015.
- Between 2000 and 2015, the proportion of children under 5 sleeping under an ITN in sub-Saharan Africa increased from less than 2% to an estimated 68%.
- 1 in 4 children in sub-Saharan Africa still lives in a household with no ITN and no protection provided by indoor residual spraying.

In 2015, only an estimated 13% of children with a fever in sub-Saharan Africa received an ACT.

Millennium Development Goals – facts and figures

Child health

- 17,000 fewer children die each day than in 1990, but more than six million children still die before their fifth birthday each year
- Since 2000, measles vaccines have averted nearly 15.6 million deaths
- Despite determined global progress, an increasing proportion of child deaths are in sub-Saharan Africa and Southern Asia. Four out of every five deaths of children under age five occur in these regions.
- Children born into poverty are almost twice as likely to die before the age of five as those from wealthier families.
- Children of educated mothers – even mothers with only primary schooling – are more likely to survive than children of mothers with no education.

Maternal health

- Maternal mortality has fallen by almost 50% since 1990
- In Eastern Asia, Northern Africa and Southern Asia, maternal mortality

Child mortality plummets, but target not met

Child mortality rates have plummeted to less than half of what they were in 1990, according to a new report released in September. Under-five deaths have dropped from 12.7 million per year in 1990 to 5.9 million in 2015. This is the first year the figure has gone below the 6 million mark.

New estimates in *"Levels and trends in child mortality report 2015,"* released by UNICEF, WHO, the World Bank Group, and the Population Division of UNDESA, indicate that although the global progress has been substantial, 16,000 children under 5 still die every day. And the 53% drop in under-five mortality is not enough to meet the Millennium Development Goal of a two-thirds reduction between 1990 and 2015.

"We have to acknowledge tremendous global progress, especially since 2000, when many countries have tripled the rate of reduction of under-five mortality," said UNICEF Deputy Executive Director Geeta Rao Gupta. "But the far too large number of children still dying from preventable causes before their fifth birthday – and indeed within their first month of life – should impel us to redouble our efforts to do what we know needs to be done. We cannot continue to fail them."

The report notes that the biggest challenge remains in the period at or around birth. A massive 45% of under-five deaths occur in the neonatal period – the first 28 days of life. Prematurity, pneumonia, complications during labour and delivery, diarrhoea, sepsis, and malaria are leading causes of death for children under 5 years old. Nearly half of all under-five deaths are associated with undernutrition.

However, most child deaths are easily preventable by proven and readily available interventions. The rate of reduction of child mortality can speed up considerably by concentrating on regions with the highest levels – sub-Saharan Africa and Southern Asia – and ensuring a targeted focus on newborns.

"We know how to prevent unnecessary newborn mortality. Quality care around the time of childbirth including simple affordable steps like ensuring early skin-to-skin contact, exclusive breastfeeding and extra care for small and sick babies can save thousands of lives every year," noted Dr Flavia Bustreo, Assistant Director General at WHO. The Global Strategy for Women's, Children's and Adolescents' Health, to be launched at the UN Genhas declined by around two-thirds

- But maternal mortality ratio – the proportion of mothers that do not survive childbirth compared to those who do – in developing regions is still 14 times higher than in the developed regions
- More women are receiving antenatal care. In developing regions, antenatal care increased from 65% in 1990 to 83% in 2012
- Only half of women in developing regions receive the recommended amount of health care they need
- Fewer teens are having children in most developing regions, but progress has slowed. The large increase in contraceptive use in the 1990s was not matched in the 2000s
- The need for family planning is slowly being met for more women, but demand is increasing at a rapid pace

HIV/AIDS, malaria and other diseases

- At the end of 2014, there were 13.6 million people accessing antiretroviral therapy
- New HIV infections in 2013 were estimated at 2.1 million, which was 38% lower than in 2001
- At the end of 2013, there were an estimated 35 million people living with HIV
- At the end of 2013, 240 000 children were newly infected with HIV
- New HIV infections among children have declined by 58% since 2001
- Globally, adolescent girls and young women face gender-based inequalities, exclusion, discrimination and violence, which put them at increased risk of acquiring HIV
- HIV is the leading cause of death for women of reproductive age worldwide
- TB-related deaths in people living with HIV have fallen by 36% since 2004
- There were 250 000 new HIV infections among adolescents in 2013, two thirds of which were among adolescent girls
- AIDS is now the leading cause of death among adolescents (aged 10–19) in Africa and the second most common cause of death among adolescents globally
- In many settings, adolescent girls' right to privacy and bodily autonomy is not respected, as many report that their first sexual experience was forced
- As of 2013, 2.1 million adolescents were living with HIV
- Over 6.2 million malaria deaths have been averted between 2000 and 2015, primarily of children under five years of age in sub-Saharan Africa. The global malaria incidence rate has fallen by an estimated 37% and the morality rates by 58%
- Between 2000 and 2013, tuberculosis prevention, diagnosis and treatment interventions saved an estimated 37 million lives. The tuberculosis mortality rate fell by 45% and the prevalence rate by 41% between 1990 and 2013.

> A healthy, prosperous world is in all our interests and the prevention of deadly diseases is one of the smartest investments we can make.

eral Assembly this month, will be a major catalyst for giving all newborns the best chance at a healthy start in life."

The report highlights that a child's chance of survival is still vastly different based on where he or she is born. Sub-Saharan Africa has the highest under-five mortality rate in the world with 1 child in 12 dying before his or her fifth birthday – more than 12 times higher than the 1 in 147 average in high-income countries. In 2000-2015, the region has overall accelerated its annual rate of reduction of under-five mortality to about two and a half times what it was in 1990-2000. Despite low incomes, Eritrea, Ethiopia, Liberia, Madagascar, Malawi, Mozambique, Niger, Rwanda, Uganda, and Tanzania have all met the MDG target.

Sub-Saharan Africa as a whole, however, continues to confront the immense challenge of a burgeoning under-five population – projected to increase by almost 30% in the next 15 years – coupled with persistent poverty in many countries.

"This new report confirms a key finding of the 2015 Revision of the *World Population Prospects* on the remarkable decline in child mortality globally during the 15-year MDG era," said UN Under-Secretary-General for Economic and Social Affairs Wu Hongbo. "Rapid improvements since 2000 have saved the lives of millions of children. However, this progress will need to continue and even accelerate further, especially in high-mortality countries of sub-Saharan Africa, if we are to reach the proposed child survival target of the 2030 Agenda for Sustainable Development."

"Many countries have made extraordinary progress in cutting their child mortality rates. However, we still have much to do before 2030 to ensure that all women and children have access to the care they need," said Dr Tim Evans, Senior Director of Health, Nutrition and Population at the World Bank Group. "The recently launched Global Financing Facility in Support of Every Woman Every Child with its focus on smarter, scaled and sustainable financing will help countries deliver essential health services and accelerate reductions in child mortality."

Among the report's findings:

- Roughly one-third of the world's countries – 62 in all – have actually met the MDG target to reduce under-five mortality by two-thirds, while another 74 have reduced rates by at least half.
- The world, as a whole, has been accelerating progress in reducing under-five mortality – its annual rate of reduction increased from 1.8% in 1990-2000 to 3.9% in 2000-2015.
- 10 of the 12 low-income countries that have reduced under-five mortality rates by at least two-thirds are in Africa.
- 5 in 10 global under-five deaths occur in sub-Saharan Africa, while 3 in 10 occur in Southern Asia.
- 45% of all under-five deaths happen during the first 28 days of life. 1 million neonatal deaths occur on the day of birth, and close to 2 million children die in the first week of life. MEH

Medilink network is home to some of the UK's leading medical equipment manufacturers

The UK has continually been at the forefront of Medical Technology (MedTech) innovation, where the process of transforming ideas and goodwill into operational realities remains paramount. Each year, key demonstrators of this can be found amongst the hundreds of UK companies operating as part of the Medilink network, under which they connect across the academic, business and clinical sectors to create opportunities to develop and utilise expertise.

BioClad – antimicrobial wall panels

One such innovative solution has come from BioClad, a Yorkshire-based company that has developed a range of products and services to provide customers with the most comprehensive solution to demand for hygienic PVC wall cladding, offering a compelling and cost-efficient alternative to traditional wall coverings.

Increasing numbers of commercial and institutional clients are benefiting from hygienic PVC wall cladding's easy-to-clean and durable properties with quicker installation techniques. All PVC wall cladding products carry a certain degree of anti-bacterial protection, but BioClad has taken hygienic wall cladding to new heights by developing the world's first antimicrobial PVC wall panels.

Their unique BioClad PVC wall cladding is impregnated with silver ions at the time of manufacture, which means that antimicrobial protection is active throughout every sheet. This provides 24/7 lifetime protection against not just bacteria, but also protozoans, fungi and other micro-organisms. The antimicrobial integrity of BioClad wall cladding remains intact even when scratched, because the antimicrobial protection cannot be washed away.

Andy Newbould, BioClad's International Sales Director, said: "We are dedicated wall cladding specialists. It's what we live and breathe, and in developing Bioclad we have gone the extra mile in providing our customers with a product that continues to look fantastic, while at the same time helping to tackle the day to day build-up of a whole range of micro-organisms."

Proven in both clinical and independent field trials, BioClad's antimicrobial PVC wall cladding is highly effective in significantly reducing the incidence of bacteria, microbes, protozoans and fungi. Bioclad panels also emit zero VOCs (Volatile Organic Compounds) and are therefore entirely safe in use and ideal for many sensitive projects.

BioClad panels are now widely used throughout UK National Health Service (NHS) hospitals and clinics, and increasingly in international healthcare. Bioclad panels were used with other products to create the world's first antimicrobial classroom!

Andy Newbould continued: "Bioclad is proud to present to the international market a product that helps healthcare customers to combat the spread of infection. We work closely with our customers from specification to installation to provide a product that helps them maintain a truly hygienic environment."

Wenzelite Gait Trainers

Developed by Drive Medical, one of the leading manufacturers and distributors of durable medical products in the world, the Wenzelite Gait Trainers range offers varied levels of support for children who require assistance with walking. Made of durable materials that are latex-free, they encourage early cognitive and learning development, cardiopulmonary strengthening and conditioning, reduce flexion contractures to enhance movement and teach the individual to take steps without assistance. As part of this range, the Trekker Gait Trainer can be used in the anterior and posterior position while the directional lever allows either forward and reserve mobility or only forward mobility, depending on the needs of the user. The variable resistance controls the speed of the rotation of the wheel, swivel casters can be locked to non-swivel, and the brakes lock as well to prevent the unit from moving.

Simple Air Mattress

Park House Healthcare, a subsidiary of Drive Medical, produce the Simple Air Mattress Replacement System, a cost effective support surface used for the prevention and treatment of pressure ulcers. Designed for patients that are at medium to high risk of developing pressure ulcers, the Simple Air Mattress is suitable for use in both nursing and home care settings and designed to withstand a maximum weight limit of over 177 kg.

The mattress features adjustable weight settings, therefore ensuring optimum pressure relief by aligning the mattress pressure to the individual selected patient weight. As a result of being comprised of independent cell construction, all cells can be individually replaced to help reduce ongoing costs while a strong, lightweight and durable pump combines ease of use with a smooth wipe clean surface. Additional safety features ensure that the mattress can be deflated within 10 seconds and the audible and visual alarm indicates low pressure and power failure in dual format.

'P' Pod

Specialised Orthotic Services (SOS), a subsidiary of Drive Medical, provides specialised seating. SOS work closely with individuals, clinicians and carers to design products which deliver practical solutions ensuring that the user's needs are met. One such product is the award winning 'P' Pod, which has been designed and developed as a simple yet effective postural support for use by disabled children and adults when indoors in the home or day care environment. Integration of specialised equipment into the home environment can be difficult due to limitations on space and access issues, however the 'P' Pod can be easily accommodated indoors and gives excellent postural support. The patented design of the 'P' Pod combines a symmetrical or custom moulded support within the simplicity of a conventional bean bag base.

The unique 'P' Pod was developed in response to clients who asked for a different seating option at home. Bean bags have traditionally been used for years with the disabled, but they lacked the true support needed. The 'P' Pod addresses this with three key components – the seat, a bolster support and the bean bag. The 'P' Pod that it was awarded the Naidex style award for providing postural support in the home environment.

Innov8 iQ ward bed

For over a century, Sidhil has been designing and manufacturing quality products for the healthcare market and today their extensive portfolio includes beds for hospital, community and nursing home applications, couches and plinths for primary care, hospital ward furniture, surgery furniture and equipment for daily living as well as static and dynamic mattress systems as well as specially engineered bariatric products.

All of Sidhil's products are designed in the UK, and the majority are produced at their modern manufacturing plant in Yorkshire, England. This includes the company's versatile Innov8 iQ ward bed, featuring split side rails to expand the bed's intrinsic functionality, making it relevant for specialist areas and high dependent intensive care and intensive treatment units as well as general ward applications.

Designed to meet the ever-increasing challenges of the modern hospital environment and satisfying the highest standards for safety and reliability, the Innov8 iQ gives the acute market access to an affordable, high specification bed equipped for use across the entire patient population.

Innov8 iQ features include a low mattress platform height to assist with falls

prevention strategies, while the side rails are cleverly designed to drop to a lower level than the mattress platform, ensuring patient egress and ingress is safe and unhindered. Built-in dampers ensure they lower at a measured rate for maximum levels of safety while the IQ Contouring' function, where the backrest and knee-break operate in graduated harmony to reduce shear and friction, combats the risk of pressure ulcers. A simple 'one touch' control achieves cardiac chair positioning, whilst angle indicators are incorporated to assist care staff with implementing clinical decisions.

Infection control is an important consideration too, with removable, blow moulded mattress platform panels giving a smooth, cleanable surface with perforations and channels to reduce liquid pooling and increase air flow. The bed is easy to move and manoeuvre, with a combined brake bar and pedal operating the brakes from both the foot end and the side of the bed.

Acclaim Flow hybrid mattress

Sidhil also design and manufacture the Acclaim Flow non-powered hybrid mattress system, designed around the company's intelligent Air Flow Technology. This self-regulating air displacement and intake system uses the patient's own body mass and weight to provide the correct surface to optimise tissue viability.

The result of intensive research and development into affordable and reliable alternatives to more costly dynamic therapy mattresses, the Acclaim Flow hybrid uses a clever combination of foam and air filled cells to achieve effective pressure redistribution, ensuring optimum comfort for patients.

The Acclaim Flow consists of 10 robust, interconnected air filled cells, encased in a foam shell and topped with a special foam layer featuring a unique castellation programme, designed using pressure mapping techniques to give optimum results. A reduced-size castellation is built in to protect the vulnerable heel area.

Inside the air-filled cells, a special foam acts as the catalyst for the system. When the patient enters the bed or moves on the mattress, air either escapes or flows back in to the cells, facilitating the correct levels of pressure redistribution. This automatic adjustment based on the weight and movement of individual patients ensures optimum comfort and reduces the challenges on vulnerable tissue.

When the patient exits the bed, the foam inside the cells automatically draws air back into the system, restoring original levels of inflation without the need for pumps or manual readjustments of any kind. This automatic function reduces the demands on nursing or caring staff with clinical research indicating that hybrid systems are suitable for patients at high risk of developing pressure ulcers.

UK's unique strength

The development and realisation of innovative products such as those highlighted demonstrate the unique position that UK companies hold within the medical technology sector. World-class resources, academic institutions and research, plus manufacturing capability to design, prototype and engineer medical technologies, sit alongside a supportive investment environment for business growth and an unrivalled access to a single healthcare market of over 60 million people. Together, these elements ensure that the UK continues to seek and develop innovative product solutions to make a tangible difference to the lives of those who use them.

■ For further information, visit:
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Exporting expertise

Creating high quality environments while managing resources in healthcare planning

By John Kelly

When the UK's National Health Service was established in 1948, many believed that its costs would be contained by the improvements in health it would bring about. The subsequent experience of healthcare systems around the world makes that seem, at best, naively optimistic, but at least Aneurin Bevan, who set up the NHS in the face of intense professional and political opposition, knew better, recognising that: "We shall never have all we need. Expectations will always exceed capacity." These words ring true today as governments are challenged to find an affordable balance between healthcare demand and supply, regardless of whether their system is funded publicly, privately or, most commonly, some combination of the two.

Why is there a problem?

So why do so many countries struggle to adequately fund and resource their healthcare systems? I propose three contributing factors.

1. Changing demography
   Of course it's good news that people are living longer, but with increased longevity comes a higher incidence of diseases that strike later in life (dementia for example), the likelihood that a patient will have more than one condition (co-morbidities), and the added complications of physical frailty and social isolation. When an ageing population is accompanied by reduced fertility rates, as is often the case, the macroeconomic challenge is how to fund a health service with fewer paying in.

2. Supply-led demand
   You only have to watch the news or read the papers to see how Bevan was right about expectations exceeding capacity. Almost every day new breakthroughs are announced – in cancer treatment, gene mapping or medical technologies, to name a few. Such developments can reduce healthcare costs, as in the case of improved anaesthesiology enabling shorter hospital stays. More typically, however, they will lead to new services as the innovation is adopted, requiring further investment in staff and infrastructure. Take for example a technology such as Magnetic Resonance Imaging (MRI). In the early 1990s, when MRI was first seen in mainstream healthcare, an authoritative academic study predicted that around 20 units would be required to serve the population of the United Kingdom. Today there are more than 300 MRI units in place and this is below the Organisation for Economic Co-operation and Development (OECD) average. It is likely that as technology continues to advance it will follow a similar trajectory.

3. Structural lag
   Health systems across the world are typically slow to adapt to changing demand profiles. Services which were designed primarily to provide acute care are being challenged as chronic disease has become more significant. Thus while there is a broad consensus that gaps in primary and community care and weak preventative strategies result in what should be avoidable admissions and extended hospital stays, shifting the balance of care remains unfinished business in the UK, USA, the Middle East and elsewhere. Even when the shift is happening so that, for example, more care can be provided close to home, overall costs will rise, at least during the transitional period, due to fixed costs and stranded capacity in the hospital sector.

Tackling the affordability challenge

At times like these it's worth remembering the cautionary words of American writer H L Mencken, "For every complex problem there is a simple solution – and it's wrong." I'm not advocating that the answer should be complex, but it's almost certainly never an easy or a single-stranded one.

Healthcare planning emerged a few decades ago as a way to create efficient pathways in hospitals, looking carefully


جبال متحركة
مرحبا بالأدوات
الرابطة الجديدة
مخـزن، أم مصـدر؟

at space and capacity, and making good use of scarce resources. It has grown into a sophisticated discipline that seeks to create high quality environments that are clinically and financially sustainable, and at its best is based on thorough research and informed thinking rather than straightforward template solutions.

A successful healthcare planning approach will bring together a broad range of skills to achieve results which are aligned to objectives and create sustainable high quality environments for patients and staff. It will start with detailed research and modelling, and move seamlessly into design and implementation. It needs a multi-disciplinary team which can apply clinical, social-psychological, analytical and modelling perspectives to the challenges that healthcare organisations face in managing their growing operations.

Appropriate care in appropriate places

A persistent question facing healthcare providers, whether governmental, commercial or not-for-profit, is how to get the balance between centralised and distributed models of care. Some healthcare providers have found out the hard way that building large, high technology, acute hospitals is not enough and that an over-capitalised healthcare system is expensive and inflexible when healthcare demands change in the ways outlined above. On the other hand, spreading healthcare resources too thinly, across too many locations, may improve patient access, but may lack the critical mass to ensure clinical, workforce and financial sustainability. Applying a healthcare planning perspective and rigorous analysis of alternatives along this spectrum can help to identify the model which best fits local demography and patient preferences. It will also help to ensure the optimum distribution of resources – avoiding under and over utilisation at the centre and at the periphery and, crucially, remaining resilient throughout the constant changes within healthcare.

Healthcare planning in action

UK-based Essentia Trading is supporting the development of a major healthcare campus in the Middle East. The goals of the project are ambitious and include:

- Shifting the balance of care from acute to strengthened community and primary care
- Developing an academic healthcare system integrating clinical service delivery, research and education
- Bringing together traditionally discrete specialities to create a more patient-focused model
- Ensuring adequate capacity for a rapidly growing population while remaining affordable and flexible.

Our work on the project has included:

- Developing a comprehensive demand and capacity model to determine future functional content across the campus through “what-if?” scenarios
- Using simulation tools to identify optimum Emergency Department size and configuration in response to rising demand and highly volatile use patterns
- Applying evidence-based international best practice to ensure that design solutions are robust, meet patient and carer needs, and enable the most effective deployment of staff – the scarcest resource in a health economy heavily dependent on non-native workers

In Ireland we are supporting one of the largest and most complex capital healthcare projects ever undertaken in the country – bringing three hospitals together to create a new children’s hospital which will be a world-class facility comparable to leading international examples in Melbourne, Toronto, Boston and Evelina London Children’s Hospital. We have been involved with the project from its inception when we were instrumental in securing the support of a wide range of (initially sceptical) stakeholders via a rigorous, evidence-based proof-of-concept exercise. As the project approaches the construction phase, we have been working with staff to develop functional briefs to guide the detailed design and operational policies – a process which has identified different working practices across the three existing hospitals and provided a means to harmonise these. At key stages in the development of the project we have carried out appraisals of the design against LEAN criteria. This has identified improvement opportunities in terms of reducing waste and optimising patient, staff and material flows.

At Guy’s and St Thomas’ NHS Foundation Trust, one of the UK’s largest healthcare providers, we have recently completed a wide ranging review targeted at optimising the value of the Trust’s fixed assets. By looking at current service delivery and utilisation through a healthcare planning lens we have identified opportunities both to reduce costs and to release capacity for new or expanded services. The results of the review will guide the Trust’s future investment strategy and provide a set of criteria for ongoing monitoring to ensure that underused capacity is progressively released and, where appropriate, reallocated.

Creating high quality environments that are clinically and financially sustainable

The affordability challenge in healthcare won’t go away and, with increases in healthcare expenditure outpacing GDP growth, even the wealthiest nations can’t spend their way out of trouble. Where healthcare planning can help is to provide multi-disciplinary perspectives, analytical tools and evidence to ensure that unavoidable choices about resource allocation are fully informed. This allows meaningful dialogues amongst stakeholders with different viewpoints and priorities, and an objective basis on which to adjudicate between these. By making assumptions explicit, the downstream consequences of investment decisions can be anticipated and progress towards objectives and targets monitored, applying course correction when (as is inevitable) the future is different from what we expected. As former Saudi Arabian oil minister Sheik Yamani observed, the Stone Age didn’t end because we ran out of stone but because something better and unexpected came along. Healthcare planning doesn’t pretend to predict the future, but it can go a long way to helping us cope with its uncertainty.

The author
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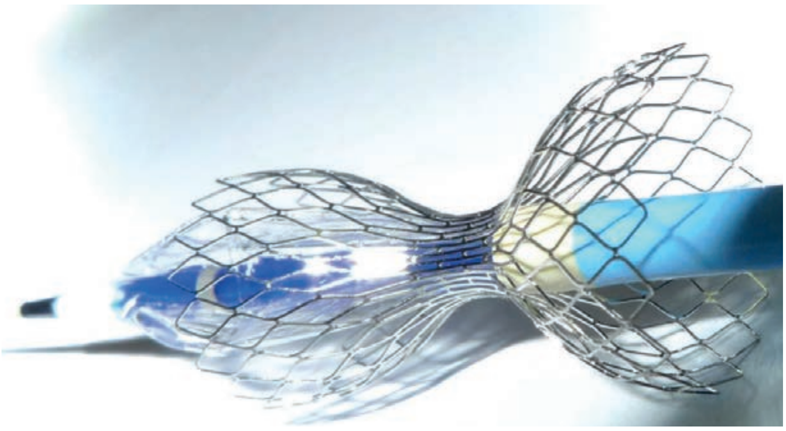
www.essentia.uk.com MEH



New treatment to bring relief to refractory angina sufferers

Dr Ranil de Silva, Consultant Cardiologist at Royal Brompton Hospital presents the innovative new treatment being offered to sufferers of refractory angina.

Royal Brompton & Harefield Hospitals is one of a few centres in the world to offer an innovative new treatment for refractory angina. Refractory angina is where patients continue to experience or have recurrence of angina despite having had treatment with medication, stents, or coronary artery bypass surgery. As patients are living longer after treatment the prevalence of refractory angina is increasing.

The innovative new treatment involves inserting a small device, called the Neovasc Reducer, to narrow the coronary sinus which is the main outflow vein from the heart. In total, the procedure takes approximately 60 minutes and patients can often be discharged within 24 hours. It can take up to 6 months for the patient to feel the full benefits of the treatment.

The device received a CE Mark in late 2011 and the first-in-man study of the Reducer, which followed 15 patients for three years, demonstrated excellent safety and efficacy in terms of reducing angina pain and other improvements in myocardial function. A more recent larger randomised trial confirmed significant reduction of angina and improved quality of life in those patients treated with the Reducer.

As a member of the team involved in the clinical trial and writing of the paper, which was published in the *New England Journal of Medicine*, we are able to perform the procedure at Royal Brompton Hospital.

■ For people interested in this treatment, the first step is to determine whether or not they are suitable through an assessment by our team. This can either be done in person or through analysis of bloodwork, a recent angiogram and a perfusion scan or stress echo. To find out more or refer a patient contact *privatepatients@rbht.nhs.uk*

Taming the growing diabetes epidemic

Why the Middle East must act

By Jaykumar Patel
Principal at BCG ME

The alarmingly high global prevalence of diabetes reflects the grim, devastating realities of this modern epidemic: today, over 380 million adults worldwide are living with diabetes, and about 180 million of these are undiagnosed. The truth is, diabetes has a far larger footprint than other diseases such as cancer (according to WHO, the global cancer incidence rate stands at 14 million): a staggering 8.3% of the world's adult population currently has diabetes. Unfortunately, future estimates paint an even bleaker picture: based on data from the International Diabetes Federation (IDF), by 2035, the global prevalence rate of diabetes – among people aged 20-79 – will have risen more than 10%.

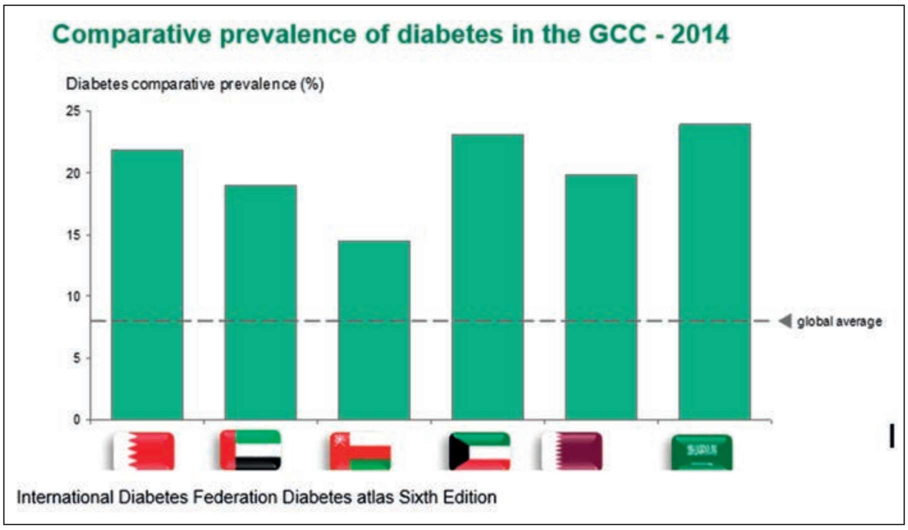
But here is the silver lining: while Type II diabetes, the most common form of diabetes, is a chronic, incurable and costly disease – it is also preventable.

An unrelenting challenge

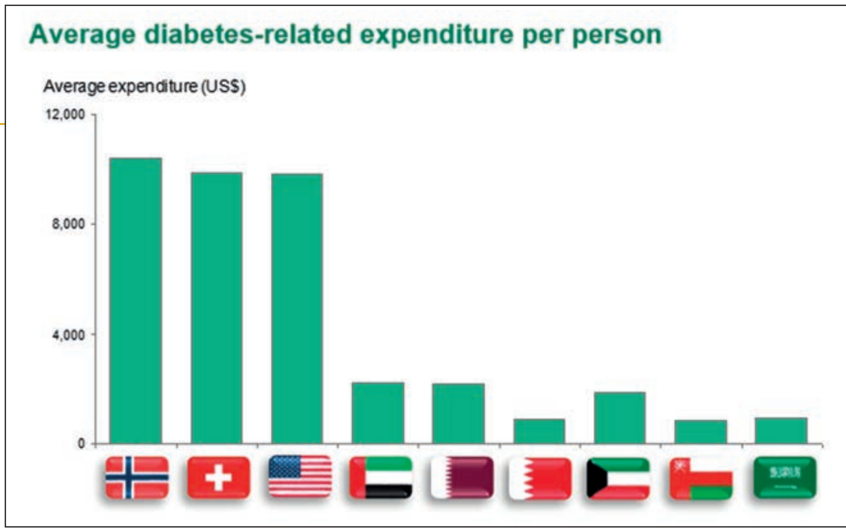
In our part of the world, specifically, the number of diabetes cases is soaring at a rapid pace. That's right: in the Middle East, an estimated 14.2 million people (10% of the adult population – one of the highest prevalence rates in the world) are affected by the disease. The fact is, diabetes rates are skyrocketing in the Middle East and it all boils down to poor nutrition, physical inactivity, and GDP growth. In the last two decades, Middle Eastern countries' rapid growth in GDP has been matched by a stark increase in obesity and diabetes. In line with this, estimates by the IDF forecast that, between 2013 and 2035, the countries with the fastest-growing diabetes prevalence rate will be the United Arab Emirates, Oman, and Qatar (three out of the six GCC countries).

Type II diabetes is a progressive disease – one that carries a slew of far-reaching health implications. It doubles the risk of coronary heart disease in men, and quadruples it in women. In addition, people with diabetes are three times more likely to have a stroke. Diabetic retinopathy also accounts for 5% of all cases of blindness globally. And someone with diabetes is 25 times more likely to have a limb amputated than someone without diabetes. As a result of such complications, Type II diabetes can reduce a person's life expectancy by up to 10 years. Remarkably, according to IDF data, in 2014, an estimated 5 million deaths were caused by diabetes and its related diseases.

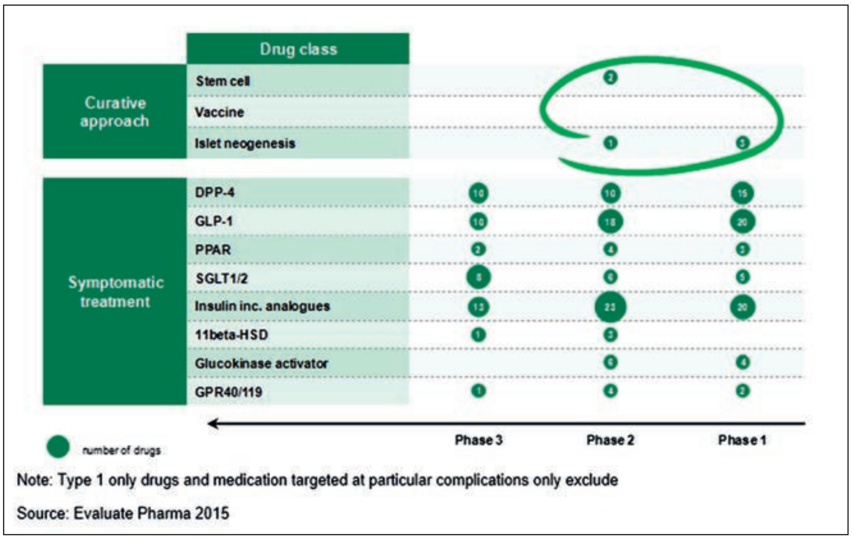
Unsurprisingly, the economic burden of diabetes can send ripple effects through a country's healthcare system. Last year, the cost of direct healthcare for diabetes



and its complications amounted to around 11% of total healthcare costs worldwide. As stated in the report of the WISH Diabetes Forum 2015, there are also indirect costs of diabetes to consider, such as lost productivity, earlier retirement, and increased requirements for social support. And these are often higher than the direct costs. Interestingly, in the Middle East, a strong link exists between GDP growth, the prevalence of diabetes, and per person spending. On average, the increase in diabetes-related healthcare costs per person amounts to approximately $110 – for every $1,000 increase in GDP per capita. Given the current treatment paradigm, and as the Middle East's GDP continues to grow, it is only a matter of time before the region faces a hefty bill for diabetes.



No cure expected in the next 20 years – only few drugs currently under development target a cure for diabetes



Looking to the future

Of course, if a diabetes cure were on the horizon, the dynamics would be drastically different and many of these pressing issues would eventually be addressed, and maybe even resolved. At the Boston Consulting Group (BCG), however, we have conducted substantial research that confirms that this is not the case. A cure for diabetes will likely not be discovered or formulated until at least 2030. This is primarily due to the fact that, currently, the medical and pharmaceutical community is focusing on symptomatic treatments and so, these will remain a priority in the diabetes drug pipeline.

It is no surprise that enhancing preventive care for most-at-risk populations could have a huge impact on both quality of life and healthcare costs. At present, approximately 7% of the Middle East population has Impaired Glucose Tolerance (IGT), which means they are at high risk of developing Type II diabetes.

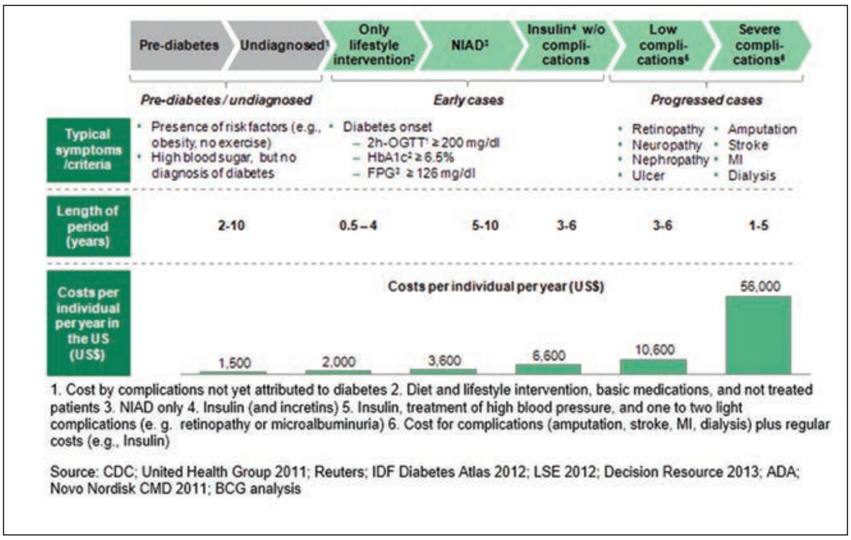
Prevention is therefore an imperative, vital and urgent need.

To gain further insight into the current diabetes landscape, BCG conducted a year-long study on the disease. As part of our research, we assessed the global impact of diabetes and identified four strategic priorities that can help reduce the disease's prevalence rates. Here they are:

1. Increasing government-led population-level health programs

Across the Middle East, there should be a more concerted effort to launch government-led population-level programs

Type II diabetes is a progressive disease and costs go up as the disease progresses



to promote preventive measures. While population-level programs have been limited in the GCC, there are examples such as the Weqaya health initiative in Abu Dhabi, and the Beat Diabetes Walk in Dubai that have been implemented. It is critical for governments in the region to significantly expand these initiatives to target schools. Furthermore, greater regulation of unhealthy food can make a huge difference. For example, in 2011, Hungary introduced a tax on unhealthy food; a year later, France followed suit and slapped a 'health tax' on soft drinks. Governments – in cooperation with FMCGs – across the Middle East should implement stricter regulations when it comes to packaging sizes and unhealthy ingredients. Likewise, foodservice players need to include the caloric value of their food product and its nutritional information on the label. In parallel, to help improve students' health and slash obesity rates, collaboration between the education and healthcare sectors is crucial. For example, schools could ban fizzy and sugary drinks.

2. Driving the 'consumerization' of basic diabetes care

In the coming years, we, at BCG, expect to see a 'consumerization' of diabetes care, especially when it comes to patients in the early phases. This entails making diagnosis and care as convenient as possible, guaranteeing access to suitably-located clinics, providing patients with low-cost drugs and screenings, and making diabetes education readily available. In the US, for instance, there are 140 walk-in clinics in Walmart stores across the country. And these clinics offer screening for diabetes, making early detection possible. In that same vein, Chilean start-up RetiDiag uses retinal photographs and telemedicine evaluation to screen people with diabetes and detect diabetic retinopathy at a very low cost.

To conclude, 'consumerization' can generate positive outcomes by driving treatment compliance, slowing down the progression of diabetes, and more importantly, prompting governmental intervention to encourage the private sector to diagnose and treat basic forms of diabetes. Working with private and quasi-government entities can enhance access to consumer data, promote early diagnosis, and enable early treatment for patients.

3. Pushing targeted new treatments

For the Middle East, halting the spread of diabetes also means advocating new forms of targeted treatment and drugs that treat complex cases (without engendering adverse side effects) and prevent complications. Additionally, a shift to integrated care is necessary. Integrated care offers the possibility to cut costs and offer care along the whole value chain; it relies on the concept that one entity is fully responsible for the care of the diabetic patient, from coordinating treatment and seeing specialists to following up on compliance and the way care is delivered. An early attempt at this model can be found in Abu Dhabi, at the Imperial College London Diabetes Center. For GCC governments, this is a particularly critical lever to push as government entities often control upwards of 50% of the provision.

At BCG, we have benchmarked several examples of integrated care models globally that have made a positive impact. In the US, for instance, Geisinger Diabetes Care is an accountable care model that aligns the goals and incentives of payers, providers and patients. The new system has reaped significant results in diabetic care; these include a reduced risk of retinopathy, stroke, and myocardial infarction (in a span of three years). For every 82 patients treated, one myocardial infarction was prevented. For every 178 patients treated, one stroke was prevented. Lastly, for every 151 patients treated, one case of retinopathy was prevented.

4. Revamping payment models

In healthcare, payment models set up the incentives and hence drive the behaviours of all stakeholders. Addressing diabetes effectively requires a change in the behaviour of these players. Current payment models are designed to support episodic care and have few elements, if any, tied to outcomes. It is critical that providers deliver integrated care – as opposed to episodic care. It is equally important for patients to comply with treatment and make the necessary lifestyle changes.

Payment models have the power to align incentives and inspire such behaviours. There are already various examples in advanced economies of insurers using payments to incentivize desired behaviours in both providers and patients. Given the Middle East's high rate of insurance penetration, we believe that payment models can serve as an essential tool for addressing the diabetes epidemic. Through regulation or national insurance schemes, governments can shift to more outcome-based integrated care payment models.

Taking action

Ultimately, the goal is to inform and equip policymakers, providers with the right information and tools needed to make things happen. Here is how:

- First, Middle East policymakers need to invest in multiple population-led programs to help create an environment focused on prevention. People need to receive the right education and skills training for them to be able to self-manage. Moreover, they need to have the right incentives for them to want to manage their condition. This means investing sufficient resources and using new technologies, which, based on our work with policymakers across the region, are presently relatively scarce. There needs to be a coordinated approach adopted by all stakeholders both inside and outside the healthcare system – at the municipal, national, and regional level. Most importantly, the range of interventions (from education to non-fiscal incentives, fiscal incentives and legislation) must befit the Middle East's culture and help shape the population's behaviour.
- Middle East policymakers should also look to incentivize and drive healthcare providers to deliver more integrated, outcome-focused care for people with diabetes. The current, fragmented, fee-for service approach does not encourage the type of care that is truly required. As outlined earlier, the effective management of diabetes entails a healthcare system that considers the totality of patients' health needs. It is about acting proactively and in a coordinated way to ensure that patients receive the right care at the right time –and reap the best possible outcomes. Currently, no healthcare system in the Middle East meets these requirements.
- Policymakers should establish effective surveillance to identify and support those at risk of Type II diabetes. The majority of these cases can be prevented by lifestyle changes or adequate drug treatments. Screening for diabetes has proven to be cost-effective. The role of policymakers is to make screening cheaper as well as more accessible and appealing for more people.

As the prevalence of diabetes in the Middle East continues to rise – and with no cure in sight – now is the time for the region's policymakers to act. While there is no silver bullet for diabetes, action on the above can help stymie the impact of the disease and make the future of diabetes management a lot less daunting. MEH

Physician support is key to successful weight loss

A review of survey data from more than 300 obese people who participated in a US-based weight loss clinical trial found that although the overall weight loss rates were modest, those who rated their primary care doctor's support as particularly helpful lost about twice as many pounds as those who didn't.

In a report on the study by Johns Hopkins researchers, published in the 21 August 2015 issue of Patient Education and Counseling, the researchers say the findings could inform the development of weight loss programs that give primary care physicians a starring role.

Researchers have long known that high-quality patient-doctor relationships marked by empathy, good communication, collaboration and trust are linked to better adherence to medication schedules, appointment keeping and other good outcomes, says Wendy L. Bennett, M.D., M.P.H., assistant professor of medicine at the Johns Hopkins University School of Medicine and a primary care physician at Johns Hopkins Bayview Medical Center. Previous studies also have shown, she says, that obese patients are more likely to report poor physician-patient relationships, with evidence of decreased respect and weight bias from providers.

To see whether and what aspects of those relationships might influence weight loss efforts, Bennett and her colleagues reviewed information gathered by Johns Hopkins' Practice-based Opportunities for Weight Reduction (POWER) trial, a two-year, randomized, controlled study funded by the US federal government. During the trial, some obese patients worked to lose weight with the aid of health coaches while their efforts were supervised by their primary care physicians.

At the end of the trial, patients filled out surveys that asked, in part, about their relationships with their primary care physician, including questions about how often their providers explained things clearly, listened carefully and showed respect, as well as how helpful their physicians' involvement was in the trial. Of the 347 patients who filled out surveys, about 63% were female, about 40% were African-American and all were obese, with body mass indices of 36.3 on average. Each participant also had one of three cardiovascular disease risk factors: high blood pressure, high cholesterol or diabetes.

Results of a review showed that nearly all of the 347 patient surveys reviewed for the Johns Hopkins study reported high-quality relationships with their physicians, with the overall relationship showing little effect on weight loss. However, those patients who gave their physicians the highest ratings on "helpfulness" during the trial lost an average of 11 pounds (5kg), compared to just over 5 pounds (2.2kg) for those who gave their physicians the lowest "helpfulness" ratings.

> Those patients who gave their physicians the highest ratings on 'helpfulness' during the trial lost an average of 5kg, compared to just over 2.2kg for those who gave their physicians the lowest 'helpfulness' ratings.

Current National Institutes of Health statistics suggest that more than one-third of adults in the United States are obese. Though Medicare and private insurance reimbursements are low or non-existent for physician-guided weight loss interventions, Bennett says, the findings could spur new reimbursement models that provide for physician involvement and enable more team-based care models.

"This trial supports other evidence that providers are very important in their patients' weight loss efforts," Bennett says. Many current weight loss programs are commercially run, she adds, and patients often join these programs without their physician's knowledge.

"Incorporating physicians into future programs might lead patients to more successful weight loss," she says. MEH

Midday nap lowers blood pressure

A Poster presented at the European Society of Cardiology (ESC) in London in September reported on a study from Greece which found that naps taken at midday – a habit favoured in some Mediterranean countries and the Far East but now in decline – are directly associated with reduced blood pressure and prescription of fewer antihypertensive medications.

Manolis Kallistratos, a cardiologist at Asklepieion Voula General Hospital in Athens, thus asked if midday sleep is a habit, a privilege (because of the nine-to-five working culture) or an exercise for good health.

The study included 386 middle-aged patients with arterial hypertension whose midday sleep time (in minutes), 24-hour ambulatory BP, pulse wave velocity, lifestyle habits, BMI and left atrial size were measured. After adjustments, midday sleepers were found to have 5% lower average 24-hour ambulatory systolic BP (6 mmHg) than those who did not take a midday siesta. The duration of midday sleep was associated with arterial hypertension measures such that those who slept for 60 minutes at midday had 4 mmHg lower average 24-hour systolic BP readings.

"The longer the midday sleep, the lower the systolic BP levels and probably fewer drugs needed to lower BP," said Kallistratos.

> The longer the midday sleep, the lower the systolic BP levels and probably fewer drugs needed to lower BP.

Coffee

However, a long-term study described in the same Poster Session found that coffee-drinking (maybe as a pick-up after a short-term nap) was associated with an increased risk of cardiovascular events (mainly AMI) in young adults with mild untreated hypertension. The 12-year study in more than 1,200 patients found that heavy coffee drinkers had a four-fold increased risk while moderate drinkers tripled their risk.

The study, said investigator Lucio Mos from the Hospital of San Daniele del Friuli in Udine, Italy, adds a little more to the controversial role of coffee consumption in the management of hyptertension. This study, which measured consumption as none (0), moderate (1–3 cups) and heavy (4 or more) in 1201 non-diabetic patients aged 18-45 years, found a linear relationship between coffee and risk of hypertension needing treatment. The association reached statistical significance for heavy coffee drinkers.

Because type-2 diabetes often develops in hypertensive patients at a later stage, the study also examined the long-term effect of coffee drinking on the risk of prediabetes. Again, a linear relationship was found, with a 100% (30-210%) increased risk of prediabetes in the heavy coffee drinkers.

Multivariable analyses over the 12-year showed that both coffee categories were independent predictors of cardiovascular events in these young adults, with hazard ratios of 4.3 (1.3-13.9) for heavy coffee drinkers and 2.9 (1.04-8.2) for moderate drinkers.

Television

There was also a higher risk of fatal pulmonary embolism found in those who spent long hours in front of the television. Toru Shirakawa, a public health research fellow in the Department of Social Medicine at Osaka University in Japan, found that those watching TV for an average of five or more hours a day had twice the risk of fatal pulmonary embolism than those watching less than 2.5 hours daily. The findings come from the Japanese Collaborative Cohort (JACC) Study, a long-term investigation of how individual lifestyle affects disease mortality and cancer morbidity, and is the first prospective assessment of the link between prolonged TV watching and fatal pulmonary embolism. The results, presented in a Poster Session, were derived from a study of 86,024 men and women aged 40-79 years who were followed-up for a median of 18.4 years until 2009.

The risk was most prominent in people under 60 watching TV for more than five hours a day – a six-fold greater risk of fatal pulmonary embolism than in those watching less than 2.5 hours (HR 6.49).

"Leg immobility during television viewing may in part explain the finding," said Shirakawa. "To prevent the occurrence, we recommend the same preventive behaviour used against economy class syndrome. That is, take a break, stand up, and walk around during the television viewing. Drinking water for preventing dehydration is also important." MEH

Short bouts of activity may offset lack of sustained exercise in kids

Brief intervals of exercise during otherwise sedentary periods may offset the lack of more sustained exercise and could protect children against diabetes, cardiovascular disease and cancer, according to a small study by researchers at the US National Institutes of Health.

Children who interrupted periods of sitting with three minutes of moderate-intensity walking every half hour had lower levels of blood glucose and insulin, compared to periods when they remained seated for three hours. Moreover, on the day they walked, the children did not eat any more at lunch than on the day they remained sedentary.

The study, published online in the *Journal of Clinical Endocrinology and Metabolism*, was conducted by researchers at NIH's National Cancer Institute (NCI), Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), National Heart, Lung and Blood Institute (NHLBI), National Institute of Diabetes and Digestive and Kidney Diseases, and Clinical Center.

"We know that 30 minutes or more of moderate physical activity benefits children's health," said the study's senior author, Jack A. Yanovski, M.D., chief of NICHD's Section on Growth and Obesity. "It can be difficult to fit longer stretches of physical activity into the day. Our study indicates that even small activity breaks could have a substantial impact on children's long-term health."

According to the US Centers for Disease Control and Prevention, more than one third of children and adolescents are overweight or obese. Obesity puts children at risk for heart disease, type 2 diabetes, stroke, and several types of cancer.

The study authors noted that US children spend about 6 hours per day in a sedentary position – either sitting or reclining. They added that many studies have linked such sedentary behaviours to obesity and insulin resistance – a risk factor for type 2 diabetes. Still, other research has found that moderate physical activity – such as walking a mile in 15-20 minutes – could lower glucose and insulin levels in adults. The study authors hypothesized that interrupting sitting in children would lower their insulin and glucose levels, as well.

"Sustained sedentary behaviour after a meal diminishes the muscles' ability to help clear sugar from the bloodstream," said first author, Britni Belcher, PhD, a Cancer Prevention Fellow in NCI's Health Behavior Research Branch and currently an assistant professor at the University of Southern California. "That forces the body to produce more insulin, which may increase the risk for beta cell dysfunction that can lead to the onset of type 2 diabetes. Our findings suggest even short activity breaks can help overcome these negative effects, at least in the short term."

To conduct the study, the researchers enrolled 28 healthy, normal-weight children who came to the NIH in Bethesda, MD from the surrounding area for two experimental visits. The children were assigned at random to participate in one of two groups. Children in the first group remained seated for 3 hours and either watched television, read, or engaged in other sedentary activities. Children in the second group alternated sitting with 3 minutes of moderate-intensity walking on a treadmill (enough to increase their heart rate) every 30 minutes for the 3-hour period. Each of the children returned to the NIH Clinical Center 7 to 30 days later. Those who had remained seated for the full 3 hours during the initial session were switched to the group that had alternated sitting with moderate walking. Similarly, those who earlier took part in the moderate walking group were switched to the sedentary group.

For each session, the children took an oral glucose tolerance test, typically given to pregnant women to check for gestational diabetes. The test involves drinking "glucola", a soda-like drink containing the sugar glucose. After consuming the drink, participants had their blood tested to see how rapidly their bodies absorb glucose and how much insulin they produce.

On the days they walked, the children had blood glucose levels that were, on average, 7% lower than on the day they spent all 3 hours sitting. Their insulin levels were 32% lower. Similarly, blood levels of free fatty acids – high levels of which are linked to type 2 diabetes – were also lower, as were levels of C-peptide, an indicator of how hard the pancreas is working to control blood sugar.

After the sessions, the children were allowed to choose their lunch from food items on a buffet table. Based on the nutrient content of each item, the researchers were able to calculate the calorie and nutrient content of what each child ate. The short, moderate-intensity walking sessions did not appear to stimulate the children to eat more than they ordinarily would, as the children consumed roughly the same amounts and kinds of foods after each of the sessions.

The study authors concluded that, if larger studies confirm their findings, interrupting periods of prolonged sitting with regular intervals of moderate-intensity walking might be an effective strategy for reducing children's risk of diabetes and heart disease.

Dr Yanovski added that future studies are needed to examine if working such breaks into school class time could be part of effective strategies to prevent obesity-related illnesses. MEH

Debate

Is obesity always bad for chronic disease?

In a debate about whether obesity is always bad for chronic disease, held at the European Society of Cardiology (ESC) Congress in London in September, Wolfram Doehner, Charité - Universitätsmedizin, Berlin, Germany, says "no", while Dan Gaita, Institutul de Boli Cardiovasculare, Timisoara, Romania, says "yes". *Middle East Health* publishes an excerpt from the debate.

Wolfram Doehner

Obesity, clearly, is an ever growing health burden to our society. The world report on burdens of disease ranks obesity among the top ten in a list of 67 risk factors – even moving from 10th to 6th between 1990 and 2010. Consequently, weight reduction is unanimously advocated by healthcare providers. In fact, there can rarely be a piece of healthcare advice that has not been more rigorously implanted in the public consciousness than weight loss as a benefit for all.

However, it needs to be made clear that such unqualified recommendation (which often enough is pursued as plain starvation) may not always be in the best interest. For example, no-one would recommend a cancer patient to go on a weight-reducing diet. More unexpectedly, and even in many cardiovascular conditions, a significant survival advantage can be seen with overweight – and, in turn, weight loss predicts an increased mortality risk, regardless of whether this happens intentionally or not.

In fact, the association between body weight and survival follows a U-shaped curve, with an optimum body weight for healthy and middle-aged populations somewhere around a BMI of 25 kg/m2, with the risk steadily increasing with both higher and lower body weights. While this point already marks the boundary between normal weight and overweight according to the WHO categories, a significant increase in mortality is observed with lower body weight throughout the 'normal BMI' range (18.5-25 kg/m2).

It thus may easily be understood that the nadir of this body weight-mortality association and the slope of the U-shaped curve may be different in different health conditions. Two specific conditions are highly important here, as we see them regularly in our clinics and hospitals: patients with established cardiovascular diseases and subjects who are old. In such cases, the optimum body weight with regard to mortality is shifted significantly towards the overweight and even mildly obese range.

> It should be the time to consider moving from a cardiovascular obesity 'paradox' to an obesity 'paradigm' to appreciate this clinical observation.

This is, of course, counterintuitive to the wisdom of obesity as risk factor in healthy subjects (i.e. in primary prevention). Accordingly, an 'obesity paradox' has been termed to reflect a finding which was a) unexpected and b) difficult to explain. Over the last 15 years, however, substantial evidence has accumulated to confirm a survival advantage with higher body weight in several CV diseases. In fact, in almost every cardiovascular disease or condition which was examined for this association, a higher body weight was found to predict better outcome. Indeed, in patients with heart failure, the survival benefit of higher body weight was even implemented in validated risk score calculators.

So the question we need to ask ourselves should be: If the inverse association of higher body weight with improved survival has been confirmed in a wide range of CV diseases, and in numerous cohorts with various disease severities and co-morbidities, and assessed by different methods, why would this still be considered an unexpected and contradictory – indeed a paradoxical – finding?

It should be the time to consider moving from a cardiovascular obesity 'paradox' to an obesity 'paradigm' to appreciate this clinical observation. The available evidence strongly suggests that overweight and obesity are not always bad, and may in fact carry some protective signal in many cardiovascular conditions. It will be a challenge for us to convince both professional and public opinion to adopt weight management recommendations that clearly distinguish between healthy subjects (to avoid overweight and obesity) and patients with established disease (where being overweight may carry some benefit and weight loss indicates disease progression and worse prognosis).

In any case, as a physician and scientist making decisions based on evidence and reasoning, one needs to appreciate that 'obesity is not always bad'.

Dan Gaita

We are in the midst of an obesity epidemic which has an impact on hundreds of millions of people around the world. Obesity has mental, physical and social implications because of its link to a vast multitude of pathological consequences. And importantly, obesity bears a significant cost for individuals, employers, healthcare systems and nationally economies.

Obesity and overweight are chronic conditions resulting from positive energy balance over time – with causes related to a combination of factors which vary from one person to another, including individual behaviours, environmental factors and genetics, which all contribute to the complexity of this disorder.

However, from an evolutionary point of view, maintaining modest excess body weight has served as an adaptive mechanism, protecting individuals by storing excess energy into fat cells during periods of food abundance.

Importantly, the negative effects of excess weight on mortality and morbidity have been recognised for more than 2000 years, although not with the name of 'atherosclerosis'. Indeed, it was Hippocrates who noted that 'sudden death is more common in those who are naturally fat than lean'!

There remains debate whether increased BMI, an estimative indicator calculated using the weight and height of an individual, is a reliable indicator of increased vascular risk. Thus, while trying to define 'normal' weight, we should also consider factors such as the dichotomy of young versus old and healthy versus ill when examining obesity as a risk factor for cardiovascular disease (eg. metabolism is slowing down about 2-5% per decade after age 40).

One could reasonably argue about the most predictive metabolic markers of increasing cardiovascular risk in the obese and overweight. There are data related to traditional risk factors such as waist circumference, percentage body fat, cholesterol and triglyceride levels, elevated blood pressure, insulin resistance, or others such as inflammatory markers. Ongoing investigation is focused on identifying predictive measures in order to better recognise risk related to obesity.

One much debated question is who is better off from a risk point of view – one who is fit and fat or a lean couch potato? There is evidence that unfit men in the BMI range of less than 25 kg/m2 have a significantly higher risk than men with a high level of cardiovascular fitness - while on the other hand, overweight men with a high level of fitness have a risk of death which is not very different from that of fit men with normal body fat. It is critical to recognise, however, that the lowest cardiovascular risk is seen in those with normal bodyweight associated with a high level of fitness.

> One much debated question is who is better off from a risk point of view – one who is fit and fat or a lean couch potato?

There is some evidence to suggest that individuals with normal blood levels of inflammatory markers are more likely to have favourable 'metabolic health' whether they are lean or obese – which means that up to 35% of obese individuals may be metabolically healthy despite their size, although the true prevalence of 'healthy obesity' is difficult to assess due to a lack of clarity in defining metabolic health.

Lastly, there is a central question to be raised. Are there truly healthy obese individuals or are 'metabolically healthy obese' persons on a temporary 'normal' stage or on an imminent path towards disease, including the major threats to modern humanity, diabetes and atherosclerosis.

As a physician one must continue to support the position that 'obesity is always bad'. MEH

The beautiful Hagia Sophia museum in Istanbul dating back to 537 is a major attraction for tourists.

Turkey aiming to become major player in health tourism

With numerous advanced hospitals, relatively low prices for treatments, strong government support in the way of public-private partnerships, and a strategic geographic location, Turkey looks set to become a major player in the lucrative health tourism industry. *Middle East Health* reports.

Turkey is going all out to tap into the lucrative global medical tourism industry. And why not – with a global industry estimated to be worth between US$38 - $55 billion there is a lot of money to be made. The country is doing a great job of marketing it's position as a leading player in the competitive world of medical tourism – and this is supported by a number of key factors – its strategic location, the relatively low cost of healthcare procedures, the high number of technologically advanced and JCI-accredited hospitals, well trained doctors and medical personnel, significant government support for medical tourism and a generally well developed tourism infrastructure.

Thanks to its strategic geographical position, Turkey is at the centre of a vast pool of potential international healthcare travellers. Its geographical proximity to Europe, Asia, Middle East, North and Central Africa, Russia and the CIS (Commonwealth of Independent States) means its potential patient client base is huge and worthy of investment.

Turkey now has an advanced healthcare system with many hospitals across

the country having achieved accreditation from the respected Joint Commission International (JCI). JCI accreditation ensures hospitals adhere to the most rigorous international standards in quality and patient safety.

According to Patients Beyond Borders Turkey boasts a network of more than 1200 public and private hospitals. Many of its 300 private facilities have developed working relationships with prestigious international medical centres, such as Harvard Medical International, Johns Hopkins, Mayo Clinic, Memorial Sloan-Kettering, and New York Presbyterian.

Over the past decade the Turkish healthcare system has undergone the largest transition in its history. The successes of health reforms, specifically the Health Transformation Program (HTP), have brought about a significant improvement in the healthcare system.

And the expansion of the country's healthcare system is expected to continue. A rapidly growing young population is one of the key factors driving demand for healthcare in this vast country. Over the next two decades, as the current young population of Turkey ages, there is likely to be a sharp rise in healthcare demand as almost 80% of a person's healthcare requirements typically occur after the age of 40-50.

Investment

According to Economist Intelligence Unit (EIU) forecasts, the healthcare sector in Turkey is set to grow by a Compound Annual Growth Rate (CAGR) of 5.6% between 2013 and 2017, while most developed countries will be experiencing relatively lower growth rates. Turkey is also expected to surpass the forecast world average with this growth rate.

Investments in the healthcare sector are expected to continue as the government strives to increase the number of hospital beds per 10,000 population to 32 by 2023, up from the current figure of 27.2.

The Turkish government has also taken on an ambitious healthcare public-private partnership program. The Ministry of Health is planning to open health "free zones", which will include hospitals, rehabilitation centres, thermal tourism facilities, nursing houses, health tech cities and research and development centres, to be built in big cities where transportation will be relatively easy.

According to a government statement, there are plans to increase health tourism revenues to $20 billion by 2023.

Tourism

Turkey is an attractive country for tourists in general. At the World Tourism Forum held in Istanbul earlier this year, TripAdvisor Vice President in Charge of Sales, Martin Verdon-Roe said that Turkey surprised the travel world in 2014 by becoming the most preferred country in the world for traveling. "Turkey has become a very popular place," he said. It's not difficult to see why – the country has a stunning array of attractions – from delicious indigenous cuisine to beautiful beaches, rich culture and numerous world

Joint Commission International accredited hospitals and labs in Turkey

Acibadem Adana Hospital
Adana, Turkey

Acibadem Fulya Hospital
Besiktas, Turkey

Acibadem Maslak Hospital
Istanbul, Turkey

American Hospital
Istanbul, Turkey

Anadolu Medical Center
(Anadolu Saglik Merkezi)
Kocaeli, Turkey

Ankara Guven Hospital
Ankara, Turkey

Antalya Hospital - Medical
Park Healthcare Group
Antalya, Turkey

Bahçelievler Hospital -
Medical Park Healthcare
Group
Istanbul, Turkey

Bayindir Hastanesi
Ankara, Turkey

Çagin Eye Hospital
Izmit, Turkey

Çukurova University
Medical Faculty,
Central Laboratory
Adana, Turkey

Dünya Göz Hastanesi
Istanbul, Turkey

Emsey Hospital
Istanbul, Turkey

Fatih University Sema
Clinical Treatment &
Research Center
Istanbul, Turkey

Gayrettepe Florence Nightingale Hastanesi
Istanbul, Turkey

Göztepe Hospital - Medical
Park Healthcare Group
Istanbul, Turkey

Hacettepe University
Hospitals
Ankara, Turkey

Hisar Intercontinental
Hospital
Istanbul, Turkey

HRS Ankara Women's
Hospital
Ankara, Turkey

Istanbul Florence
Nightingale Hastanesi A.
Istanbul, Turkey

Izmir University
Medicalpark Hospital
Izmir, Turkey

Kadiköy Florence Nightingale Hospital
Istanbul, Turkey

Liv Hospital Ulus
Istanbul, Turkey

Medicana International
Istanbul Hospital
Istanbul, Turkey

Medipol Mega Hospitals
Complex
Istanbul, Turkey

Medistate Kavacik Hospital
Istanbul, Turkey

Memorial Ankara Hospital
Ankara, Turkey

Memorial Antalya Hospital
Antalya, Turkey

Memorial Ata ehir
Hospital
Istanbul, Turkey

Memorial Sisli Hospital
Istanbul, Turkey

Neolife Tip Merkezi
(Neolife Medical Center)
Istanbul, Turkey

Npistanbul Neuropsychiatry
Hospital
Istanbul, Turkey

Ozel Doruk Yildirim
Hastanesi
Bursa, Turkey

Özel Medline Adana
Hastanesi
Adana, Turkey

Ozel Pendik Bolge
Hastanesi
Istanbul, Turkey

Private Cankaya Hospital
Ankara, Turkey

Private Medicabil Hospital
Bursa, Turkey

Private Tobb-Etu Hospital
Ankara, Turkey

Sifa Universitesi Bornova Saglik Uygulama Ve
Arastirma Merkezi
Izmir, Turkey

i li Florence Nightingale
Hospital
Istanbul, Turkey

Turkish Red Crescent
Society - The Aegean
Regional Blood Center
Izmir, Turkey

Turkish Red Crescent
Society Middle Anatolia
Regional Blood Center
Ankara, Turkey

Turkish Red Crescent
Society North Marmara
Regional Blood Center
Istanbul, Turkey

Uludag Universitesi
Saglik Kuruluslari
Bursa, Turkey

Yeditepe University Dental
Healthcare and Research
Center
Istanbul, Turkey

Yeditepe University
Hospital
Istanbul, Turkey

heritage sites and historical landmarks of global significance.

Istanbul, itself is a major attraction. It was the third most visited city in Europe in 2014 attracting in excess of 10 million tourists.

Visiting Turkey for healthcare

The number of tourists visiting Turkey specifically for healthcare has been growing steadily year on year.

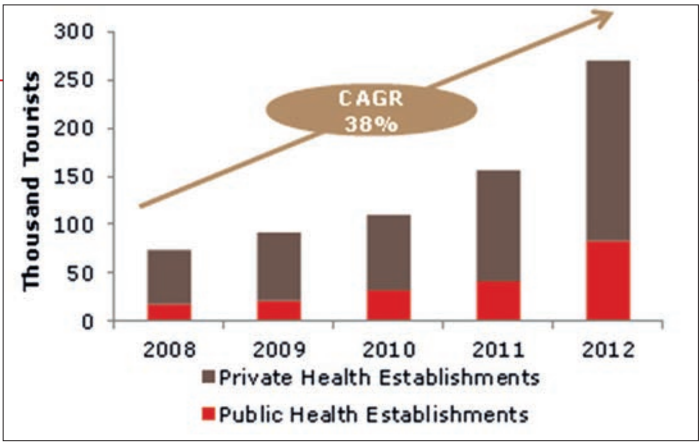
Actual figures of medical tourists vary depending on the source and the classification of what constitutes a medical tourist, but one thing is clear – it is a fast growing industry in the country.

Government statistics show the number of foreign patients coming to Turkey to receive medical treatment increased at a CAGR of 38% between 2008-2012.

Figures released by Turkey's Ministry of Health (MoH) put the number of medical tourists at 270,000 in 2012 and the ministry expects this to increase to 500,000 in 2015, and to 2 million by 2023.

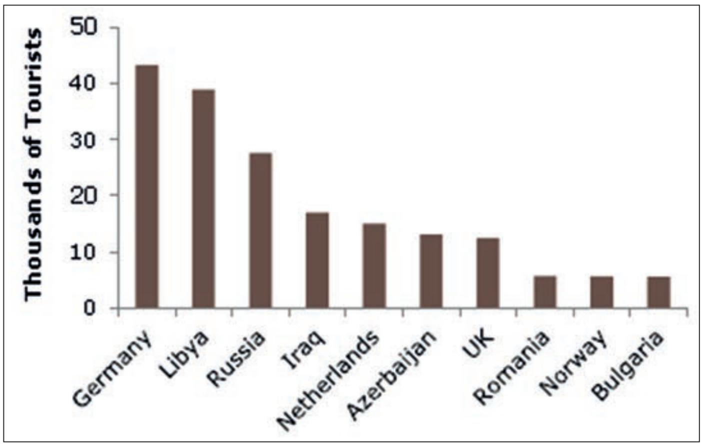
Most health tourists came from Germany, Libya, Russia, Iraq and the Netherlands in 2012, according to the MoH.

In 2012, the most common treatment were eye operations with a frequency of 25%, followed by oncology (13%) and orthopaedics (12%).



Source – Turkey Ministry of Health

Distribution of Patients Receiving Health Care in Turkey by Year, 2008-2012



Source – Turkey Ministry of Health

Health Tourists in Turkey by Country of Origin, 2012

Healthcare costs

The cost of healthcare is considerably cheaper in Turkey compared to most economically advanced countries. Using US costs across a variety of specialties and procedures as a benchmark, the average range of savings in Turkey is 50-65%, according to research by Patients Beyond Borders. MEH

Major stakeholders in health tourism in Turkey

The Ministry of Health of Turkey (MoH)
Turkey's MoH, founded in 1920, is the largest healthcare provider and the main body responsible for the provision of healthcare services. The mission of the MoH is to continuously improve the health of the population through the prevention of disease and the provision high quality healthcare services.
www.saglik.gov.tr
www.saglik.gov.tr

The Ministry of Culture and Tourism
The Ministry of Culture and Tourism evaluates, improves and markets all opportunities relating to tourism. More specifically, it regulates healthcare tourism services as well as granting the permission required for these services.
www.kultur.gov.tr
www.kultur.gov.tr
www.sgk.gov.tr

Private Hospitals and Health Institutions Association (OHSAD)
The Private Hospitals Association, the Health Institutions Association, the Tourism Regions Health Institutions Association and the Southeast Anatolia Private Health Institutions Association have come together to establish the Private Hospitals and Health Institutions Association. Through this merger, 80% of hospitals within the private sector and 850 other health institutions have a joint platform for cooperation.
www.ohsad.org.tr
www.ohsad.org.tr

Accredited Hospitals Association
The Accredited Hospitals Association protects the rights and interests of internationally accredited hospitals and healthcare professionals working in these institutions.
www.ahd.org

Health Establishments Association (TUS DER)
Health Establishments Association protects the rights and interests of private healthcare providers, physicians and citizens as one of the largest non-governmental organizations in this area since 1999.
www.tusider.org.tr

Turkish Medical Association (TTB)
The Turkish Medical Association (TTB) is the voice of physicians in Turkey by constitutional right. 80% (83,000 members approximately) of the country's physicians are members of TTB. The Turkish Medical Association encourages professional responsibility and investigates complaints by patients.
www.ttb.org.tr

Medipol – a popular choice for foreign patients

Middle East Heath: Which qualifications should your staff have, and what do you do to reach a better healthcare service?

■ **Ozer Koca:** Every day, we endeavour to do better by training our physicians and our staff – who know the health problems of Turkey and the world. They have the required knowledge, skills and attitudes for providing and managing primary healthcare services. They know, guard and apply the ethical rules of the profession, and are open to national and international current knowledge. They are, able to think systematically and work in a team – investigator and interrogator – and always improve and renew themselves. They use technology in relevant fields with medical science and have effective communication skills and public leadership qualities.

MEH: What are your future plans?

■ **OK:** We are proud of being a member of Istanbul Medipol University which has interpreted the realities and needs of our country and by combining with universal values, it has begun its journey full of confidence. Although it is still a young university hospital, it has achieved an identity that is already appreciated and admired. While en route to the target of achieving greater success, each member of the hospital and university works with great sacrifice. The targets on this path grow constantly and increase our enthusiasm and determination.

MEH: How many foreign patients do you treat each year? What countries do they come from?

■ **OK:** We accept annually around 40,000-42,000 foreign patients. 40% of those patients come from Middle East and Arab Countries. 35% of them come from CIS and 25% of them come from Europe, Asia and other countries. Recent agreements made between countries may change this ratio. As a result of agreements made with Iraq, Libya, Bahrain, Oman and Qatar, the ratio of the patients coming from Arab Countries has signifi cantly increased when compared with the past few years. Because we work with many insurance companies, we are also active in Balkans through municipality agreements. We have individual patients coming from Europe with private insurance. He also treat Azerbaijani patients as we have close communication with them through our office in Azerbaijan.

MEH: What is your target in terms of foreign patients? What is your ratio of expat patients?

■ **OK:** We aim to increase our present foreign patient number by 30% as of 2015-2016. One of our targets, developed though regional studies, is to raise the number of individual agreements signed with countries. As a university hospital, we are justified and proud to be recognised by other countries as a reliable hospital which is achieving constant successes. We also aim to work separately for African countries and increase activity in that region.

The ratio of the patients, who are our citizens but live abroad, in the total patient number changes cyclically between 5% and 10%. We find out that our expat patients, who come to us for healthcare services do so during vacation. They mostly work in Germany. It is seen as an important factor that those patients live in areas which do not have qualified work force or technological infrastructure, but long waiting periods at local hospitals. Turkey's value in the region is rising rapidly, thanks to recent healthcare investments. MEH

Özer Koca, Business Director of Medipol University Hospital

> We accept annually around 40,000-42,000 foreign patients. 40% of those patients come from Middle East and Arab Countries.

Successful Results in the Gold Standard "Orthotopic Liver Transplant"

Different methods can be applied in liver transplantation depending on the type of the disease or the condition of the donors. However, the most commonly applied one is orthotopic liver transplantation, according to Acibadem's Professor **Remzi Emiroglu**.

Acıbadem University Hospital Organ Transplantation Department Chief Professor Remzi Emiroglu says that the most common causes of liver cirrhosis include hepatitis, bile tract inflammation and stone, alcohol, and recently, fatty liver due to overweight. When the disease manifests itself, it causes liver insufficiency, ascites development, severe jaundice, bone tissue disorders, coagulation disorders, high pressure in the blood vessels, and brain diseases. Loss of appetite, lassitude, loss of weight, intestinal disturbances, sleepiness after meals, and insomnia during the night are among the common symptoms of liver disease. When these symptoms occur, the liver can no longer fulfill the needs of the body, in other words liver failure emerges. However this insidious disease may sometimes present itself with liver cancer.

When liver function deteriorates and the organ cannot function, patients are left with a single choice: Liver transplantation. Professor Remzi Emiroglu states that liver transplantation operations in Turkey are performed at world-class standards. He adds there are various methods for transplantation operations.

Orthotopic Liver Transplanation

In orthotopic liver transplantation, the liver of the recipient is removed totally, and replaced by the liver taken from a cadaver or living donor. If the transplantation is from a living donor, half of the liver is taken and transplanted.

Orthotopic liver transplantation yields better results compared to other transplantation types. This is because the diseased liver is removed completely; thereby the possibility of a cancer or diseases recurrence in the future is lowered.

Auxiliary Heterotopic Transplantation

Auxiliary transplantation is not very frequently performed; it is rather used in rapidly developing conditions such as mushroom poisoning, or some metabolic liver diseases by preserving some of the patient's own liver. When the cause of liver failure is gone, the patient's own liver begins to work again.

Reduced Size and Split Transplantation

In the split liver transplantation from patients with brain death, the organ is split into two and transplanted into two separate recipients.

Common questions …

Where is the liver located?

The liver is reddish-dark and weighs approximately 1-2 kilograms. It is placed in the right upper corner of the abdominal cavity, under the diaphragm (a muscle layer that separates the chest and abdomen) and between the stomach, right kidney, and intestines. Under the liver lies the gall bladder. The liver is composed of two main lobes, the right and left, and has two main vessels: the hepatic artery and the portal vein. The portal vein carries the nutrients absorbed from the intestine.

The liver takes up approximately 500 ml of the blood pumped every minute, in other words 13%.

What the liver likes and dislikes?

- It likes the artichoke because the potent antioxidant "silymarin" restructures the damaged tissue.
- It likes thistle and sage.

Professor Remzi Emiroglu, Acıbadem University Chief of Organ Transplantation Department

- It likes fruit sugar, but does not like the white sugar in excessive amounts
- It does not like white flour because it undergoes numerous processes, is devoid of bran, and results in cholesterol and some types of cancer.
- It does not like fatty, fried high cholesterol foods or products such as salami or sausage because they increase its workload.
- It does not like alcohol because alcohol tires it.

Keep in mind...

The most common diseases in children that necessitate liver transplantation are the lack of development of biliary tracts, and metabolic diseases. It manifests with jaundice, abdominal distention, and itching, it also results in growth and developmental retardation.

The liver regulates numerous chemicals in the blood and secretes "bile". When blood exits the stomach and intestines, it passes through the liver to be processed. Also, it disintegrates food and drugs, facilitating their use. MEH

Memorial is always by your side…

Memorial Hospitals Group was established with the mission of becoming a world-class brand in healthcare by making a difference with pioneering practices in the sector with its distinguished staff and patient satisfaction-oriented service approach complying with the international quality standards in the light of ethical principles, and admitted its first patient in February 2000.

Introducing world-class quality healthcare service to Turkey, Memorial is the first **JCI (Joint Commission International)** accredited hospital in Turkey, and 21st in the world and is a member of American Association of Hospitals (AHA).

Memorial, providing service to 1.8 million of outpatients every year and performing 60.000 surgeries, is the home of trust in healthcare with its specialist physicians and healthcare staff who combine their knowledge and experience with tender care to the patients, its patient-oriented service approach, quality policy, its diagnosis and treatment facilities equipped with advanced medical technology, its modern spaces and comfortable patient rooms.

Memorial, having internationally known departments such as IVF Unit-Genetics-Cardiovascular Surgery and Organ Transplantation, is a Reference Centre in branches such as Orthopedics, Cardiology, Neurological Sciences, Urology, Gynecology, Hematology, Gastroenterology, Oncology, Children's Health and Robotic Surgery.

Pioneering in the improvement of healthcare services standards with many first practices in Turkey, Memorial also successfully represents our country abroad with its international diagnostic and treatment methods. This is one of the reasons why Memorial Hospitals Group was selected as one of the best healthcare institutions abroad by US News & World Report.

Renowned worldwide Organ Transplantation Centers have been annually performing 234 liver transplantations, 352 kidney transplantations and 156 bone marrow transplantations; Cardiovascular Surgery Unit has been annually performing 1900 heart surgeries, 7000 angiographies (TAVI, Mitra Clip, Lead Extraction) and IVF center has been performing 7.000 applications annually.

Admitting 32.532 international patients from 92 countries throughout the world, Memorial is a world-class hospital that brings comfort of being treated in a safe environment to more and more persons each year.

Memorial is always by your side for your health with over 1.000 physicians, 6.000 employees, 4 medical centers and 10 hospitals located in stanbul, Ankara, Kayseri, Antalya and Diyarbakır.

"Because Your Health is Precious"

For more information visit
www.memorial.com.tr/en
or call +90-212-444-7-888

Interview

Tech solutions for smart hospitals

Middle East Health speaks to **James Fan**, Senior Solution Architect Manager, Smart City Group, Advantech about the company and how it implements smart technology in hospital design.

Middle East Health: Can you describe what your company does?

James Fan: Advantech, founded in 1983, is a leader in providing trusted, innovative, embedded and automation products and solutions. Advantech offers comprehensive system integration, hardware, software, customer-centric design services, and global logistics support; all backed by industry-leading front and back office e-business solutions. Advantech has always been an innovator in the development and manufacture of high-quality, high-performance medical computing platforms.

With its Solution Architect team's support, Advantech is focused on providing solution-ready packages that are designed around carefully planned hardware and software. It is committed to assisting hospitals implement technical solutions that help them improve areas such as outpatient services, nursing care, and critical care, and envisions becoming the premium healthcare solution provider.

MEH: You recently issued a white paper about the development of 'Smart Cities' with the advent of the "Internet of Things". How do you see this being applied to Hospital Design and "Healthcare Cities"?

JF: Our vision is that of "Enabling an Intelligent Planet". From there, you have of course the 'smart city', which is the theme of this topic. The 'Smart Hospital' concept originally came from Advantech's industrial automation sector and I think there is a big opportunity for our company to help hospitals get smarter through the use of more intelligent technology. What we want to do is follow in the footsteps of automated factories, where we can remotely monitor machines and service them when they are not in use, thus preventing them failing at a later date.

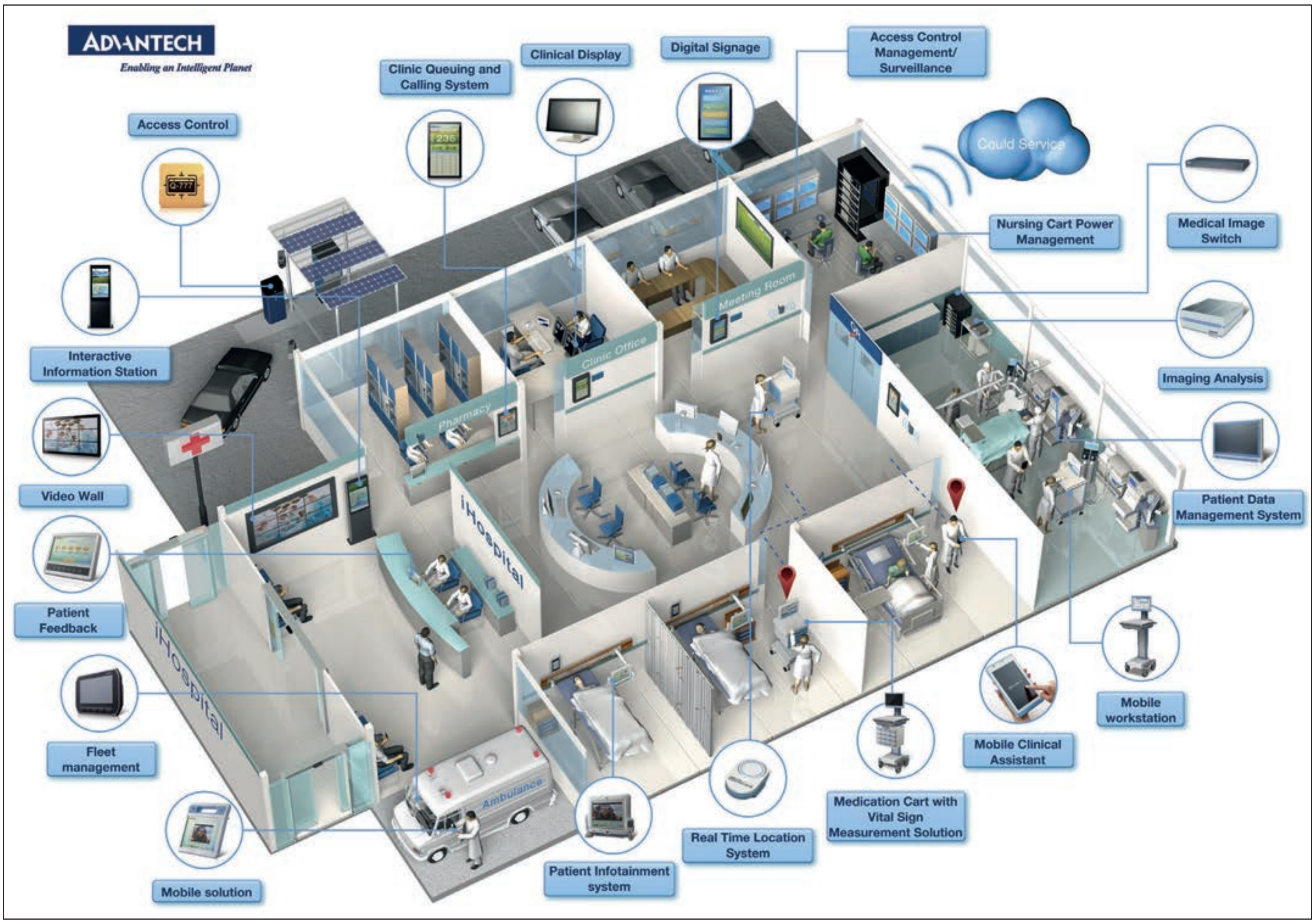
Advantech sees the smart hospital from the perspective of the patient as well as the medical staff and tries to meet the needs of both. The same concepts are useful in a hospital setting: you want to know what is being done and at what point patients require care. It will be ideal when colleagues can electronically monitor and discuss patient treatment, and share health records with other doctors. At the moment this is all done on paper which is complex and labor intensive.

MEH: What technologies can be incorporated in the hospital design?

JF: As hospitals look for ways to use and allocate limited medical resources in more efficient ways, technology assisted planning offers solutions that contribute to better environments for healthcare providers and patients alike, especially for nursing care, patient infotainment and critical care.

We are well established and well known in the critical care are with our point-of-care terminals, while we are relative newcomers to nursing. About two years ago, we released our trolleys, the difference being that we offered computerized trolleys – the computer was inside the cover or on top as a panel PC, giving hospitals the ability to have the same type hospital-wide – and that our trolleys are set up specifically to accommodate multiple accessories, such as panels. So if a hospital is seeking a complete workstation solution, we are well positioned because that is our target end user: the caregiver who needs to bring multiple accessories to the patient.

In the past we had a tablet, the MICA, which was developed together with Intel®. This was large and a bit heavy, and we



now see a need for a pocketable tablet with Windows®. Another aspect is patient infotainment – an area that involves bringing care directly to the patient's bedside.

In addition to the many direct benefits Advantech products bring to patient care, our stringent medical safety certification process aids them as well. Equipment maximized for safety and infection control brings peace of mind to both patients and caregivers. Advantech is also helping create integrated operating rooms, providing high-end robust computing terminals that aim to improve the workflow for medical staff as well as improve the patient experience.

MEH: How will this help health workers and patients in these 'smart hospitals'?

JF: Taking our nursing cart 'AMiS' as example. With the trolley, you can do patient monitoring, critical care solutions, and medication. We provide different medication-dispensing automations and the trolley is narrow enough that it can travel easily throughout wards, which is not normally the case. Most competing trolleys are too big, too wide, and must be stationed in the hallways, increasing the likelihood of mistakes. We want to bring the medication dispenser, other accessories, and the computer itself to the patients, so their health – and medications – can be safely monitored and electronically recorded.

Mobile devices that support patient monitoring, data transfer, and wireless transmission are becoming increasingly common. Institutions are becoming increasingly interested in ideas about the technology of future healthcare, which include increased connectivity, patient self-monitoring devices, cloud technologies, adoption of electronic health records (EHR), and more. This will bring much additional improvement to hospitals.

MEH: What can Advantech offer developers of so-called 'smart hospitals' and 'smart healthcare cities'?

JF: The formation of Smart Cities can be considered a manifestation of the concept "at the right time, in the right place, and with the right person". Healthcare policy will continue to impact the development of technologies and the behavior of hospitals. But ultimately, the entire healthcare ecosystem, including the insurance companies, has to come together to make "meaningful use" a reality. There are two possible trends to follow. First, expect to see hospital services go beyond their four walls. Second, standards for interoperability should evolve and become more practical.

The terms "Smart Hospitals" and "Smart Healthcare Cities" no longer represent new concepts. With the rapid development of the Internet of Things (IoT), Smart Healthcare Cities are dramatically increasing worldwide, gradually yet subtly becoming a part of everyday life, that's why we are publishing a whitepaper to increase public understanding by sharing success stories from around the world. This allows local governments planning to implement Smart Cities to learn from previous cases, and together with Advantech, to promote the development of "Smart Hospitals" and "Smart Healthcare Cities".

MEH: How do you work with developers?

JF: Advantech has always been an innovator in providing total solutions as well as in the development of high-quality, high-performance computing platforms. The Advantech Solution Architect team works closely with clients in consultative selling mode, collaborating with clients to understand their business requirements, issues, and priorities, and to develop a solution that advances the client's business strategy and goals.

Advantech cooperates closely with its partners to help provide complete solutions for a wide array of applications across a diverse range of industries. To realize our corporate vision of Enabling an Intelligent Planet, Advantech will continue collaborating and partnering for Smart City & IoT Solutions.

MEH: What challenges do you foresee in trying to incorporate these technologies in healthcare?

■ JF: It was a crazy situation back when hospitals were pretty well computerized in the administrative areas, but had absolutely no computer-based support for medical care. Every time we talked to senior medical staff, our words fell on deaf ears. Without a reliable terminal, even the best software is useless, and at the end of the day we could only sell our hardware in combination with software. The Advantech Solution Architect team at that time invested a lot of effort in developing a total solution for hospitals.

When our Solution Architect team began negotiations, the medical staff wanted the convenience of one-stop shopping. The Advantech sales team lost valuable orders, and that created a desire in the Solution Architect team to come up with a better-selling bundle package.

MEH: How can you resolve these challenges?

■ **JF:** The Advantech Solution Architect team listened carefully to user requests. Just having an appropriate computer was not the critical point. The users wanted to continue working the way they were used to working. We kept asking ourselves what it was that caretakers and physicians really wanted.

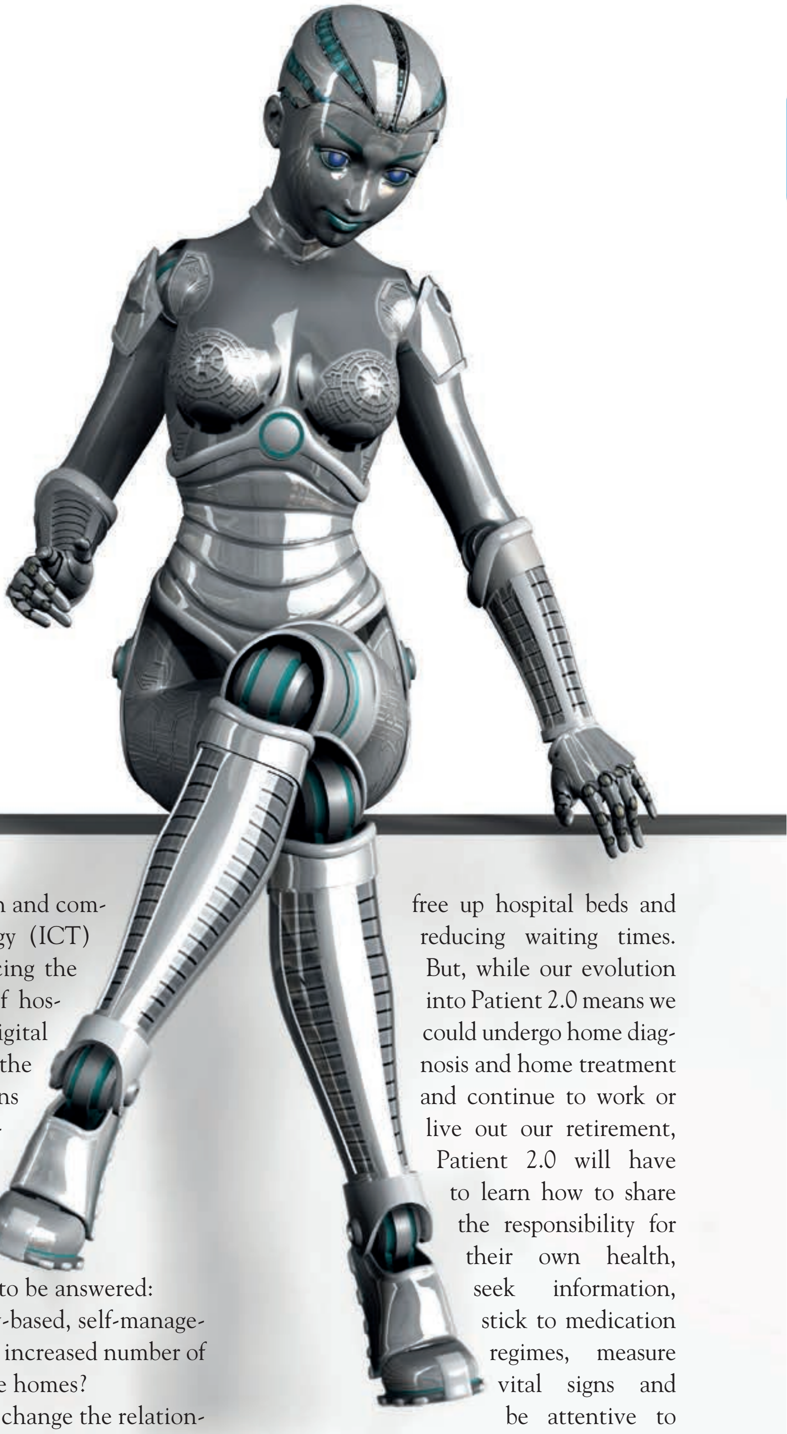
How could we motivate clinic staff not just to buy IT-systems, but also to really put them to use? Our Solution Architect team was responsible for reviewing customer requirements, researching possible solutions, documenting the solution that best met the customer requirements, developing cost cases to transition from the current environment to the proposed solution, and delivering the solution in a steady state. It quickly turned out that available, ready-to-buy components were only a part of the user's expectations.

MEH: It must be expensive to incorporate these technologies in the design and building of these 'smart hospitals'. How do you convince investors that it is worth their investment?

■ **JF:** Mary Logan, president of the Association for the Advancement of Medical Instrumentation (AAMI), observed that companies in the interoperability space may be effective working vertically but still have far to go in working horizontally. For example, a vendor may test its device and find that it works flawlessly, but when put in an environment where it is on the same network with a device from another company, there may be compatibility problems.

In observing major investments that have taken place recently, one can see that healthcare vendors and hospitals are serious about providing patient-centric solutions under the American Recovery and Reinvestment Act (ARRA). Healthcare technologies, including wireless, robots, imaging and cloud-based solutions will continue to propel the Healthcare IT (HIT) business. Device and solution providers will see opportunities abound. One big challenge ahead is getting the whole healthcare ecosystem to work together under the federal policy. With a shortage of medical personnel predicted, seamlessly integrated healthcare solutions are urgently needed to improve productivity and efficiency. MEH

Medical projects that Advantech is involved with worldwide.



Patient 2.0 – heal thyself!

Writing in the *International Journal of Healthcare Technology and Management*, researchers in Denmark explain how the new paradigm of a digital healthcare system, as it matures, is putting the picture of the doctor-patient relationship in an entirely new frame and not always in a positive way.

The advent of electronic healthcare records and the mobile computer in the form of the laptop, tablet and smart phone has led to the notion of patient empowerment. The new medical ethos that began to emerge in the mid-2000s was of a transformation of the traditional healthcare system into a modern digital system in which we, as patients, have access to the information and knowledge previously available only to medical professionals and can now meet our physicians on a more equitable footing.

Søsser Brodersen and Hanne Lindegaard of the Center for Design, Innovation and Sustainable Transitions at Aalborg University Copenhagen, explain how the headline proclamations that future patients will take of themselves via tele-healthcare systems are yet to happen. Patients would not interact with a face-to-face meeting with stethoscopes and sphygmomanometers and a "stick-out-your-tongue", but via digital sensors and domestic diagnostic devices and a video conference call to their doctor.

"In Scandinavia, the design of future healthcare systems and healthcare technology innovation are top priorities for politicians and technology developers," the researchers argue.

"An ageing population and an increasing number of patients who are living with chronic diseases have led to increased healthcare system costs," they add. The same can be said for many other parts of the world. Information and communication technology (ICT) could be key to reducing the number and length of hospital visits in the digital age. But, to make the necessary adaptations to healthcare and upgrade us to the Patient 2.0 paradigm, there are many issues yet to be addressed and questions to be answered:

Will the technology-based, self-management view result in an increased number of technologies in private homes?

How will the vision change the relationships between doctors and patients, and patients and relatives in practice?

How will the newly-empowered patients (or their relatives) become experts on their own illnesses?

How will patients' identities shift from being 'treated' to being 'empowered' when living with a chronic illness?

The transfer of power to patients will inevitably involve additional work and costs for someone, but perhaps reduce the burden on the healthcare worker. The researchers argue that the changes will have implications beyond the economic and logistic gains anticipated by politicians looking to free up hospital beds and reducing waiting times. But, while our evolution into Patient 2.0 means we could undergo home diagnosis and home treatment and continue to work or live out our retirement, Patient 2.0 will have to learn how to share the responsibility for their own health, seek information, stick to medication regimes, measure vital signs and be attentive to symptoms.

The researchers' case studies of elderly and chronically ill patients show that a 150-year old Patient 1.0 tradition might be overturned to the benefit of both patient and physician, and perhaps even politicians.

Reference

Brodersen, S. and Lindegaard, H. (2015) "Empowering patients through healthcare technology and information? The challenge of becoming a Patient 2.0", Int. J. Healthcare Technology and Management, Vol. 15, No. 1, pp.7388

MIDDLE EAST HEALTH I 70

Public Private Partnerships help improve accessibility, quality of health care in Middle East

By Ziad Salameh

When it comes to healthcare, governments globally are faced with the challenge of providing services to their citizens. Key to this challenge is finding the appropriate resources to develop healthcare initiatives, particularly when it comes to implementing technology advancements and innovations.

One of the best solutions to this challenge is the partnership of government and the private sector – so-called Public Private Partnerships (PPP). This enables them to create strong, sustainable and scalable infrastructure for an effective and robust healthcare system.

Technology research firm, Gartner, notes that healthcare spending on IT products and services in the Middle East and Africa reached US$3 billion in 2014. Overall healthcare expenditure across the GCC is set to grow from $39.4 billion in 2013 to $69.4 billion by 2018, according to Alpen Capital.

The cost implications for maintaining and running high quality, accessible and affordable healthcare services are extremely high and governments are looking at more private-sector participation to harness their strengths and capabilities in care provision, financing, healthcare supplies, and health education.

Governments and the private sector are cooperating to provide healthcare services which can be delivered more efficiently and cost effectively. From a long term perspective, PPPs in healthcare are actively working towards facilitating public services that can be measured, analysed and are more strategy and policy driven. It results in a marked interdependence of both sectors with valuable benefits for each of them. More importantly, it delivers modern facilities and services and caters to the needs of 21st century healthcare.

The partnerships span the healthcare spectrum including pharmaceuticals, medical equipment, training and, health insurance. More importantly the collaborative efforts of PPP can also address the needs of the wider society by being able to reach out to more underserved and remote areas and provide the same benefits as their city counterparts.

The internet

Over the past decade the internet has had a major impact on economic growth, social inclusion and improved government service delivery. It is the critical enabler of delivering remote healthcare services and reaching the most remote and underserved communities. This is possible with the introduction of telehealth services where long distance patient healthcare is enhanced through telecommunication technologies which are capable of improving access to specialist care without the need for expensive and long travel.

The advent of video conferencing plays an effective role in remote healthcare. It allows easy communication for patients and doctors to stay connected – from the initial consultation, medical diagnosis and prescriptions and into the follow up stage. All this is possible from the comfort of the patient's home. It also provides an extremely large network of opportunities for doctors and healthcare providers to share information and support each other to improve their services.

Clinical workflow solutions that are available through private sector products and solutions helps local and remote healthcare teams improve collaboration, streamline workflows, enhance patient examinations and consultations, and make critical decisions more quickly. These solutions provide the tools and resources healthcare practitioners need to deliver high-quality patient care.

At the same time PPP can play a vital role in health education and is capable of

enhancing face-to-face remote education by providing doctors and care givers the opportunity to stay abreast with medical innovations and advancements. Similarly, PPPs can utilize cutting-edge technologies to create and implement educational campaigns to cover family planning, infectious diseases and effects of environment on health through fast and effective mobile and internet communication and can help improve the wellbeing of citizens.

In an age where more data is moving between devices and people and from machine to machine, it transforms the way governments need to be prepared for this wealth of digital information and encourages them to strengthen their digital strategies. PPPs bring service providers and technology organizations together and provide innovative solutions where data can be gathered and analysed. It helps them plan, implement and manage healthcare projects and prepare for future reforms. Embracing these best practices helps provide improved operational efficiencies, drives faster and better decision making and provides cost effective services.

The coming years will see PPPs increasing their reach, scope and scale of healthcare with increasing use of medical IT that will help providers manage their services through information gathering, analysis and sharing. Information sharing which is secure, accurate, diagnostic will offer greater patient experience along with lower cost implications.

Data security

PPP, while providing quality services, must also lay strong emphasis on the privacy and sensitive nature of patient information and data. Technology can assist in the challenges that are a part of the connected healthcare ecosystem. Technology partners can provide trained and certified security experts who can design and assist in patient data security. They provide a more resilient approach to cyber security with an integrated and architected approach to security. Simply put, the security must be able to not just detect security incidents, but must be able to determine their origin, evaluate their impact and search for other occurrences of identical or similar incidents.

Jordan Healthcare Initiative

The Jordan Healthcare Initiative (JHI) is a good example of an effective PPP healthcare programme in the Middle East. JHI is a strategic collaboration between Cisco and the Government of Jordan to improve the efficiency of and access to quality healthcare services for the people of Jordan, particularly those living in rural and underserved areas. The initiative has resulted in a series of projects where collaboration and communication technologies were strategically used to transform, enhance and deliver healthcare across the country. To date, more than 110,000 patients have benefited from telehealth video consultations or cloud enabled radiology services developed through this initiative.

Governments in the GCC are committed to their long term strategies for healthcare services. Several examples highlight their efforts. These include Saudi Arabia's Ministry of Health's 10-year strategy for an integrated and comprehensive approach to healthcare provision and the Qatar National Health Strategy 2011-2016. It is aligned with the Qatar National Vision 2030 – a long term social and economic development program. In 2014 Oman drew up a 40-year vision – "Health Vision 2050" – which aims to enable the Omani people to live healthy and productive lives through a well-rounded health system. These initiatives are an indication of the expected rise in PPP in healthcare in the Middle East to improve the quality of and access to healthcare services. MEH

The Author

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Leroy Cooper – back on the golf course

Back on course

Hybrid approach speeds golfer's recovery

Husam Balkhy, MD

Although it could mean missing his weekly golf game, Leroy "Rocky" Cooper knew he had to get his heart fixed, and soon. He just had to find a way to get in, get it done, and get out without too much down time.

"I knew I had a problem and that it was getting worse," he said. "I thought maybe I needed some stents."

So, Cooper, who spends the warmer six months of the year in Frankfort, Illinois, and the colder six in Fort Myers Beach, Florida, went to a local medical center for tests. The team there had bad news. You need open-heart surgery, they told him.

He found this troubling. "My uncle had heart surgery last November," Cooper said. "He had to go back to the hospital soon afterwards for a collapsed lung. Six months later it still hurt. I thought: there must be a better way. So I did some research."

He was already tuned in to robotic surgery. About seven years ago, Cooper, now 61 years old, had been diagnosed with prostate cancer. He found a surgeon who removed the cancer using the DaVinci surgical robot. It did not require a major incision, just five small holes for the miniaturized surgical tools, tubes and a camera.

When he searched for robotic heart surgeons, though, he found this specialty was not nearly as common as robotic prostate specialists. But he soon came across Husam Balkhy, MD, director of the minimally invasive and robotic cardiac surgery program at the University of Chicago Medicine, the only such program in the country doing a large volume of robotic coronary surgery.

Plus, something about the website "struck my fancy", he said. So he called, made an appointment and sent his angiograms.

Patient becomes pioneer

Balkhy's team confirmed that Cooper had significant blockages in two of his major arteries – one on the left side and one on the right. Although multi-vessel robotic coronary bypass has become fairly routine at UCM since Balkhy joined the team just over a year ago, Cooper's particular distribution of blockages "did not lend itself well to an isolated robotic procedure", Balkhy said.

Because of the strong collaboration between surgery and interventional cardiology at UCM, Balkhy recommended a hybrid procedure to attack Cooper's blockages without opening his chest. He worked with interventional cardiologist Sandeep Nathan, MD, co-director of the cardiac catheterization laboratory. Working together, and in pairs, the three of them developed a plan.

They decided to perform the coronary bypass – known as LIMA-LAD – first, using the robot. The team carefully explained the process. Balkhy would insert his tools through five nickel-sized incisions to take part of the left internal mammary artery (LIMA) and use it to create a graft that would carry oxygen-rich blood past the partial blockage in Cooper's left anterior descending (LAD) artery.

"There are very few teams in a position to do this."

"That's the heart problem they call the 'widow maker'," Cooper noted.

When Balkhy was done, the surgical tools would be removed and the tiny incisions closed. Nathan would then insert a catheter through the radial artery in the left wrist and maneuver it to the heart.

His first mission was simply to confirm that the bypass graft was reliably in place and functioning well. Then he would use an expandable balloon to open the partially clogged right coronary artery and install two wire-mesh stents to keep them open.

"I liked the idea that it was all done at once," Cooper said. "They call it the hybrid room, because they use it to combine different sorts of treatments, things that would normally be done on different days in separate rooms."

Although each physician has done hundreds of cases, they had never done the two procedures together, the same day in the same room. Cooper would be the first.

"Our approach was quite novel," Nathan said. "This all-in-one procedure is not performed on a routine basis. I don't know of another place that combines a totally endoscopic surgical approach with leading-edge interventional technique. But it makes perfect clinical sense."

"I'm glad you've volunteered for experimental surgery," was the response from Cooper's somewhat skeptical community-based physician when told of the innovative plan. He wished his patient luck.

Five small holes let golfer play12

On Wednesday, July 9, Cooper played golf. Early the next morning, July 10, he checked into the hospital. He was wheeled to the hybrid room at 7.30am.

Everything went according to plan. The combination of treatments took about four and a half hours: just under three hours for robotic surgery and about 90 minutes for angioplasty and stent placement. That evening, in his hospital bed, Cooper was pleased to find that despite having two teams unclogging and rerouting the arteries that delivered blood to his heart, he had little or no pain, "nothing an aspirin couldn't handle".

His only discomfort was a sore throat, caused by the breathing tube they put in place for his operation. He also had one not-unexpected disappointment. "The surgery," he said, "did not improve my golf game."

By Saturday morning, July 12, Cooper felt fine, eager to go home. "I was bored," he said. "I got up and walked around the hospital for a couple hours. After a while they came looking for me, to tell me I would be discharged that afternoon."

> Everything went according to plan. The combination of treatments took about four and a half hours: just under three hours for robotic surgery and about 90 minutes for angioplasty and stent placement.

"I got out in two days," he marveled. "My uncle, the one who had surgery last November, called a few days later to ask how it went. 'You're up and around?' he said. 'Already?'"

Cooper insists he would definitely recommend the hybrid approach, bestowing upon his treatment team "five stars across the board". There was no pain, other than his sore throat. Recovery time was "virtually nil". His doctors, he said, "are way ahead of the game".

Plus, he added, they were not "suit doctors. They weren't stuffy. They would sit down and explain everything."

Just before he was discharged, Cooper's physicians – pleased with the outcome and just a little proud of their accomplishment – mentioned that he was the first patient to undergo simultaneous robotic bypass surgery and stent placements at the University of Chicago.

"There are very few teams in a position to do this," Balkhy noted, "but there may be a substantial number of patients for whom this is an appealing option."

The following Wednesday, Cooper did not play golf. But the next week, July 23, just 12 days after his pioneering operation, he was back on the course.

"It was a little too soon for all 18 holes," he acknowledged, "but I played 12. My arm hurt a little, and I got tired, but it was fine. It was good just to be out there." MEH

Oxygen under pressure – a future adjunct option for refractory wounds

By Dr Lon W. Keim

Imagine being at risk of losing one of your feet.

That's what a mother of seven from Kuwait with advanced diabetes mellitus recently faced before coming to Nebraska Medicine and the University of Nebraska Medical Center, through the assistance of the Office of International Healthcare Services.

She presented with a problem wound involving her right foot, now threatened by potential amputation. Her management was further complicated by the need of dialysis three times per week for her end stage renal disease.

Years ago Dr Jefferson Davis and Dr Thomas Hunt coined the term "problem wounds", which they defined as wounds which simply do not heal as they should.

Through their experience and research, they determined that a common denominator of problem wounds is tissue hypoxia or oxygen deprivation. Tissue hypoxia is commonly a result of three factors: inadequate oxygen in the blood, insufficient regional blood flow, or most often – focal oxygen demand exceeds delivery. That is the metabolic demands of the wound exceed oxygen delivery from the available blood supply.

Accordingly, the body's inherent defense mechanisms – the ability to fight infection, generate new blood vessels, build tissue, create strength, provide coverage – are forced to function in an oxygen deficient environment. Thus a problem wound, like the one the woman from Kuwait experienced, is created.

Re-establishment of local regional blood flow through vascular enhancement procedures such as arthrectomies, angioplasties, stent placement, and bypass procedures is the essential cornerstone of initial management.

Hyperbaric Oxygen Therapy (HBO) also has been found to be a useful adjunct in selected patients who tissue oxygenation is not improved to accepted levels by revascularization procedures. The patient is entirely enclosed in a monoplace chamber and breathes 100% oxygen at pressures greater than 1.0 atmospheric pressure absolute (ATA).

With increased pressure, the amount of oxygen physically dissolved in the blood is increased. This increased oxygen pressure in plasma enhances diffusion from existing vasculature and improves regional wound tissue oxygen tensions.

The increased oxygen tension will not make a normal wound heal faster, but allows an otherwise compromised wound to heal through improved white cell function, enhanced antibiotic effectiveness, promotion of micro-vessel growth and collagen formation. It should be emphasized that HBO is not a substitute for adequate debridement or appropriate antibiotics, adequate nutrition, or local wound care.

Prior to coming to Nebraska, the mother from Kuwait had been evaluated by clinicians in Europe who believed nothing further could be done with amputation being the next most likely course of action. She was subsequently referred to Nebraska Medicine where vascular surgeons were able to improve her distal vascular circulation through angioplasties and stent placement.

Subsequent transcutaneous oxygen assessment confirmed marginal tissue oxygen tensions that reversed with Hyperbaric Oxygen Therapy, thereby justifying further treatment with HBO. While continuing her dialysis three times a week, through a series of HBO treatments at 2.4 ATA for 90 minutes each, local wound care, and pressure off loading, her wound oxygen tensions improved, allowing her wound to heal to a degree it was believed she could be safely discharged and return to Kuwait with her limb intact.

It should be emphasized that her recovery was the result of a team effort that included: skilled surgeons, gifted interventional radiologists, talented infectious disease expertise, attentive nurses, ongoing dialysis support, pressure off loading, aggressive nutritional support, and hyperbaric oxygen therapy.

The Hyperbaric Unit at Nebraska Medicine is equipped with four monoplace chambers capable of treating patients at pressures up to 3.0 ATA. The unit is staffed by hyperbaric trained critical care nurses, and is located immediately adjacent to an ICU. As such, the Nebraska Medicine specialists are capable of both treating walk-in outpatients as well as those requiring intensive critical care support. Although available 24/7 for emergent conditions, the unit routinely runs four shifts a day, with the majority of patients treated once daily five days a week.

HBO is viewed as the primary treatment for only three conditions: (1) acute carbon monoxide intoxication, (2) decompression sickness (bends), and air emboli (air bubbles within the vascular system).

Nebraska Medical Center's HBO team (L to R): Top row: K Fowler BSN RN CHN, P Shalberg LPN CHT, D Winn, BSN RN CHN, Nurse Manager. Bottom row: L Keim, MD HBO Staff Physician, J Cooper, MD HBO Medical Director, J Sippel, MD HBO Staff Physician.

For all other conditions, HBO is viewed as adjunctive therapy to the traditionally accepted mandates of care: adequate debridement and wound care, pressure off loading, edema control, nutrition, wound care, appropriate antibiotics, etc.

The following conditions have been approved and are endorsed by the Undersea and Hyperbaric Medicine Society (UHMS) as appropriate for treatment with HBO: (1) Clostridial myonecrosis – gas gangrene, (2) Necrotizing Soft Tissue Infections, (3) Refractory Chronic Osteomyelitis, (4) Compromised Flaps & Grafts, (5) Diabetes Mellitus – with lower extremity problem wounds refractory to conventional management for > 30 days, Wagner III-IV, (6) Delayed Radiation Injury – to Soft Tissues and Bone including radiation cystitis, radiation caries, colorectal radiation enteritis, or any chronic non-resolving chronic wound within a prior area of radiation, (7) Crush Injury – Skeletal Muscle Compartment Syndromes, (8) Intracranial Abscess, (9) Idiopathic Sudden Sensorineural Hearing Loss, (10) Exceptional Blood Loss Anemia, and (11) Thermal Burns

The risks and side effects associated with HBO therapy are few. They include: confinement anxiety; barotrauma to the ears sinuses and potentially the lungs; fire (controlled by rigid adherence to strict safety protocols), rare oxygen induced seizures; and occasional transient reversible changes in vision. All in all, it is extremely well tolerated with minimum risks.

For additional information, please contact Nizar Mamdani, Executive Director, International Healthcare Services at Nebraska Medicine at +1 (402) 559-3656 or via email at *nmamdani@nebraskamed.com*
Visit our website at *www.unmc.edu/international*

RTI and Bergen Healthcare to set up a calibration lab in India

RTI and Bergen Healthcare have joined forces to set up a joint calibration lab to serve the Indian market. Bergen Healthcare has been RTI's distributor in India since 2013. Based on the successful cooperation so far, the companies have now decided to set up a calibration lab dedicated to the Indian market.

"We see a great potential in the Indian market. The number of X-ray machines is growing steadily and the need for quality assurance will increase accordingly. India is a strategic market for RTI," says Fredrik Ljungberg, President of RTI.

"The opportunity to establish a calibration lab in India is really exciting. We are confident that Bergen Group has the necessary skills, expertise and market coverage to bring the calibration services to the Indian market successfully," says Rajinder Kumar Kaura, Chairman cum Managing Director of Bergen Group, India.

"We have been operating in the Indian market since 1983 and the healthcare market in India is developing well.The equipment from RTI we offer the Indian market is outstanding. The calibration lab will make our offer even stronger,"

The lab will be situated in Gurgaon just outside New Dehli and be managed by Rakesh Chaudhry. Bergen Healthcare has geographical coverage of the Indian market and the calibration services will be offered using their nation wide sales force.

"We have decided to situate the calibration lab at our works in Gurgaon. This way it will be accessible easily by the most developed part of the Indian healthcare market," says Chaudhry, Vice President at Bergen Healthcare.

"Our strategic partner, Bergen Healthcare, is well-established in the Indian market and we look forward to a long-term successful cooperation with them," says Fredrik Ljungberg, President of RTI.

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The Middle East has one of the highest rates of major depression

By **Leslie Morgan**, OBE DL
CEO, Durbin PLC
Leslie Morgan is a Fellow of the Royal Pharmaceutical Society of Great Britain

Mental illness is a condition which can impact a person's mood: the way they think and how they feel. It occurs in people of all walks of life, including all classes, race, ethnic and religious divisions. Disorders such as anxiety, depression, obsessive-compulsive disorder and psychosis, are all part of the wide and varied spectrum of mental illness. It was surprising to hear that the World Health Organisation (WHO) has estimated that there are around five hundred million people on the planet affected by a mental illness. It also saddens me to learn that these conditions are generally not treated with the same sense of urgency as physical illness, and that in many areas the resources to provide the care needed are often not available.

Research by *PLOS Medicine* found that globally, depression is the second highest cause of disability – more than 4% of the world's population has been diagnosed. A recent study by WHO found that the Middle East has one of the highest rates of major depression compared to the rest of the world – almost 7%. October 10 marked the annual global Mental Health Awareness day – the day originated in 1992 as a plan to focus more attention on the range of mental illnesses and the effects that they can bring to people's lives worldwide. This year addresses the subject of 'Dignity in Mental Health'. According to the Social Care Institute for Excellence, this can be divided into three focus areas: stigma and discrimination, acute inpatient care, and human rights violations.

An untreated mental illness can prevent someone from living their everyday life. To illustrate this, WHO created a televised campaign: 'I had a black dog, and his name was Depression'. The metaphor reflects the frightening condition, describing the heavy burden felt by sufferers and aimed to open people's eyes to how distressing and consuming depression can be.

The organisation, Embrace, is an awareness support network for mental health in Lebanon and the Middle East. They also came up with a campaign to help abolish the stigma surrounding mental illness and to encourage people to speak openly and learn about mental health. The campaign in Arabic translates as 'untie the knot', referring to the often confused and limited understanding of mental health by Middle Eastern societies.

Despite an increase in mental health awareness at a national level in the Middle East, it is still unlikely that an affected person will know where to go, who to talk to and how to access care. Conditions such as depression and anxiety affect every country and society in the world, however these illnesses often remain stigmatised with sufferers feeling afraid to talk about their struggle and unable to know where to turn for help. Many people are still afraid and ashamed to seek help for a mental illness, whether for themselves or their loved ones. Some families still believe that mental health is a taboo subject and expect that by shutting it away and not addressing it, the issue will just disappear. In some cases, people have felt more comfortable diagnosing a family member with demons and calling a religious healer to perform an exorcism than to admit they are in a psychiatric hospital or being prescribed medication for a mental illness. This is the type of misunderstanding that needs to be abolished.

I applaud the many charities and organisations which are pushing to ensure that those who need it are under-going treatments, receiving the best care and ensuring patients' human rights are always protected, especially at times when their own judgement may be compromised. Often these mental illnesses are largely preventable and treatable and this is usually easier the earlier they are recognised and diagnosed. We must continue to support those who strengthen communities by educating people about mental illness in a bid to extinguish the shame associated with, and negativity surrounding this subject. I once read a great quote by Michelle Obama which sums this up well: "At the root of this dilemma is the way we view mental health. Whether an illness affects your heart, your leg, or your brain, it's still an illness, and there should be no distinction." MEH

Durbin PLC is a British company based in South Harrow, London. Established in 1963, the company specialises in supplying quality assured pharmaceuticals, medical equipment and consumable supplies to healthcare professionals and aid agencies in over 180 countries. As well as reacting rapidly to emergency situations, Durbin PLC responds to healthcare supply needs from local project level to national scale programmes.
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Lung cancer developments improving – but awareness is still lacking

Whilst awareness of breast cancer is improving in the country, there is still some negligence on the part of UAE residents around lung cancer, according to an expert speaking at the third annual International Oncology Conference in Abu Dhabi. However, whilst it is still one of the leading causes of death in the UAE, brought on by the prevalence of hookah pipes and cheap tobacco, incidence rates are still lower than in other parts of the world.

"From the limited data we have available, it appears that lung cancer incidence in the UAE is less than it is in the western world. However, we also see higher rates of incidence amongst women, which is why we emphasize that in all cases, regular check-ups are a must, as early detection means a much higher chance of survival," said Dr Norbert Dreier, Head of Department, Oncology / Hematology at Burjeel Hospital in Abu Dhabi.

There are two major types of lung cancer – small cell lung cancer and non-small cell lung cancer – and treatment of both differs greatly. Non-small cell lung cancer is more common, and it is here that the field is seeing some rapid developments.

"Small-cell lung cancer continues to be treated using age-old methods like chemotherapy, radiation therapy and surgery. However, for non-small cell lung cancer, we're detecting genetic aberrations that will allow us to have more specific treatments for this cancer moving forward. There are a lot of companies zoning in on this market – the market leaders are of course Roche Diagnostics – but there are also many others, this all helps us strengthen our diagnostics portfolio and benefit the patients," said Dr Dreier.

Whilst those who have never smoked can still develop the disease, the risk of lung cancer amongst smokers is at least 10 times higher than that of non-smokers, the World Health Organization recently reported. In the UAE, much needs to be done to raise awareness, according to Dr Dreier.

"Awareness levels around lung cancer are not where they should be and there is definitely some negligence on the part of the patient. Clearly, smoking rates are not declining, so hopefully we can do something more. There is a lung cancer program starting in Abu Dhabi this year, but whilst this is a good start, there is still a long way to go," he said.

Held under the patronage of His Excellency Sheikh Nahyan Mubarak Al Nahyan, UAE Minister of Culture, Youth and Community Development, the conference attracted more than 35 cancer experts and 900 delegates. MEH

Small-cell lung cancer continues to be treated using age-old methods like chemotherapy, radiation therapy and surgery. However, for non-small cell lung cancer, we're detecting genetic aberrations that will allow us to have more specific treatments for this cancer moving forward.

Interview

Novartis expands oncology portfolio

Drugs for melanoma in the pipeline

Middle East Health was invited to the Novartis Pharmaceuticals headquarters and research campus in Basel, Switzerland in June to attend a conference on new developments by the pharma company. **Callan Emery** spoke to Patrick Eckhart, regional head oncology, Novartis Middle East and North Africa.

Callan Emery: Novartis recently acquired the oncology portfolio of GSK – why did Novartis make this acquisition? What are they getting from the deal?

■ **Patrick Eckhart:** The acquisition was part of a broader deal where, from the perspective of wanting to be the leader in each of the fields where we operate, Novartis could to continue with research in the developments of compounds for oncology. We are number two globally in the development of treatments for oncology and we wanted to expand our therapeutic areas in this field. With the acquisition we are able to not only acquire new treatment areas, but also enhance areas in which we are already involved. There was a lot of synergy between the portfolios of GSK and Novartis.

What sets us apart from our competitors is that we have a specific focus area on oncology. Since 2000, we have had a specific Business Unit for oncology to speed up research and commercialisation of treatments.

CE: I understand you also acquired two pipeline oncology drugs?

■ **PE:** Yes. We have the rights for two oncology pipeline compounds of GSK. That means once we get the results we have first option to decide whether we want these drugs or not. GSK will keep working on them until results are out.

CE: Which drugs did you acquire?

■ **PE:** With relevance to the Middle East and the UAE, one of the biggest selling drugs we acquired was Tykerb for the treatment of breast cancer. It enhances our breast cancer portfolio where we already have products like Femara and Afinitor.

And we do have in our pipeline another three drugs coming for breast cancer. Breast cancer is a major focus for Novartis for the future.

The other acquisition was Votrient for first-line treatment of renal cell cancer. It's a pretty new compound that was launched one to three years ago depending on the market. Votrient has good affinity with our second-line treatment for renal cell cancer – Afinitor.

CE: Novartis has a patient co-pay system in place in the Middle East. What is this?

■ **PE:** We do this to assist patients who cannot afford to continue taking their long-term medication. We don't assist patients directly, but work through third parties such as the ministries of health and NGOs.

Each country is different and we have different programmes for each country.

CE: Are you involved in any partnerships in the region with regards cancer?

■ **PE:** We do this all over the region. For example, Thalassaemia – if there is a high demand for treatment we will partner with hospitals to help ease the burden, where the government doesn't provide funds. For example, in Algeria we assisted with the funding of MRI machines for some hospitals so they can check the blood to see if treatment is working.

CE: You are involved in education – what is this about?

■ **PE:** It is an important part of our programme. We take a facilitative role in this – to help set up patient forums across the region where we can provide info about their disease and treatment. We also provide education on prevention measures that can be taken for certain diseases – such as breast cancer. These forums are important as we have found, particularly in the Middle East, that there is often a stigma around certain

RADIANT-4 study

In September Novartis announced results of a Phase III pivotal study (RADIANT-4) showing Afinitor tablets reduced the risk of progression by 52% vs placebo in patients with advanced, progressive, nonfunctional neuroendocrine tumours (NET) of gastrointestinal (GI) or lung origin.

The results of the RADIANT-4 study – part of the largest clinical trial program in patients with advanced NET – will serve as the basis of worldwide regulatory submissions for Afinitor for the treatment of advanced, progressive, nonfunctional GI and lung NET. Afinitor is already approved in more than 95 countries worldwide for locally advanced, metastatic or unresectable progressive NET of pancreatic origin.

ViaOpta Nav – a smart app for visually impaired people

During the event in Basel, Novartis Pharmaceuticals announced the release of new features for its ViaOpta applications, and the extension for use with smart watches. The discreet, hands-free nature of using ViaOpta app with wearable devices, such as Apple Watch and Android Wear, provides users with an experience that easily fits into their existing routines allowing those with visual impairments to navigate daily life with even greater ease.

ViaOpta Nav is the first turn-by-turn navigation app available for a wearable device designed specifically for visually impaired people, providing voice guidance and vibration settings, which alert the user to upcoming intersections and landmarks. The users can ask for their exact position, add waypoints to a calculated route, and find nearby destinations or landmarks and save them as favourites. Users and their caretakers can also share and access a person's exact location.

"Novartis is committed to providing innovative solutions which go beyond medicine, like these apps for the visually impaired which benefit their daily quality of life," said David Epstein, Head of Pharma Division, Novartis Pharmaceuticals.

Globally, more than 285 million people live with vision impairment and blindness. In order to reach as many of these people as possible, ViaOpta apps are now available in several languages with additional languages currently in development.

Key features

The app coverage has been extended to the whole world, although coverage is less in rural areas. Features include: Points of Interest nearby; Object Recognizer, which identifies objects in the user's field of vision when the user points the camera of the device at an object. Scene Recognizer, which enables the user to point the camera of the device in a desired direction or at place and the voiceover will tell the user what is in front of them to help them navigate unfamiliar environments.

Jadenu for iron chelation therapy

Jadenu is a new oral formulation of Exjade (deferasirox) tablets for oral suspension, for the treatment of chronic iron overload due to blood transfusions in patients two years of age and older, and chronic iron overload in non-transfusion-dependent thalassemia syndromes (NTDT) in patients 10 years of age and older. Jadenu is the only once-daily oral iron chelator that can be swallowed whole.

Many patients with sickle cell disease, thalassemia or myelodysplastic syndromes need repeated blood transfusions and consequently, long-term daily chelation therapy. Jadenu oral tablets can be taken in a single step, with or without a light meal, simplifying administration of treatment for chronic iron overload.

diseases and the patients find it difficult to discuss them with their family or friends. These forums provide an opportunity for patients to discuss their disease.

CE: You are operating in countries with conflict – how do you do this?

■ **PE:** We are very proud of the people we have in the field in these countries. We cannot abandon patients who require medication in these countries. So, for example, in Syria, Libya and Iraq – we have people in the field who do jobs such as picking up the drug and delivering it to the patient.

CE: Are you still able to supply drugs into these regions?

■ **PE:** Yes, this is a really tough job. We normally do big a shipment once or twice a year. It's very difficult to get them in or to find a partner who is willing to bring the drugs in. So we try to concentrate the shipments into one or two shipments a year. It can take many months' planning as we have to find an airport that is open and then we are faced with the difficulties of ground transportation to ensure that the drugs get to the right place. Our people on the ground there ensure that the distribution works well in such difficult conditions. So, yes, we are still operating in these countries.

Normally we will work with the central government to facilitate the shipment of medications.

CE: You have several drugs in the pipeline – 25 in all. Can you tell me about some of these?

■ **PE:** I can give you a snapshot. We will continue to reinforce the areas we are in – breast cancer, renal cell cancer and lung cancer.

And we are operating in a number of new areas – often neglected areas of treatment, such as melanoma. For melanoma we have two new compounds which we are developing – for single and combination treatment, which we expect will really boost treatment opportunities for patients with melanoma.

CE: How far off from commercialisation are these drugs?

■ **PE:** We reckon about 18 months before we get final data and then we have the submission process.

We also have two other melanoma compounds coming from GSK, which will reinforce our position for melanoma treatment.

We also developing compounds for the treatment of Cushing disease [also known as hypercortisolism – a condition in which the pituitary gland releases too much adrenocorticotropic hormone]. This is a good example of a rare disease that has been neglected by the pharma industry.

So we have these big drug research areas like breast cancer, but we are also continuing research in these smaller areas like Cushing disease.

CE: Are you doing research for disease treatments that have a high prevalence in the Middle East, like some of the blood disorders?

■ **PE:** Yes, we are continuing research to develop compounds for the treatment of Thalassaemia, for example. We have been leading this area for the treatment of iron overload [a side effect from frequent blood transfusions which are required for Thalassaemia]. We have had Exjade on the market for some time and have recently launched Jadenu, which will be available in the UAE in November. MEH

Drug discovery & biotech

7th International Conference on Drug Discovery and Therapy
& 4th Biotechnology World Congress
University of Sharjah, Sharjah,
United Arab Emirates
15-18 February 2016

These international conferences co-organized by Eureka Science and the University of Sharjah, under the patronage of His Highness Dr. Sheikh Sultan Bin-Mohammed Al Qasimi, Supreme Council Member, Ruler of Sharjah and President of the University of Sharjah, Sharjah, UAE are unique in bringing the latest knowledge in the fields of drug discovery, therapy and biotechnology closer to the doorstep of pharmaceutical scientists, internists and primary care physicians from all over the world.

These conferences aim to provide an open and stimulating scientific and cultural exchange that will give all the participants the opportunity to share their experiences, foster collaborations across industry and academia and evaluate emerging technologies across the globe. The 4-day conference will provide an opportunity to both foster collaborations and learn about the biotechnological advancements taking place in the international academic and corporate biotechnology communities.

Previous conferences, held annually in Dubai from 2008 to 2014, attracted many Noble Laureates and were met with great successes. These will see a series of exclusive talks by number of Nobel Laureates and numerous top scientists covering a diverse range of themes regarding the current state of developments and the new challenges and horizons facing scientists. There will also be poster presentations and an associated commercial exhibition.

■ Detailed information on both conferences can be found at *www.icddt.com* and *www.biotechworldcongress.com*.

■ Please contact Eureka Science, Sharjah, United Arab Emirates. Tel: +971 6 5575783 for additional queries.

One-stop clinic for breast cancer

Dr Sherif Adly MD, FRCS (Ed.)

Breast cancer is one of the most commonly diagnosed cancers amongst women. Not only is it imperative to regularly check yourself, it is also essential to have easy access to first rate services.

So if you have concerns, a lump, changes in your breasts or family history of breast cancer, Al Zahra Medical Center in Dubai can help you at their One Stop Breast Clinic.

The One-Stop Breast Clinic sees patients with breast cancer symptoms or concerns and aims to investigate, clear or diagnose breast conditions and plan the treatment in the course of a single visit.

At the One-Stop Breast Clinic, you will first be seen by Dr Sherif Adly MD, FRCS (Ed.) a consultant surgeon with special interest in breast diseases and his breast care nurse. He will listen to your concerns, examine you and explain to you in details what sort of radiological modality you will need, a breast ultrasound, a mammogram or both. That will be arranged and performed in the same visit.

Same-day imaging investigations are performed by our specialist breast Consultant Radiologists, and the results will be available on the same day. You will be accompanied by our breast care nurse who will explain to you the radiological modality selected for you.

The results of your radiological modality will be explained to you by Dr Sherif Adly and he will be there for you to answer any question and to clear up any concerns.

Should your breast ultrasound and/or mammogram show a breast lump, then a fine needle aspiration cytology will be needed. This is a needle biopsy that Dr Sherif Adly will do for you in his clinic in the same visit.

If your breast condition needs surgical treatment, Dr Sherif Adly performs operations in Al Zahra Hospital in Dubai and Al Zahra hospital in Sharjah.

■ **Dr Sherif Adly** has been practicing and teaching surgery for more than 20 years. He is a Professor of Surgery, Misr University for Science and Technology (MUST), a prestigious University in Cairo, Egypt.

Dr Sherif trained in the UK at the University Hospitals of Wales and in Tayside University Hospitals (Ninewells Hospital) in Scotland. MEH

Medical Fair Thailand continues to attract international interest

Medical Fair Thailand

- 600 exhibitors from 42 countries, 15 national pavilions and country groups
- 7,226 visitors from 59 countries, representing a 13% increase from the previous edition

> The Southeast Asian market is becoming more significant, which is why we have come to the exhibition to increase our network and meet with existing and new distributors in the region.

The global footprint of Medical Fair Thailand 2015 was firmly established as Southeast Asia's most recognised medical and health care event when the 7th edition of the Fair came to a close on 12 September.

More than 7,226 trade visitors from 59 countries attended the 3-day exhibition which focused on hospital, diagnostic, pharmaceutical, medical and rehabilitation equipment and supplies, welcomed 600 exhibitors from 42 countries including 15 national pavilions and country groups from Austria, Belgium, China, France, Germany, Japan, Malaysia, Singapore, South Korea, Taiwan, Thailand, UK and for the first time the USA, Turkey and Italy. The internationality of the exhibition was further reflected in the number of visitors, an increase of 13% compared to the previous edition in 2013. 34% of the visitors came from overseas, mainly from ASEAN countries such as Singapore, Malaysia, Myanmar, Philippines and Vietnam, as well as other Asian countries including China, India, Japan and Taiwan.

On the domestic front, Thai visitors recorded a 17% increase, which included visiting delegations from more than 60 hospitals from across Bangkok and surrounding provinces. According to Watcharin Boonshuwong, Chief of Patient Care Services, Praram 9 Hospital, Bangkok, who was visiting for the first time in search of medical devices and instrumentation for use in the emergency ICU wards: "The diverse range of products from various countries is very impressive and I would certainly encourage my colleagues from the hospital to visit this exhibition."

Thailand's Minister of Industry, Dr Atchaka Sibunruang, who officiated at the opening of the exhibition, underscored the importance of Medical Fair Thailand, which reflected the fast paced growth of the medical and healthcare industry. In her opening address, Dr Atchaka said the exhibition is a significant event for the modernization and development of the medical and healthcare industry for Thailand and the Southeast Asian region and "an important step for Thailand to prepare local personnel and professionals in the field to be ready for the integration of the region under the AEC (ASEAN Economic Community)."

For many exhibiting companies, particularly small and medium sized firms, the resounding sentiment was the relevance of Medical Fair Thailand as a stepping stone to penetrate the ASEAN market and to introduce their latest technologies.

Michael Richardson, Senior Vice President of the US firm Perry Baromedical, said: "The Southeast Asian market is becoming more significant, which is why we have come to the exhibition to increase our network and meet with existing and new distributors in the region. The number of visitors, sales leads and new contacts from Vietnam, Laos, Thailand, Indonesia, Malaysia, Philippines and Singapore that we have been able to generate has been excellent."

Brandt Lee, Export Manager, LKL Advance Metaltech, from Malaysia, added: "There have been some very interesting leads the event has generated – of which we seldom come across in other medical shows. Thailand may prove to be the centralized hub for the ASEAN & Pacific region."

Wolfgang Binder, Director of Sales of renowned medical vehicle solution provider, Dlouhy, who has been exhibiting at Medical Fair Thailand since 2005, said: "The size of the exhibition has grown exponentially allowing us to present our latest developments and improved products to existing as well as new customers from Thailand and across the Southeast Asian region. We had a very good experience at the 7th edition and will be back again in 2017!"

The ability to link up exhibitors with relevant distributors, suppliers and agents and vice versa as well as catering to the different solutions and visitor needs across the various specializations, proved to be the key element that contributed to the success of the exhibition – as an important sourcing platform. The business matching programme offered a value-add service and saw a healthy take up rate of 4,500 meeting requests.

Sarah Liebermann, an exhibitor from DEWIMED Medizintechnik found the platform user friendly and a "useful tool where I've found potential leads via the scheduled meetings".

■ The next edition of Medical Fair Thailand will be held in 2017. Up next for the medical and healthcare industry will be the 11th edition of Medical Fair Asia, to be held in Singapore from 31 August to 2 September 2016. Participation details are now available at *www.medicalfair-asia.com*

Timesco leads the way with reusable and single-use laryngoscopes

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

Timesco manufactures the world's number one single use disposable fibre optic laryngoscopes system "Callisto", which is complemented with Callisto single use and Optima reusable LED handles.

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

The Timesco Laryngoscope programme is also available with a new Rechargeable system. Timesco has also added innovative, award winning, energy savings systems for extended battery life, EES and ION.

The Timesco Laryngoscope programme is part of Timesco product ranges which cover all disciplines of surgery. Timesco surgical and medical ranges cover premium O.R. quality Surgical Instruments, Dental, Electro surgery, Diagnostic, EMS, etc.

Timesco has been established since 1964 and is one of the largest privately owned quality surgical and medical companies in UK. We are approved suppliers to many MOH's throughout the world including the NHS in UK.

We have a regional distribution in the Middle East and have an office in Dubai – manager Misbah Jabbar.

Email: *misbah.jabbar@timesco.com*
Phone: 00971 508 451019.

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

- See us at Arab Health on the British Pavilion ABHI
- For more information, please visit: *www.timesco.com*

JDH introduces the new Videra HD camera System for C-Arm usage

Image Diagnostics' new Videra HD camera system is an all in one endoscopy camera, light source and full featured video capture solution paired with autoclavable camera heads. The system includes Videra camera, wireless control tablets, endoscopes, monitors, and other peripherals.

The Camera Control Unit (Videra CCU 1080p, 1920x1080 video) easily configures for multiple users and surgical specialties. It has a wireless connectivity. Data I/O includes USB 2.0: Front: x 1, Rear: x 4, Ethernet: RJ45 x 3. It has remote input for Foot Pedal, and outputs for still and motion capture.

Light Source (15,000 hours effective use) has an output equivalent to 300W Xenon. Still capture is 1080p – BMP, JPEG, PNG. Motion video capture is 1080p 60fps. The hard drive's capacity is 256GB Solid State (~ 100 hours of motion video). It records two video signals simultaneously and auto prints to a printer.

The integrated camera head comes with a sensor of 1/3" 3CMOS, 1080p 60fps native video, integrated eyepiece grabber coupler, 4 programmable camera buttons, 2x digital zoom.

The Camera & System Control interface (GUI Videra / OS Android) has a display of 10.1" WXGA (1280x800) PLS TFT and connects to CCU via USB or 802.11 Wi-Fi. One can configure CCU presets and system setup as well as customize user profiles.

It manages case information, initiates still or motion capture. One can edit still images or video, send images or video via email, network, or wireless.

The Videra camera system joins other products from Image Diagnostics which include leading C-Arm urology and vascular tables as well as a unique line of portable video integration towers (MDS system).

● Camera system & imaging table on display at MEDICA on JD Honigberg International's stand: 16/D40-8

● For more information: *medical@jdhintl.com / www.jdhmedical.com*

Konica Minolta introduces AeroDR 2S digital X-ray detector

Konica Minolta introduces a new, versatile digital X-ray detector: AeroDR 2S. This fully wireless, portable detector allows healthcare facilities to upgrade an existing analogue X-ray room into a completely digital environment in just a few simple steps. Again Konica Minolta has succeeded in developing the lightest 14x17" CsI detector: AeroDR 2S weighs a mere 2.5 kg.

Fast

In order to speed up your workflow the AeroDR 2S is fully charged within 13 minutes. And with a cycle time of just 4 seconds your patient throughput can improve dramatically. AeroDR 2S is ready when you are.

Reliable

Making use of the same AeroSync hybrid detection technology as used in the AeroDR Premium, the reliability of the Automatic Exposure Detection is unsurpassed. This allows clinicians and technicians to make reliable exposures, even in a mobile setting or in stressful circumstances.

Robust

Even in extreme environments such as ICU, ER and Trauma rooms where liquids and fluids such as blood can harm the performance of technical equipment, the AeroDR 2S can be used without any trouble due to its waterproof carbon housing.

AeroDR 2S is a cost effective way to digitize your analogue X-ray equipment.

● Visit us at Arab Health 2016, booth number S1E50.

● For more information, visit: *www.konicaminolta.com/healthcare/products/dr*

Exoskeleton to ensure an active old age

Researchers from Aalborg University are involved in an international project to develop portable robot skeletons for the elderly so they can continue to be active longer. Think of it as a tool, not as a robot, say the researchers.

The world's population is aging. According to the World Health Organization (WHO), in 2050 there will be more than two billion people over age 60. And the older we get, the weaker our bodies become. So an international team of researchers and companies are working to develop an exoskeleton for senior citizens so they can remain active for longer.

"Many older people are mentally fit and want to continue to be active, but their physical abilities are steadily deteriorating," explains Shaoping Bai, Associate Professor at the Department of Mechanical and Manufacturing Engineering at Aalborg University. "This is an attempt to complement the strengths of older people so they can continue to be mobile and live independently for a longer time."

Put the skeleton on

In popular terms, an exoskeleton is a kind of light-weight robot skeleton with small electric motors that can be mounted on the body. This gives the body support while the motors provide extra strength to perform different types of movements. It's a bit like being on a battery-powered electric bicycle where the motor assistance depends on how strongly you step on the pedals.

Using a variety of advanced sensors the exoskeleton detects things like whether you want to lift your arm or stretch your elbow, and activates small motors that function somewhat like power steering in a car; the movements will be easier and you don't need to put a lot of effort into them.

Exoskeletons exist to some extent today as medical devices for people who have lost the use of their limbs.

Not medical equipment

The exoskeletons that the Aalborg University researchers are working on, however, are not meant for people who are paralyzed or otherwise disabled. The target group is primarily active older people who, for example, would like to continue to be able to garden, go out for walks and manage in their own homes for a longer time.

"There are some very advanced and very costly exoskeletons developed for the medical world," explains Shaoping Bai, "but that's not what we're working on. The product we'll end up with will be more something you put on for half an hour or an hour if you need to perform a task that you can no longer do."

Bones outside the skin

A human body is very complex and researchers thus face an enormous task when they're designing a portable robot skeleton that has to imitate the body's movements.

"Our joints are inside the body, but with the exoskeleton the support will be on the outside," explains Simon Christensen, a PhD student on the project. "It's a huge design challenge to make something that feels natural and comfortable for the user."

"It's important that users don't feel that the exoskeleton is stronger than they are – in the sense that it can disempower someone," says Shaoping Bai. "The sensors must be sensitive enough to be able to determine how much the motors need to help. The biggest challenge is actually purely mechanical."

On the market in five years

The partnership on AXO Suit, as the robot skeleton is called, has been going on for nearly a year the first prototype is expected within the year. When the project runs out in two years a fully functional model has to be ready.

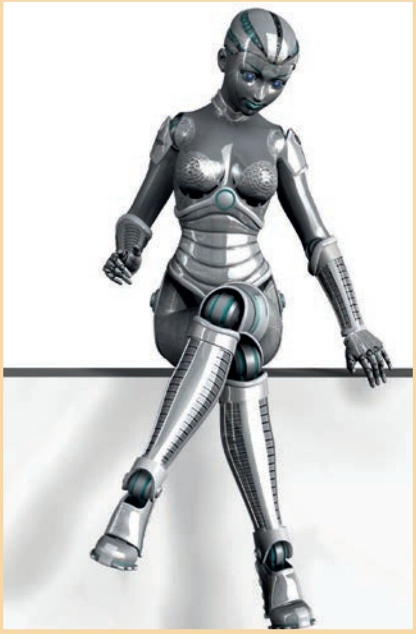
"In five years, we expect that commercially available models will be on the market," says Shaoping Bai.

on the WEB Axo Suit
www.axo-suit.eu

Agenda

Selected schedule of regional medical meetings, conferences and exhibitions

Event	Date / City	Contact
November 2015		
12th Congress of Arab Association of Urology	5 – 7 November, 2015 Dubai, UAE	*http://aau2015.com* *neha.choudhary@mci-group.com*
International Paediatric Medical Congress	12 – 14 November, 2015 Dubai, UAE	*info@internationalpaediatriccongress.com* *www.internationalpaediatriccongress.com*
Minimally Invasive Surgery Workshop	13 November, 2015 Abu Dhabi, UAE	*cme@alnoorhospital.com*
The Emirates Society of Laparo-Endoscopic Surgeons Congress 2015	18 – 21 November, 2015 Dubai, UAE	*www.mmesa-esles2015.com* *israa.al.ali@genesislevant.com*
Abu Dhabi International Conference in Dermatology & Aesthetics	19 – 20 November, 2015 Abu Dhabi, UAE	*jerico@menaconf.com*
XXI World Congress of Echocardiography and Cardiology	20-22 November, 2015 Istanbul, Turkey	*http://www.worldechoistanbul.org*
ICRM 2015: 17th Int'l Conference on Radiation Medicine	24 – 25 November, 2015 Dubai, UAE	*www.waset.org/conference/2015/11/dubai/ICRM*
The First Annual Heart Failure Conference	26 - 27 November, 2015 Abu Dhabi, UAE	*http://atnd.it/29163-0* *zandra@menaconf.com*
December 2015		
Qatar International Medical Devices & Healthcare Exhibition & Conference	2 – 4 December, 2015 Doha, Qatar	*www.qmedexpo.com*
MEDEXCON 2015	2 – 4 December, 2015 Ankara, Turkey	*info@tgexpo.com* *www.medexcon.net/Eng*
Eyaf Expo 2015	3 – 6 December, 2015 Istanbul, Turkey	*international@mbagrup.com* *www.engelsizyasamfuari.com*
The International Congress in Aesthetics, Anti-Ageing Medicine & Medical Spa (ICAAM)	4 – 5 December, 2015 Dubai, UAE	*www.antiageingme.com*
IOF Regional's 3rd Middle East and Africa Osteoporosis Meeting	5 – 7 December, 2015 Abu Dhabi, UAE	*www.iofbonehealth.org/abudhabi-2015*
The First Saudi International Lab Expo 2015	6 – 8 December 2015 Riyadh, KSA	*www.saudilabexpo.com*
ESEM Scientific Conference	6 – 10 December, 2015 Dubai, UAE	*www.saudilabexpo.com*
MEAAAIC 2015 Middle East-Asia Allergy Asthma, Immunology Congress 2015	10 – 12 December, 2015 Abu Dhabi, UAE	*http://meaaaic.org*



Agenda

Selected schedule of regional medical meetings, conferences and exhibitions

Event	Date / City	Contact
16th Emirates Society of Ophthalmology Congress	10 – 12 December, 2015 Dubai, UAE	*http://eso-congress.org* *nadia.ansari@mci-group.com*
Radiology Symposium	11 December, 2015 Abu Dhabi, UAE	*cme@alnoorhospital.com*
ICACCM 2015: 17th Int'l Conference on Anaesthesiology and Critical Care Medicine	23 – 24 December, 2015 Dubai, UAE	*www.waset.org/conference/2015/12/dubai/ICACCM*
ICBMJD 2015: 17th Int'l Conference on Bone, Muscle and Joint Diseases	23 – 24 December, 2015 Dubai, UAE	*www.waset.org/conference/2015/12/dubai/ICBMJD*
ICVID 2015: 17th Int'l Conference on Virology and Infectious Diseases	23 – 24 December, 2015 Dubai, UAE	*www.waset.org/conference/2015/12/dubai/ICVID*
January 2016		
International Conference on Genetics, Biological & Life Sciences (GBLS-16) Dubai-UAE	10 – 11 January, 2016 Dubai, UAE	*http://cbmsr.org/conference.php*
The Breast and Gynecological International Cancer Conference	14 – 15 January, 2016 Cairo, Egypt	*http://www.bgicc.eg.net/Home.aspx*
IMTEC Oman 2016	18 – 20 January, 2016 Muscat, Oman	*www.imtecoman.com*
6th Emirates Otorhinolarygology, Audiology & Communication Disorder Congress	13 – 15 January, 2016 Dubai, UAE	*nadia.ansari@mci-group.com* *www.emiratesrhinologyandotology.ae*
ISER- 2nd International Conference on Science, Health and Medicine (ICSHM)	16 January 2016 Dubai, UAE	*http://iser.co/conference/Dubai/ICSHM*
1st Middle-Eastern Conference for Stereotactic and Functional Neurosurgery	16 – 18 January, 2016 Dubai, UAE	*info@mfsns.org* *http://www.msfns.org*
Gulf Arrhythmia Congress	21 – 23 January, 2016 Dubai, UAE	*http://www.gulfarrhythmia.org* *mag@diaedu.com*
The ICID 2016: 18th International Conference on Infectious Disease	26 – 27 January, 2016 Jeddah, KSA	*www.waset.org/conference/2016/01/jeddah/ICID*
Arab Health	25 – 28 January, 2016 Dubai, UAE	*www.arabhealthonline.com*
Medlab	25 – 28 January, 2016 Dubai, UAE	*http://www.medlabme.com/overview*
2016 IIER the 28th International Conference on Recent Advances in Medical Science (ICRAMS)	29 January, 2016 Dubai, UAE	*http://theiier.org/Conference/Dubai/8/ICRAMS*

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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- Arab Health expo

- Middle East Monitor
- Worldwide Monitor
- The Laboratory
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HEALTH FACILITY BRIEFING, PLANNING + DESIGN

A to Z of Health Planning

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- specialist health & medical planning
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- peer reviews and audits

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- Health Planning training and Master Classes

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- embedded Health Facility Guidelines
- room data sheets & room layout sheets
- mapping module
- equipment scheduling & purchasing module
- capital & recurrent Costing Module

H.F.B.S.
Health Facility Briefing System

PREMIER'S NSW EXPORT AWARDS
Australian Institute of Export
2011 Category Winner: Emerging Exporter

Australia UNLIMITED
49th Australian Export Awards
WINNER

Your Trusted IVD Partner, Now Even Closer to You

We have taken the unprecedented move of being the first IVD company to establish our regional headquarters and subsidiary in the Middle East. Our local base of operations reinforces the commitment to deliver global Roche Standards across the region and is driven by a full team of vastly experienced specialists offering a complete portfolio of services.

Our widespread regional presence means regardless of necessity, be it patient requirements or general healthcare involvement, we are there to support your IVD needs - because we believe without a profound and solid diagnosis there is no cure.