Middle East
HEALTH
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November-December 2013
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Health for All

Saudi continues to expand healthcare infrastructure

Conflict Zone

Hundreds of doctors killed and imprisoned in Syria

Thromboembolism

New Oral Anticoagulants prove better than warfarin

In the News

- WHO calls for phase out of mercury thermometers by 2020
- GAVI alliance on track to meet ambitious immunization goals
- Study suggests sleep clears brain of damaging toxins
- Three US-based scientists share Nobel prize for medicine

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Prognosis

Saudi Arabia's astounding healthcare expansion

Saudi Arabia continues to expand its healthcare infrastructure at an astounding rate. The kingdom recently announced their latest healthcare budget, which will be used to build several new healthcare cities, many more new hospitals and clinics and employ hundreds of doctors and other healthcare personnel to work in and run these facilities. As well as the all-important provision of greater and easier access to healthcare for Saudis, it also means that the kingdom, for the foreseeable future, will continue to serve as a major driver in the demand for healthcare technology, devices, equipment and services in the region – good news for the companies that use this magazine to market their products and services in the kingdom and the wider region. You can read the Saudi report on page 42.

In a look at ground-breaking hospital design, we publish an article outlining the innovative and pioneering use of geothermal energy which has been incorporated into a new-build hospital in Chicago to help alleviate its electricity consumption and lower its carbon footprint. Read the Advocate Sherman Hospital story on page 48.

The atrocities in Syria continue unabated. The Union of Syrian Medical Relief Organization regularly releases reports of the latest killings of medical workers and bombings of medical facilities around the country. In a recent report they say that 149 doctors have been killed in the conflict since it began in March 2011 and, equally shocking, that 469 health workers have been imprisoned. A Bioedge report says that the few doctors who remain in Syria are being overwhelmed with a casualty admission every 32 seconds – the highest rate in the world. Read the report on page 26, and the Open Letter signed by doctors around the world, which calls on Assad to allow doctors to treat patients without fear of attack or reprisal.

Middle East Respiratory Syndome Coronavirus (MERS-CoV) continues to inflict a high mortality in the region, mostly in Saudi Arabia. The WHO met in September to assess the state of the virus and decided that conditions still do not warrant the declaration of a Public Health Emergency of International Concern. They stressed, however, that healthcare facilities must remain vigilant. The WHO will meet again in November to assess the spread of the virus. Read the MERS-CoV update on page 32.

Good health

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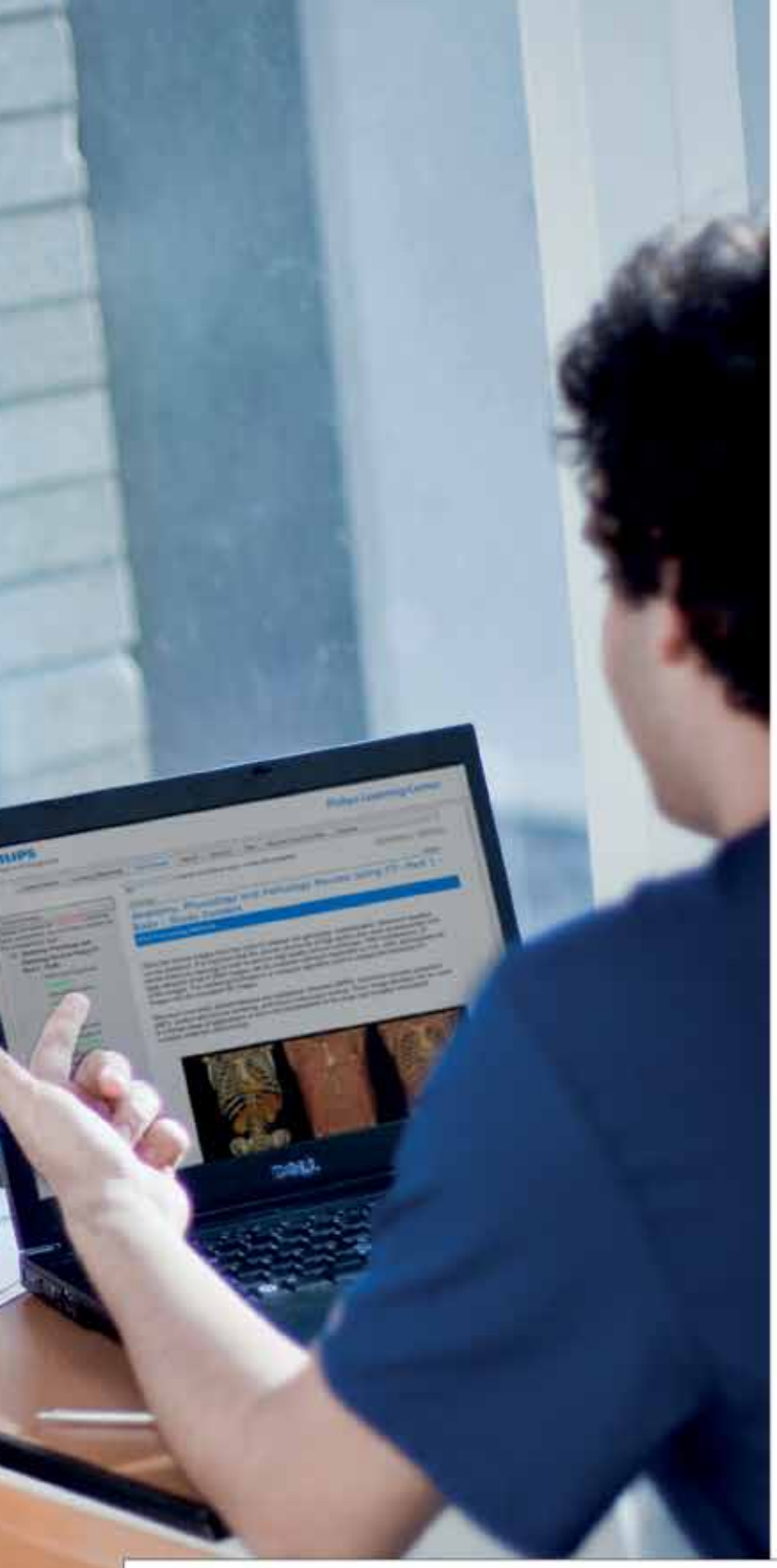

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PHILIPS

middle east monitor

Update from around the region

Dr. Omar Kamel Hallak, Chief Interventional Cardiologist, American Hospital Dubai

American Hospital Dubai performs first surgical procedure in Dubai for resistant hypertension

A new surgical treatment still under trial has been performed for the first time in Dubai at the American Hospital Dubai, giving new hope to sufferers of uncontrolled high blood pressure. The first patient to undergo the procedure at the hospital was a 56-year old male resident of the UAE, a US citizen of Jordanian origin.

High blood pressure – or hypertension – is one of the most common health issues facing the global community and the UAE, with around 30% of the country's population affected. High blood pressure (BP) is associated with obesity and can lead to other potentially serious health issues, such as heart disease, kidney failure and stroke. For many with high BP, advances in medication and lifestyle adjustments can help control the blood pressure to maintain a normal healthy life. For a significant number of others – around 10% of all hypertension suffers – the problem cannot be controlled even through the use of multiple medications. This condition is known as Resistant Hypertension (RHT) and represents a serious health risk.

Until recently, there has been no treatment for RHT other than by using more medications in higher doses, with all the complications and side effects these may create and the adverse impact on the quality of life of the patient. This may be about to change thanks to a new surgical treatment that is still under trial, but which has just been performed for the first time in Dubai by the team at the American Hospital Dubai led by Dr. Omar Kamel Hallak, Chief Interventional Cardiologist, where special training and equipment allowed them to treat the first patient, with promising results.

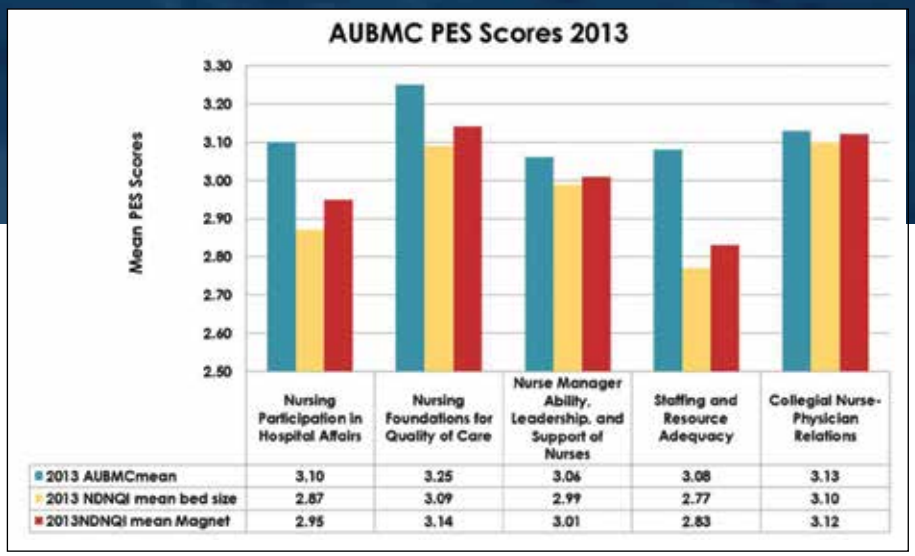
One of the possible causes of resistant hypertension is thought to be due to miscommunication between the kidney and the brain through the 'sympathetic nerve' of the kidney, which plays a central role in the body's ability to control blood pressure. Ablation of the nerve improves the blood pressure control.

The new procedure – 'Renal Nerve Ablation' – was first trialled around three years ago and initial studies on a limited number of patients suggest that it is effective and safe, although there is not yet enough evidence to understand fully the long term effectiveness. This means that the procedure can only be carried out with special arrangements for clinical governance and the consent of the patient. Patient selection is critical and should be undertaken by a multidisciplinary team to establish that the patient cannot control blood pressure through medication or lifestyle changes.

Dubai's first Renal Nerve Ablation patient was Khalid Omari, a 56-year old senior manager at a construction company in Dubai, who had struggled with high blood pressure medications for around 12 years and had already had open heart surgery to unblock arteries. "High blood pressure is a silent killer and once symptoms are apparent, it is often too late. I had suffered from headaches and knew something was not right. Following my heart surgery and after working with blood pressure medications with the team at the American Hospital Dubai, we had built a high level of trust; so, when we first discussed this new treatment, I researched the background carefully for several months and then agreed to the surgery. Recovery was fast and I certainly feel more energetic and motivated but we await the final outcome over the next three to six months. The worst case is no long term change to my condition but I can feel an immediate improvement and I hope to inspire others with high blood pressure to comply with their treatment and give hope to live a normal life."

The renal artery ablation procedure is undertaken using a special catheter, which is connected to a generator which delivers low power radiofrequency energy and applies this to each renal artery at 4-6 points to ensure the nerve is severed. Dr Hallak, who has already designed a catheter used in renal artery stenting, has designed a new catheter to improve the performance of the current technology used in Renal Nerve Ablation, and which is currently under evaluation in the US.

"The immediate technical success rate of this new procedure is very high," says Dr Hallak. "Based on patient studies, we know that it delivers an immediate short term average reduction in blood pressure, and that the blood pressure reduction is maintained at least over a two year period. This procedure appears to be very promising – it is not yet the standard of care but it will have significant applications in the future. The American Hospital Dubai is one of very few select centers in the world capable of performing the procedure. The first procedure at the hospital went very smoothly and produced very good results for the patient."



AUBMC nurses score high

In a recent Registered Nurse Satisfaction Survey conducted in April 2013, comparing Magnet Designated medical institutions worldwide, the American University of Beirut Medical Center (AUBMC) scored higher than the mean of all Magnet Designated hospitals with respect to the practice environment.

Magnet Recognition is a program by the American Nurses Credentialing Center that recognizes healthcare organizations for providing excellence in nursing. AUBMC, as the first Magnet designated medical center in the Middle East since 2009, continues to provide excellence in patient care through its entire interdisciplinary team.

Recent research from internationally recognized nurse investigator Dr. Linda H. Aiken shows that Magnet hospitals have better work environments, a more highly educated nursing workforce, superior nurse-to-patient staffing ratios, and higher nurse satisfaction than non-Magnet hospitals.

The US-based National Database of Nursing Quality IndicatorsTM (NDNQI) is the only national nursing database to evaluate nursing care at the unit level. Linkages between nurse staffing levels and patient outcomes are also demonstrated through the use of this database. Compared with the NDNQI average scores, AUBMC scored higher on all pillars covering nursing participation in hospital affairs, foundations for quality of care, nurse manager ability, leadership and support of nurses, staffing and resource adequacy, and collegial nurse-physician relations.

"The average scores on all these parameters have been increasing considerably over the past two years." said Iman Al Kouatly, Director of Nursing.

"What truly matters for the satisfaction of the Registered Nurses at AUBMC, is the solid structures established by the Medical Center's leaders to create an environment that fosters a culture of shared decision making in hospital affairs," said Al Kouatly. "The collaboration and continuity in care delivery system among the inter-professional teams plays an essential role in providing excellent and safe quality care for our patients."

"We feel proud being part of AUBMC's nursing family," said Nisrin Abou Fakhr, Private Clinic Nurse. "Nursing is a science of caring along to curing, and we do it with the patient in mind. There is nothing more rewarding in what we do than that smile and appreciation we get from every person we meet from patients, colleagues and family."

Kuwait MoH chooses Integraph to manage ambulance dispatch

The Ministry of Health Department of Emergency Medical Services in Kuwait selected Intergraph's computer-aided dispatch (CAD) system to manage dispatch for all their emergency and non-emergency operations.

"Intergraph's solution will enable the Department of Emergency Medical Services to provide real-time, more efficient response to the medical emergencies of our citizens in Kuwait, which ultimately is the main goal for the department," said Husain Al-Husaini, head of communications at the

Department of Emergency Medical Services.

Serving more than 3.5 million citizens and residents of the country and receiving more than 300 emergency and 400 non-emergency calls per day, the Department of Emergency Medical Services was in need of a multi-agency, enterprise-wide solution to support the entire country.

Intergraph's CAD system will replace the existing older system, allowing the country to take advantage of a modern technology platform that meets the need of the large number of calls for service received each day.

The Department of Emergency Medical Services will also implement Intergraph's Mobile for Public Safety, I/Calltaker, I/NetViewer and I/NetDispatcher software for web-based communications between dispatchers and ambulance vehicles in the field, allowing the department to send information to mobile units, which ensures that personnel in the field have critical information available at all times.

"Implementation of Intergraph's CAD solution by IMEL, Intergraph's exclusive distributor in the Middle East, will allow MOH personal to access real-time information in the field to make smarter decisions that save lives," said Muhammed Al Aswad, managing director, IMEL.

Could Iraq be the next big market?

Iraq has considerable untapped growth potential and is seen by many as "The next big one", according to Steve Hamilton-Clark, CEO of TNS MENA one of the world's largest custom market research organisations.

Steve Hamilton-Clark, CEO, TNS MENA, says Iraq is poised to be the next regional hotspot and local marketers must fast get to grips with the nuances of the market.

Hamilton-Clark was commenting as his company unveiled the 'Iraqi As Consumer 2012 (IRAC)' study – a first-of-a-kind initiative – with IIACSS, a public opinion and marketing research company, which unveils a deeper understanding of what makes the Iraqi consumer tick.

"Considering the economic slowdown in the developed world, more and more clients would like to enter the Iraqi market which has intrigued marketers for years, however until now there has been very little information available," explained Hamilton-Clark.

The study, which spanned 10 cities, looks at Iraq from the inside out to unearth the Iraqi of today – how they live, what they believe in and what they aspire to be.

"For instance we found that over 50% of Iraqi consumers feel that the nation is headed in the right direction and have an optimistic view about the economic and political situation in the country which highlights the potential for marketers," added Hamilton-Clark.

The study found that consumer confidence is much higher in Kurdistan (Erbil and Sulaimaniya) and in the South (Basra) with figures as high as 48% and 54% respectively, while in Baghdad the confidence level rates 32% and in the Northern governorates only 27%.

The study also reveals that overall 41% think Iraq's current economic situation is good and very good, with 32% saying that now is the time to buy consumer durables. Meanwhile, 42% stated things will continue to improve over the coming months.

Key study outcomes include understanding of socio-cultural, economic factors, identifying emerging trends and their impact on consumer behaviour and attitudes, as well as an in-depth understanding of consumer lifestyles.

"This enables brands to find the best way to connect with their relevant consumer, using different media touch points and generating new communication channels. To get the supply chain in line with Iraqi consumer demands, marketers must take time to dig deep and look across various profile groups to ensure desires, wants and needs are accurately met," Hamilton-Clark concluded.

National Reference Laboratory inks deal with Universal Hospital

National Reference Laboratory has signed an agreement with Universal Hospital in Abu Dhabi to provide a one-stop solution for their standard and advanced clinical testing needs. Through this partnership, National Reference Laboratory will be a referral lab for Universal Hospital, providing access to a menu of more than 4,000 diagnostic tests and other rapid diagnostic services for its patients.

The agreement was signed at Universal Hospital in Abu Dhabi by Dr. Shabeer Nellikode, Managing Director of Universal Hospital, and Abdul Hamid Oubeisi, General Manager of National Reference Laboratory.

Dr Shabeer said: "We are pleased to form this partnership with National Reference Laboratory; one of the best reference labs in the region. Through this agreement, we are able to provide our patients with a full range of tests, from standard to highly specialized, and move forward with our vision to provide world class services in preventive care and total health management to the people of Abu Dhabi."

Abdul Hamid Oubeisi stated: "We are delighted to establish this service agreement with Universal Hospital, where patient care always comes first." He continued, "As the referral lab for Universal Hospital, we aim to provide a one-stop solution for all of their clinical testing needs, creating an efficient and high-quality service that is closer to home. In doing so, we are able to reduce both turnaround times and logistical costs compared to laboratories abroad."

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specialty, tertiary care facility in Abu Dhabi. As part of its plans to enhance preventative healthcare in the Abu Dhabi market, Universal is also working with partners to increase patient screenings and develop a family physician program for regular check-ups to improve overall quality of care and reduce costs for patients.

National Reference Laboratory is a wholly owned subsidiary of Abu Dhabi's Mubadala Healthcare, created in partnership with, and operated by, Laboratory Corporation of America (LabCorp), one of the world's largest and most experienced clinical laboratory operators.

Sidra partners with BGI-Health to set up genetic screening initiative

Qatar's Sidra Medical and Research Center in September this year signed a Memorandum of Understanding with BGI-Health Asia Pacific to bring Genetic Sequencing and Population Studies to the MENA region. The partnership will establish an institute at Sidra, the first joint institute for BGI in the region.

Through its partnership with BGI, the largest genome sequencing and comprehensive genomic organization in the world, Sidra will collaborate with and provide support to all biomedical research organizations in Qatar and MENA region needing genomic analysis. The agreement places Sidra in the ranks of other BGI partners, all high performing academic centers, in the US and Europe.

The agreement provides for direct engagement and coordination between BGI-Health Asia Pacific and Sidra on genomics, research and development. Collaboration will focus on topics of common interest, including: reproductive health, new born screening, autism, hereditary cancer testing; monogenic disorder testing, and exome sequence-based personalized medical healthcare. Additionally, BGI-Health Asia Pacific will aid in genetic testing relevant to Sidra and the MENA region, namely, pre-marital, pre-conception, pre-implantation, pre-natal and pre-school testing for a large number of genes relevant to disease.

Sidra's Chief Executive Officer Dr. William Owen and BGI-Health Asia-Pacific's Chief Executive Officer Dr. Jingxiang Li shake hands after signing a Memorandum of Understanding to establish an institute at Sidra delivering genomic analysis for the MENA region.

Sidra's Chief Executive Officer Dr. William Owen signed the agreement on behalf of Sidra. He said: "It is a major milestone for Sidra to partner with BGI Health, an established, world-class genomics leader. This agreement will facilitate routine, interactive relationships between Sidra and other local scientists in research and development. Obviously, this will bring important benefits to the people of Qatar and the wider region through cutting-edge genomics and R&D."

BGI-Health Asia-Pacific's Chief Executive Officer Dr. Jingxiang Li signed the agreement on behalf of BGI. He said: "We're delighted to embark on this partnership with Sidra, and to jointly establish a genomic center of excellence with emphasis on the clinical applications of NGS (Next Generation Sequencing). An integration of BGI's expertise on sequencing and bioinformatics, along with Sidra's pioneering clinical and translational research, will lead to exciting prospects in the development of genomic translational medicine and personalized health care".

Under the terms of the agreement, the institute will utilize state-of-the-art molecular genetics equipment, reagents and specialized equipment operators, as well as state-of-the-art technologies for clinical testing.

Welch Allyn partnership to enhance product service in Gulf region

Welch Allyn, a leading medical diagnostic device company that specializes in helping clinicians improve patient outcomes, has entered into a strategic product service partnership with TBS Group, a global clinical engineering service provider headquartered in Trieste, Italy. The Authorized Service Provider (ASP) agreement is designed to provide comprehensive product repair services to Welch Allyn customers in the Gulf region. Welch Allyn also recently signed an ASP agreement with Abdulrehman AlGosaibi G.T.C. to provide an enhanced service experience for customers in the Kingdom of Saudi Arabia. These agreements further emphasize Welch Allyn's commitment to its customer base in the Middle East.

"By partnering with TBS Group, we can offer an enhanced cost-effective service solution to our distributors and their customers that will assist them with routine maintenance of our products," said Wojtek Bulatowicz, director of Service and Solutions at Welch Allyn. "This ASP agreement will enable us to extend the life of our products, reduce total cost of ownership, and deliver an even better user experience for our customers. It is part of the commitment and effort that Welch Allyn has implemented in the Gulf region and beyond to better serve our existing and future customers."

By deploying TBS Group's service capabilities in the Gulf region, backed by its own service and logistics operation, Welch Allyn can better meet its customers' high standards for service quality. This means shorter turnaround times for repairs and easier access to a qualified support team when required by Welch Allyn customers and distributors, resulting in improved availability of medical devices where and when they are needed most. MEH

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Update from around the globe

World cancer burden to hit poorest nations hardest

The funding model for cancer care and research is "broken" – with poorer nations hardest-hit, a University of Strathclyde-based expert has warned.

Professor Peter Boyle, Director of the University of Strathclyde Institute of Global Public Health at iPRI, called on the private medical and pharmaceutical industries to work more closely with governments and the public sector to enable them to cope with the growing international cancer burden.

Professor Peter Boyle, Director of the University of Strathclyde Institute of Global Public Health

Prof Boyle, lead author on the recently-published "State of Oncology 2013" report, told how cancer diagnosis and death rates were rising across the world, while access to care was inconsistent between nations. Speaking at the European Cancer Congress in Amsterdam, he added: "It is bad to have cancer, and worse to have cancer if you are poor.

"Many parts of the world are already unable to cope with the current situation and are totally unprepared for the future growth of the cancer problem."

Prof Boyle called for a private-public fund to help poorer countries manage, citing 2009 estimates by the Economist Intelligence Unit that it would cost $217 billion a year to bring cancer diagnosis, care and treatment in poor countries up to the standards of wealthy nations. He said: "There's no single source of philanthropy, there's no government, there's no company, there's no single institution that can afford that sort of investment.

"The current model of financing is broke. We need to fix it. We need radical solutions."

Cancer will claim more than 13.2 million lives by 2030 – almost double the number in 2008 – the International Agency for Research on Cancer has estimated, with most deaths in low and middle income countries. Prof Boyle warned of "devastating damage to entire families and communities" in poorer nations, which have limited access to equipment, expertise and medicines.

The report predicted global cancer cases would reach 26.4 million a year by 2030, in large part due to the impact of expanding and ageing populations in populous countries such as India, China and Nigeria, along with changing lifestyles.

Prof Boyle said: "It is impossible to avoid the conclusion that there is a need for a major public-private partnership, involving a number of sources from different areas, to make the necessary progress with the briefest delay." This partnership would require the backing of drug firms, as well as manufacturers of diagnostic and treatment technology, including scanning and radiotherapy equipment, Prof Boyle added.

He cited the Global Fund to Fight AIDS, Tuberculosis and Malaria – set up in 2002 and funded mainly by OECD governments – as an example of how such a fund could operate successfully. However, he cautioned that while the Global Fund was seeking $15 billion in financing over the coming three years, the amount of investment required to have all cancer patients world-wide brought up to the same standard of care would require between one and two orders of magnitude greater investment.

US NIH approves high-priority research for BRAIN initiative

US National Institutes of Health (NIH) Director Francis S. Collins, M.D., Ph.D., has approved initial areas of high-priority brain research to guide US$40 million of NIH fiscal year 2014 funding within the BRAIN (Brain Research through Advancing Innovative Neurotechnologies) Initiative. The initiative aims to accelerate work on technologies that give a dynamic picture of how individual cells and complex neural circuits interact. The ultimate goal is to enhance understanding of the brain and improve prevention, diagnosis and treatment of brain diseases.

The initiative was announced in April by US President Barack Obama. He called for a total of $110 million in the 2014 fiscal year budget to support the effort, of which $40 million is expected to be allocated by NIH.

"The time is right to exploit recent advances in neuroscience research and technologies to advance our understanding of the brain's functions and processes and what causes them to go wrong in disease," said Dr Collins. "The BRAIN Working Group has been on a fast track to identify key areas of research for funding. This group of visionary neuroscientists has provided an excellent set of recommendations, and I am eager to move these areas forward."

NIH's fiscal 2014 investment will focus on nine areas of research. The vision for the initiative is to combine these areas of research into a coherent, integrated science of cells, circuits, brain and behaviour.

- Generate a census of brain cell types
- Create structural maps of the brain
- Develop new, large-scale neural network recording capabilities
- Develop a suite of tools for neural circuit manipulation
- Link neuronal activity to behaviour
- Integrate theory, modelling, statistics and computation with neuroscience experiments
- Delineate mechanisms underlying

human brain imaging technologies

- Create mechanisms to enable collection of human data for scientific research
- Disseminate knowledge and training

Global child mortality rate on positive trend

In 2012, approximately 6.6 million children worldwide – 18 000 children per day – died before reaching their fifth birthday, according to a new report released today by UNICEF, the World Health Organization (WHO), the World Bank Group and the United Nations Department of Economic and Social Affairs/Population Division. This is roughly half the number of under-fives who died in 1990, when more than 12 million children died.

"This trend is a positive one. Millions of lives have been saved," said Anthony Lake, UNICEF Executive Director. "And we can do still better. Most of these deaths can be prevented, using simple steps that many countries have already put in place – what we need is a greater sense of urgency."

The leading causes of death among children aged less than five years include pneumonia, prematurity, birth asphyxia, diarrhoea and malaria. Globally, about 45% of under-five deaths are linked to undernutrition.

About half of under-five deaths occur in only five countries: China, Democratic Republic of the Congo, India, Nigeria, and Pakistan. India (22%) and Nigeria (13%) together account for more than one-third of all deaths of children under the age of five.

Newborn children are at particularly high risk

"Care for mother and baby in the first 24 hours of any child's life is critical for the health and wellbeing of both," says Dr Margaret Chan, Director-General at WHO. "Up to half of all newborn deaths occur within the first day."

The lives of most of these babies could be saved if they had access to some basic healthcare services. These include skilled care during and after childbirth; inexpensive medicines such as antibiotics; and practices such as skin-to-skin contact between mothers and their newborn babies and exclusive breastfeeding for the first six months of life.

Progress, challenges

While the global average annual rate of reduction in under-five mortality accelerated from 1.2% a year for the period 1990-1995 to 3.9% for 2005-2012, it remains insufficient to reach Millennium Development Goal 4 which aims to reduce the under-five mortality rate by two-thirds between 1990 and 2015.

"Continued investments by countries to strengthen health systems are essential to ensure that all mothers and children can get the affordable, quality care they need to live healthy, productive lives," said Keith Hansen, Acting Vice President of Human Development at the World Bank Group.

Sub-Saharan Africa, in particular, faces significant challenges as the region with the highest child mortality rates in the world. With a rate of 98 deaths per 1000 live births, a child born in sub-Saharan Africa faces more than 16 times the risk of dying before his or her fifth birthday than a child born in a high-income country.

However, sub-Saharan Africa has shown remarkable acceleration in its progress, with the annual rate of reduction in deaths increasing from 0.8% in 1990 -1995 to 4.1% in 2005-2012. This is the result of sound government policies, prioritized investments and actions to address the key causes of child mortality and reach even the most difficult to reach populations.

Global and national action to improve child health

Both globally and in countries, a series of initiatives are in place aimed at improving access to maternal and child health care, inspired by the United Nations Secretary-General's widely endorsed Global Strategy for Women's and Children's Health which aims to save 16 million lives by 2015 through a "continuum of care" approach.

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- A Global Vaccine Action Plan that is working towards universal access to immunization by 2020. Vaccination against preventable diseases is one of most effective country-driven and globally-supported actions, as it currently averts an estimated two to three million deaths every year in all age groups from diphtheria, tetanus, pertussis (whooping cough), and measles. In 2012, an estimated 83% (111 million) of infants worldwide were vaccinated with three doses of diphtheria-tetanus-pertussis (DTP3) vaccine.
- Some 176 countries have signed on to A Promise Renewed – the call to action spearheaded by the Governments of Ethiopia, India and the United States, together with UNICEF in a global effort to stop children from dying of causes that are easily prevented.
- The United Nations Commission on Life-Saving Commodities for Women and Children is helping countries improve access to priority medicines such as basic antibiotics and oral rehydration salts.
- Earlier this year, WHO and UNICEF joined other partners in establishing a new Global Action Plan for Pneumonia and Diarrhoea which aims to end preventable child deaths from these two major killers of under-fives by 2025. The plan promotes practices known to protect children from disease, such as creating a healthy home environment, and measures to ensure that every child has access to proven and appropriate preventive and treatment measures.
- Similarly, partners are working on Every Newborn: a global action plan to end preventable deaths. The aim is to launch this global newborn action plan in May 2014 and provide strategic directions to prevent and manage the most common causes of newborn mortality, which account for around 44% of all under-five mortality.
- UNICEF, WHO and the World Bank Group all support the Scaling Up Nutrition (SUN) global movement in its efforts to collaborate with countries to implement programmes to address poor nutrition at scale with a core focus on empowering women.

GAVI on track to meet ambitious immunisation goals

The GAVI Alliance is on track to meet its ambitious targets of supporting developing countries to immunise an additional quarter of a billion children by 2015, and preventing nearly four million deaths in the process. That's the conclusion of the Mid-Term Review report, a comprehensive and transparent assessment published 20 October this year aimed at examining the progress GAVI has made midway through its current strategic period from 2011 to 2015, and the challenges it faces in meeting its commitments to developing countries and to donors.

Dagfinn Høybråten, Chair of the GAVI Alliance Board, said: "GAVI is reaching record numbers of children with life-saving vaccines, just over two years after our successful pledging conference and midway through our current strategy period.

"More countries than ever are introducing new vaccines, resulting in more deaths averted and improved health and wellbeing for millions of people."

In addition to reaching its goal of helping developing countries immunise 243 million children between 2011 and 2015, GAVI is also on target to help avert nearly four million future deaths during the same period. The report also found that the historic gap in access to immunisation between low- and high-income countries is starting to close. In the Kilifi district of Kenya, for example, the number of hospital admissions of children with pneumococcal disease from vaccine serotypes fell from 38 to zero within less than three years of the introduction of pneumococcal vaccine.

Such accounts have been captured in a series of impact stories that are being published on the GAVI website alongside the report. These show the extraordinary efforts of implementing countries and Alliance members to ensure vaccines reach the children who need them, wherever they live. Together, the report and the impact stories, come mid-way through GAVI's funding cycle, following its first ever pledging conference in London, in 2011, where GAVI raised additional funding to enable it to commit a total of US$7.4 billion towards its mission.

GAVI has four strategic goals: These goals include: accelerating the uptake and use of under-used and new vaccines; strengthening health systems to improve immunisation coverage; improving long-term predictability and stability of immunisation financing; and helping to improve vaccine market conditions for developing countries.

on the WEB GAVI Alliance
www.gavialliance.org

WHO calls for phase out of mercury thermometers by 2020

The World Health Organization (WHO) and Health Care without Harm organisation have joined forces to launch a new initiative to get mercury removed from all medical measuring devices by 2020.

The initiative '*Mercury-Free Healthcare by 2020*', launched 11 October 2013 to mark the signing of the *Minamata Convention on Mercury*, calls for the phase out of mercury fever thermometers and blood pressure devices containing mercury. This will be done by ending the manufacture, import and export of these devices and by supporting


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Mercury and its various compounds are of global public health concern and have a range of serious health impacts including brain and neurological damage especially among the young. Others include kidney damage and damage to the digestive system.

While the Minamata Convention allows countries to continue to use mercury in medical measuring devices until 2030 under certain special circumstances, WHO and the nongovernmental organization Health Care without Harm believe that the potential negative health consequences from mercury are so great that all should strive to meet the main target date of 2020 set out in the Convention.

"With the signing of the Minamata Convention on Mercury we will be going a long way in protecting the world forever from the devastating health consequences from mercury," says WHO Director-General Dr Margaret Chan. "Mercury is one of the top ten chemicals of major public health concern and is a substance which disperses into and remains in ecosystems for generations, causing severe ill health and intellectual impairment to exposed populations."

The Convention provides a blueprint for country action to eliminate the most harmful forms of mercury use, reduce mercury emissions from industry, promote mercury free methods, protect children and women of childbearing age from mercury exposure, and take steps to improve workers health and well-being.

on the WEB Mercury-Free Healthcare
www.mercuryfreehealthcare.org

Health of older women in developed countries improves

Measures taken in developed countries to reduce noncommunicable diseases – the leading causes of death globally – have improved the life expectancy of women aged 50 years and older over the last 20 to 30 years. But, according to a study published in the *Bulletin of the World Health Organization* 2 September 2013, the gap in life expectancy between such women in rich and poor countries is growing.

The WHO study, one of a collection of articles in a special issue of the journal devoted to women's health beyond reproduction, found that the leading causes of death of women aged 50 years and older worldwide are cardiovascular disease (heart disease and stroke) and cancers, but that in developing countries these deaths occur at earlier ages than in the economically advanced world.

The study is one of the first to analyse the causes of death of women aged 50 years and older from a wide range of countries. Its findings suggest that prevention, detection and treatment of noncommunicable diseases are currently inadequate in many countries.

"Given the substantial reduction in maternal mortality and the increase in the number of older women over the last 10 years, health systems in low- and middle-income countries must adjust accordingly, otherwise this trend will continue to increase," said Dr John Beard, director of the World Health Organization's (WHO) Department of Ageing and Life Course and one of the authors of the study.

"Changing women's exposures at earlier stages of their lives, particularly in relation to sexual health, tobacco and harmful use of alcohol, is essential to reversing the epidemic of chronic diseases," Dr Beard said.

There are known and cost-effective ways to address these common noncommunicable diseases, including prevention, early diagnosis and management of high blood pressure, obesity and high cholesterol and screening and treatment for cancers.

"The best way to address these conditions in low- and middle-income countries is to build on the existing healthcare services, so that they can be detected early and managed with effective treatment," he said. "So, for example, maternal healthcare services can provide proper detection and management of gestational diabetes to help prevent mothers from becoming overweight or diabetic later in life."

Developed countries have taken measures to address these conditions over the last 20 to 30 years and the results show. According to the WHO study, fewer women aged 50 years and older in these countries are dying from heart disease, stroke and diabetes than 30 years ago and these health improvements contributed most to increasing women's life expectancy at the age of 50.

At 50 years, women in Germany and Japan gained 3.5 years in life expectancy – thanks to improvements in these health areas – and can today expect to live to 84 and 88 years respectively.

In France, the United Kingdom and Chile, the life expectancy of 50-year-old women increased by about 2.5 years to 36.7, 34.4 and 34.3 years, so that they can expect to live to 83 or 84 years thanks to improvements in these health areas, the study showed.

Meanwhile, in Mexico and the Russian Federation, the life expectancy of 50-year-old women increased more slowly, by 2.4 and 1.2 years, so they can expect to live to the age of 80 and 78 years, it showed.

While breast cancer incidence increased overall during the same 30-year period, there were fewer breast and cervical cancer deaths among women aged 50 years and older due to the provision of early diagnosis and timely treatment.

Between 1970 and 2010, female deaths in this age group from cardiovascular disease and diabetes fell on average by 66% in 11 affluent countries: Chile, France, Germany, Greece, Japan, New Zealand, Mexico, Poland, the Russian Federation, the United Kingdom and the United States of America, the study showed.

WHO's 194 Member States agreed on a global action plan for the prevention and control of noncommunicable diseases (NCD) at the World Health Assembly in May. The plan proposes measures that countries can take to address these diseases over the next seven years.

● The complete contents of the journal, since 1948, is available free at: *www.pubmedcentral.nih.gov/tocrender.fcgi?journal=522&action=archive* MEH

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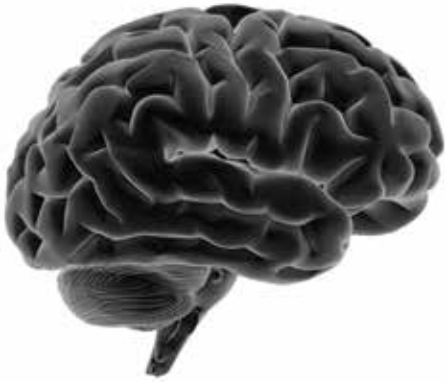


Study suggests sleep clears brain of damaging toxins

A good night's rest may literally clear the mind. Using mice, researchers showed for the first time that the space between brain cells may increase during sleep, allowing the brain to flush out toxins that build up during waking hours. These results suggest a new role for sleep in health and disease. The study was funded by the National Institute of Neurological Disorders and Stroke (NINDS).

"Sleep changes the cellular structure of the brain. It appears to be a completely different state," said Maiken Nedergaard, M.D., D.M.Sc., co-director of the Center for Translational Neuromedicine at the University of Rochester Medical Center in New York, and a leader of the study.

For centuries, scientists and philosophers have wondered why people sleep and how it affects the brain. Only recently have scientists shown that sleep is important for storing memories. In this study, Dr Nedergaard and her colleagues unexpectedly found that sleep may be also be the period when the brain cleanses itself of toxic molecules.

Their results, published in *Science*, show that during sleep a plumbing system called the glymphatic system may open, letting fluid flow rapidly through the brain. Dr Nedergaard's lab recently discovered the glymphatic system helps control the flow of cerebrospinal fluid (CSF).

"It's as if Dr Nedergaard and her colleagues have uncovered a network of hidden caves and these exciting results highlight the potential importance of the network in normal brain function," said Roderick Corriveau, Ph.D., a program director at NINDS.

Initially the researchers studied the system by injecting dye into the CSF of mice and watching it flow through their brains while simultaneously monitoring electrical brain activity. The dye flowed rapidly when the mice were unconscious, either asleep or anesthetized. In contrast, the dye barely flowed when the same mice were awake.

"We were surprised by how little flow there was into the brain when the mice were awake," said Dr Nedergaard. "It suggested that the space between brain cells changed greatly between conscious and unconscious states."

To test this idea, the researchers inserted electrodes into the brain to directly measure the space between brain cells. They found that the space inside the brains increased by 60% when the mice were asleep or anesthetized.

"These are some dramatic changes in extracellular space," said Charles Nicholson, Ph.D., a professor at New York University's Langone Medical Center and an expert in measuring the dynamics of brain fluid flow and how it influences nerve cell communication.

Certain brain cells, called glia, control flow through the glymphatic system by shrinking or swelling. Noradrenaline is an arousing hormone that is also known to control cell volume. Similar to using anaesthesia, treating awake mice with drugs that block noradrenaline induced unconsciousness and increased brain fluid flow and the space between cells, further supporting the link between the glymphatic system and consciousness.

Previous studies suggest that toxic molecules involved in neurodegenerative disorders accumulate in the space between brain cells. In this study, the researchers tested whether the glymphatic system controls this by injecting mice with labelled beta-amyloid, a protein associated with Alzheimer's disease, and measuring how long it lasted in their brains when they were asleep or awake. Beta-amyloid disappeared faster in mice brains when the mice were asleep, suggesting sleep normally clears toxic molecules from the brain.

"These results may have broad implications for multiple neurological disorders," said Jim Koenig, Ph.D., a program director at NINDS. "This means the cells regulating the glymphatic system may be new targets for treating a range of disorders."

The results may also highlight the importance of sleep.

"We need sleep. It cleans up the brain," said Dr Nedergaard.

● **doi:** 10.1126/science.1241224

Study finds Polypill improves patient compliance

People are much more likely to take preventive medicines if they're combined in one pill, an international study has found. The findings were published 3 September 2013 in the *Journal of the American Medical Association*.

Taking aspirin, cholesterol-lowering and blood pressure-lowering drugs long-term more than halves heart attack and stroke recurrence. However, only about 50 per cent of people with cardiovascular disease in high-income countries take all recommended preventive medications. In low- and middle-income countries, only five to 20 per cent do. This leaves tens of millions of people undertreated.

In the first study to test the impact of a fixed-dose combination pill - called a polypill - in people with cardiovascular disease, 2,004 participants in the UK, Ireland, the Netherlands and India were randomly assigned either the polypill, or their normal combination of medicines.

After an average of 15 months' follow-up, the proportion of participants in the polypill group who were taking medications regularly was a third higher than in the group receiving usual care. The polypill group also had lower blood pressure and cholesterol measurements.

Lead author, Professor Simon Thom, from the National Heart and Lung Institute at Imperial College London, said: "The reality is that large numbers of people who have already suffered heart attacks or strokes either don't receive these medications or get out of the habit of taking them. The findings of this study suggest that providing them in a single pill is a helpful preventive step."

Testosterone deficiency not only cause of age-associated changes in men

Just as the symptoms of menopause in women are attributed to a sharp drop in oestrogen production, symptoms often seen in middle-aged men – changes in body composition, energy, strength and sexual function – are usually attributed to the less drastic decrease in testosterone production that typically occurs in the middle years. However, a study by Massachusetts General Hospital (MGH) researchers finds that insufficient oestrogen could be at least partially responsible for some of these symptoms.

"This study establishes testosterone levels at which various physiological functions start to become impaired, which may help provide a rationale for determining which men should be treated with testosterone supplements," says Joel Finkelstein, MD, of the MGH Endocrine Unit, corresponding author of the study in the September 12, 2013 *New England Journal of Medicine*. "But the biggest surprise was that some of the symptoms routinely attributed to testosterone deficiency are actually partially or almost exclusively caused by the decline in oestrogen that is an inseparable result of lower testosterone levels."

Traditionally a diagnosis of male hypogonadism – a drop in reproductive hormone levels great enough to cause physical symptoms – has been based on a measure of blood testosterone levels alone. Although such diagnoses have increased dramatically – leading to a 500% increase in U.S. testosterone prescriptions between 1993 and 2000, the authors note – there has been little understanding of the levels of testosterone needed to support particular functions.

In addition to its direct action on some physical functions, a small portion of the testosterone that men make is normally converted into oestrogen by an enzyme called aromatase. The higher the testosterone level in a normal man, the more is converted into oestrogen. Since any drop in testosterone means that there is less to be converted into oestrogen, men with low testosterone also have low oestrogen levels, making it unclear which hormones support which functions. The MGH team set out to determine the levels of hormone deficiency at which symptoms begin to occur in men and whether those changes are attributable to decreased levels of testosterone, oestrogen or both.

The study enrolled two groups of men with normal reproductive function, ages 20 to 50, and all participants were first treated with a drug that suppresses normal production of all reproductive hormones. Men in the first group were randomly assigned to receive daily doses of testosterone gel at one of four dosage levels or a placebo gel for 16 weeks. Men in the second group received the same testosterone doses along with an aromatase inhibitor which markedly suppressed conversion of testosterone into oestrogen. More than 150 men in each group completed the study, including monthly visits for blood tests and questionnaires about their overall health and sexual function. Body composition and leg strength were assessed at the beginning and end of the study period.

Among participants in whom oestrogen production was not blocked, increases in body fat were seen at what would be considered a mild level of testosterone deficiency. Decreases in lean body mass, the size of the thigh muscle and leg strength did not develop until testosterone levels became quite low. In terms of sexual function, sexual desire was reported to decrease progressively with each drop in testosterone levels, whereas erectile function was preserved until testosterone levels were extremely low.

In participants also receiving the aromatase inhibitor, increases in body fat were seen at all testosterone dose levels, but suppressing oestrogen production had no effect on lean mass, muscle size or leg strength. Adverse effects on sexual function were much more obvious when oestrogen synthesis was suppressed regardless of participants' testosterone levels.

Overall the results imply that testosterone levels regulate lean body mass, muscle size and strength, while oestrogen levels regulate fat accumulation. Sexual function – both desire and erectile function – is regulated by both hormones.

Dr Finkelstein notes that decisions about whether an individual is a candidate for testosterone replacement should be made based on his symptoms and not just his testosterone level. The findings regarding oestrogen's effects suggest that the forms of testosterone used for therapy should be capable of being aromatized into oestrogen, he adds.

Researchers look for Alzheimer's disease before symptoms start

Johns Hopkins researchers say that by measuring levels of certain proteins in cerebrospinal fluid (CSF), they can predict when people will develop the cognitive impairment associated with Alzheimer's disease years before the first symptoms of memory loss appear.

Identifying such biomarkers could provide a long-sought tool to guide earlier use of potential drug treatments to prevent or halt the progression of Alzheimer's while people are still cognitively normal.

To date, medications designed to stop the brain damage have failed in clinical trials, possibly, many researchers say, because they are given to those who already have symptoms and too much damage to overcome.

"When we see patients with high blood pressure and high cholesterol, we don't say we will wait until you get congestive heart failure before we treat you. Early treat-

ments keep heart disease patients from getting worse, and it's possible the same may be true for those with pre-symptomatic Alzheimer's," says Marilyn Albert, Ph.D., a professor of neurology at the Johns Hopkins University School of Medicine. She is primary investigator of the study whose results are published in the October 16, 2013 issue of the journal Neurology. "But it has been hard to see Alzheimer's disease coming, even though we believe it begins developing in the brain a decade or more before the onset of symptoms," she adds.

For the new study, the Hopkins team used CSF collected for the Biomarkers for Older Controls at Risk for Dementia (BIOCARD) project between 1995 and 2005, from 265 middle-aged healthy volunteers. Some three-quarters of the group had a close family member with Alzheimer's disease, a factor putting them at higher than normal risk of developing the disorder. Annually during those years and again beginning in 2009, researchers gave the subjects a battery of neuropsychological tests and a physical exam.

They found that particular baseline ratios of two proteins – phosphorylated tau and beta amyloid found in CSF – were a harbinger of mild cognitive impairment (often a precursor to Alzheimer's) more than five years before symptom onset. They also found that the rate of change over time in the ratio was also predictive. The more tau and the less beta amyloid found in the spinal fluid, the more likely the development of symptoms. And, Albert says, the more rapidly the ratio of tau to beta amyloid goes up, the more likely the eventual development of symptoms.

Researchers have known that these proteins were in the spinal fluid of patients with advanced disease. "But we wondered if we could measure something in the cerebral spinal fluid when people are cognitively normal to give us some idea of when they will develop difficulty," Albert says. "The answer is yes."

Alzheimer's disease disrupts critical metabolic processes that keep neurons healthy. These disruptions cause neurons to stop working, lose connections with other nerve cells, and finally die. The brains of people with Alzheimer's have an abundance of two abnormal structures – amyloid plaques and "tangles" made of tau.

The plaques are sticky accumulations of beta-amyloid that build up outside of the neurons, while the tangles form inside the neurons. When there are too many tangles inside the cells, the cells start to die. In a normal brain, tau helps the skeleton of the nerve cell maintain itself. When too many phosphate groups attach themselves to tau, too much of the protein develops and tangles form.

Albert says researchers believe that the relative amount of beta-amyloid in the spinal fluid decreases as Alzheimer's progresses because it is getting trapped in the plaques and therefore isn't entering the fluid.

Though the BIOCARD study has been going on for nearly two decades, this is some of the first predictive data to come out of it, Albert says, owing to the length of time it takes for even high-risk middle-aged people to progress to dementia. Only 53 of the original patients have progressed to mild cognitive impairment or dementia, giving a sample size just large enough to draw some preliminary conclusions. These first symptoms include memory disruptions such as repeating oneself, forgetting appointments, and forgetting what others have said.

Propofol discovery may lead to new anaesthetics

New research on the most commonly used anaesthetic drug could help to unravel a long-standing mystery about how it induces a pain-free, sleep-like state.

General anaesthetics are administered to tens of millions of people every year in hospitals, where they are used to sedate patients undergoing surgery. Despite this, scientists have yet to understand how the drug interacts with its targets in brain cells to achieve this effect.

Following years of research on propofol, which has become the most commonly used anaesthetic since it was introduced in the 1980s, researchers at Imperial College London and Washington University School of Medicine have published a study in the journal *Nature Chemical Biology* in which they identify exactly how the drug acts in the brain.

Researchers had already identified the receptor that propofol interacts with in the brain. Having a more detailed picture of exactly how propofol works on a molecular level may help scientists to design new versions of the drug that reduce the risks involved in surgery and ultimately improve patient safety.

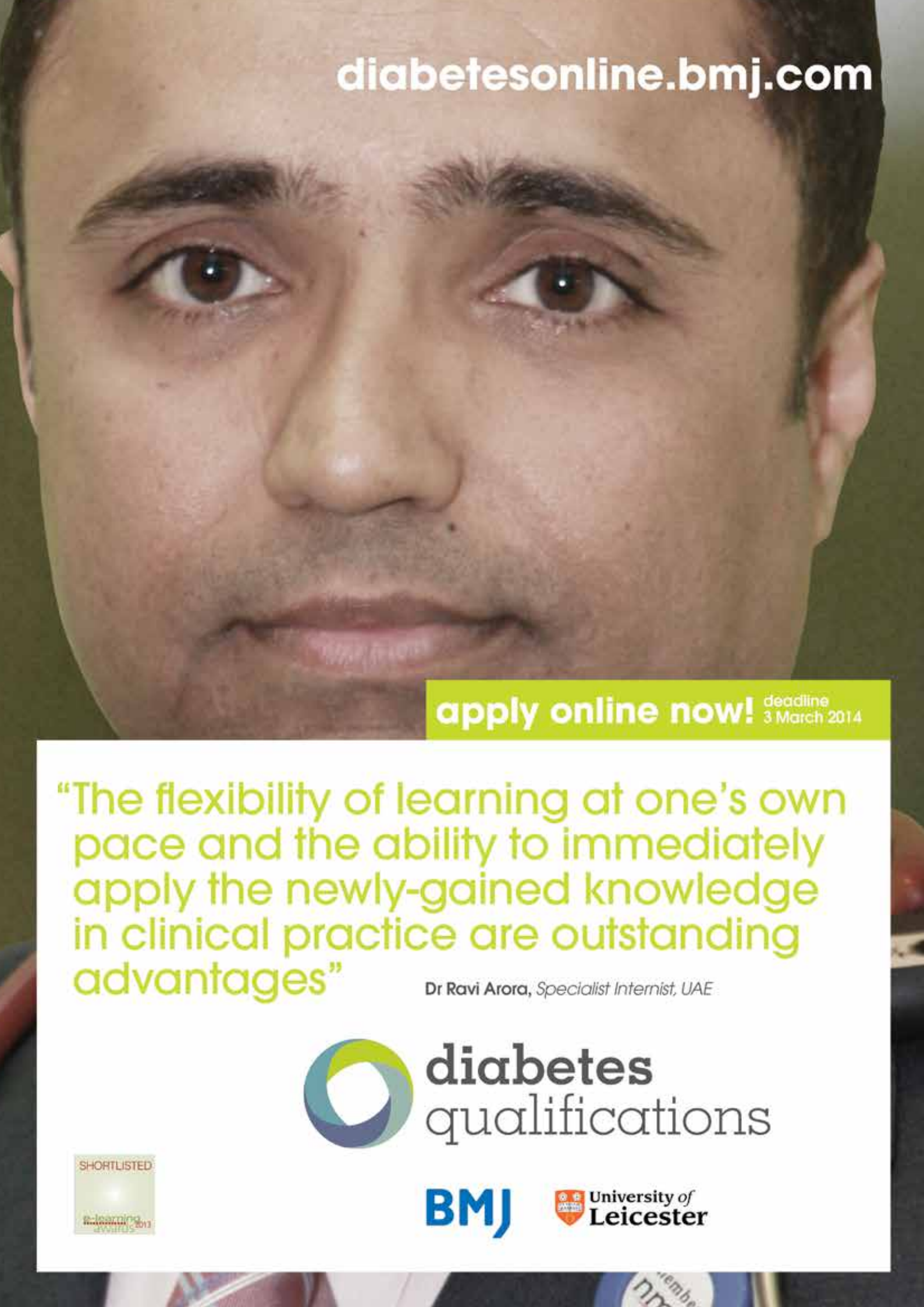
"The job of the skilled anaesthetist is so important because in addition to the desirable effects of anaesthetics which make surgery possible, current anaesthetics can have unwanted effects on the heart, on blood pressure and can also interfere with breathing during surgery," said the study's co-principal investigator Professor Nick Franks from the Department of Life Sciences at Imperial College London.

"Whilst propofol is the best anaesthetic we have today, it is important for patient safety that we come up with new versions of the drug that work just as well or better as anaesthetics, but have fewer or less dangerous side effects."

"For many years, the mechanisms by which anaesthetics act have remained elusive," explained co-principal investigator Alex S Evers, MD, the Henry E. Mallinckrodt Professor and head of the Department of Anesthesiology at Washington University.

"We knew that intravenous anaesthetics, like propofol, act on an important receptor on brain cells called the GABAA receptor, but we didn't really know exactly where they bound to that receptor."

In an attempt to understand how propofol induces anaesthesia during surgery, scientists have tried to identify how and where it interacts with receptors in the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brain called gamma-aminobutyric acid type A (GABAA) receptors. Activating these receptors – with propofol for example – stops a nerve cell communicating with its neighbours, leading to unconsciousness.

For this study, the scientists created a molecule that closely resembles and mimics propofol but has an added hook that grabs onto the GABAA receptor and won't let it go when it is activated by a bright light. They then extracted the receptor, cut it into pieces and identified the place on the protein that the propofol mimic had attached to.

Using the techniques they have developed, the scientists say they will now identify binding sites of other anaesthetics. They believe their approach also can be used to study other types of drugs, such as psychiatric agents and anti-seizure drugs.

● **doi:** 10.1038/nchembio.1340.

Large study launched to check if vitamin D prevents diabetes

Researchers have begun the first definitive, large-scale clinical trial to investigate if a vitamin D supplement helps prevent or delay type 2 diabetes in adults who have prediabetes, who are at high risk for developing type 2. Funded by the US National Institutes of Health, the study is taking place at about 20 study sites across the United States.

The multiyear Vitamin D and Type 2 Diabetes (D2d) study will include about 2,500 people. Its goal is to learn if vitamin D – specifically D3 (cholecalciferol) – will prevent or delay type 2 diabetes in adults aged 30 or older with prediabetes. People with prediabetes have blood glucose levels that are higher than normal but not high enough to be called diabetes.

"This study aims to definitively answer the question: Can vitamin D reduce the risk of developing type 2 diabetes?" said Myrlene Staten, M.D., D2d project officer at the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), part of NIH. "Vitamin D use has risen sharply in the U.S. in the last 15 years, since it has been suggested as a remedy for a variety of conditions, including prevention of type 2 diabetes. But we need rigorous testing to determine if vitamin D will help prevent diabetes. That's what D2d will do."

"Past observational studies have suggested that higher levels of vitamin D may be beneficial in preventing type 2 diabetes, but until this large, randomized and controlled clinical trial is complete, we won't know if taking vitamin D supplements lowers the risk of diabetes," said Anastassios G. Pittas, M.D., the study's principal investigator at Tufts Medical Center, Boston.

D2d is the first study to directly examine if a daily dose of 4,000 International Units (IUs) of vitamin D – greater than a typical adult intake of 600-800 IUs a day, but within limits deemed appropriate for clinical research by the Institute of Medicine – helps keep people with prediabetes from getting type 2 diabetes. Based on observations from earlier studies, researchers speculate that vitamin D could reduce the diabetes risk by 25%. The study will also examine if sex, age or race affect the potential of vitamin D to reduce diabetes risk.

on the WEB D2d
http://tinyurl.com/lyyxl7h

Scientists regenerate fully functional bioengineered saliva and tear glands

A research group headed by Professor Takashi Tsuji of Tokyo University of Science have successfully regenerated fully functional bioengineered salivary and lacrimal (tear) glands. The results signify a substantial advance in the development of next generation organ replacement regenerative therapies. The results are published in the scientific journal *Nature Communications*.

Organ replacement regenerative therapy has been proposed as having the potential to enable the replacement of organs that have been damaged by disease, injury or ageing. A research group led by Professor Takashi Tsuji (Professor in the Research Institute for Science and Technology, Tokyo University of Science, and Director of Organ Technologies Inc.) has provided a proof-of-concept for bioengineered organ replacement as the next step for regenerative therapy

For the salivary glands, Dr. Tsuji's research group (M. Ogawa et al.) reports the fully functional regeneration of a salivary gland that reproduces the morphogenesis induced by reciprocal epithelial and mesenchymal interactions through the orthotopic transplantation of a bioengineered salivary gland germ as a regenerative organ replacement therapy. The bioengineered germ developed into a mature gland through acinar formations with the myoepithelium and innervation. The bioengineered submandibular gland produced saliva in response to the administration of pilocarpine and gustatory stimulation by citrate, protected against oral bacterial infection and restored normal swallowing in a salivary gland defect mouse model. Thus, this study provides a proof-of-concept for bioengineered salivary gland regeneration as a potential treatment for xerostomia.

For the lacrimal (tear) glands, Dr. Tsuji's research group (M. Hirayama *et al.*,) reports the successful orthotopic transplantation of a bioengineered lacrimal gland germ into an adult extra-orbital lacrimal gland defect model mouse, which mimics the corneal epithelial damage caused by lacrimal gland dysfunction. The bioengineered lacrimal gland germ and harderian gland germ both developed *in vivo* and achieved sufficient physiological functionality, including tear production in response to nervous stimulation and ocular surface protection. This study demonstrates the potential for bioengineered organ replacement to functionally restore the lacrimal gland.

on the WEB Bioengineered salivary gland
http://tinyurl.com/pufpx4y

Bioengineered lacrimal (tear) gland
http://tinyurl.com/n9ayqwv

The Center for Cancer Care at American Hospital Dubai

Cancer not only affects your health, but also your family and lifestyle. Understanding this, the Center for Cancer Care at American Hospital Dubai has launched the first Linear Accelerator Unit serving Radiation Therapy patients in Dubai.

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gene pool

Genetic research news from around the world

Researchers target specific gene mutation causing ALS, dementia

Johns Hopkins scientists have developed new drugs that – at least in a laboratory dish – appear to halt the brain-destroying impact of a genetic mutation at work in some forms of two incurable diseases, amyotrophic lateral sclerosis (ALS) and dementia.

They made the finding by using neurons they created from induced pluripotent stem cells (iPS cells), which are derived from the skin of people with ALS who have a gene mutation that interferes with the process of making proteins needed for normal neuron function.

"Efforts to treat neurodegenerative diseases have the highest failure rate for all clinical trials," says Jeffrey D. Rothstein, M.D., Ph.D., a professor of neurology and neuroscience at the Johns Hopkins University School of Medicine and leader of the research described online this week in the journal Neuron. "But with this iPS technology, we think we can target an exact subset of patients with a specific mutation and succeed. It's individualized brain therapy, just the sort of thing that has been done in cancer, but not yet in neurology."

Scientists in 2011 discovered that more than 40% of patients with an inherited form of ALS and at least 10% of patients with the non-inherited sporadic form have a mutation in the C9ORF72 gene. The mutation also occurs very often in people with frontotemporal dementia, the second-most-common form of dementia after Alzheimer's disease. The same research appeared to explain why some people develop both ALS and the dementia simultaneously and that, in some families, one sibling might develop ALS while another might develop dementia.

In the C9ORF72 gene of a normal person, there are up to 30 repeats of a series of six DNA letters (GGGGCC); but in people with the genetic glitch, the string can be repeated thousands of times. Rothstein, who is also director of the Johns Hopkins Brain Science Institute and the Robert Packard Center for ALS Research, used his large bank of iPS cell lines from ALS patients to identify several with the C9ORF72 mutation, then experimented with them to figure out the mechanism by which the "repeats" were causing the brain cell death characteristic of ALS.

In a series of experiments, Rothstein says, they discovered that in iPS neurons with the mutation, the process of using the DNA blueprint to make RNA and then produce protein is disrupted. Normally, RNA-binding proteins facilitate the production of RNA. Instead, in the iPS neurons with the C9ORF72 mutation, the RNA made from the repeating GGGGCC strings was bunching up, gumming up the works by acting like flypaper and grabbing hold of the extremely important RNA binding proteins, including one known as ADARB2, needed for the proper production of many other cellular RNAs. Overall, the C9ORF72 mutation made the cell produce abnormal amounts of many other normal RNAs and made the cells very sensitive to stress.

To counter this effect, the researchers developed a number of chemical compounds targeting the problem. This compound behaved like a coating that matches up to the GGGGCC repeats like velcro, keeping the flypaper-like repeats from attracting the bait, allowing the RNA-binding protein to properly do its job.

Rothstein says Isis Pharmaceuticals helped develop many of the studied compounds and, by working closely with the Johns Hopkins teams, could begin testing it in human ALS patients with the C9ORF72 mutation in the next several years. In collaboration with the National Institutes of Health, plans are already underway to begin to identify a group of patients with the C9ORF72 mutation for future research.

Gene variants associated with immune system and autoimmune disease

Numerous studies have reported that certain diseases are inherited. But genetics also plays a role in immune response, affecting our ability to stave off disease, according to a team of international researchers. The new findings, from the SardiNIA Study of Aging, supported in part by the US National Institute on Aging (NIA) at the National Institutes of Health, are published in the September 26, 2013 issue of *Cell*.

The SardiNIA researchers found 89 independent gene variants on the genome associated with regulating production of immune system cells. Five of these sites for the gene variants coincide with known genetic contributors to autoimmune diseases, and extend previous knowledge to identify the particular cell types that are affected by these genes.

"We know that certain diseases run in families. From this study, we wanted to know the extent to which relative immune resistance or susceptibility to disease is inherited in families," said David Schlessinger, Ph.D., chief of NIA's Laboratory of Genetics. "If your mother is rarely sick, for example, does that mean you don't have to worry about the bug that's going around? Is immunity in the genes? According to our findings, the answer is yes, at least in part."

The study team, led by Francesco Cucca, M.D., director of the National Research Council's Institute of Genetic and Biomedical Research in Italy, discovered that variants in particular genes had very significant effects on the levels of one or more particular types of immune system cells. A number of these genes are also implicated in risk for various autoimmune diseases, including ulcerative colitis, multiple sclerosis, rheumatoid arthritis, and celiac disease.

Understanding the genes affecting immune system cells and risk for autoimmune disease is the first step in developing therapies that are personalized according to an individual's needs, although more research is needed to further characterize the role genetics plays in the complex dynamics of the immune system, the researchers pointed out.

The human immune system is a complex network of cells, tissues, and organs working together to fight disease and keep us at optimal health and function. Our first line of defence, the innate immune system, includes barriers, like skin and mucus as well as specific cells and molecules providing a prompt but nonspecific response to harmful germs – pathogens – preventing them from entering the body or eliminating them rapidly after infection. The second line of defence, the adaptive immune system, engages the body to produce, store, and transport cells and molecules providing more specific responses to combat pathogens. The immune system has evolved to reject pathogens and even some cancers, but high levels of immune function can also make the body prone to autoimmune disease. Autoimmune diseases occur when the body uses the immune system against itself, attacking normal, healthy cells.

The number of adaptive immune system cells available to attack a pathogen or, in the case of autoimmune disease, attack healthy cells, is what appears to be regulated by genetics. The SardiNIA research team tested the heritability of this immune response using a genome-wide association study, looking at approximately 8.2 million variants in blood samples taken from 1,629 Sardinians.

Small, single-letter variations in genes naturally occur throughout the DNA code and are generally without effect on any specific trait. However, in some instances, scientists find that a particular variant is more common among people with a trait or disease.

In the analyses, researchers identified 89 independent variants and 53 sites associated with immune cell characteristics. Most of these associations were previously undiscovered. Some had been identified before in other studies, but without firm statistical significance. The researchers compared their findings with data in public repositories, and in some cases, found that these genes had already been associated with autoimmune disease.

This finding is the most recent of several discoveries made by the SardiNIA study itself and in conjunction with other groups in international consortia. Previous findings identified gene associations with height, fasting blood sugar, cholesterol and other fats in the blood, beta-thalassemia (a blood disorder), and uric acid levels, which can contribute to gout and risk of heart and kidney disease.

One of the unique features of the investigation is its study population – the Sardinians. "The lineage of most Sardinians goes back approximately 20,000 years, to the Mediterranean island's original settler population – and an ideal group for this type of research," said Cucca. "We have learned that in case after case, findings in Sardinia have been applicable world-wide." MEH

149 doctors killed in Syria conflict, 469 health workers imprisoned

A casualty admission every 32 seconds, says Bioedge report

According to a recent Union of Syrian Medical Relief Organisation (UOSMM) report, 149 doctors have been killed in Syria since March 15, 2011. Six of them were foreign doctors, and 3 female doctors. The report said 44% of the total doctor death toll was attributed to shooting and 26% died as a result of shelling, explosion and airstrikes. The report noted 12% of doctors died in detention and by execution in detention.

In an article by *www.bioedge.org*, published October 13, 2013, and titled "Hospitals and medical personnel targeted in Syrian conflict" it is reported that "more than 15,000 medics have left the country, claiming they are being deliberately targeted by air strikes or threatened with imprisonment if they carry on treating the wounded. In Aleppo, only 36 of the 5,000 doctors who were working in Aleppo before the conflict, remained in the city; serving not less than 4 million people; which means that there is one doctor for every 70,000 people".

Additionally, the report points out, the rate of casualties admitted to hospitals is higher than any other area in the world with a new casualty admission every 32 seconds.

Dr Tawfik Chamaa, UOSSM spokesperson, said: "We are deeply disturbed by the large number of doctors who have lost their lives in the current crisis in Syria. As we have said on many occasions, hospitals, ambulances, and medical personnel, are entitled to protection from hostile fire under the Geneva Convention."

Dr Chamaa added: "Targeting hospital and medical personnel will aggravate and worsen the medical crisis. With the soaring number of casualties and increasing medical demands, we urge all sides inside Syria to respect the protection of hospitals and medical personnel, which is granted by the Geneva Convention, and to immediately provide access for all international medical and relief organizations inside Syria."

Bombed buildings in Azaz, Syria. 16 August 2012

Open Letter

Meanwhile, an Open Letter – *http://tinyurl.com/m7zfowe* – on medical care in the Syrian conflict signed by 55 doctors from around the world, and published 17 September 2013 on the *Syria Deeply* blog *(http://beta.syriadeeply.org)*, says "37% of Syrian hospitals have been destroyed and a further 20% severely damaged. Makeshift clinics have become fully fledged trauma centres struggling to cope with the injured and sick. An estimated 469 health workers are currently imprisoned and around 15,000 doctors have been forced to flee abroad".

"The targeted attacks on medical facilities and personnel are deliberate and systematic, not an inevitable nor acceptable consequence of armed conflict. Such attacks are an unconscionable betrayal of the principle of medical neutrality.

"The number of people requiring medical assistance is increasing exponentially, as a direct result of conflict and indirectly because of the deterioration of a once-sophisticated public health system and the lack of adequate curative and preventive care. Horrific injuries are going untended, women are giving birth with no medical assistance, men, women and children are undergoing life-saving surgery without anesthetic, and victims of sexual violence have nowhere to turn to.

"The Syrian population is vulnerable to outbreaks of hepatitis, typhoid, cholera and dysentery. The lack of medical pharmaceuticals has already exacerbated an outbreak of cutaneous leishmaniasis, a severe infectious skin disease that can cause serious disability. There has been an alarming increase in cases of acute diarrhea, and in June aid agencies reported a measles epidemic sweeping through districts of northern Syria. In some areas, children born since the conflict started have had no vaccinations, meaning that conditions for an epidemic – which have no respect for national borders – are ripe.

"As doctors and health professionals we urgently demand that medical colleagues in Syria be allowed and supported to treat patients, save lives and alleviate suffering without the fear of attacks or reprisals." MEH

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Targeted roadmap outlines steps to end childhood TB deaths

The deaths of more than 74,000 children from tuberculosis (TB) could be prevented each year through measures outlined in the first ever action plan developed specifically on TB and children.

The *Roadmap for Childhood TB: Toward Zero Deaths*, launched 1 October 2013 by global TB leaders in Washington DC, estimates that US$120 million per year could have a major impact on saving tens of thousands of children's lives from TB, including among children infected with both TB and HIV.

The global TB leaders include: World Health Organization (WHO), Stop TB Partnership, the International Union Against Tuberculosis and Lung Disease (The Union), UNICEF, U.S. Centers for Disease Control and Prevention (CDC), United States Agency for International Development (USAID) and Treatment Action Group (TAG).

Every day, more than 200 children under the age of 15 die needlessly from TB – a disease that is preventable and curable. The World Health Organization (WHO) estimates that as many as 1 in 10 TB cases globally (6%-10% of all TB cases) are among this age group, but that the number could be even higher because many children are simply undiagnosed. The new roadmap builds on the latest knowledge of the disease and identifies clear actions to prevent these child deaths.

"Any child who dies from TB is one child too many," says Dr Mario Raviglione, Director, Global Tuberculosis Programme at WHO. "TB is preventable and treatable, and this roadmap focuses on immediate actions governments and partners can take to stop children dying."

The launch of the first roadmap on TB and children follows increasing awareness on the urgent need to address the issue. Under the child survival movement's banner of *A Promise Renewed*, more than 175 countries signed a pledge in June 2012, vowing to redouble efforts to stop children from dying of preventable diseases, including tuberculosis.

A small price tag to halt a global disease

The US$120 million a year in new funding for addressing TB in children from governments and donors includes US$40 million for HIV antiretroviral therapy and preventive therapy (to prevent active TB disease) for children co-infected with TB and HIV.

The funds will also go towards improving detection, developing better medicines for children and integrating TB treatment into existing maternal and child health programmes. Getting more paediatric health professionals to actively screen for TB with better tools, i.e. drugs, diagnostics and vaccines, will help capture the full scope of the epidemic and reach more children with life-saving treatment sooner.

"Far too many children with tuberculosis are not getting the treatment they need," says Nicholas Alipui, Director of Programmes for UNICEF. "Most of these children live in the poorest, most vulnerable households. It is wrong that any children should die for want of a simple, affordable cure, especially where there are community-based options to deliver life-saving interventions."

Ten actions to save young lives

The *Roadmap for Childhood TB: Toward Zero Deaths* recommends 10 actions at national and global levels:

1. Include the needs of children and adolescents in research, policy development and clinical practices.
2. Collect and report better data, including preventive measures.
3. Develop training and reference materials on childhood TB for health workers.
4. Foster local expertise and leadership among child health workers at all levels of health systems.
5. Use critical intervention strategies, such as intensive case finding, contact tracing and preventive therapy; implement policies enabling early diagnosis; and ensure there is an uninterrupted supply of high-quality anti-TB medicines for children.
6. Engage key stakeholders and establish effective communication and collaboration between the health sector and other sectors that address the social determinants of health and access to care.
7. Develop integrated family- and community-centred strategies to provide comprehensive and effective services at the community level.
8. Address research gaps in the following areas: epidemiology, fundamental research, the development of new tools (such as diagnostics, medicines and vaccines); and address gaps in operational research and research looking at health systems and services.
9. Close all funding gaps for childhood TB.
10. Form coalitions and partnerships to study and evaluate the best strategies for preventing and managing childhood TB, and for improving tools used for diagnosis and treatment.

"If a small child can summon the bravery to complete a six-month TB treatment, the global community must be similarly brave in its ambitions to defeat the epidemic," says Dr Lucica Ditiu, Executive Secretary of the Stop TB Partnership. "To get to zero TB deaths, we must focus on the most vulnerable groups and children are the most vulnerable of all. The steps outlined in this roadmap are simple and low-cost. We owe it to the children of the world to put this plan into action."

on the WEB Roadmap for Childhood TB
www.who.int/tb/challenges/children

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ALPINION
MEDICAL SYSTEMS

Nobel prize for medicine shared by three scientists for their research into regulation of vesicle traffic in cells

The 2013 Nobel Prize in Physiology or Medicine has been awarded jointly to James E. Rothman, Randy W. Schekman and Thomas C. Südhof for their discoveries of machinery regulating vesicle traffic, a major transport system in our cells.

Rothman is currently Professor and Chairman in the Department of Cell Biology at Yale University in New Haven, Connecticut, USA. Schekman is Professor in the Department of Molecular and Cell biology at University of California at Berkeley. Südhof is Professor of Molecular and Cellular Physiology at Stanford University, California, USA.

Schekman discovered a set of genes that were required for vesicle traffic. Rothman unravelled protein machinery that allows vesicles to fuse with their targets to permit transfer of cargo. Südhof revealed how signals instruct vesicles to release their cargo with precision.

Through their discoveries, Rothman, Schekman and Südhof have revealed the exquisitely precise control system for the transport and delivery of cellular cargo. Disturbances in this system have deleterious effects and contribute to conditions such as neurological diseases, diabetes, and immunological disorders.

How cargo is transported in the cell

In a large and busy port, systems are required to ensure that the correct cargo is shipped to the correct destination at the right time. The cell, with its different compartments called organelles, faces a similar problem: cells produce molecules such as hormones, neurotransmitters, cytokines and enzymes that have to be delivered to other places inside the cell, or exported out of the cell, at exactly the right moment. Timing and location are everything. Miniature bubble-like vesicles, surrounded by membranes, shuttle the cargo between organelles or fuse with the outer membrane of the cell and release their cargo to the outside. This is of major importance, as it triggers nerve activation in the case of transmitter substances, or controls metabolism in the case of hormones. How do these vesicles know where and when to deliver their cargo?

Traffic congestion reveals genetic controllers

Schekman was fascinated by how the cell organizes its transport system and in the 1970s decided to study its genetic basis by using yeast as a model system. In a genetic screen, he identified yeast cells with defective transport machinery, giving rise to a situation resembling a poorly planned public transport system. Vesicles piled up in certain parts of the cell. He found that the cause of this congestion was genetic and went on to identify the mutated genes. Schekman identified three classes of genes that control different facets of the cell´s transport system, thereby providing new insights into the tightly regulated machinery that mediates vesicle transport in the cell.

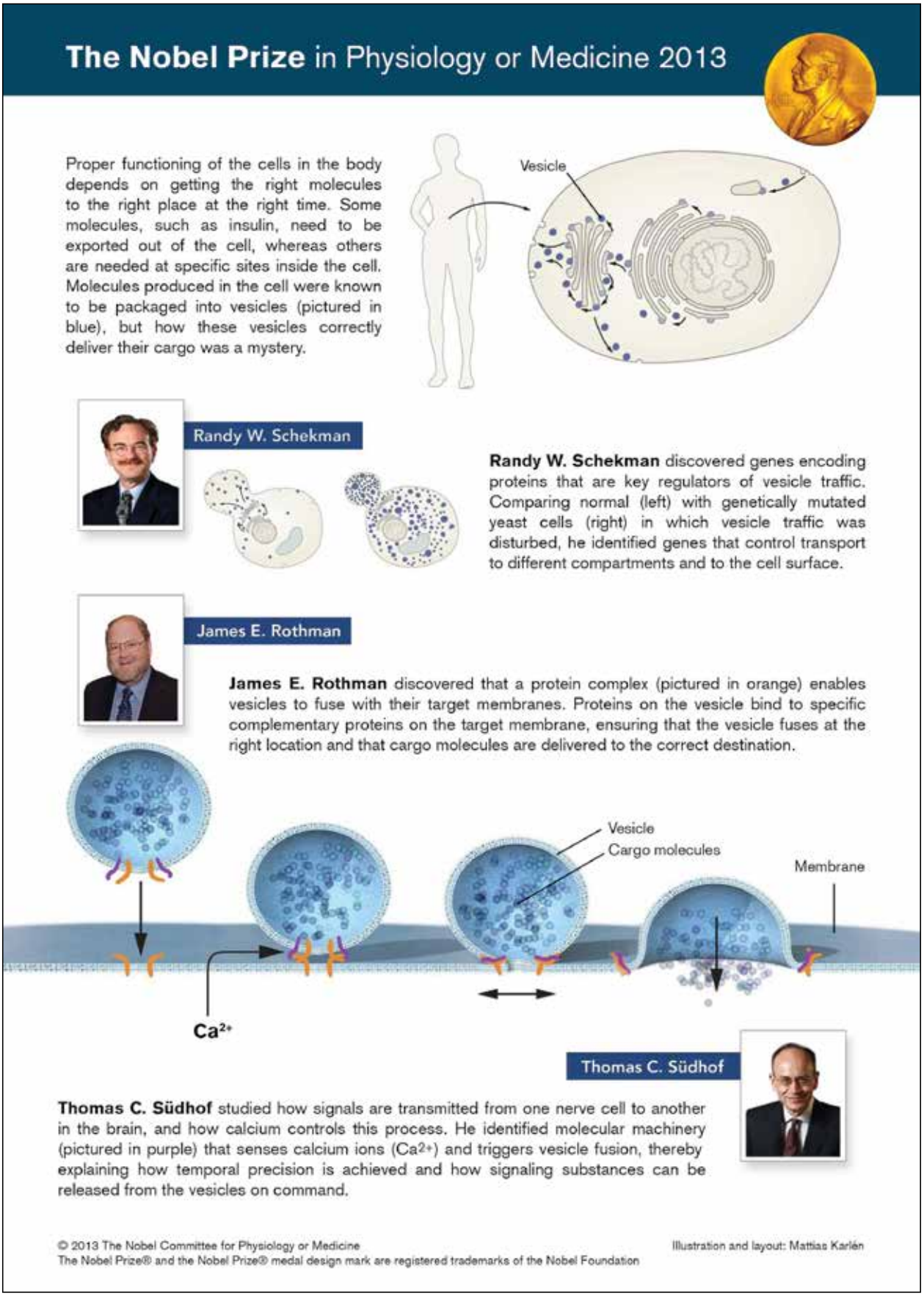
Docking with precision

Rothman was also intrigued by the nature of the cell´s transport system. When studying vesicle transport in mammalian cells in the 1980s and 1990s, Rothman discovered that a protein complex enables vesicles to dock and fuse with their target membranes. In the fusion process, proteins on the vesicles and target membranes bind to each other like the two sides of a zipper. The fact that there are many such proteins and that they bind only in specific combinations ensures that cargo is delivered to a precise location. The same principle operates inside the cell and when a vesicle binds to the cell´s outer membrane to release its contents.

It turned out that some of the genes Schekman had discovered in yeast coded for proteins corresponding to those Rothman identified in mammals, revealing an ancient evolutionary origin of the transport system. Collectively, they mapped critical components of the cell´s transport machinery.

Timing is everything

Südhof was interested in how nerve cells communicate with one another in the brain. The signalling molecules, neurotransmitters, are released from vesicles that fuse with the outer membrane of nerve cells by using the machinery discovered by Rothman and Schekman. But these vesicles are only allowed to release their contents when the nerve cell signals to its neighbours. How is this release controlled in such a precise manner? Calcium ions were known to be involved in this process and in the 1990s, Südhof searched for calcium sensitive proteins in nerve cells. He identified molecular machinery that responds to an influx of calcium ions and directs neighbour proteins rapidly to bind vesicles to the outer membrane of the nerve cell. The zipper opens up and signal substances are released. Südhof´s discovery explained how temporal precision is achieved and how vesicles´ contents can be released on command.



Vesicle transport gives insight into disease processes

The three Nobel Laureates have discovered a fundamental process in cell physiology. These discoveries have had a major impact on our understanding of how cargo is delivered with timing and precision within and outside the cell. Vesicle transport and fusion operate, with the same general principles, in organisms as different as yeast and man. The system is critical for a variety of physiological processes in which vesicle fusion must be controlled, ranging from signalling in the brain to release of hormones and immune cytokines. Defective vesicle transport occurs in a variety of diseases including a number of neurological and immunological disorders, as well as in diabetes. Without this wonderfully precise organization, the cell would lapse into chaos. MEH

Third meeting of WHO Emergency Committee says still no need for a Public Health Emergency of International Concern

The third meeting of the Emergency Committee convened by the Director-General under the International Health Regulations (2005) [IHR (2005)] was held by teleconference on Wednesday, 25 September 2013.

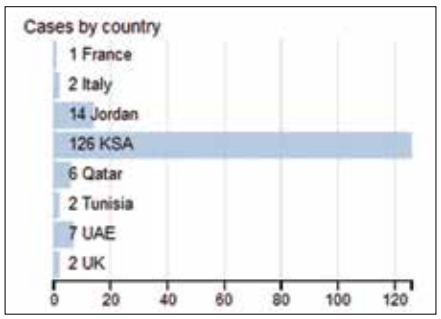
During the informational session, Kingdom of Saudi Arabia and Qatar presented on recent developments in their countries. The WHO Secretariat provided an update on epidemiological developments, Hajj and Umrah and recent WHO activities related to MERS-CoV. The Committee reviewed and deliberated on the information provided.

The Committee concluded that it saw no reason to change its advice to the Director-General. Based on the current information, and using a risk-assessment approach, it was the unanimous decision of the Committee that the conditions for a Public Health Emergency of International Concern (PHEIC) have not at present been met.

While not considering the events to constitute a PHEIC, Members of the Committee reiterated their prior advice for consideration by WHO and Member States and emphasized the importance of:

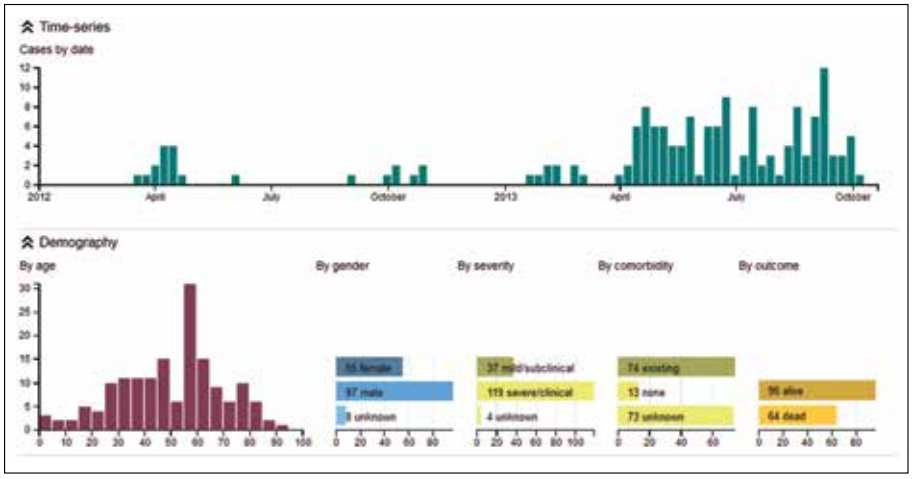
- Strengthening surveillance, especially in countries with pilgrims participating in Umrah and the Hajj;
- Continuing to increase awareness and effective risk communication concerning MERS-CoV, including with pilgrims;
- Supporting countries that are particularly vulnerable, especially in Sub-Saharan Africa taking into account the regional challenges;
- Increasing relevant diagnostic testing capacities;
- Continuing with investigative work, including identifying the source of the virus and relevant exposures through case control studies and other research;
- Timely sharing of information in accordance with the International Health Regulations (2005) and ongoing active coordination with WHO.

The WHO Secretariat will continue to provide regular updates to the Members, and currently anticipates reconvening the Committee in late November 2013. Any serious new developments may require re-convening the Committee before then. MEH



Data supplied by Epidemic (As of 18 October 2013) *(http://epidemic.bio.ed.ac.uk/coronavirus_background)*

The website notes: The list of cases has been gathered from various sources including WHO bulletins and media reports. It contains some cases that were not laboratory confirmed (but are extremely likely). There will be inaccuracies and omissions and it should be considered illustrative of the current situation. The peak at zero age group includes cases of unknown age.



Latest laboratory-confirmed cases of MERS-CoV

As of 18 October the latest laboratory-confirmed case of Middle East respiratory syndrome coronavirus (MERS-CoV) is that of a 61-year-old man in Qatar with underlying medical conditions who was admitted to a hospital on 11 October 2013. At the time of writing he was hospitalized in a stable condition. The patient was tested positive for MERS-CoV infection in Qatar and was confirmed by the reference laboratory of Public Health England.

According to WHO, preliminary investigations revealed that the patient had not travelled outside Qatar in the two weeks prior to becoming ill. The patient owns a farm and has had significant contact with the animals, including camels, sheep and hens. Some of the animals in his farm have been tested and were negative for MERS-CoV. Further investigations into the case and the animals in the farm are ongoing.

Globally, from September 2012 to date, WHO has been informed of a total of 139 laboratory-confirmed cases of infection with MERS-CoV, including 60 deaths.

In Saudi Arabia, the latest cases include two men aged 55 and 78, from Riyadh region. They became ill at the end of September 2013 and died in the beginning of October 2013. Both the patients were reported to have had no contact to a known laboratory-confirmed case with MERS-CoV.

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The HbA1c test: How early diagnosis can help stem the rising prevalence of diabetes across the Middle East

By **Waclaw Lukowicz**
CEO of Siemens Healthcare, Middle East

When you consider the most recent figures for diabetes prevalence in the Middle East, the importance of identifying those people at risk of developing the disease appears self evident. The International Diabetes Federation reported in 2011 that 9.1% of the Middle East's adult population had diabetes – some 32.8 million people. More staggering still, this figure is expected to almost double to nearly 60 million by 2030. The mortality figures related to the disease also do not make for encouraging reading: a little over 10% of all deaths in adults in the Middle East are attributable to diabetes. It really goes without saying that these are big, big numbers.

The region contributes six of the world's top ten countries for diabetes prevalence in adults aged between 20 and 79. Kuwait, Lebanon, Qatar, Saudi Arabia, Bahrain and the United Arab Emirates (UAE) all feature on this roll-call; all of them recording a percentage diabetes prevalence of over 19% of their total adult population. The global prevalence of diabetes and impaired glucose tolerance (IGT), itself a hugely concerning figure, was recorded at 8.3% in 2011.

What has caused this situation can be attributed to a range of factors – from the growing population and rising age demographics, through to the potential impact that the increased affluence of the region's citizens has on their nutrition and physical activity levels. Simply put, diabetes prevalence – in common with other lifestyle diseases – has increased as life expectancy rises and economic development contributes to changes such as less physical activity, unhealthy nutrition and consequent rising levels of obesity.

At the same time, healthcare expenditure on diabetes throughout the region was expected to be around US$10.9 billion in 2011, only 2.3% of the total global figure for spending on the disease. Whilst this figure is expected to double over the next two decades, the level of spending is still, proportionally, relatively low.

Taken together, the situation requires even more focus to ensure that it does not continue to grow or even spiral out of control. It is therefore essential that the healthcare industry look seriously at every possible diagnosis technique to ensure that diabetes is caught as early as possible.

HbA1c

The measurement of hemoglobin A1c (HbA1c) blood levels is a widely accepted technique for monitoring long-term glucose control in diabetic individuals. Previous studies have shown that improving HbA1c control can greatly reduce the risk of further complications from diabetes – such as kidney disease, eye damage or amputations. The risk of such complications can be reduced by as much as 35% with as little as a 1% reduction in a person's HbA1c levels. As a direct result, the American Diabetes Association has recommended that anyone with diabetes should have their HbA1c levels tested at least once every six months and every three months if their HbA1c levels are not meeting treatment goals.

The medical community has, more recently, recognized the clinical value of the HbA1c test in the diagnosis of diabetes – with several major associations such as the American Diabetes Association, the International Diabetes Federation and the European Association for the Study of Diabetes accepting the tests

value in diagnosis at an International Expert Committee in 2009. The conclusion was based on several advantages when compared with the traditional method of measuring blood glucose levels – not least the convenience of the test, which was cited as a significant benefit since it can be conducted at any time and requires no preparation by the patient. It compares very favorably with fasting plasma glucose measurements where fasting must occur at least eight hours prior to testing. The HbA1c test also requires just a single test measurement of blood, as compared to blood glucose testing that requires that the patient undergo serial blood draws over a number of hours.

The relative ease with which the test can be performed is also an important attribute because it offers the potential for larger-scale public screening of the disease. Type 2 diabetes presents relatively few symptoms during the first few years, and those that do appear may not be readily identified as being diabetes. For example, symptoms such as increased thirst and frequent urination, increased hunger, weight loss, fatigue or blurred vision, are potential diabetic symptoms that are also readily identified with other conditions. Subsequently, many studies into the incidence of diabetes have frequently found that a significant proportion of those diagnosed had not previously known they had the condition. As such, anything that can speed up and simplify the process of diagnosis has an evident utility in increasing the number of people undergoing testing for diabetes.

Another crucial recent development has been the acceptance of the HbA1c test as a measure of identifying those patients that are at risk of developing diabetes. The 2012 edition of the '*Standards of Medical Care in Diabetes*' report from the American Diabetes Association stated that HbA1c values of between 5.7% and 6.4% could signify a prediabetic state in an individual.

Such a finding, made early enough, allows a doctor time to discuss the necessary lifestyle changes and disease management options with the patient, and presents a real opportunity for patients to 'pull back from the brink' of developing diabetes. Catching the disease at such an early point therefore presents the prospect of halting the number of mounting cases before they even begin.

Looking ahead

The region is facing a real challenge to combat the rising pervasiveness of diabetes around the Middle East, and it is therefore imperative that companies and suppliers such as Siemens continue to innovate to ensure the tools are there to meet this crisis. The use of the HbA1c test for the diagnosis of diabetes, as well as for identifying those at risk of developing the disease, is now a proven part of this tool kit and offers some real and crucial advantages over other established methods. MEH

Data show Sanofi's Lyxumia added to basal insulin lowers blood sugar especially when Fasting Plasma Glucose is controlled

Sanofi announced in September that new GetGoal-L sub-analysis results showing that reductions in HbA1c with Lyxumia (lixisenatide), when added to basal insulin, were greatest in patients with type 2 diabetes who had well-controlled baseline fasting plasma glucose (FPG). Sanofi says these findings are consistent with the efficacy profile of Lyxumia, which shows a clinical and statistically significant reduction in HbA1c across different patient populations.

The results also showed that reductions in body weight with Lyxumia, when added to basal insulin, were greatest in this group. The GetGoal-L sub-analysis was shared during an oral presentation at the 49th Annual Meeting of the European Association for the Study of Diabetes, in Barcelona, Spain.

Professor Josep Vidal, Endocrinology and Nutrition, University of Barcelona, said: "The study showed that Lyxumia is an effective post-prandial glucose lowering option that improves HbA1c levels when added to basal insulin. We analyzed data from patients who were not at their target HbA1c level, despite controlled fasting plasma glucose, and we found that a treatment regimen that targets post-prandial glucose, as well as fasting plasma glucose, could be an effective choice for these patients."

Sanofi explains that as type 2 diabetes progresses over time, patients treated with basal insulin may no longer maintain their target HbA1c level (average blood sugar levels over the past 2 to 3 months), despite typically sustaining good control of FPG with basal insulin. For these patients, Lyxumia can significantly reduce HbA1c by primarily reducing post-prandial glucose levels through its complementary action with basal insulin. Targeting both FPG and post-prandial glucose could be an effective way to lower HbA1c in certain patients with type 2 diabetes.

Lyxumia (lixisenatide)

Lyxumia (lixisenatide) is a glucagon-like peptide-1 receptor agonist (GLP-1 RA) for the treatment of patients with type 2 diabetes mellitus. GLP-1 is a naturally-occurring peptide hormone that is released within minutes after eating a meal. It is known to suppress glucagon secretion from pancreatic alpha cells and stimulate glucose-dependent insulin secretion by pancreatic beta cells.

Lyxumia is currently approved in in Europe for the treatment of adults with type 2 diabetes mellitus to achieve glycemic control in combination with oral glucose-lowering medicinal products and/or basal insulin when these, together with diet and exercise, do not provide adequate glycemic control. Lyxumia is also approved in Mexico, Australia, Japan and Brazil for the treatment of adults with type 2 diabetes. MEH

Heart disease in the UAE

By Dr.V. J. Sebastian
BSc, MBBS, Dip. Card. (London), FCCP (USA), FRCP (Glasg), FRCP (Edin), FRCP (London), FRCP (Ireland), FACC
Head of the Department of Cardiology
Medical Director, International Modern Hospital, Dubai

Many of the career-oriented young executives, who live by the clock, do not understand the impact of their lifestyle and busy schedule on their health and life in total. According to World Health Organization's figures, every 2 seconds one person dies of cardiovascular disease. Heart disease is on the prowl in the Gulf, claiming more and more victims, both male and female, in the prime of their lives and career.

A good number of persons do not have any symptoms or signs of any illness and often claim to be healthy, until they have an attack. Heart disease accounts for 25% of all the deaths in the UAE and remains the leading cause of death. Moreover, it is alarming to note that more and more young people, in their thirties and forties, are the victims of this deadly disease. It is also worrying to note that 25% of the persons suffering from a heart attack die within an hour and half, even before the victim reaches the hospital.

It is also of great concern that more Indians are affected by heart disease than any other ethnic group. The youngest patient I looked after in the UAE following a heart attack is a 21-year-old Indian.

What is to be blamed for the ever-increasing number of deaths due to heart disease? It is the influence of affluence? The rapid socio-economic changes – changes in lifestyle, unhealthy eating and insufficient physical activity, coupled with stress associated with this modern working environment – all have contributed to this.

Who is at risk?

Heart attacks strike both men and women, but often more men than women in the younger age group. However, some people are more likely than others to have a heart attack because of the "risk factors" they may have. While some of these risk factors like being male, increasing age, family history of heart attack are not modifiable, all other risk factors including smoking, high blood pressure, high cholesterol, diabetes, overweight, diabetes, lack of exercise and stress can be modified. Risk factors do not add their effects in a simple way, but they multiply each other's effects several fold. So it is very important to prevent or control risk factors that can be modified.

How can we prevent heart disease?

There is enough scientific evidence that the chances of suffering heart attack can be prevented or reduced by identifying the risk factors and modifying them.

- Aim for a healthy weight
- Quit smoking
- Know your blood pressure
- Reduce high blood cholesterol
- Manage diabetes
- Manage stress
- Be physically active each day

Prevention is better than cure

In the modern era of changing lifestyle, eating habits and stressful environment taking care of these factors can prevent unexpected loss of life. As the old adage goes: *"A stitch in time saves nine"*. MEH

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Bellagio Declaration – scientists call for efforts to protect healthy food policies

Public health and nutrition scientists are calling for greater efforts to protect healthy food policies from being undermined by the lobbying forces of multi-national food corporations, or Big Food and Big Soda as they have been called. A meeting on the progress of obesity prevention efforts in low and middle income countries in Bellagio, Italy in June, has released its Bellagio Declaration at the International Congress on Nutrition in Granada, Spain on September 18, 2013. The Declaration calls on governments and other organisations to take specific actions to counteract the influence of Big Food which has successfully blocked healthy food policies in many countries.

"The stories which came out from many presentations from developing countries which are battling the obesity epidemic followed a common pattern," said the meeting convener, Professor Barry Popkin from the University of North Carolina. "Governments see the rising tsunami of obesity flooding over their countries, but as soon as they put up serious policies to create healthier food environments they get hammered by the food industry." The policies which predictably provoke this response are regulations to reduce the marketing of unhealthy foods to children, front-of-pack labelling systems to help consumers readily assess the healthiness of the food, and taxes on unhealthy foods like sugar-sweetened beverages, according to Prof Carlos Monteiro, University of Sao Paulo, a co-convener and one of Brazil's leading public nutrition researchers.

The country experiences, published in a series of papers in September in *Obesity Reviews*, show that the obesity epidemic is rising very fast in many developing countries, rapidly catching up or overtaking undernutrition as the dominant nutrition problem. This is creating a double burden of co-existent overnutrition and undernutrition within many populations or even within households.

The Director General of the World Health Organisation, Dr Margaret Chan, has recently called the lobby forces of Big Food and Big Soda one of the biggest challenge that countries face as they try to reduce obesity and diet-related chronic diseases. She outlined some of the tactics the food industry have been using such as front groups and lobby groups, promises of self-regulation, lawsuits, and industry-funded research. The Bellagio Declaration calls on WHO to develop norms for government engagement with the private sector so that partnerships are not detrimental to nutrition goals.

"We have written to Dr Chan to strongly support WHO in its work with governments and non-government organisations to increase the transparency and accountability systems within food policy development," said Professor Boyd Swinburn from the University of Auckland and Co-Chair of the International Obesity Task Force, "The first priority for food policies is to improve nutritional outcomes for the population, not the bottom lines of multinational corporations."

The Bellagio meeting was held under the auspices of the International Obesity Taskforce and the International Union of Nutritional Sciences, led by its immediate Past President, Professor Ricardo Uauy, University of Chile, and was funded by the Rockefeller Foundation.

on the WEB Bellagio Declaration
http://tinyurl.com/nxz85pl

- Papers from the Bellagio Meeting on Program and Policy Options for Preventing Obesity in the Low- and Middle-Income Countries published online by *Obesity Reviews* and available at: *www.bellagioobesity2013.org*

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Researchers meet in Abu Dhabi to discuss the latest developments in diabetes

Karim Meeran, Professor of Endocrinology, Imperial College London Faculty of Medicine and Chairman, ICLDC Medical Board London, UK, said diabetes in the GCC is not only about sedentary lifestyle and poor diet but there is also a genetic factor.

More than 140 diabetes experts gathered at the inaugural Advanced Diabetes Conference organised by Imperial College London Diabetes Centre (ICLDC) in Abu Dhabi in September to share the latest thinking and discuss challenges associated with the disease.

Conference Chairman, Professor Maha Taysir Barakat, Director General, Health Authority Abu Dhabi (HAAD), said that the event is much needed in a region with such high diabetes prevalence.

"This conference will help draw attention to the disease, which is both manageable and preventable.

"The key to good health is as simple and as smart as managing a balanced diet and taking some moderate, regular exercise," Prof Barakat said.

Conference Chairman, Professor Maha Taysir Barakat, Director General, Health Authority Abu Dhabi (HAAD), said the event is much needed in a region with such high diabetes prevalence.

Speaking at the conference, Karim Meeran, Professor of Endocrinology, Imperial College London Faculty of Medicine and Chairman, ICLDC Medical Board London, UK, said: "Diabetes in the GCC is not only about sedentary lifestyle and poor diet but there is also a genetic factor.

"Features specific to the GCC include younger onset, a strong association with obesity, late presentation to the healthcare sector and higher rates of chronic complications."

He emphasized that diabetes care in the region is often affected by limited access to publicly funded healthcare resources and a shortage of specialised healthcare professionals.

Cultural barriers between carers and patients, and deep-rooted health beliefs also play a part, he added.

"In the Middle East there is poor awareness about health, civil societies are less well developed, while the private sector is poorly regulated."

Prof Meeran said that as the incidence of type 2 diabetes in children and adolescents rises, it is increasingly important to differentiate newly diagnosed type 1 from type 2 diabetes.

He said features suggesting the diagnosis of type 2 diabetes include increased weight, a family history of diabetes and an age of 10 and over.

"In type 1 diabetes the pancreas is unable to produce any insulin. With type 2 diabetes a person is able to produce insulin but this is either not enough or the body can't use it properly."

He recommends a number of principles to guide management of diabetes in children.

This includes an effective insulin regimen, monitoring of glucose, flexibility with food and as much activity as possible.

"With children, especially those diagnosed with type 1 diabetes, they need routine and rules. They also benefit if encouraged to explore, begin to make their own decisions and hopefully develop some independence."

He added that adult support is essential for success especially with insulin pump treatment until the child is able to manage the diabetes independently.

"Studies in children with type 1 diabetes have demonstrated the positive effect of patient and family education.

"The delivery of intensive diabetes case management, and close telephone contact with the diabetes team are associated with reduced medical emergencies and cost to the patient," Prof Meeran said. MEH

Experts call for change in lifestyle to prevent alarming increase in lifestyle diseases

By **Hajer Almosleh**
Middle East Health correspondent

Diabetes continues to be an ever-increasing health concern in the region. One in nine adults in the region has diabetes, and more than half of people with diabetes in the region don't know they have it. The issue was highlighted at a recent press conference in Dubai to announce an International Conference on Lifestyle Disorders in the region, organised by Aster Medical Center, part of DM Healthcare, a leading healthcare provider in the Middle East and India, in association with global pharmaceutical company Novartis.

Speakers pointed out that the increase in lifestyle diseases – such as diabetes, hypertension and obesity – is a consequence of demographic changes such as ageing and urbanization, which in turn has led to a growing trend to a more sedentary life and a high-fat, high-salt diet – key risk factors for lifestyle diseases.

The latest statistics from the *International Diabetes Atlas* reveal that the MENA region, based on current trends with predicted demographic changes, will witness an alarming increase of 82.9% in the prevalence of diabetes by the year 2030.

Regional countries including Kuwait, Qatar, Saudi Arabia, Lebanon and the UAE are among the top 10 in the world for diabetes prevalence.

Dr. PMM Sayed, Medical Director, Aster Medical Centre, said: "The health conference is being organized as part of Aster's ongoing 'Synergic Partnership for a Healthy Life' programme."

Hypertension

Hypertension is among the top lifestyle disorders, which increasingly leads to several fatal diseases in the region. About 40.8% of the UAE adult population, aged between 35 and 70 years, suffer from hypertension, according to a recent survey by Dubai Heart Center. The study reveals that 40.9% of females and 40.6% of males suffer from hypertension. Among them 34.8% are in urban areas and 52.8% in rural areas. It is estimated that around 66% of hypertensive people are aware of the condition, while 59% of them are receiving treatment and the condition is under control.

The speakers agreed that a change in lifestyle – a lack of exercise and unhealthy diet are the culprits.

According to Professor Gordon T McInnes, University of Glasgow, women are more prone to be afflicted by lifestyle diseases. However, Professor Gordon emphasised that although the effect on women is most obvious 10 years after menopause, risk factors do manifest themselves quite rapidly and both genders are affected. He added that smoking exacerbates the situation.

Dr. Shekhar S. Warrier, Specialist Cardiologist at Aster Medical Center, Dubai commented that people generally want answers in medical form. "They want medical intervention" when diagnosed.

Dr. Prakash Pania, Specialist Endocrinologist at Aster Jubilee Medical Complex, Dubai, attributed the increase of hypertension and obesity to big portions of food and less physical exercise.

"Eating more and doing less physical exercise often leads to diabetes and hypertension. These are a preventable, but sadly, no one wants to adopt a healthier lifestyle unless they are plagued with those diseases.

"Unfortunately, people are generally only diagnosed at the transitional stage. Lifestyle diseases don't announce themselves," Dr Pania said, adding: "They need to be screened to be discovered.

> People are ignoring their health, although prevention is the best solution. There's a lot of denial among patients.

"People are ignoring their health, although prevention is the best solution. There's a lot of denial among patients," he said.

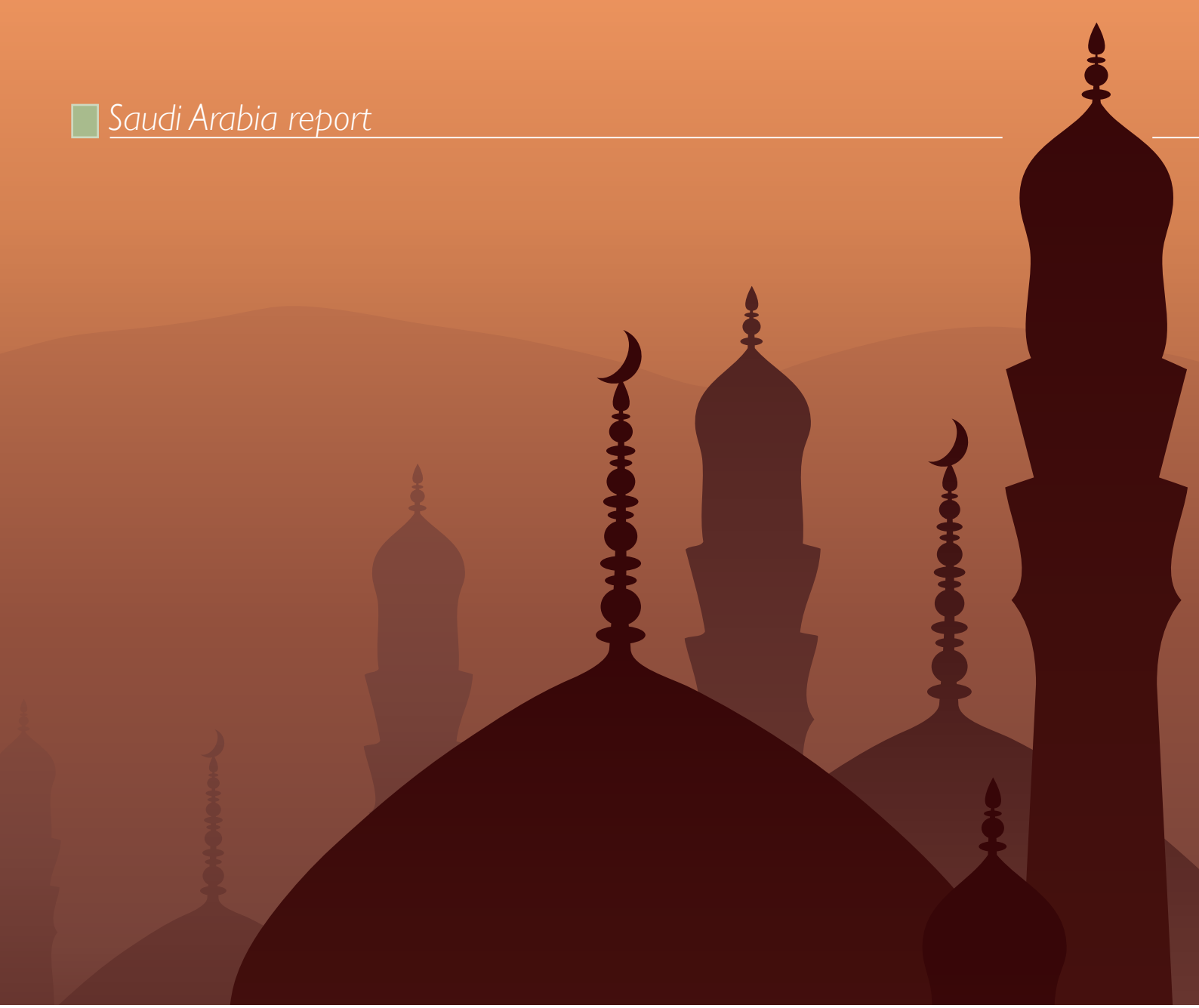
Dr. Shekhar said people should be encouraged to have regular checkups.

"Living with undetected lifestyle disease is like 'risky driving'," he said.

Gordon T McInnes, Professor of Clinical Pharmacology, Honorary Consultant Physician and Head of the Section of Clinical Pharmacology and Stroke Medicine, University of Glasgow, stressed that the "vast majority eat too much, smoke, and ignore exercise.

"People who move to cities get high blood pressure due to increase salt intake and stress."

Change or modification of lifestyle solves the issue. When that doesn't happen (no change), medical solutions are introduced, Prof McInnes said. MEH



Saudi budgets $14.5bn for healthcare

MoH plans to build another 5 medical cities

The Kingdom of Saudi Arabia has allocated SR54.35 billion (US$14.5bn) to healthcare this year, according to a September report in *Arab News*. This is up 15.45% on the healthcare budget for 2011.

The report, which outlines some of the key healthcare expenditures, says the increased budget will enable the Ministry of Health to continue constructing healthcare cities, hospitals and primary healthcare centres across the kingdom.

King Abdullah, who signed the budget, disclosed plans to establish five new medical cities and 19 new hospitals.

The ministry will set aside SR25.2 billion for salaries and SR16.39 billion for operation, cleaning and maintenance contracts. It has also allocated SR7.76 billion for medicine, training and catering, and SR5 billion for new development projects.

The newspaper reported that the budget includes funding for the opening of 155 primary healthcare centres across the kingdom, adding that the ministry has plans to increase the number of the centres to 2,750 from the existing 2,286 centres.

Arab News says the ministry's long-term plan is to build 138 hospitals with 34,800 beds to cater to the increasing local population.

The new budget has made allocations for a 200-bed Al-Ansar Hospital in Madinah, a 500-bed mental hospital in Makkah, a 200-bed mental hospital in Baha, a 200-bed maternity and children's hospital in Gurayat and a 200-bed medical tower in Dammam.

The ministry plans to establish a medical tower for accidents and emergency at Dammam Medical Tower, an outpatient clinics tower at Qatif Central Hospital, and an emergency medical tower at Prince Abdul Aziz Hospital in Arar.

Three tumour centres in Jazan, Hail and Al-Ahsa, each with a capacity of 100 beds, three cardiac centres in Jazan, Tabuk and Taif and six dental centres in Makkah, Al-Ahsa, Taif, Qatif, Al-Kharj and Samita with a total of 430 dental clinics .

In October last year, King Abdullah inaugurated 420 health projects and laid foundation stones for 127 other health facilities worth SR12 billion.

The king also laid the foundation stones for two medical cities in the northern and southern regions, projects in three medical cities, a specialist hospital, seven public hospitals, two medical towers, 73 digitized operation theatres and 111 primary healthcare centres, according to the ministry.

Health Minister Abdullah Al-Rabeeah, was quoted by the newspaper as saying: "Our ministry will keep improving health services in the country by enhancing the quality of services at medical facilities, introducing new patient service programs and developing home medicine, preventive medicine, emergency services and clinical referral services."

Home Healthcare

The Home Healthcare Program (HHP) has covered some 20,000 patients ever since it was introduced in April 2010. The program offers healthcare at the homes of patients who cannot travel to medical clinics for their treatment.

Around 32% of the patients covered under the program suffer from chronic diseases such as hypertension, diabetes, as well as cardiac and renal diseases.

Twenty per cent are Alzheimer's and psychiatric patients, 13% paralytics, 10% suffer from diabetic foot and 2% from malignant diseases.

Al-Rabeeah has allocated a fleet of 80 vehicles to help health officials visit homes regularly to monitor the health of patients covered under the program, according the *Arab News*.

Healthcare Saudi symposium designed to help open Saudi market to foreign healthcare companies

To meet this growing demand for healthcare, Saudi Arabia is relying heavily on imported medical equipment. As a result, accessing the Saudi market has become significantly easier for international companies.

However, there are clear steps that foreign companies need to follow. Mohammed Al Amri, Project Director at Naru Capital, explains: "The two most common ways to penetrate the market and conduct business within the healthcare sector in Saudi Arabia are a partnership with local distributors and strategic joint venture partnerships. Although several distributors operate only in the specific regions, most operate throughout the country with a base either in Riyadh or Jeddah. Distributors play a major role in registration of products, acquiring contracts, introducing new products, supply, distribution and logistics of healthcare in Saudi Arabia. Large distributors are also involved in after sales service and maintenance. Medical device manufacturers, pharmaceutical companies, furniture manufacturers amongst others typically do business through distributors in the country."

International healthcare providers have a chance to source their business partners at the upcoming 3rd Patient Relations Symposium on 9-10 December in Riyadh. This initiative will see the attendance of more than 200 of the Kingdom's healthcare decision makers and major medical distributors.

For companies planning to set up locally based operations, co-operation with Saudi partners is essential.

"To set-up manufacturing facilities in the Kingdom it is necessary to form local joint venture partnerships, which has become increasingly profitable, due to numerous incentives introduced by the Ministry of Health and the Government of Saudi Arabia to attract foreign direct investment. These incentives include grants, land and interest free loans for extended periods," explained Al Amri.

"This is emphasised for local manufacturing in the pharmaceutical industry, as over 60% of drugs produced is directly bought by the government. Other dominant forms of joint ventures include setting-up of diagnostic centres, private hospitals, clinics, as well as obesity, dialysis, rehabilitation and diabetic centres."

Simultaneously with the Symposium, Saudi and GCC sector investors will have a chance to source potential partners among 10 business cases at the Healthcare Investment Initiative to be presented at the InterContinental Hotel in Riyadh on 9 December.

"This is not a conference, tradeshow or event open to the public. This is a platform to introduce healthcare investment opportunities to strategic partners and investors in Saudi Arabia and GCC. Each business case is handled with confidentiality and all investors are confirmed to be seeking healthcare investments," said Al Amri.

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Sudanese doctors

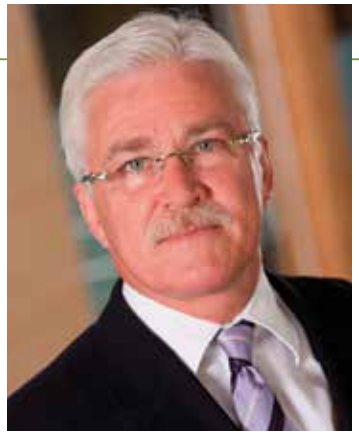
Meanwhile, Sudanese Ambassador to Riyadh Abdul Hafiz Ibrahim, is quoted by *Arab News* as saying the Saudi MoH plans to recruit 5,000 Sudanese doctors for its public hospitals. This is in addition to the 10,000 Sudanese doctors already working in the Kingdom's public and private sectors.

Ibrahim said Sudan's health services would not be affected by the departure of 5,000 doctors. "We have 5,000 graduates every year, so we will share them between our two countries."

"The Saudi health ministry has benefited from the Sudanese experience in the strategic planning of medical services at the Kingdom's hospitals, the development of medical disciplines at Saudi universities, and in the establishment of health divisions at government hospitals," said Ibrahim. MEH

INTERVIEW

New joint venture set up to advance delivery of healthcare technology



Jeffrey Davenport, CEO of Care-RTKL

Middle East Health: Care-RTKL is a new venture launched recently. Can you give us some background on why it was formed?

Jeffrey Davenport: In early 2009, we saw the opportunity to integrate world-class technology expertise into the prestigious healthcare developments underway in the MENA region. HDH, the Healthcare Development Holding company led by Dr Wael Kaawach and RTKL, an international expert in healthcare technologies planning, created a joint venture firm to advance care through the integration and delivery of healthcare technology.

The joint venture company we have formed is named Care-RTKL and is based in Jeddah, KSA. The company provides forward-thinking medical equipment and technology solutions that give our clients and their patients access to less invasive and more accurate diagnoses and treatments.

Our vision is to become the premier provider of a comprehensive healthcare solution for the planning and delivery of medical equipment and medical technology to clients in Saudi Arabia and the MENA Region.

MEH: Why is this service needed?

JD: The digital age has transformed hospitals into increasingly complex, high-tech enterprises where medical equipment, information systems, and building management systems run on a common data infrastructure and continuously interact together. Integrating this advanced equipment and technology into healthcare facilities requires greater expertise than ever before. The results directly impact the hospital's operational efficiency, patient satisfaction and reputation as a world-class leader in medical care.

MEH: How does your approach to delivering this service differ from other providers in the region?

JD: First of all it is the people. Care-RTKL employs the best equipment planners, technology design engineers, and wireless specialists in the industry. These experts have earned a broad range of professional credentials that complement their experience serving world-renowned clients such as Stanford University Medical Center and Cleveland Clinic.

Our teams specialize in all key departmental modalities and stay knowledgeable of current equipment, technologies, trends and options. We know what to look for, what to avoid, and the best practices to employ to give our clients the best value for their capital expenditure.

Secondly, is our process. We get involved at the very beginning of the planning phase and see the project through to hand-over. We coordinate the equipment and technology with the architects and engineers so that the treatment spaces are designed to meet the space requirements, heat loads, power requirements and plumbing needs. We are not a distributor of equipment, so we are making equipment selection for our clients based on the best solution that meets their requirements and budgets. Procuring the equipment for large projects is typically more than our client's resources can handle, so we support them with a full procurement team that prepares the tenders and assist in evaluating the best value for the client. We also have a full team on the construction site led by a team of biomedical engineers that understand the installation requirements. They coordinate with the contractor and the trades so that the construction is coordinated to receive the right equipment the first time, saving time on the schedule and cost for the contractor. Once the equipment is installed the team collaborates with the vendors to commission the equipment and turn the facilities over to the client in a shorter time. This allows the new facility to begin treating patients sooner and more reliably. MEH

South Korea to build $1bn Hospital Information System for kingdom's hospitals

Saudi Arabia and South Korea have struck a deal whereby South Korea will build IT networks for Saudi hospitals worth around US$1 billion, according to reports by South Korea's Yonhap and Chosun media.

South Korea's Health Minister Jin Young met with his Saudi counterpart Abdullah Al-Rabeeah in Riyadh in September and agreed to supply the IT systems to 3,000 clinics and 80 state-run hospitals in the kingdom.

The two health ministers also agreed that around 100 Saudi physicians will travel to Seoul every year starting March 2014 to train at Seoul National University Hospital, Asan Medical Center, Seoul St. Mary's Hospital, Samsung Medical Center and Severance Hospital.

The IT deal will see South Korea building a Healthcare Information System to enable hospitals to store and share clinical and healthcare information of patients.

The medical industry in Saudi Arabia is witnessing rapid growth after King Abdullah, who began his reign in 2005, invested large amounts in healthcare. A total of 29 hospitals were built there in 2012 alone, while another 102 are under construction.

Developing a world-class hospital? Care RTKL assists prestigious hospitals throughout the MENA region to integrate their increasingly sophisticated medical equipment, technology systems, and information management into a seamless infrastructure. We know the latest-generation products and how to design the required platform to support even the most technically advanced hospital or medical city now and into the future. No other firm matches Care RTKL's scope of highly specialized and comprehensive services. Today's more complex hospitals require greater technology expertise than ever before. Contact Care RTKL for single-source, cutting-edge solutions to your technology needs.

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Saudi Aramco and Johns Hopkins sign joint venture to provide healthcare to Aramco employees

Saudi Aramco and Johns Hopkins Medicine International (JHI), the international arm of Johns Hopkins Medicine, have signed a joint venture agreement to establish a new health care provider for Saudi Aramco.

The agreement was signed on June 23, 2013, in Dhahran, Saudi Arabia, by Saudi Aramco Senior Vice President Abdulaziz F. Al-Khayyal and Paul B. Rothman, M.D., dean of the medical faculty, CEO of Johns Hopkins Medicine. The new company will focus on providing high-quality health care services to Saudi Aramco's employees, dependents and annuitants that make up their eligible medical recipients.

"This joint venture brings together two global leaders who share a strong commitment to improve access to world-class health care services," Al-Khayyal said. "Over the last 80 years, Saudi Aramco doctors and nurses have served the medical needs of employees and family members. Now, with Johns Hopkins Medicine International as a joint venture partner, we will set an even higher standard for future generations. This is a logical step in our company's transformation and demonstrates our ongoing commitment to our people."

"For more than 120 years, Johns Hopkins has been recognized as a national and global leader in patient care, research and education," said Dr Rothman. "We are pleased to have the opportunity to share our innovations and best practices with our colleagues at Saudi Aramco and to assist them with further strengthening health care services the company offers to its employees, retirees and their families."

The new venture will assume the responsibilities of Saudi Aramco Medical Services Organization (SAMSO), which manages the health-related services for approximately 350,000 members of the Saudi Aramco community.

Under the terms of the agreement, Saudi Aramco and JHI will each hold an ownership stake in the new Saudi company. JHI, drawing upon the vast expertise of The Johns Hopkins University and The Johns Hopkins Hospital and Health System, will provide comprehensive clinical services, research, education and management expertise to the joint venture.

Steven J. Thompson, CEO of JHI said: "Our international work now spans more than a dozen countries on four continents. It is a privilege for us to collaborate with Saudi Aramco to carry forth its commitment to improving the health of its employees. We are especially energized by the patient safety, nursing, research and medical training initiatives that will be at the core of this work, and we believe this new joint venture will allow us to advance Johns Hopkins' vital mission of improving the health of the world."

"This agreement marks the first step in the long-term process of creating a new medical center of excellence in Saudi Arabia," Dr Saeed Mughram, SAMSO executive director, said. "Building on the strong, well-established health care system at Saudi Aramco and the proven expertise of Johns Hopkins Medicine, the joint venture will provide enhanced services, including new clinical programs, and in the future, centers of excellence in clinical research and education, to address some of our most significant health issues, including diabetes and heart disease."

This agreement marks the first step in the long-term process of creating a new medical center of excellence in Saudi Arabia.

The signing marks the beginning of a multi-year, phased integration plan for the joint venture. The new company is expected to commence operations in the early part of 2014. MEH

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Advocate Sherman Hospital: Largest lake-coupled geothermal system paying off

By **Warren L. Lloyd**
PE, LEED AP

Just four years after Advocate Sherman Hospital opened the doors to its new US$230,000,000 greenfield campus outside Chicago, it is nearly half way to paying back the $6.1 million investment that provided it with the largest lake-coupled geothermal system in the world.

The success of the system and its relatively short payback show what can be achieved – and saved –with geothermal at a healthcare facility given the right combination of resources and commitment.

"Based on current utility rates, the payback has been a little slower, since the price of gas has gone way down since the facility opened," said Ray Diehl, chief engineer for Advocate Sherman.

"But we're still on track for payback in potentially four to six years. By the end of this year, we will be at $3.5 million (of the payback)."

The hospital's decision to build a new campus was driven by its need for an updated and enlarged facility; by 2005 its then-100-year-old, 5-hectare campus was outdated and landlocked in downtown Elgin, Illinois.

Fortunately, the hospital had had the foresight to purchase a nearby 62-hectare cornfield overlooking a 10-hectare forest preserve – plenty of room for a new 60,000-square-meter replacement hospital. As work on the master plan for the new campus began, hospital officials asked the design team – led by architects Shepley Bulfinch Richardson Abbott of Boston

– to provide both a healing environment for patients and follow the principles of sustainable development.

The available land, coupled with the size of the project, motivated KJWW Engineering Consultants to suggest the incorporation of a geothermal lake system. A detention pond already was required for the site, and it easily could be enlarged to accommodate the needs of the system. Furthermore, KJWW could provide the know-how, having previously designed the world's first lake-coupled geothermal system for healthcare in 2000 at Great River Medical Center in Burlington, Iowa.

Geothermal systems can have substantial additional upfront costs, however, so Advocate Sherman proceeded cautiously. Their lake-coupled system was estimated to cost an extra $6.1 million – $3.5 million to install (above the cost of a conventional gas-fired mechanical plant), $1.6 million for the additional 4 hectares of land needed to expand the detention pond, and $1 million to excavate the pond. With annual energy savings estimated at $1.1 million, however, the hospital would be able to recoup the cost of the system in just six years.

Advocate Sherman officials visited Great River to tour that facility's lake-coupled system and talk to that hospital's administrators, who gave the design glowing reports. Great River's success with, and endorsement of, the system – coupled with the long-term savings and relatively quick return on investment – convinced Advocate Sherman to adopt the geothermal system for its facility.

Ground broke in June 2006, and the geothermal system was installed in the lake in the spring and summer of 2008. On December 15, 2009, patients and staff moved in to the facility, which features a six-floor, 255-inpatient-bed tower; a Level II trauma center; emergency department; cancer center; cardiac care center, radiology; woman's diagnostic center, and kitchen and cafeteria.

How geothermal heating and cooling works

Geothermal systems operate on the principle that the Earth's temperature a few feet below the surface remains a constant 130° C year round. Because water at the lake bottom is cooler than outside air in the summer and warmer in the winter, the system can be used to raise and lower air temperature accordingly.

Heating mode: In the winter months the geothermal heat pumps use stable ground or water temperatures near the earth's surface to control building temperatures. During the winter, a closed geothermal pipe loop system extracts heat from heat exchangers on the lake bottom. Liquid coolant passes through the loop to the manifold room and transfers energy via a second loop to individual heat pumps throughout the building. A return pipe feeds back to the manifold room to once again exchange temperatures with the lake network.

Cooling mode: In warmer weather the geothermal system conditions the facility air by reversing the heating process. Rather than extracting heat from the ground, heat is extracted from the hospital air and circulated through the pipe loop to the lake. Upon return, the cooled liquid offsets the indoor air temperature and is redistributed through the facility.

Source: Shepley Bulfinch

The parameters of the geothermal lake required for the campus were determined by a limnologist retained by the design team. The complex task involved sizing the lake and arranging the heat exchangers to derive maximum heat transfer; water depth and temperature gain also were studied to ensure the lake would support wildlife and not become choked with weeds or algae.

To help maintain a consistent water level, the 5.5-meter-deep lake is lined with a 1-meter-thick layer of clay reclaimed from the lake excavation material. The water level is maintained by storm water runoff; two wells serve as a backup but to date never have been used.

The geothermal system itself consists of relatively few different components. Lying in the water 4.5 meters below the surface are 175 geothermal grids (each 9 meters by 2.5 meters) which serve as heat exchang-

ers. The grids are made of 240 kilometers of polypropylene pipe and are the only structure in the lake. Should a grid need maintenance, it can be filled with air and floated to the surface.

Each grid sends a nontoxic mixture of water and methanol through a pair of flexible 5-centimeter pipes to a manifold room inside the hospital. From there the fluid is transferred to the main 60-centimeter supply and return pipes that fan out to individual heat pumps. Since a hospital operates around the clock and heating and cooling needs vary on a room-by-room basis, every patient room or group of offices has its own thermostat. At Advocate Sherman, that means about 1,000 water-to-air heat pumps are located throughout the building. For ease of access and routine maintenance, the pumps are located in small closets along the patient corridor.

Back-up boilers are available to heat the loop's fluids if the system ever fails for any reason. And while the geothermal system heats and cools the critical life areas (emergency department, inpatient surgery and ICU), conventional air handlers provide the high volume of ventilation and filtration required in these areas.

The entire geothermal system relies on the lake water to cool the fluid in the warmer months and heat the fluid in the colder months. The fluid also redistributes energy throughout the building in the winter, absorbing interior ambient heat (generated by people, lights and machinery) and releasing it in outer rooms before returning to the lake, which acts like a 6-hectare cooling tower. Because of the large amount of ambient heat produced inside hospitals, Advocate Sherman's geothermal system actually works in cooling mode 10 months of the year – even in Chicago's northern climate.

Besides huge energy savings for the hospital, the lake-coupled geothermal system provides many other benefits. The system is quieter than a conventional HVAC system and eliminates the need for large, unsightly and noisy cooling towers. The mechanical plant size is reduced, and shaft sizes are 10% smaller than conventional ducted heating and cooling systems since a portion of the energy is supplied hydronically. Maintenance is simpler and can be done on individual heat pumps, eliminating the shutdown of an entire system. The system also is flexible and can be expanded to meet the future growth needs of the campus. (Currently the system provides 2,400 tons of cooling, with the ability to expand to 3,400 tons.)

The system also provides the hospital with an avenue for educating the public on its environmental stewardship: Visitors entering the lower level from the parking lot pass through an enclosed concourse

Awards

Advocate Sherman Hospital has received the following awards:

- $400,000 grant from the Illinois Clean Energy Community Foundation for its geothermal lake for setting a "green" benchmark for how hospitals and large institutional energy users can heat and cool facilities in an environmentally friendly way
- $956,000 from the U.S. Department of Energy for the lake for promoting America's energy security through reliable, clean, and affordable energy
- Midwest Construction, Best of 2010 / Healthcare Award of Merit


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overlooking the lake on one side and the piping and pumps in the manifold room on the other. Educational signs describe how the geothermal system works.

"We have done much education with our local community college, high school and middle schools," said Diehl. "Science classes come here and they teach the students about sustainability and energy efficiency, and they teach them about how the geothermal system works. It has been very well received by the community, and especially the schools."

From a natural healing standpoint, the lake-coupled geothermal system dovetails nicely with the tranquil and therapeutic environment that is the hallmark of the Advocate Sherman campus. The lake provides habitat for fish, ducks and native wetland plants, and is ringed by a 1.2-kilometer bike/walk path, providing a place for outdoor exercise. It is an integral part of the campus's natural setting, which faces a forest preserve and also includes healing gardens, a prairie restoration, a variety of plantings and no-mow grasses.

This connection between nature and healing continues on the interior of the hospital, starting at the lake-level entry. A stunning, four-story atrium features a 21-meter-diameter central support nicknamed the "Tree of Life," its eight structural columns curving outward and upward like tree limbs. Additionally, 75% of the inpatient rooms feature a window with a calming lake view.

The economic, aesthetic, therapeutic and environmental benefits of the lake-coupled geothermal system easily justify the added investment required. In just a few more years the system will have paid for itself, and the hospital will begin to realize the substantial energy savings year after year.

"It all comes down to Btu per square feet," said Diehl. "The old hospital used 352 kBtu per square foot (3,787 kBtu per square meter) per year. Now we're at 192 kBtu per square foot (2,076 kBtu per square meter) per year." Compared to the old campus, Advocate Sherman now uses 80% less natural gas, 15% more electricity, and 72% less water.

The geothermal system heating and cooling the campus saves the hospital upward of 30% in space conditioning costs each year, making Advocate Sherman one of the most energy-efficient healthcare facilities in the world. Although the hospital did not pursue LEED certification, it has nonetheless provided a presentation on its highly energy-efficient system at the request of the U.S. Green Building Council, the purveyor of LEED accreditation. It also has been visited by several other healthcare organizations. Like Great River before it, Advocate Sherman now serves as an example of what can be accomplished with geothermal in a healthcare facility, given the desire for sustainability, willingness to invest and the right resources – the primary factor being the availability of a lake, wells, or the ability to dig deep into the earth.

"Going 'green' is more than a geothermal system, and other healthcare institutions often times aren't as lucky to have the land to dedicate for such a system," said Dawn Stoner, project coordinator for Advocate Sherman. "I think we serve as an example in that we were able to think 'outside the box.' "

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- For more information on Advocate Sherman Hospital's geothermal lake, visit: *www.shermanhealth.com/geothermal_lake.php*

About the author

Warren L. Lloyd, PE, LEED AP, is vice president and a client executive for KJWW Engineering Consultants, a recognized expert in high performance design, sustainability and LEED. KJWW provides mechanical, electrical, structural, technology and acoustical engineering services as well as architectural lighting, medical equipment planning, energy modeling and commissioning. It serves the markets of healthcare, education, industrial, corporate, commercial, sports and recreation and government. The U.S.-based company has 14 office locations, including Dubai, UAE, and Ahmedabad, India. For more information, visit: *www.kjww.com* MEH

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UK innovation: the Head-Up neck collar

A new era for national healthcare

Jason Brannan looks at the major changes that have taken place in the United Kingdom's healthcare sector over the past year and outlines the significance of this new era of healthcare for the United Kingdom and the world.

The United Kingdom's healthcare sector has seen major structural changes over the past 12 months, and with many new organisations being established it signals a new era for healthcare in the UK.

Many of the changes seen in 2013 have been driven by radical government policies outlined in 2011, which placed innovation and early technology adoption at the heart of healthcare delivery in the UK.

The drivers for change are consistent across the globe – the aging demographic, expanding populations, growth in long-term chronic disease, enhanced patient expectations, and of course, the need to contain costs at a time when global economies continue to face huge pressures.

The UK Government signalled its commitment to the Life Sciences sector with the simultaneous launch of three major strategies in December 2011.

1. The Prime Minister's Life Science Prospectus, 'Investing in UK Health and Life Sciences';

2. The NHS Chief Executive's 'Innovation, Health and Wealth' strategy; and

3. The joint Business, Innovation and Skills Department and Department of Health's 'Strategy for Life Sciences'.

The main thrust of the initiatives announced was to open up business and universities to more collaboration, to invest in the best UK ideas at an early stage and, central to the strategies, to open up the National Health Service (NHS) to new innovations and new clinical trials.

In 2013, these policies are now being borne out by the advent of new initiatives and organisations developed specifically to ensure this commitment to the

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sector harvests real results – and ultimately benefits patients as well as wider society.

Healthcare delivery

One early initiative within the Innovation, Health & Wealth Strategy was the creation of 15 Academic Health Science Networks (AHSNs) across the UK – the first phase of which went live in April 2013.

Academic Health Science Networks are charged with bringing together the NHS, academia, industry and other major stakeholders to improve the identification, uptake and spread of innovation in the NHS.

The networks represent a cultural shift in the NHS, with a recognition that service delivery can only be transformed through the rapid adoption of new technologies and that this requires the strategic participation of the UK Life Sciences business community – the focus being on improving the UK's health and wealth.

The AHSNs each bring together in a formal partnership, with their own a governance structure, NHS hospital and NHS community organisations covering around three to five million people, to accelerate innovation adoption. Effective partnership with the business community will be key to the success of AHSNs and regional Medilink organisations will provide an important conduit for business engagement.

The main thrust of AHSNs will be developing links across disciplines and establishments and engagement with industry in a way that has not taken place previously. There are six key functions of AHSNs:

- Research participation
- Translating research and learning into practice
- Education and training
- Service improvement
- Information
- Wealth creation

The distinct difference with the AHSNs is that they are being instigated from the top down. For the first time, CEOs within not only industry but the NHS and academia are leading the change.

This approach represents a cultural shift within the NHS, recognising industry as natural partners to improve the health and wealth of the UK.

Clinical needs

Another major initiative to launch in 2013 is the NHS National Institute for Health Research-funded (NIHR) Health Technology Co-operatives (HTCs).

The eight HTCs across the UK are newly created centres based at NHS or-

> The main thrust of the initiatives was to open up business and universities to more collaboration, to invest in the best UK ideas at an early stage and, central to the strategies, to open up the National Health Service to new innovations and new clinical trials.

ganisations to act as centres of expertise that focus on clinical areas or themes of high morbidity and the unmet needs of NHS patients. Working collaboratively with industry, they develop new medical devices, healthcare technologies or technology-dependent interventions, which improve treatment and quality of life for patients.

The HTCs are another important step in NHS organisations as they are able to work with industry to create genuinely innovative technologies for areas of unmet clinical need.

The aims of the NIHR Healthcare Technology Co-operatives are to:

- act as a catalyst for NHS "pull" for the development of new medical devices, healthcare technologies and technology-dependent interventions
- focus on clinical areas and/or themes of high morbidity which have high potential for improving quality of life of NHS patients and improving the effectiveness of healthcare services that support them
- work collaboratively with patients and patient groups, charities, industry and academics.

Two pilot HTCs were funded in 2008 by the NIHR (Devices for Dignity HTC; Bowel Function HTC). Building on the pilot scheme, the NIHR announced the designation and funding for eight new HTCs that were launched on 1 January 2013. The specific conditions being covered by the HTCs are:

- Chronic gastrointestinal (GI) disease
- Brain injury
- Cardiovascular disease
- Devices for Dignity
- Wound prevention and treatment
- Colorectal therapies
- Mental health and neurodevelopmental disorders
- Trauma management

Primary care

The biggest change in service delivery this year has been the shift in responsibility of primary care from Strategic Health Authorities and Primary Care Trusts.

This change came about from the UK Government's White Paper, 'Equity and Excellence: Liberating the NHS' which outlined radical reform to the way healthcare is delivered in the UK; one of the central principles being that community based General Practitioners (GPs) will take responsibility for budgets and commissioning (through Clinical Commissioning Groups - CCGs).

Four hundred GP consortia drawn from some 35,000 GPs have

Earl Howe, UK Minister of Health studies a medical device developed by UK company Viamed at the Arab Health exhibition in Dubai in January.

assumed commissioning responsibility from the Strategic Health Authorities and 152 Primary Care Trusts, which have been disbanded. This has been overseen by an independent NHS Commissioning Board, which will review progress regarding health outcomes and allocation of NHS

Exporting expertise

The Government's international agency, UK Trade and Investment (UKTI), signalled its commitment to Life Sciences with the launch of Healthcare UK, a joint initiative between the Department of Health, NHS Commissioning Board and UKTI, at the Arab Health Congress in Dubai in January 2013.

Launched by health minister Earl Howe, Healthcare UK will help international customers from both the public and private sectors access the UK's healthcare expertise and aims to boost the value of the UK's trade in healthcare products and services.

Healthcare UK will draw on an in-depth knowledge of the UK's health sector and utilise UKTI's network of professional advisers in nearly 100 countries. The focus here will be on the delivery of high-quality healthcare in countries where populations are growing rapidly.

Healthcare UK has been set up to provide a one-stop-shop for governments and healthcare providers looking to access NHS expertise and in turn develop their own systems. Initially, it aims to address this in five main areas – primary care, medical education and training, digital healthcare, infrastructure (PPPs) and health systems development. The most predominant is that of the delivery of health systems and services.

Healthcare UK was also launched to the South American market this year at the Hospitalar International Fair in Sao Paulo, Brazil, by Kenneth Clarke, Government Minister. The launch coincided with the largest ever trade mission of British healthcare companies to Brazil.

Working in partnership with UKTI, Medilink has been developing links with the Gulf States for a number of years, where there has been heavy and sustained investment in health delivery and management systems.

Medilink continues to reach out to potential academic, clinical and industrial collaborators in the Middle East, to establish partnership and exploit development opportunities.

Professor Lord Ara Darzi elected to the Institute of Medicine

Professor Lord Ara Darzi has been elected to the Institute of Medicine (IOM), the health arm of the US National Academy of Sciences.

Membership of the IOM is one of the highest honours in the field of health and medicine.

Professor Darzi, the Director of the Institute of Global Health Innovation at Imperial, is one of 70 new members and 10 foreign associates elected for their "outstanding professional achievement and commitment to service," the IOM announced on 21 October this year.

"It is a great honour to be elected as a foreign associate of the Institute of Medicine," Professor Darzi said. "It is a rare privilege and reflects the hard work of the team that I work with."

Established in 1970, the Institute of Medicine is one of the National Academies – along with the National Academy of Sciences, the National Academy of Engineering and the National Research Council – and serves as a resource for independent, scientifically informed analysis and recommendations on health issues.

"It is an honour to welcome our highly distinguished colleagues to the Institute of Medicine," said IOM President Harvey V. Fineberg. "These individuals have inspired us through their achievements in research, teaching, clinical work, and other contributions to the medical field. Their knowledge and skills will deeply enrich the IOM."

Professor Darzi holds the Paul Hamlyn Chair of Surgery at Imperial College London, the Royal Marsden Hospital and the Institute of Cancer Research. He is an Honorary Consultant Surgeon at Imperial College Hospital NHS Trust.

Professor Darzi's research is directed towards achieving best surgical practice through innovation in surgery, enhanc-

Kenneth Clarke, Government Minister, launches the Healthcare UK initiative.

The road ahead

The last 12 months has seen the introduction of a number of new organisations and structures in the UK Healthcare system. These have been developed in response to the submission of transformational healthcare policies from the UK Government, focused on improving the health and wealth of the nation.

With these new structures now firmly in place, the UK will be better placed to confront the challenges which affect healthcare systems worldwide: containing rising costs of healthcare delivery whilst meeting increased expectations of patients. Resolving the perennial problem of 'more for less'.

These new strategies, which crucially place clinical research, innovation and early technology adoption at the heart of the NHS, provide an optimistic outlook for the future of the UK Healthcare system and the drive for improved health and wealth.

The Author

Jason Brannan is PR & Communications director of Medilink in Yorkshire. He also leads on communications for Medilink in the UK.

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ing patient safety and the quality of healthcare. He has publishing over 800 peer-reviewed research papers in these fields.

In recognition of his achievements in the research and development of surgical technologies, Professor Darzi has been elected as an Honorary Fellow of the Royal Academy of Engineering, a Fellow of the Academy of Medical Sciences and a Fellow of the Royal Society. He was knighted for his services in medicine and surgery in 2002.

In 2007, he became a member of the House of Lords and was appointed Parliamentary Under-Secretary of State at the Department of Health. After leaving his role in central government in 2009, Professor Darzi sat as the UK's Global Ambassador for Health and Life Sciences until March 2013.

Professor Darzi was appointed a member of Her Majesty's Most Honourable Privy Council since June 2009. In September 2013 he was appointed to lead a new clinically-led London Health Commission, which will conduct an evidence-based investigation into healthcare provision and resources for Londoners. MEH

Businesses, universities get seed funding

Earlier this year the the UK's Technology Strategy Board (TSB) and the Medical Research Council announced they would provide £47.2 million (US$76.3 million) to UK businesses and universities, through their jointly managed Biomedical Catalyst programme. The funding addresses the need for new and effective healthcare solutions for the growing and ageing UK population.

The awards were made to 43 small and medium-sized businesses (SMEs) and seven universities, as part of the £180 million Biomedical Catalyst programme. This is a key part of the Government's Strategy for UK Life Sciences. The scheme supports the translation of an idea from concept to commercialisation and a number of the projects being given funds in this initiative involve late-stage human trials of new healthcare solutions.

The total value of the projects in this second round, including private matched investment from the businesses, amounts to more than £78 million. Among the projects that won funding are: a novel drug for treating multiple sclerosis; the world's first clinical trial of a stem cell-based voice box transplant; an innovative low-cost implantable blood pump for advanced heart failure; gene therapy for a genetic visual disorder; and a new therapeutic approach to controlling the immune system in infectious disease.

Speaking at the funding event, David Willetts, the Minister for Universities and Science, said: "The Biomedical Catalyst is making a real impact by making sure that our innovative businesses in the UK are able to develop new products for the healthcare industry. Many great innovations often fall into the 'valley of death' between the creation of an idea and the market place. The Catalyst is helping the UK to bridge that gap, so that the best new ideas in healthcare can be transformed into innovative products and services."

Iain Gray, Chief Executive of the Technology Strategy Board, said: "The Biomedical Catalyst scheme is demonstrating the enormous scope for innovation in healthcare. New and innovative approaches to the challenges facing the health services in this country will help ensure that it meets the needs of UK citizens in the decades to come."

Professor Sir John Savill, Chief Executive of the MRC, said: "The awards bring the total invested through the Biomedical Catalyst so far to almost £100m. This substantial support will bring academic researchers together with UK SMEs to work towards a common goal – improving the health of the nation and changing lives through medical research."

The programme is already delivering

results. With support from the Biomedical Catalyst, companies who were successful in securing awards in Round 1 have been able to attract further significant funding from the private sector. London based Bio-Moti, who secured a Feasibility Award in Round 1 for their work on ovarian cancer treatments, announced an initial private finance round of £150,000 under the Seed Enterprise Investment Scheme (SEIS). Glide Pharma secured an additional £14m in a round led by Invesco Perpetual following their Early Stage Award for work on a treatment for osteoporosis.

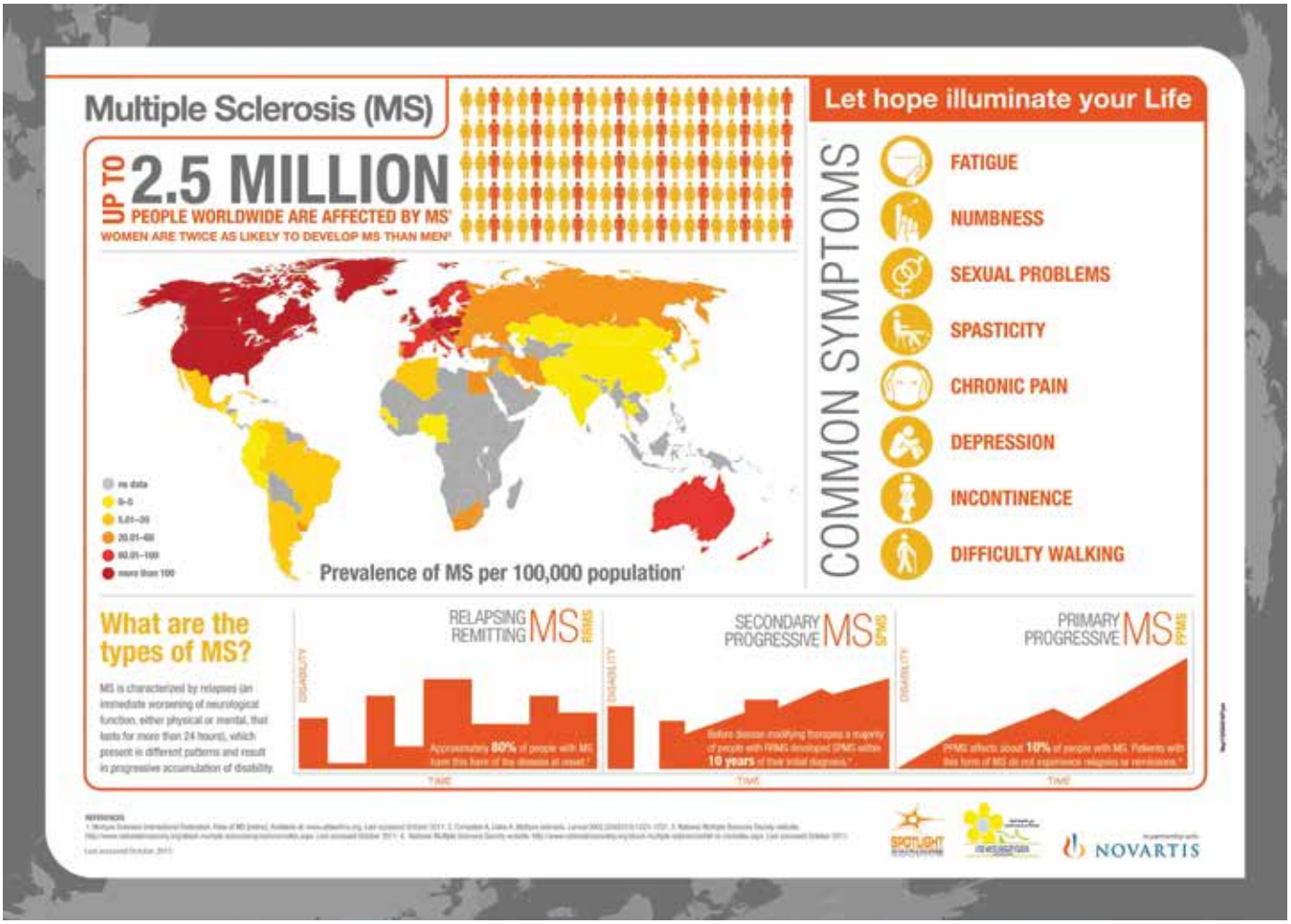
Some of the projects funded include:

Business-led projects

- Indigix Ltd (an Imperial College London spin out) will be using their Feasibility Award of £150,000 (project value of £200,000) to develop a new dimmer-switch like drug for the immune system which has the potential to treat life threatening infectious diarrhoeal diseases. The drug reduces the cytokine response just like a dimmer switch reduces the brightness of a bulb enabling the reduction of cytokines to levels that are helpful rather than harmful to the human body.
- Advanced heart failure is a large and growing healthcare challenge. Calon Cardio-Technology Ltd will be collaborating with Swansea University on the development of an innovative low-cost implantable blood pump to treat this condition using an Early Stage Award of £1.7m (project value of £2.6m).
- A £1.3m (project value of £1.9m) Late Stage Award will enable the first clinical studies of a novel drug for the treatment of Multiple Sclerosis to be conducted by Canbex Therapeutics Ltd working in partnership with University College London and Queen Mary University London. The drug was originally discovered from research conducted at UCL and this project builds on work conducted with a Wellcome Trust Translational Award leveraging additional investment by UCL Business.

Academic-led projects

- Professor Martin Birchall and colleagues at the UCL Ear Institute have been awarded £2.8m through the Biomedical Catalyst to allow them to carry out the world's first clinical trial of a stem cell based voice box transplant. The ultimate goal is to produce a safe and effective therapy suitable for routine NHS use, resulting in improved quality of life for patients and carers.
- Researchers at the UCL Institute of Ophthalmology have been awarded £2.1m to conduct the first ever clinical trial of a gene therapy for cone cells, to treat a severe visual disorder called achromatopsia. If successful, the trial could not only lead to an effective new treatment for this condition, but also pave the way for gene therapy as a treatment for a wide range of sight problems. MEH



2.5 million people live with MS

By **Dr Suzan Noori**

Multiple sclerosis (MS) is an immune-mediated inflammatory disease that attacks myelinated axons in the central nervous system, destroying the myelin and the axon in variable degrees and producing significant physical disability within 20-25 years in more than 30% of patients. In most cases, the disease follows a relapsing-remitting pattern (approximately 85% of cases), with short-term episodes of neurologic deficits that resolve completely or almost completely. A minority of patients experience steadily progressive neurologic deterioration.

The cause of MS is not known, but it likely involves a combination of genetic susceptibility and a presumed nongenetic trigger (e.g. viral infection, low vitamin D levels) that together result in a self-sustaining autoimmune disorder that leads to recurrent immune attacks on the CNS.

Geographic variation in the incidence of MS supports the probability that environmental factors are involved in the etiology. The incidence of the disease is lower in the equatorial regions of the world than in the southernmost and northernmost regions.

A controversial hypothesis proposes a vascular rather than an immunologic cause for some cases of MS. The CCSVI hypothesis posits that stenosis of the main extracranial venous outflow pathways results in compromised drainage and a high rate of cerebral venous reflux and iron deposition in the brain parenchyma. Given the paucity of supporting evidence, most MS experts question the CCSVI hypothesis.

Worldwide, approximately 2.5 million people are affected by MS. As is true of autoimmune diseases in general, MS is more common in women. The female-to-male

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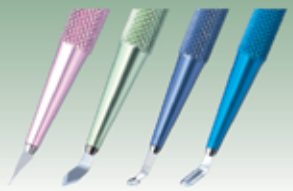

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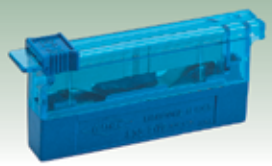

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ratio of MS incidence is 3 to 1. MS is usually diagnosed in persons aged 20-50 years; however, it can occur in persons of any age. An estimated 8,000-10,000 children under the age of 18 also live with MS. The average age at diagnosis is 29 years in women and 31 years in men.

Diagnosis

MS is diagnosed on the basis of clinical findings and supporting evidence from ancillary tests. Tests include the following:

- Magnetic resonance imaging(MRI) of the brain and spine: The imaging procedure of choice for confirming MS and monitoring disease progression in the CNS
- Evoked potentials: Used to identify subclinical lesions; results are not specific for MS
- Lumbar puncture and cerebrospinal fluid examination (CSF): May be useful if MRI is unavailable or MRI findings are nondiagnostic; CSF is evaluated for oligoclonal bands and intrathecal immunoglobulin G (IgG) production

Traditionally, MS could not be diagnosed after only a single symptomatic episode, as diagnosis required the occurrence of repeat clinical attacks suggesting the appearance of lesions separated in time and space; however, recent guidelines allow diagnosis of MS even with a first clinical episode as long as ancillary tests support separation of lesions in time or space.

Signs and symptoms

Attacks or exacerbations of multiple sclerosis (MS) are characterized by symptoms that reflect central nervous system (CNS) involvement. The sine qua non of MS is that symptomatic episodes are "separated in time and space" – that is, episodes occur months or years apart and affect different anatomic locations. In addition, the duration of the attack should be longer than 24 hours.

Additionally, it is important to recognize that the progression of physical and cognitive disability in MS may occur in the absence of clinical exacerbations.

Classic MS symptoms are as follows:

- Sensory loss (ie, paresthesias) - Usually an early complaint
- Spinal cord symptoms (motor) - Muscle cramping; weakness & spasticity
- Spinal cord symptoms (autonomic) - Bladder, bowel, and sexual dysfunction
- Cerebellar symptoms - Charcot triad of dysarthria, ataxia, and tremor.
- Optic neuritis (ON) characterized by loss of vision (or loss of color vision) in the affected eye and pain on movement of the eye; can be the first demyelinating event in approximately 20% of patients. ON develops in approximately 40% of MS patients during the course of their disease.
- Heat intolerance, may result in blurring of vision (Uhthoff sign), usually in an eye previously affected by ON
- fatigue (which occurs in 70% of cases) and dizziness; fatigue must be differentiated from depression (which may, however, coexist), lack of sleep, and exertional exhaustion due to disability
- Pain – Occurs in 30-50% of patients at some point in their illness
- Subjective cognitive difficulties – With regard to attention span, concentration, memory, and judgment
- Depression – A common symptom
- Euphoria – Less common than depression

Management

Treatment and management of multiple sclerosis should be targeted toward relieving symptoms of the disease, treating acute exacerbations, shortening the duration of an acute relapse, reducing frequency of relapses, and preventing disease progression.

Drugs approved for use in MS that reduce the frequency of exacerbations or slow disability progression are referred to as disease-modifying drugs (DMDs). The DMDs currently approved for use by the US Food and Drug Administration (FDA) include the following:

- Interferon beta-1a
- Interferon beta-1b
- Glatiramer acetate
- Natalizumab has a black-box warning for progressive multifocal leukoencephalopathy (PML). Because of the risk of PML, natalizumab is available only through a special restricted distribution prescribing.
- Fingolimod
- Teriflunomide
- Dimethyl fumarate

Treatment of acute relapses is as follows:

- Methylprednisolone can hasten recovery from an acute exacerbation of MS
- Plasma exchange (plasmapheresis) can be used short term for severe attacks if steroids are contraindicated or ineffective

The following agents are used for treatment of aggressive MS:

- High-dose cyclophosphamide has been used for induction therapy
- Mitoxantrone is approved for reducing neurologic disability and/or the frequency of clinical relapses in patients with SPMS, PRMS, or worsening RRMS

Prognosis

If left untreated, more than 30% of patients with MS will develop significant physical disability within 20-25 years after onset. Several of the disease-modifying agents used in MS have slowed disability progression within the duration of research trials.

Male patients with primary progressive MS have the worst prognosis, with less favorable response to treatment and rapidly accumulating disability. The higher incidence of spinal cord lesions in primary progressive MS is also a factor in the rapid development of disability.

Life expectancy is shortened only slightly in persons with MS, and the survival rate is linked to disability. Death usually results from secondary complications (50-66%), such as pulmonary or renal causes, but can also be due to primary complications, suicide, and causes unrelated to MS.

The Author

Dr Suzan Noori is a consultant neurologist at Rashid Hospital Dubai. She is a member of the Royal College of Physicians in the UK and a collegiate member of the Royal College of Physicians in London. She is a Multiple Sclerosis certified specialist (USA) and she earned a postgraduate certificate in Multiple Sclerosis practice from Leeds Metropolitan University in UK. She earned an MBBS and MD from the University of Khartoum. She is licensed by the Dubai Health Authority , MOH and the General Medical Council in Sudan. Her special interests include Multiple Sclerosis, therapeutic use of botulinum toxin injections for spasticity and dystonia, Intrathecal (IT) Baclofen pump therapy refilling and programming for treatment of spasticity. MEH

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The changing role of hospital CIOs

Why the need to articulate their strategy has now topped their priority list

In today's ever-evolving healthcare landscape, hospital CIOs can no longer afford to simply serve as order-takers who fulfill requests in support of clinical or business operations; instead, a report from Booz & Company, argues that they must focus on developing a clear IT strategy to improve patient outcomes and efficiencies.

Today, hospitals and health systems worldwide are facing a plethora of challenges; these include aging populations, evolving disease profiles, increasing demand by patients for quality care, mounting cost pressures and an uneven distribution of expert resources. In addition, healthcare delivery is shifting from a focus on specific health episodes to a continuum approach, with a greater emphasis on education and prevention. Luckily, however, technol¬ogy may hold the key to addressing many of these seemingly overwhelming changes. In effect, the adoption of IT and IT-enabled medical equipment can radically improve the quality of care and create greater operational efficiencies.

According to management consulting firm Booz & Company, to capitalize properly on such potential, hospitals will need to undergo a significant transformation. This begins with the development of a clear, holistic IT strategy that is aligned with the organization's clinical practices and overall operating model. And, of course, the hospital CIO should be the driving force behind this approach.

The changing face of healthcare delivery

Now more than ever, the inevitable spread of technology in hospitals – and its strong potential to improve care, reduce costs, and streamline operations – is spurring CIOs to become entrepreneurs and strategic enablers for the enterprise, and so, move beyond their former role as mere providers of services. After all, CIOs have the technical expertise needed, and their positioning within the organization gives them visibility across functions and between clinical operations and business operations.

"In this new role, CIOs can be far more proactive and innovative," says Ramez T. Shehadi, a Partner with Booz & Company, leading the firm's Digitization platform. "They can educate their colleagues about new technologies. Moreover, at a fundamental level, they can shape the IT agenda for the overall organization, choosing platforms and systems that will ultimately lead to better outcomes and improved business performance."

This is a considerable shift from the traditional role CIOs have played within hospitals and provides them with a significantly expanded mandate. Indeed, traditionally, the CIO fulfilled requests from clinicians, administrators, and the hospital board, and kept the IT function running as a second-line support service for the overall organization.

Ramez T. Shehadi

Jad Bitar

Dr Walid Tohme

Challenges to overcome

In the notoriously non-nimble hospital environment, real change does not come easy. Developing a transformative IT agenda is a sizable challenge for several reasons. First, CIOs are not starting from a blank slate and hospitals are often bound by existing commercial relationships with IT vendors and providers. Hospitals currently have a wide range of existing hardware, software, and medical devices – along with legacy clinical and business systems.

"Many of these systems function, in effect, in silos and are not interoperable, which prevents CIOs from designing a more integral system that can better meet their hospitals' specific IT needs," explains Jad Bitar, a Principal with Booz & Company. "Replacing those systems is also not a realistic option in many cases because of vendor contracts that lock hospitals into agreements, along with potentially high switching costs."

In addition to such internal constraints, the external environment has a profound impact on how hospitals can or need to operate. For example, in the U.S., the Obama administration in 2009 introduced a stimulus package of around US$20.6 billion in financial incentives for healthcare organizations to shift to electronic medical records (EMRs) for Medicare and Medicaid patients. This had an immediate impact, as CIOs quickly reached out for these grants and implemented EMR systems. Such regulations will likely continue to evolve, creating a moving target for hospital CIOs.

Third, data storage is a growing challenge, thanks to the increasing digitization of medical information, via technologies such as EMR and Picture Archiving and Communications Systems (PACS). Regulations at the national level, supervisory agencies, and hospitals' own legal teams typically mandate keeping electronic documents and records, including emails, for periods ranging between 7 to 10 years – if not indefinitely. The proper retention of this data allows healthcare organizations to perform complex analytics that improve preventive care, treatment, and operations.

The last – and perhaps most significant – challenge is that strategy development has

traditionally represented only a small component of the CIO's realm of responsibility. Instead, IT departments are generally tailored to handle operations, with limited skills pertaining to IT planning and management.

"These are sizable issues, but the oppor¬tunities are correspondingly large," states Dr. Walid Tohme, a Principal with Booz & Company. "Technology's impact may be even greater on healthcare than on other industries because of its potential to vastly improve patient outcomes and healthcare operations. It can increase efficiency, reduce costs and save lives."

Although advances come faster than many organizations can keep up with, CIOs that can get ahead of these advances will give their organizations a clear competitive advantage.

Formulating the strategy

For hospital CIOs embarking on such a transformation program, a hospital IT strategy and a master plan are critical to set the path and ensure proper guidance during the execution phase.

"The key is to get it right from the start," says Shehadi. "This is because the initial moves in any transformation are always the most important and they have considerable influence over what is a multiyear process. It is precisely at this point that planning errors can have tremendous long-term effects on delivery and the budget."

Bitar echoes that statement, adding: "Correctly formulating the strategy means more than defining IT goals and building blocks to support the transformation. It is also about rallying support inside the organiza¬tion and then building the neces¬sary momentum to take the hospital through the often difficult first steps."

Similarly, the strategy formulation pro¬cess accurately defines the manpower and financial resources needed for the transformation. The CIO can use the strategy as a tool to communicate with the hospital leadership to rationalize the necessary investment and effort, and obtain the board's endorsement.

Finally, by providing clear and mea¬surable objectives along with resource requirements and critical milestones, the strategy helps the CIO to foster an environment of accountability in which all stakeholders are aware of the hospital's IT path forward, the challenges ahead, and what is expected of each of them.

The "BOOST" approach

According to Booz & Company, successful CIOs use five key principles while drafting a strategy, which together make up the "BOOST" approach.

"By adopting these five principles, the CIO will establish a solid foundation and manage competing priorities and risks from the earliest phases of the project," says Tohme.

The "BOOST" approach:

- **B – Determine the Baseline**

The CIO must start by assessing the current baseline of IT capabilities across the organization, in terms of technology, organization, processes, and governance. By identifying legacy applications and suboptimal practices, the CIO can pinpoint what must be amended and what must be changed. In particular, the CIO should isolate pain points that prevent a close alignment between business and clinical requirements.

- **O – Align with Business Operations**

Traditionally, both clinical and business users in a hospital complain that IT is not aligned with their needs. During this transformation process, the CIO must avoid this pitfall by engaging with operations early on in order to better understand the specific requirements from administrators and clinicians. With this understanding, the CIO can tailor the IT strategy to their needs and ensure that it is properly aligned with the hospital's overall operating strategy.

- **O – Build up Organizational Capability**

Transformations that rely on only technology and do not consider other organization elements are doomed to fail. A CIO can respond fully to users' needs, install the best IT solutions, and then find that neither the IT department nor the business users can handle the flurry of technology-driven changes. By comparison, effective CIOs are able to innovate beyond technology, by understanding the inevitable impact that the process has on an organization, its operating model, and its business processes. The right approach ensures that a sufficient organizational structure is in place to support the delivery of IT services after the transformation is complete. It also establishes sufficient governance to properly align IT, clinical, and business functions, along with a proper management of risk. Last, this approach creates processes that allow the IT department to ensure a high level of consistency and repeatability in its activities.

- **S – Create a Strategic Implementation Office**

IT transformation can be a wrenching, disruptive experience. It is a long-term endeavor that proceeds through a series of often challenging implementation phases. To smooth the path, the CIO should establish a Strategic Implementation Office (SIO), a robust governance mechanism that ties all the ends together, and that keeps the IT change program coherent and on track. The SIO augments traditional project management capabilities with strategic thinking and strong functional skills that can be applied throughout a project life cycle.

- **T – Track Costs during and after Implementation**

This type of IT transformation requires a budget, and the CIO needs to guide the hospital board through the process of paying for the transformation during design, implementation, and beyond. A customized implementation plan will help provide the board with a forecast of how much it will cost to reach the target.

To conclude, IT transformations within hospitals are complex and potentially disruptive, entailing risks from a governance and technology standpoint. To mitigate those risks, CIOs need to develop a comprehensive IT strategy that ties in all the loose ends and presents a consistent playbook that they can always have on hand. For every CIO facing these challenges, the time to develop this playbook is now. Although strategy development is not within the typical CIO mandate, the BOOST approach offers guidance to achieve it. Properly defined, the playbook will prevent the transformation from being derailed by ad hoc operational crises, and thus keep the organization on track to achieve its long-term goals. MEH

About Booz & Company

Booz & Company is a leading global management consulting firm focused on serving and shaping the senior agenda of the world's leading institutions. The founder, Edwin Booz, launched the profession when he established the first management consulting firm in Chicago in 1914. Today, as the company approaches their 100th anniversary, they operate globally with more than 3,000 people in 57 offices around the world.

The company believes passionately that essential advantage lies within and that a few differentiating capabilities drive any organization's identity and success. They work with their clients to discover and build those capabilities that give them the right to win in their chosen markets.

Booz & Company is a firm of practical strategists known for their functional expertise, industry foresight, and "sleeves rolled up" approach to working with their clients. To learn more about Booz & Company or to access their thought leadership, visit *booz.com/me*. The Ideation Center, Booz & Company's leading think tank in the Middle East, is available at *ideationcentre.com*.

Notes from the European Society of Cardiology Congress 2013

By Dr. Mary Ellen Kitler

The European Society of Cardiology (ESC) represents more than 80,000 cardiology professionals in Europe and around the world. The ESC mission is to reduce the burden of cardiovascular disease in Europe. Education and lifelong learning are important for the ESC mission. See the website, *www.learn.escardio.org*, for information about the ESC eLearning Platform.

Professor Keith Fox, Chairman of the Congress Program Committee

The annual ESC congress was held in Amsterdam, The Netherlands from 31 August to 4 September 2013. The congress theme was, "The heart interacting with systemic organs". The clinical reality is that cardiovascular disease does not exist in isolation, but that the heart interacts with other organs, which explains the spotlight of the 2013 congress. The organs implicated include the lungs, the brain, the kidneys, the gastrointestinal systems and the reproductive systems. Professor Keith Fox, Chairman of the Congress Program Committee, emphasized that despite major advances, cardiovascular disease remains the number one killer in Europe. Professor Panos Vardas, President, ESC, noted that cardiovascular disease kills 1.9 million European citizens in the 27 member states, costs the European Union €195.5 billion annually, and accounts for more than 10% of the total healthcare costs in the European Union.

There were 29,990 participants from approximately 150 countries, such as Brazil, Canada, Egypt, India, Iraq, Japan, Poland, and the Netherlands. The ESC selected 4,225 abstracts for presentation from the 10,491 abstracts submitted. The congress had approximately 400 ESC sessions, 70 industry-sponsored sessions, 33 joint sessions with sister societies, and 70 company exhibitions. The Amsterdam newspaper called this ESC congress, "The Olympics of Cardiology".

The 2013 ESC Clinical Practice Guidelines

The ESC released four new clinical practice guidelines at the congress. The Guidelines on the Management of Stable Coronary Disease clearly defines which patients should receive CT angiography, so that this technique is not overused. This 2013 guideline gives more prominence to new imaging techniques, such as cardiovascular magnetic resonance (CMR) and coronary computed tomography (CT) angiography in the diagnosis of coronary artery disease in patients with stable chest pain.

The ESC and the European Association for the Study of Diabetes jointly produced the Guidelines on Diabetes, Pre-Diabetes and Cardiovascular Diseases. These guidelines introduce glycated hemoglobin (HbA1c) for the diagnosis of diabetes. Cardiovascular risk assessment has been simplified. Drugs are assessed with blood pressure targets.

The Guidelines on Cardiac Pacing and Cardiac Resynchronization Therapy emphasizes a practical how-to-approach. These guidelines have a new classification system for bradyarrhythmias according to mechanisms rather than according to etiology. These 2013 guidelines lead the clinician through a series of several questions.

The ESC and the European Society for Hypertension produced the Guidelines for the Management of Arterial Hypertension, which redefine the approach to diagnosing and treating hypertension. The guidelines have several revised definitions of hypertension, which will significantly affect diagnosis, and have updated recommendations on how to treat hypertension, with more emphasis on drug selection.

- The *ESC Pocket Guidelines App* for Apple and Android mobile devices are free for all users worldwide.

Under dagnosis of Myocardial Infarction in women

Dr. Nicholas Mills, Royal Infirmary of Edinburgh, Scotland, UK, presented the lecture, "High-sensitivity cardiac troponin and the under diagnosis of myocardial infarction in women". The high-sensitivity cardiac troponin assay has a coefficient of variation of less than 10% at the 99th percentile upper reference limit and the troponin is detectable in more than 50% of the reference population. The aim of the clinical trial was to determine whether lowering the diagnostic threshold for myocardial infarction using a high-sensitivity cardiac troponin I assay will improve outcomes in patients with suspected acute coronary syndromes (See the website, *clinicaltrials.gov*, and number NCT01852123). The trial evaluated the impact of sex-specific diagnostic thresholds for myocardial infarction in men and women with suspected acute coronary syndrome. The trial conclusion was that the use of contemporary troponin assays with a single diagnostic threshold contributes to the under diagnosis of myocardial infarction in women and to sex inequalities in the investigation and treatment of myocardial infarction. Women with small increases in troponin identified using the high-sensitivity assay, are at high risk of reinfarction and death. Therefore, Dr. Mills recommended the use of sex-specific diagnostic thresholds. Implementation of a high-sensitivity troponin I assay with sex-specific thresholds would increase the diagnosis of myocardial infarction in women (from 13% to 23%) with little effect in men (from 23% to 24%).

Temperature is important to cardiovascular disease risk

For the readers, it is important to realize that the two lectures described below were presented by professors from Europe, where winter normally has cold temperatures.

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Professor Marc Claeys, University of Antwerp, Belgium, presented the lecture, "Environmental triggers of acute myocardial infarction: does air pollution matter?" The multifactorial study of 15,964 acute myocardial infarction patients in 32 Belgian percutaneous coronary intervention centers during 2006 to 2009 did not detect a relationship between air pollution and acute myocardial infarction. Multivariate analysis showed that temperature was significantly correlated with acute myocardial infarction. Further analysis showed that the triggering effect of low temperature was also present outside the winter period. Apparently, small differences in temperature between the inside and outside can precipitate acute myocardial infarction. This finding shows that the risk is not due to a pure cold temperature effect, but is due to absolute changes in temperature. Professor Claeys stressed that people at risk of acute myocardial infarction, such as elderly patients with diabetes and/or hypertension, can minimize their risk by avoiding large changes in temperature. In reality, everyone should wear suitable clothes when going from the warm indoors to the colder outdoors, even when it is not winter.

Professor Pedro Marques-Vidal, Institute of Social and Preventive Medicine, University of Lausanne, Switzerland presented the lecture, "Seasonality of cardiovascular risk factors: an analysis including over 100,000 patients in seven countries". The European Association for Cardiovascular Prevention and Rehabilitation (EACPR) organized the study. The investigators pooled data on body mass index, waist circumference, systolic blood pressure, diastolic blood pressure, total cholesterol, HDL cholesterol, LDL cholesterol, triglycerides and glucose from 10 population-based studies. The investigators performed multivariate adjustments for age, gender, current smoking, and obesity. The risk factors, which showed definite winter increases, included systolic blood pressure, diastolic blood pressure, and waist circumference. Professor Marques-Vidal stressed that during the period when the temperature is low, cardiovascular disease prevention is important and it is necessary to strengthen emergency resources during periods of cold temperature.

A good night's sleep

Most cardiologists agree that it is important that a patient has a good night's sleep.

The team at Heart for Children

However, a common complaint is that a patient feels tired when he wakes up.

A cardiologist must obtain accurate information about how well the patient is sleeping. Normally, the cardiologist sends the patient to a sleep laboratory at a hospital. The patient sleeps in the laboratory with many leads attached to him. Needless to say, the procedure is expensive and many patients cannot sleep well in the unfamiliar setting.

NeuroVigil, San Diego, California, has developed the iBrain as an alternative to expensive sleep laboratory evaluations. The iBrain is a cutting edge single channel EEG recording device that is easy to use, is comfortable, is portable and allows for more efficient and user friendly data collection. It is non-invasive and has wireless technology. The iBrain itself is small, i.e., approximately 5 cm by 7 cm. The patient wears the iBrain in an elastic head harness and sleeps in his own bed. All the data is stored in the iBrain when the patient is wearing the iBrain. Using the internet, the stored data is sent to NeuroVigil for analysis. NeuroVigil can analyze the data in a few minutes using their algorithms. The analysis will tell the cardiologist how well the patient slept.

on the WEB NeuroVigil
www.neurovigil.com

The European Heart for Children

The European Heart for Children continues its capacity-building humanitarian mission. The aim of the organization is to build capacity in under-served countries, so that in the future, the local medical community can solve their problems by themselves. The leaders of the EHC stress that the EHC must not to be an organization that arrives with experts, solves the problems, and then leaves with the result that the local physicians do not know how to proceed when the problem arises again. Recently, the EHC collaborated with the Magdi Yacoub Heart Foundation at the Aswan Heart Centre in Egypt. The EHC supplied ECHO equipment to the Centre and financing for local cardiologists to study techniques for ECHO in the UK. In the future, the EHC will send physicians from Africa to the Aswan Heart Centre to learn ECHO techniques. Volunteers for field missions and financial support are encouraged.

on the WEB European Heart for Children
www.europeanheartforchildren.org
email: *info@europeanheartforchildren.org*

European Society for Cardiology Congress 2014

The next ESC congress will be held in Barcelona, Spain from 30 August 2014 to 3 September 2014. Abstracts for the congress can be submitted from mid-December 2013 to 14 February 2014.

on the WEB ESC Congress
www.escardio.org

The author

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New Oral Anticoagulants provide improved efficacy and safety in treatment of patients with Atrial Fibrillation and Acute Coronary Syndrome

By Callan Emery

Middle East Health was invited to a media roundtable organised by Bayer at the European Society of Cardiology (ESC) Congress in Amsterdam in September. Titled – From Trials to Practice: Management of Arterial Thrombosis – the session saw several of the world's leading experts in the field, discuss arterial thrombosis, its epidemiology and look at the history of treatment with a focus on a set of new medications which has shown a marked improvement in efficacy and safety – specifically in the treatment of patients with Atrial Fibrillation and Acute Coronary Syndrome.

Venous and arterial thromboembolism (VAT) occurs when some or all of a blood clot becomes loose and is moved by the blood stream to block a vein or artery which can result in stroke, heart attack, pulmonary embolism (PE), or in some cases can cause death. In fact, more people die from blood clots than from AIDS, breast cancer, prostate cancer and road traffic accidents combined.

VAT encompasses two serious conditions - VTE (venous thromboembolism), which includes pulmonary embolism and deep vein thrombosis (DVT); and Arterial Thromboembolism, which includes stroke and heart attack.

Speaking at the roundtable, Professor The Lord Kakkar of the Thrombosis Research Institute in London, UK, explained that of the 57 million deaths each year 13% were due to Coronary Artery Disease, 12% Cancer and 10% stroke. "So nearly a quarter of all deaths are due to thromboembolism," he emphasised.

He said that thrombosis can be either acute or chronic and pointed out that after the first acute event, the patient is at a high risk of recurrent VTE.

"The European Union has a population of 454 million people. We can expect about 500,000 deaths from VTE per year," he stated.

"Even with current management techniques, up to 20% of patients will suffer another event within three years."

He noted that people with atrial fibrillation are at greater risk of a thromboembolism. "Research shows that 25% of people over 40 years of age will get Atrial Fibrillation. People with Atrial Fibrillation have a five times greater risk of suffering a thromboembolic event, such as stroke."

He pointed out a couple of examples of the huge economic burden of VAT, saying that in the United States, some $1.5 billion is spent on DVT alone. In the EU, the annual cost of stroke is Euro 38 billion.

The panel explored the importance of delivering optimal management in two specific populations at high risk of arterial thrombosis – patients with Atrial Fibrillation and patients with Acute Coronary Syndrome.

Patients with Atrial Fibrillation

Patients with AF need protection from stroke as they are at much greater risk of having a stroke. Long-term stroke protection includes: 1. Lifestyle modification, such as correct diet, stopping smoking and exercise; 2. Pharmaceuticals, such as aspirin and warfarin; Interventions, such as cardioversion and catheter ablation.

Looking specifically at the pharmaceuticals, people at risk of stroke or patients who have suffered a thromboembolic event, have traditionally been treated with Vitamin K antagonists (VKAs) such as warfarin, which have been around since the 1950s, however there is now a new class of drugs on the market called Oral Anticoagulants or OACs, such as rivaroxaban, that have been shown in several recent trials to offer better efficacy, safety and patient convenience / compliance.

Speaking at the session, Professor Alexander Turpie of McMaster University in Hamilton, Ontario, Canada, supported this, saying: "Traditional therapy with VKAs makes effective anticoagulation harder than it needs to be and can often leave the patient unprotected. Recent data from the GARFIELD real-life registry supports this, showing that only 24.5% of those patients treated with VKAs were well-controlled and 40% of those patients eligible for anticoagulation were not receiving treatment."

For most AF patients, VKAs are no longer the recommended option for stroke prevention. ESC Guidelines for the management of atrial fibrillation (updated August 2012) recommend rivaroxaban and other novel OACs as broadly preferable to VKAs in the vast majority of patients with non-valvular AF, stating that novel OACs offer better efficacy, safety and convenience. VKAs are associated with significant drawbacks that challenge optimal patient treatment, including the slow onset of action, need for routine coagulation monitoring and frequent dose adjustments, and many food and drug interactions.

For people with AF, once-daily rivaroxaban offers highly effective protection against stroke without the need for routine coagulation monitoring. In general, a once-daily dosing regimen has been shown to be preferred by patients and is associated with improved patient adherence compared to regimens with higher dosing frequency.

Prof Kakkar said: "Many doctors are still prescribing warfarin, although the new OACs are safer, more effective and easier.

"Novel OACs are a better tool, but doctors need to be thorough when administering the drug and switching patients from the older medication to this novel medication.

"With the novel OAC there is considerably less bleeding, particularly bleeding into the brain. Studies show a reduction by

up to 50%. So the new drug is particularly good for older patients when bleeding into the brain is more dangerous," he said.

Patients with Acute Coronary Syndrome

Speaking at the Media Roundtable, Professor Robert C. Welsh of Mazankowski Alberta Heart Institute University of Alberta, Edmonton, Alberta, Canada explained: "Acute Coronary Syndrome (ACS) is a common and life-threatening condition which occurs when a coronary artery is blocked by a blood clot reducing blood supply to the heart, thereby causing a heart attack."

ACS is common in adults, more frequently occurring in people over the age of 50 years. Typically, it occurs in people who are overweight with high blood pressure and diabetes mellitus. As with Atrial Fibrillation, ACS becomes more common with increasing age.

"There are 2.5 million ACS cases diagnosed annually," Prof Welsh noted. "It is the most common cause of death in the EU, with 741,000 deaths annually."

Studies show that following an ACS, one in 10 patients will have another major atherothrombotic event, such as heart attack or stroke, within a year.

"The majority (68-97%) of deaths related to ACS occur after hospital discharge," Prof Welsh pointed out.

The current standard of care for long-term secondary prevention of ACS is antiplatelet therapy alone, as well as lifestyle modification such as exercise, weight loss and smoking cessation.

However, improved protection is seen with dual treatment – when rivaroxaban is used in combination with standard antiplatelet therapy.

Complementary modes of action of antiplatelets and anticoagulants is found to provide more complete protection in long-term ACS clot formation. – (Hamm CW et al. Eur Heart J. 2011;32:2999-3054).

In May this year the European Medicines Agency approved rivaroxaban 2.5 mg twice daily in combination with standard antiplatelet therapy as the only novel OAC available for the secondary prevention of ACS in patients with elevated cardiac biomarkers.

Prof Welsh noted that the approval is based on the positive efficacy and safety profile of rivaroxaban 2.5 mg twice daily in combination with standard antiplatelet demonstrated in the pivotal, Phase III ATLAS ACS 2-TIMI 51 study. (N Engl J Med 2012; 366:9-19. Jan 5, 2012. doi: 10.1056/NEJMoa1112277).

Also, ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation (August 2012) recommend the use of rivaroxaban 2.5 mg twice daily in specific STEMI patients. (Steg G, et al. Eur Heart J. 2012. doi: 10.1093/eurheartj/ehs215).

A paradigm shift in treatment

Prof Samuel Z. Goldhaber, Brigham and Women's Hospital, Harvard Medical School, Boston, USA, pointed out that this novel OAC is a "major landmark advance" in treatment for stroke prevention in patients with AF and for patients with ACS.

He noted that up until four years ago there had only been one anticoagulant – warfarin - introduced in the 1950s. In the past four years, four new anticoagulants have been introduced.

"There now exists a major new treatment to prevent CAD and CVD like never before."

> Novel OACs are a better tool, but doctors need to be thorough when administering the drug and switching patients from the older medication to this novel medication.

He stressed it is now important for doctors and patients to be aware that there are alternatives to warfarin.

He noted that rivaroxaban has multiple indications:

- Stroke Prevention in AF
- DVT Acute Treatment
- PE Acute Treatment
- DVT Extended Treatment
- PE Extended Treatment
- ACS: Decrease Recurrent MI, Stroke, Death
- Prevention of VTE: Hip/Knee Surgery

And has multiple advantages:

- Does not require preceding parenteral anticoagulation therapy such as LMWH
- Once daily in AF stroke prevention and short-term VTE prevention after orthopaedic surgery
- The shortest half life of all novel OACs, thereby enhancing safety
- Fixed doses by treatment indication
- Liberates the patient from dietary restrictions imposed by using warfarin
- Liberates the patient from spending time getting INR tested and waiting for the Anticoagulation Management Service to phone with INR result and dose adjustment
- Cuts in half the chance of ICH
- Streamlines educational process for clinicians re: pharmacology, metabolism, bleeding risk
- Allows hospital formularies to choose one NOAC for all thrombosis indications
- A patient may be prescribed rivaroxaban to treat or prevent one thrombotic disorder, and subsequently may require rivaroxaban for a different thrombotic disorder – enhanced familiarity with drug. MEH

The 10th Libya Healthcare Exhibition 2013

Roche Diagnostics focuses on HPV and cervical cancer

Roche Diagnostics Middle East (RDME) focussed on cervical cancer at this year's Libya Healthcare Exhibition, highlighting the importance of screening using the newest generation of HPV DNA tests to ultimately prevent the development of cervical cancer in women. This exhibition provided an excellent opportunity for RDME to raise the awareness of the positive medical value that the new HPV DNA tests offers to physicians and women in the region.

The 10th Libya Healthcare Exhibition, which was held on 10-12 September 2013, provided RDME an excellent platform to highlight the benefits its cobas HPV Test bring to cervical cancer screening and prevention. Advancement in the research of disease mechanism and the human papilloma virus (HPV) had enabled Roche Diagnostics to develop a fully automated cervical cancer screening test that detects the high-risk HPV genotypes that cause cervical cancer. There are more than 100 different types of HPV and 14 of them are known to cause cervical cancer. Out of the fourteen high-risk genotypes, HPV 16 and 18 are the most dangerous, contributing to 70% of cervical cancer cases worldwide.

Interest in HPV DNA testing as an important diagnostic tool in addition to the traditional PAP smears is growing. For many years Pap smear has been a cornerstone of detecting cervical pre-cancer by looking at cell morphology and irregularity, and has reduced mortality since its introduction in the 1940's. Despite that, cervical cancer remains a significant public health matter. Pap smear has low sensitivity, which could result in missed disease in women. A 'normal' Pap result does not always mean that the patient is cancer-free. It is possible for Pap smears to give false negative results, missing the presence of pre-cancer, allowing that to develop into cancer if remained undetected. False positives could also be problematic, causing anxiety and distress in women, as well as unnecessary interventions.

Whilst PAP cytology accurately detects anywhere between 34 percent to 80 percent of women with precancer, the new generation of HPV DNA tests provide an accuracy rate of 95 percent. According to the ATHENA study, (insert sensitivity / specificity data). The cobas HPV Test found 92% of cases of high-grade cervical precancer (≥CIN3) in the overall population compared to 53% found by Pap smear.

The cobas HPV test from Roche Diagnostics is the only clinically validated, CE-marked and FDA-aproved test that simultaneously detect all high-risk HPV genotypes as well as individual results for the most aggressive HPV genotype 16 & 18. It gives three results in one test, allowing doctors to stratify risks and identify women with the highest risk and require immediate intervention (women with HPV 16 / 18), as well as those with the lowest risk and can return for routine screening.

Nearly 1 in 7 women with normal Pap smear actually had HPV 16 and high-grade cervical precancer.

The stratification of patient risk is a major step forward for medical professionals because it gives them the ability to advise all patients of their HPV status and risk of developing cervical cancer with clarity and confidence. Professor Mohamed El-Mahaishi added, "Co-testing is preferred rather than using a Pap test alone.", a view shared by the American Cancer Society (ACS), the American Society for Colposcopy and Cervical Pathology (ASCCP) and the American Society for Clinical Pathology (ASCP). Their agreed recommendations for co-testing on evidence showing that adding an HPV test to Pap smear increases the detection of cervical pre-cancer and reduces the rate of the disease invasive cervical cancer, compared to using a PAP test alone.

The Roche ATHENA study for the cobas HPV Test is the largest U.S.-based registration study for cervical cancer screening, including more than 47,000 women. The study is designed to answer current medical and scientific questions about the importance of testing for high-risk HPV genotypes in cervical cancer screening and to provide clinical information about the specific HPV genotypes that place women at highest risk for developing cervical cancer. The new three-year follow-up data from the ATHENA study was published in the American Journal of Obstetrics & Gynecology in November 2012 by Cox et al. The results of the study show conclusively that women with HPV 16 and 18 are more at risk for developing cervical precancer and that cytology may not always detect cervical disease.

The fight against cervical cancer does of course have another front, that of vaccination. Vaccinations are designed to prevent HPV infection in girls. The vaccination is effective only when it is administered at a young age, before an HPV infection could be transmitted sexually. These vaccines are highly effective but are not designed to treat or protect women who have already been infected with the virus. A type-specific HPV vaccine is likely to reduce but not eliminate the risk of cervical cancer and more notably, the uptake of HPV vaccines means that clinically relevant lesions will become less common. That in itself makes cytological evaluations less effective. Such scenarios make objective DNA testing a far more viable strategy from a clinical standpoint.

Raising awareness of the importance of cervical cancer screening with HPV genotyping is one of the many tasks Roche Diagnostics committed to preventing the disease and saving lives. While HPV DNA testing is more important in women of age 30 and above, educating younger generations is a necessary step in prevention. Professor Mohamed El-Mahaishi reaffirmed the importance of awareness, "Working with ministries and healthcare institutes to educate the younger generation on testing is crucial in raising awareness of the testing facilities available to young girls. Here in the Middle East, awareness of testing cannot be compared to that of other regions but we need to be more proactive in improving awareness by working together." The ability for medical professionals to accurately identify women with the highest risk genotypes means that many more lives can be saved. Medical experts at Roche Diagnostics know that there is a specific need to focus on the awareness of cervical cancer screening in the Middle East and North Africa and the 10th Libya Healthcare Exhibition provided RDME with an excellent opportunity to place the issue of cervical cancer on the agenda. MEH

Philips Healthcare Clinical Education – Learning for Life

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We are dedicated to providing affordable, high-quality professional education to healthcare professionals. The Philips Learning Center provides continuing education (CE) approved and/or accredited self-directed learning activities by Recognized Continuing Education Evaluation Mechanisms (RCEEMs). Our education offerings are supported by the industry's leading academic institutions and accreditation organizations. That's why more than 300,000 medical professionals use the Learning Center for their continuing education needs.

We offer training at customer sites, our 3 main high-tech training facilities, online, and at 30 other Philips locations as well as third party institutes – when and where you need it, flexible and convenient. MEH

A fascination with babies

By **Leslie Morgan**, OBE
Managing Director Durbin PLC.
Leslie Morgan is a member of the Royal Pharmaceutical Society of Great Britain

Since the birth of Prince George, the British media seems to have become fascinated with babies and many suspect this will spark somewhat of a 'baby boom'. Throughout the world, however, there is a bigger concern regarding declining birth rates. Fertility rates in European countries such as Spain, Greece and the Republic of Ireland have fallen dramatically, and the Middle East is also experiencing a drop in population growth. So what are the reasons for this?

Many claim that the declining rates in the aforementioned European countries are partly due to the economic crisis, and it is hardly surprising. After all, fertility rates often drop in periods of financial stress. They dropped during the US Great Depression in the 1930's and in Russia in the early 1990's when the Soviet Union broke up.

Further afield, Iran's population surged during the last century but in recent years the rate of growth has slowed down, mainly as a result of the birth control policy. However, Iran's Supreme Leader Ayatollah Ali Khamenei, has now done something of a U-turn and ordered an end to the policy by calling for the population to reach 150m from the current 75m.

Mohammed Ismail Motlagh, who heads Iran's population programme, said that its main objective was to avoid producing single-child families. Approximately 150,000 health officials have since been deployed to visit married couples in their homes in an effort to persuade them to have more children.

Unfortunately for many though, getting pregnant is not so easy. According to a report by the WHO in 2010, fertility rates in all six Gulf countries dropped significantly between 1990 and 2008. The UAE, in particular, has one of the fastest declining birth rates in the world, falling from 5.7 children to less than 2 per family in the past 30 years.

The falling rates in the Middle East have been blamed on lifestyle diseases such as obesity and diabetes which have left many women with fertility problems. Polycystic Ovarian Disease has also increased among women as a result of obesity, poor diet and lack of exercise. But it's not just women who have health issues. The average sperm count among men has also halved in recent years, and this has also been blamed on poor lifestyle choices.

So what is being done to help these couples? Governments of Middle Eastern countries are opening up In Vitro Fertilisation (IVF) facilities at hospitals and a steady number of private IVF centres are also starting to appear. In February 2011, Emirates Hospital in Dubai became the first private clinic in the region to offer IVF treatment. The increase in private sector facilities was sparked by the UAE's decision to allow private healthcare companies to obtain licenses to practice.

Government and private hospitals in the Gulf are expected to open more IVF centres to cope with soaring demand for the treatment among infertile couples. Just a few months ago a new clinic opened in Abu Dhabi with the company behind it saying it is planning more facilities in the UAE and other countries in the GCC over the next few years. Fakih IVF offers treatments such as IVF, Intra-Cytoplasmic Sperm Injection, Natural Cycle IVF, Pre-implantation Genetic Diagnosis for recurrent miscarriages, genetic testing of hereditary diseases, male infertility treatment and preserving fertility in cancer patients.

Fertility clinics have already presented married couples with more options than they had a few years ago. An increase in education and literacy among women has also changed the way IVF is perceived and has helped to boost demand for the treatment. The social stigma once associated with IVF has all but disappeared. I've written before about the impact of obesity and the health related issues which come from it, and now that the problem is becoming more widespread, educating couples to make healthy lifestyle choices is key.

Taking care of your health is so important and now seemingly vital for the growth of our population. 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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An insight into mental healthcare for Syrian refugees

An interview with Dr Henrike Zellmann, a psychologist from Germany, who has been working with MSF in Domeez refugee camp in Iraq since August 2013

As part of its medical response to the Syrian refugee crisis, Médecins Sans Frontières (MSF) has been running a mental health programme providing psychological assistance to hundreds of patients in Domeez refugee camp in northern Iraq. Teams are seeing patients who have experienced traumatic events as a direct result of the war in Syria, or who are suffering because of the conditions they are faced with in the camp. Many were diagnosed with mental health disorders prior to the conflict and with their situation thrown into turmoil, they may have spent long periods without access to medication or care.

Dr Henrike Zellman sits with some of the Syrian refugees who MSF has been assisting.

MSF's mental health services in Domeez are open six days a week. A team of four counsellors provides between 70 and 100 sessions per week for individuals, families and groups. They work together with doctors, nurses and community health workers to detect, diagnose and provide comprehensive mental healthcare.

Dr Henrike Zellmann, a psychologist from Germany, has been working with MSF in Domeez refugee camp since August 2013. She works with a team of one Iraqi and two Syrian psychologists. She explains here how the mental health needs in the camp are growing, and how MSF's services are becoming increasingly crucial.

Worsening situation

In Domeez refugee camp, we are really seeing a situation that is getting worse in terms of mental health needs. People are extremely disillusioned. When they first arrived, they might have had some hope that the situation would last for a couple of months. Now, everybody realises that the situation is not getting better, and they do not know if or when it will end.

The mental health of the refugees is extremely fragile. There are many triggers that will cause their state of mind to quickly deteriorate: the living conditions they are forced to face on arrival to the camp, memories of the ongoing conflict in Syria, and the level of uncertainty about when the conflict will end, or if they can ever return to a normal life.

If you are living in a state of uncertainty, your psychological wellbeing is enormously affected. Refugees here are living in this state continuously. Right now, they don't have a lot of hope. There is no reason for them to hope that the situation will improve in the near future."

Severe mental disorders

We are seeing a lot of people who have more severe mental disorders, such as psychosis. With a heightened sense of futility among the refugee population, the complaints we are treating are far more complex. Although the trauma of war and inadequate living conditions won't be the sole cause for episodes of psychosis, it can certainly trigger it.

A couple of weeks ago, we had a woman come to our clinic who was displaying symptoms of delirium. She thought she was pregnant with 11 children. We were worried as she has three children, and we did not know what the situation was like for them at home. We went to visit her and saw that the conditions were adequate, and that she had a lot of support from her neighbours. We will monitor her case closely and encourage her to keep visiting us for the sessions. Stigma around mental health issues can be a big obstacle here, so it was great to know in this case that the community was showing solidarity with her.

When I see how the children here are affected, it is very difficult to imagine what they are going through. I have the feeling they are just losing time, that their years are being wasted. There is not much for the children here to do: many are still unable to go to school as there are not enough services in the camp. So they spend their days simply playing in the dust. Some have to find jobs to help support their families, and teenagers as young as 13 and 14 are working and are unable to continue their education.

Counselling sessions with children

When we do sessions with the children, it is important that we make them understand that their reactions are normal. They are living in a very abnormal situation, but they need to be aware that how they react is something that so many of their friends are also going through.

One of the most frequent symptoms we see in children is bedwetting. This is a condition that puts an extra burden on the parents who often do not know how to handle it. It can also increase tension in their relationships with the child, as the child may feel ashamed and embarrassed.

A 10-year-old boy came to see us because he was having this problem. He had come to Iraq a few months before and had been reunited with his family in the camp. We explained to him that what he was experiencing was normal, we gave him some advice on how to overcome it, and we assured him that it wasn't a big deal. It was so great to see his reaction and relief, and that just by talking so openly about the issue, he was able to overcome a lot of his embarrassment.

Invisible wounds

The mental health wounds are often so invisible to many, but our team is really seeing that these wounds are very deep. One of the main things we do is simply to give the patients time to express themselves. The patient and the counsellor work together to find ways to cope with the situation, to alleviate the symptoms, and to finally gain more control over their reactions. A lot do not want to burden their own family with their problems. Speaking to a non-family member in a confidential environment really does help.

Sometimes people arrive to the clinic in a very upset and traumatised state. They are crying or are just completely stressed out. We are able to provide a safe space for patients to express themselves, to work on their reactions, and to feel they are not abnormal, that they are not going crazy. As soon as the door is closed, we spend time with them, and we listen. Without being intrusive, together with the patient, we help them to heal. Although the wounds can heal, the suffering may not disappear. But if we can help them to find ways to better cope and deal with that suffering, then that is something. MEH

Harloff's new scope storage cabinet has HEPA filter

Harloff's newest medical storage product line helps streamline workflow in a hospital outpatient department, a clinic, an ambulatory surgery center, or a doctor's office.

The unique features of Harloff's large, high capacity scope cabinet (SC16DP) sets it apart from the competition. It features:

1. Unique HEPA filtration system to exceed AORN scope storage recommendations. This cabinet will dry scopes with clean air (largest complaint of most scope cabinet owners is lack of cleanliness). The HEPA filter captures up to 99.97% of particles.
2. Two door styles; tempered glass doors or tambour door made from foam filled aluminum slats.
3. Internal drawstring to assist in closure; helping staff to avoid strenuous overhead reach.
4. 16 Scope capacity, customizable as needed.
5. High quality, durable construction made with sturdy 18 gauge steel.
6. Sturdy frame and base.
7. Five-year international warranty

The storage cabinet is proudly manufactured in the USA.

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

Codonics Safe Label System reduces medication errors

Safe Label System (SLS) greatly reduces injectable medication errors common in the operating room. SLS simplifies and improves the safety and accuracy of syringe labelling, helping to eliminate vial and ampoule swaps, mislabelling, and syringe swaps.

SLS sits on your existing anaesthesia drug cart. When a drug is ready to be prepared, the clinician uses SLS to scan the vial or container. The drug is instantly verified against the pharmacy's drug database. SLS then speaks and visually displays the drug name and concentration to confirm the selection, acting as a second pair of eyes. A full-colour label is printed on demand and includes the drug name, concentration, preparer's initials, expiration time and a barcode. Once the syringe is prepared and labelled, it can be "triple-checked". Using SLS to scan the barcode on the syringe label prior to injection provides the final visual and audible confirmation of the drug name as well as the time remaining until it expires.

Using the touch screen, dilutions can be easily accommodated and include safety guardrails to avoid mistakes. When a drug is diluted, the easy-to-read label is printed showing the new dilution and concentration. From the touch screen, users can also quickly print line and catheter labels for both ends.

To support global medication labelling standards, SLS integrates worldwide best practices and international standards, including the Joint Commission International, recommendations of the European Society of Anaesthesia (ESA), and ISO standards. With SLS, clinicians will never have to handwrite labels and every syringe will be clearly, safely and compliantly labelled.

Dedicated to providing their patients with the most advanced medical technology available, King Hamad University Hospital (KHUH), Bahrain, is leading the region to ensure patient safety. With a keen awareness of worldwide medication labelling standards, KHUH has implemented SLS throughout the site, including the operating room, ICU, PICU, NICU, Labour and Delivery, ER, Daycare, Radiology and Pharmacy. KHUH utilizes Codonics Container Labelling System (CLS) to incorporate barcode compliancy into their Pharmacy and throughout the facility. CLS enables barcode unit dose labelling to improve efficiency and increase accuracy. The system creates and prints data matrix labels readable by SLS or any other system with a barcode scanner. MEH

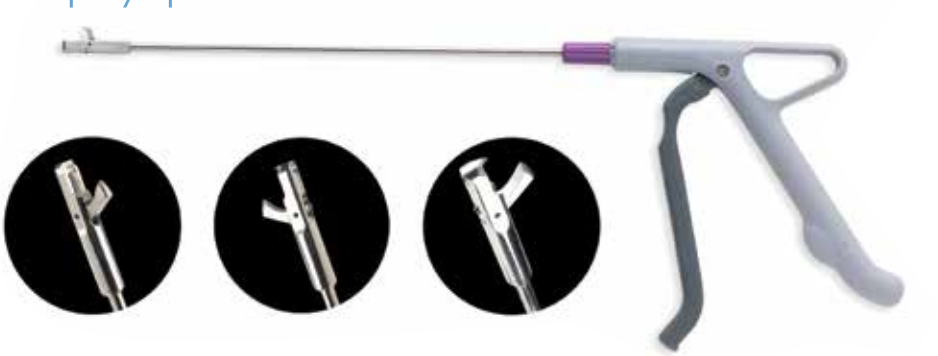
Clinicians welcome high quality single-use cervical biopsy punch

Since launching at last year's Medica, DTR Medical's Rotating Cervical Biopsy Punch is a timely development in light of the increasing need for cervical cancer screenings and human papilloma virus (HPV) testing.

This cost effective solution not only ensures clinics can run smoothly through improved instrument availability, but guarantees a good quality biopsy every time. It is clear to see why it has been received so well in the market, with notable positive feedback including:

"The rotating punch biopsy is slick, easy to use and sharp"

"The reusable forceps [biopsy punches] consistently produce inadequate samples – cross-cut, crushed or torn – this causes confusion and further unnecessary follow-up. I want to use these disposable forceps [single-use biopsy punch]"



The rotating jaw provides first time sharpness and a precise cut with a cleaner wound that heals quickly. Alternatives commonly lack a precise cutting jaw, creating poor biopsies with continued wound trauma which leads to longer patient recovery time.

This addition to an extensive range of single-use gynaecology instruments is a truly 'fit-for-purpose' instrument that can enhance existing procedures.

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

Astra Biotech launches real-time PCR kits for detection of Sexually Transmitted Diseases

Sexually Transmitted Diseases (STDs) are a global healthcare problem with worldwide increasing incidence (from 2005 to 2008: *Neisseria gonorrhoeae* – by 21% and *Trichomonas vaginalis* – by 11.2%). STDs often manifest no symptoms and elude diagnosis and treatment. Both pathogens are recognized as cofactors for HIV infection and can lead to reproductive problems.

In contrast to the traditional method of microscopic examination and culture detection of STDs, the PCR method offers fast and sensitive detection of pathogens.

Neisseria gonorrhoeae and *Trichomonas vaginalis* PCR kits are designed to provide fast qualitative detection of *Neisseria gonorrhoeae* and *Trichomonas vaginalis* DNA in urethral swab specimens, endocervical and vaginal smears, urine samples, prostatic fluid specimens and other human body fluids and tissue samples by means of Real-Time PCR. The kits include all required components in a ready-to-use format: PCR mix, DNA polymerase and internal as well as positive and negative controls. Test protocols are provided for a wide range of widespread thermal cyclers.

- For more information, visit: *www.astrabiotech.de*

Philips Healthcare offers Continuing Medical Education

Philips Healthcare recognizes and commits to the need for education in the region. The company has opened four education centers, in Beirut, Dubai, Riyadh and Istanbul. Philips Education Centers in the Middle East provide healthcare professionals with closer-to-home solutions when it comes to training needs. They offer a range of accredited courses.

Philips is dedicated to providing affordable, high-quality professional education to healthcare professionals. In addition the Philips Online Learning Center provides continuing education (CE) approved and/or accredited self-directed learning activities by Recognized Continuing Education Evaluation Mechanisms (RCEEMs). Their education offerings are supported by the industry's leading academic institutions and accreditation organizations. That's why more than 300,000 medical professionals use the Online Learning Center for their continuing education needs. Philips Healthcare offers training at customer sites, their global high-tech training facilities, online, and at 30 other Philips locations as well as third party institutes – when and where you need it, flexible and convenient.

- For more information, visit: *www.philips.ae/healthcare*

Static Systems' Fusion-IP nurse call defined for every environment

Static Systems' new Fusion-IP family of nurse call systems will soon to be launched in the Middle East, following the successful introduction in the UK.

In a concerted effort to take the complexity out of choosing the most appropriate nurse call system, the company has categorized its Fusion-IP product range into four distinct sub-brands.

Together, the new Fusion-IP 'family' comprising Ultima, Optima, Codem and Aspire can accommodate the nurse call needs of all healthcare environments, ranging from simple systems for smaller community hospitals and treatment centres, to hi-tech new-build schemes employing the latest IP technologies. A cost-effective upgrade path for legacy systems is also provided.

All solutions in the Fusion-IP family can operate independently or as one integrated system with connection via a TCP/IP connection through an Ethernet switch.

Static Systems will shortly also be introducing 'Ventura' the company's new range of medical supply units.

Company representatives will be at Arab Health 2014 to explain the thinking behind Fusion-IP Ultima, Optima, Codem and Aspire and also demonstrate the Ventura product range.

- For more information, visit: *www.staticsystems.co.uk*

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HI-CARE can be adapted to suit any multi-disciplinary operating theatre

This suspended media bridge optimizes the quality of surgical interventions by providing surgeons, anaesthetists and operating room staff an easy access to power supplies, communication technologies, data transfers and medical gas that can be easily positioned within reach according to each procedure. This is because of the flexibility offered by its eight internal and external sides and its innovative rotating corners system.

The HI-CARE can be adapted to suit any multi-disciplinary operating theatre as each one is individually tailor-made to perfectly fit the dimensions and organisation of this high risk area.

The equipment is positioned so that the floor is left free and contributes to the optimization of the operating room material and human turnover.

In a single unit, HI-CARE combines energy distribution, equipment carriage and peripheral lighting of the area.

Perfectly adapted equipment

To comply with all international norms and standards, the HI-CARE suspended distribution beam is specifically designed and manufactured to meet the specifications of each customer: extra low voltage/low voltage electric currents, medical gas alarm monitoring, any brands and standards on internal and/or external beam sides, rail(s) and tube(s) on internal and/or external faces of the unit, cover(s) and/or tube(s) on the housing using the whole length of the beam.

Easy access to functionalities

The recommended under-beam height (2000 mm) allows easy access to the features, which are within reach of all staff members while keeping the distribution unit compact.

Operating room turnover

The rotating corners with indexation enable rapid modification of equipment positioning and therapy devices between two operations, ensuring the benefit of an optimised workspace for anaesthetists, surgeons and their staff.

Hygiene

Compatible with all ceiling laminar air flow systems, the HI-CARE contributes to the fight against nosocomial infection by protecting the air flow from turbulence.

Cleaning and decontamination

The smooth shapes and surfaces allow easy cleaning and decontamination.

Maintenance

The technical equipment fixed at the back of the unit with direct access through dedicated clipped covers enables quick maintenance.

RGB (Red Green Blue) Lighting

Indirect integrated lighting on the upper part of the HI-CARE beam provides comfortable vision for operating staff whilst enabling peripheral tasks to be safely carried out. The comfort provided by the different dimmable colours of the LED lighting system offers infinite possibilities for the patients emotional management (red light relaxes, blue stimulates) as well as improved vision (green for endoscopy, x-rays). The HI-CARE media bridge integrates 100% LED RGB lighting to provide perfect vision to anaesthetists, surgeons and their staff to carry out their tasks during endoscopic procedures.

Fanem releases new Transport Incubator

Fanem, a leading global manufacturer of neonatal equipment, announces that IT-2158 Transport Incubator, designed for the safe transport of premature babies and newborns, involving routine procedures and high complexity cases, is now on the market. It uses a microprocessor to control and monitor parameters, displayed on a panel that is easy to view and operate. It also provides air microfiltration, temperature control, passive humidification and oxygen concentration inside the hood.

The IT 2158 comes with advanced technologies, such as the Babypuff Resuscitator, a blender and a gas regulator. A neonatal ventilator as well as an aspirator can also be hooked up. It has a support for up to two air cylinders and two oxygen cylinders to ensure greater autonomy and sustainability during transport, with continuous use of gases, allowing for switching between the two pairs. It monitors the patient's oxygenation through an oxygen analyzer and pulse oximetry.

The double-walled hood provides full patient visibility. The bed slips through the headboard of the hood and enables external care in emergency situations. The incubators are equipped with auxiliary lighting for observation of patients in low-light environments.

In addition, the three access doors (side, front and rear), four hatches and two dual tubing access grommets facilitate performing procedures by more than one professional.

- For more information, *visit: www.fanem.com.br*

Intersurgical introduces InterGuide tracheal tube introducer

Intersurgical has added two new product lines to their Airways Accessories range. InterGuide and InterForm are designed to assist during difficult intubation scenarios and are well-established concepts in the market.

InterGuide is a flexible tracheal tube introducer commonly known as a bougie, which allows for ease of positive endotracheal tube location. Other main features include its bold green colour to make for clear identification within an ET tube; low-friction surface to facilitate insertion; and a non-traumatic coudé tip.

Ideal for use in anaesthesia, in predicted or difficult airways; emergency medicine, for difficult airways or where direct laryngoscopy is not possible; and ITU.

Available in sizes 6FR, 10 FR and 15FR.

InterForm is a malleable endotracheal stylet made with an aluminium core coated in a mobile plastic sleeve, allowing the user freedom to form the most suitable shape for easy insertion. Acting as a former within the inner lumen of the ET tube, InterForm does not come into direct contact patient contact.

Ideal for use in anaesthesia and emergency medicine under similar conditions as InterGuide.

Available in sizes 6FR, 10FR and 14FR.

Both are sold in box quantities of 10.

- For more information, visit: *www.intersurgical.com/products/airway-accessories/18143*

Agenda

Selected schedule of regional medical meetings, conferences and exhibitions

Event	Date / City	Contact
DECEMBER 2013		
The 2nd International Communication Disorders Audiology and Neuro-Otology Conference	1 – 4 December, 2013 Riyadh, KSA	*icanconference.sa@gmail.com*
Excellence in Paediatrics 2013	4 – 7 December, 2013 Doha, Qatar	*eip@2013.com www.2013.excellence.in.paediatrics.org*
International Congress in Aesthetic, Anti Aging Medicine and Medical Spa	6 – 7 December, 2013 Dubai, UAE	*www.antiagingme.com*
40th ICMM World Congress on Military Medicine	7 – 12 December, 2013 Jeddah, KSA	*www.w40cmmjed2013.org.sa*
Asthma & COPD Forum: The 10th Annual STS Conference	11 – 12 December, 2013 Riyadh, KSA	*halorainy@gmail.com www.saudithoracic.com*
GULFPCR-GIM 2013	12 – 13 December, 2013 Dubai, UAE	*www.gulfpcr.com*
15th Emirates Ophthalmology Congress	12 – 14 December, 2013 Dubai, UAE	*eoc@mci-group.com http://www.eoc-uae.org/index.php*
JANUARY 2014		
1st Non-Communicable Chronic Diseases Congress in the UAE	9 – 11 Jan, 2014 Dubai, UAE	*www.ncdcongressuae.com/index.php*
5th European Society of Endocrinology Clinical Update	10 – 11 Jan, 2014 Abu Dhabi, UAE	*www.ese-hormones.org/education/clinicalupdate.aspx*
Pan Arab Rheumatology 2014	14 – 17 Jan, 2014 Dubai, UAE	*www.panarabrheumatology2014dubai.com/*
Arab Health 2014	27 – 30 Jan, 2014 Dubai, UAE	*www.arabhealthonline.com*
MedLab Dubai	27 – 30 Jan, 2014 Dubai, UAE	*www.arabhealthonline.com/Medlab*
FEBRUARY 2014		
International Conference on Drug Discovery & Therapy	10 – 12 February, 2014 Dubai, UAE	*www.icddt.com*
3rd Annual American Society for Nutrition Middle East Congress	19 – 21 February, 2014 Dubai, UAE	*http://asnme.org/index.html*
9th International Breast Cancer Congress	26 – 28 February, 2014 Tehran, Iran	*http://en.crc.sbmu.ac.ir/*

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Selected schedule of regional medical meetings, conferences and exhibitions

Event	Date / City	Contact
■ MARCH 2014		
International Medical Travel Exhibition and Conference	5 – 6 March, 2014 Dubai, UAE	*www.medicaltravelexhibitions.com*
Dubai Pharmaceutical & Technologies Exhibition	10 – 12 March, 2014 Dubai, UAE	*www.duphat.ae*
2014 GulfThoracic Congress	13 – 15 March, 2014 Dubai, UAE	*http://www.gulfthoracic.com/*
ArabLab, The Expo	17 – 20 March, 2014 Dubai, UAE	*www.arablab.com*
Abilities-ME	24 – 26 March, 2014 Abu Dhabi, UAE	*www.abilitiesme.com*
OBS-GYNE Exhibition & Congress	30 March - 01 April 2014 Dubai, UAE	*www.obs-gyne.com*
■ APRIL 2014		
Occupational Safety and Health Middle East	1 – 3 April 2014 Abu Dhabi, UAE	*andrew.macgregor@reedexpo.ae*
Dubai Derma 2014	8 – 10 April 2014 Dubai, UAE	*www.dubaiderma.com*
IMTEC OMAN – 2014	15 – 17 April, 2014 Muscat, Oman	*www.imtecoman.com marketing@imtecoman.com*
ICJR Middle East 2014	April 30 – May 2, 2014 Dubai, UAE	*www.icjr-me.com*

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

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