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May-June 2013

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Biomed research

Qatar's quest to contribute
to global science community

Obama's BRAINy idea

US invests \$100m to kick-start
revolutionary study of the brain

Saving lives long distance

Telemed service helps lower mortality
rate in paediatric cardiac patients

In the News

- Islamic Development Bank partners with GAVI to accelerate vaccination
- WHO – political will needed to reduce over 1 million road deaths a year
- Landmark study shows health benefits of Mediterranean diet



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*Nourah, age 7
Rare Lung Diseases Program patient
Kuwait*



Prognosis

Scientific endeavour



Qatar's quest to play an active role in the global scientific research community is starting to gain traction as recognition of this Gulf State's contribution to science and medicine grows. The Emir of Qatar, Sheikh Hamad bin Khalifa Al Thani, has pumped a lot of money into establishing the infrastructure for this scientific endeavour as well as making large sums available to researchers. In this issue's Qatar Report, we look specifically at the medical research environment in the emirate and how it is taking a leading role in this field in the region.

Also in this issue we look at an inspiring initiative recently kick-started by US President Barack Obama. Called BRAIN – or *Brain Research through Advancing Innovative Neurotechnologies* – the initiative aims to revolutionise our understanding of the workings of the brain by creating new technologies to do this as well as developing new ways for treating neurological disorders.

An interesting report from the Children's Hospital of Pittsburgh outlines a study they did that shows how telemedicine can help paediatric cardiac patients in resource-scarce regions receive the critical care they need to survive. The study looks at a collaboration between Fundación Valle del Lili in Cali, Colombia and the Children's Hospital of Pittsburgh and notes a significant decline in paediatric mortality during the course of the study.

We have a variety of interesting news stories in this issue. An important one reports on a call by the Grand Imam of Al Azhar in Cairo in which he states his support for polio vaccination. He points out that every child has the right to be protected against this terrible disease. His support of the polio vaccination initiative is important and will hopefully go some way to changing the attitudes of some parents – largely in rural areas of the Arab world – who refuse to allow their children to be vaccinated against the disease. Their reasons are based on misinformation and fear and hopefully this call will correct this and, like smallpox, lead finally to the total eradication of polio in the world.

Good health

Brian Wilkie

wilkiexp@emirates.net.ae



Publisher

Brian Wilkie
wilkiexp@emirates.net.ae

Editor

Callan Emery
editor@middleeasthealthmag.com

Editorial and Production

Trident Media - Middle East
www.tridentmedia-me.com

Editorial Consultants

Dr Gamal Hammad, Dr Peter Moore, Harry Brewer

Middle East Editorial Office

PO Box 825, Dubai, UAE
Telephone: (+9714) 334 6609
editor@middleeasthealthmag.com

Marketing Manager

Michael Hurst
Telephone: (+9714) 391 4775 || Fax: (+9714) 391 4888
michael@middleeasthealthmag.com

Advertising Sales

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

Americas, France

Jay Franco,
3 Erinlea Crescent, Scarborough,
Ontario M1H 2S8, Canada
Tel: 1-416-439-5100 || Fax: 1-416-439-0770
jfranco@middleeasthealthmag.com

Japan

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

China

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

Taiwan

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

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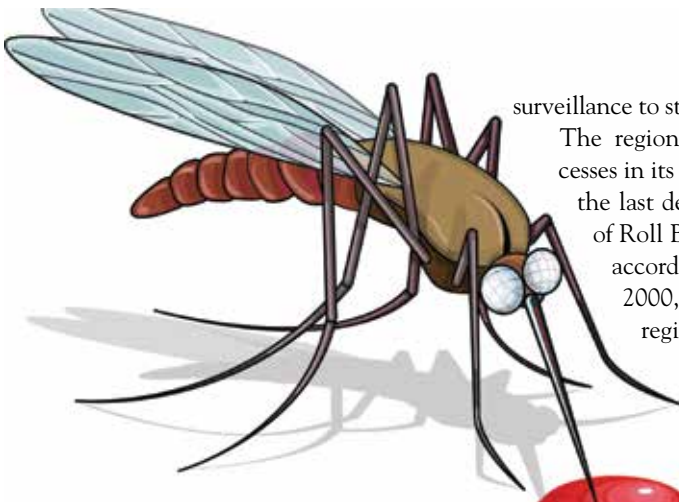
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Update from around the region



World Malaria Day marked with call to focus efforts

The WHO Eastern Mediterranean Region marked World Malaria Day on April 25 with the theme: "Invest in the future. Defeat malaria".

The WHO points out that malaria is still a big challenge for the Eastern Mediterranean Region, as more than 50% of the regional population lives in areas in which there is a risk of contracting malaria. Based on 2010 estimates, about 10.4 million people were affected by malaria and 15,000 people die of malaria in the region every year.

Dr Ala Alwan, WHO Regional Director for the Eastern Mediterranean, urged stronger and improved efforts in the fight against malaria. "We need to focus our efforts in areas of greatest need and protect every person living in areas at risk of malaria with effective prevention tools."

Malaria control efforts continue to be restrained by low political commitment, weak infrastructure and lack of national capacities, according to the WHO. Malaria is not just a problem for the Eastern Mediterranean Region alone; the disease continues to kill an estimated 660,000 people worldwide, mainly children under five years of age in sub-Saharan Africa. Every year, more than 200 million cases occur; most of these are never tested or registered.

The WHO T3 (Test. Treat. Track.) programme is an essential approach in guiding countries to ensure that every suspected malaria case is tested, and every confirmed case is treated and tracked effectively through

surveillance to stop transmission.

The region has had several successes in its fight against malaria in the last decade since the launch of Roll Back Malaria initiative, according to the WHO. In 2000, 10 countries in the region were free from malaria, a number which rose to 14 in 2010 with two further countries vigorously pursuing elimination targets.

The region has prioritized malaria control and elimination with the aim of providing universal access to malaria diagnosis and effective treatment, including artemisinin-based combination therapy for falciparum species, along with prevention through effective vector control.

Despite the gains made globally in malaria prevention and control, global funding for malaria control has seen a decline and emerging drug and insecticide resistance threaten to reverse recent progress made. Global efforts in the fight against malaria are at a critical juncture with only two years left to meet the Millennium Development Goals.

Since 2000, malaria mortality rates have fallen by more than 25%, and 50 of the 99 countries with ongoing transmission are now on track to meet the 2015 World Health Assembly target of reducing incidence rates by more than 75%. A major scale-up of vector control interventions, together with increased access to diagnostic testing and quality-assured treatment, has been key to this progress.

Grand Imam supports polio vaccination in Muslim countries

The World Health Organization Eastern Mediterranean Region issued a press statement saying the Grand Imam of Al-Azhar, Cairo, Dr Ahmad Al Tayyeb, called for the protection of Muslim children against poliovirus transmission by ensuring they

receive the required polio vaccine. He stressed the importance of increasing the awareness of the correct Islamic teachings on the subject to combat misinformation, and confirmed that Al-Azhar is ready to continue to exert all efforts to enlighten Muslim individuals and communities about the rights of children to be protected against polio and all other diseases and the obligation of all Muslims to ensure that their children are protected.

This was announced in March at a meeting held at Al-Azhar during which the Grand Imam met with Muslim scholars from several countries. The scholars expressed their solidarity with the children of the Islamic world and reaffirmed their resolve to support the people, health workers and governments of the three countries where polio is not yet eradicated, namely Afghanistan, Nigeria and Pakistan.

The Global Polio Eradication Initiative, launched in 1988 by the health ministers of the Member States of the WHO, has been successful in stopping the transmission of this crippling disease in all but these three countries of the world. Except for in Afghanistan, Nigeria and Pakistan, Muslim communities and countries everywhere have eradicated polio, including 54 out of 57 member states of the Organization of Islamic Cooperation (OIC) that have successfully interrupted transmission of wild poliovirus. This has been achieved through the application of proven eradication strategies, the administration of the safe oral polio vaccine and with financial and political support from the Islamic world.

Forum raises awareness of prevalence of COPD in the region

Chronic obstructive pulmonary disease (COPD) and productive cough is rapidly increasing in the MENA region, according to doctors speaking at the 2nd Regional Respiratory Forum hosted by Boehringer Ingelheim, in Dubai, in April.

According to speakers at the forum, 13 million people in the region suffer from COPD, and it is estimated that, 1.9% of the UAE's population suffers from COPD.

It was observed that 63% COPD patients remain untreated in the UAE, the highest figure in the MENA region.

The main aim of this year's conference was to create awareness of the importance of diagnosing and treating COPD.

During the forum, Professor David Halpin, Consultant Physician & Honorary Associate Professor, revealed new bronchodilator therapies that were recently launched for the treatment of COPD, highlighting evidence of the short-term efficacy of these drugs. He also highlighted the role of other new therapies for COPD including evidence regarding anti-inflammatory therapies and therapies that modulate mucus secretion, as well as considering novel interventional bronchoscopy techniques to achieve lung volume reduction.

At the forum, Prof. Dr. Mirna Waked, Head of the Pulmonary Division at St George Hospital University Medical Center in Lebanon, highlighted that diagnosing COPD without spirometry is still a challenge. To date, COPD remains largely undiagnosed and the only way to determine COPD is through spirometry which is selectively available in the region in tertiary care centers only, he said.

Given that COPD is expected to become the third leading cause of mortality in 2020 (according to the BREATHE study published in *Respiratory Medicine* in December 2012) there is a great need to develop a scale for diagnosis of the disease. This has led Dr. Waked to develop a simple diagnostic score including risk factors and symptoms with good predictive value for positive diagnosis of COPD and high negative predictive value excluding COPD. The properties of the score are superior to other scores developed previously; more importantly, they allow for rapid diagnosis for COPD in primary care centres which can potentially decrease the percentage of untreated patients in the region.

The forum took place in the presence of more than 300 senior pulmonologists, internists, respiratory therapists, medical specialists, and professors representing the healthcare industry from UK, South Africa, Italy, Germany, GCC countries, Egypt,

Lebanon, Morocco, Algeria, Tunisia, Iraq, Libya and Jordan.

Qatar's HMC partners with Institute for Healthcare Improvement

Qatar's Hamad Medical Corporation (HMC) has signed a strategic agreement with the Institute for Healthcare Improvement (IHI) which will see IHI faculty work collaboratively with HMC staff, particularly HMC's Center for Healthcare Improvement (CHI) to examine new and innovative ways to achieve the safest and most effective quality of healthcare in the region and enhance the patient's experience at HMC.

"Our staff and our patients will see real and lasting benefits from the close interaction with IHI in the field of quality improvement," said Hanan Al Kuwari PhD, Managing Director of HMC. "They have worked with healthcare providers and organizations around the globe and will bring their expertise to Qatar to enable HMC to continue its commitment to delivering high quality patient care."

IHI is an independent not-for-profit organization that works with health care providers and leaders throughout the world to achieve demonstrable outcomes in safe and effective health care.

Maureen Bisognano, President and CEO of IHI, said: "We are motivated by a vision of a future in which everyone has the best care and health possible and we have worked for over 25 years to fulfill this vision by assembling a unique team that works collaboratively with our partners."

The collaboration with IHI will include a focus on understanding HMC's current patient safety culture and review how teams within the organization can work together to improve the quality of care.

The agreement also includes IHI's support to host the Middle East Forum on Quality Improvement in Healthcare (17-19 May, 2013 in Doha).

Mediclinic signs MOU with Swiss hospital for obesity surgery

Mediclinic Middle East has signed a Memorandum of Understanding (MOU) with its sister company in Switzerland, Hirslanden

Private Hospital Group, which will see Hirslanden providing consultative services to Mediclinic Middle East in the area of obesity surgery.

The agreement got underway with a visit in March by Dr. Martin Thurnheer from Hirslanden to Mediclinic City Hospital, Dubai, where he inspected facilities for obesity surgery, conducted a workshop and training sessions for relevant hospital staff and introduced the services to the wider doctor community.

Dr Thurnheer MD was instrumental in the establishment of the eSwiss Medical and Surgical Center in collaboration with Hirslanden Clinic Stephenshorn, St Gallen, Switzerland in December last year and was previously head of Bariatric Surgery at the Cantonal Hospital, St. Gallen.

New test for Down's launched in UAE

Eastern Biotech and Life Sciences, Dubai has launched a non-invasive Prenatal Diagnostic Test in the UAE to detect Trisomy, a genetic mutation that leads to Down's Syndrome. The diagnostic test detects Cell Free Fetal DNA in the maternal blood to make the diagnosis.

The accuracy of the new test in larger studies is 99.9% – making this new diagnostic modality the most accurate diagnostic test of its kind available, according to Eastern Biotech.

Further, this genetic test now makes it possible to predict at as early as 11 weeks, if the foetus is carrying the genetic mutation that leads to Down's Syndrome.

Eastern Biotech has partnered with BGI Health laboratories based in Hong Kong to bring this test to the UAE and other GCC countries. In the UAE the test is being marketed under the name Trigene.

Oman's first Prometric medical exam centre opens

Oman's Minister of Health Dr Ahmed Bin Mohammed Al Saidi, Oman Medical Specialty Board (OMSB) Executive President Dr Abdullah Al Fustaisi and senior Prometric executives formerly opened a new, state-of-the-art test center for OMSB and international exams.



The computer-based exams will help ensure OMSB medical standards are met by candidates seeking to practice medicine and deliver healthcare services in Oman and ensure that healthcare quality is aligned with the Sultanate's national Health System 2020 policy as developed by the ministry. The facility is the first Pro-metric testing center in Oman.

After completion of training in specialty programs and passing all required examinations, OMSB Residents obtain the Oman Specialty Board Certificate, the equivalent of a Ph.D. in medical specializations.

Dr Abdullah Al Fustaisi said: "The Pro-metric Center offers an admission for 22 medical specialty exams via Internet at the moment, which include Obstetrics & Gynecology, General Surgery, Anesthesia, Cosmetic Surgery, Neurosurgery, Emergency Medicine, Ophthalmology and many others. In addition, other related examinations could be taken at this center, such as: American Board Exam, PMP, TOEFL, and other exams."

He added that more exams will be added to the list.

International Society of Pharmacoeconomics and Outcomes Research launched in Qatar

The College of Pharmacy at Qatar University has launched the Qatar Chapter of the International Society of Pharmacoeconomics and Outcomes Research (ISPOR). The Chapter is officially affiliated with ISPOR, based in New Jersey, USA, which is recognized globally as the authority for outcomes research and its application in health care.

ISPOR promotes pharmacoeconomics and outcomes research, and encourages the efficiency, effectiveness, and fairness of health care decisions to improve health.

The ISPOR Qatar Chapter is the first of its kind, in relation to supporting the advancement of the outcomes research practices at a "local level" in Qatar, which in turn will result in bilateral access to programs and benefits. It is a non-profit society and includes researchers, health care practitioners and decision makers, and regulatory and educational groups in Qatar.

Specific objectives of the ISPOR Qatar Chapter are to:

- Conduct workshops to develop understanding of pharmacoeconomics and outcomes research in Qatar.
- Act as a resource at a local level for individuals interested in conducting pharmacoeconomics and outcomes research.
- Serve as a forum in bringing together the academic researchers, health care practitioners, and decision makers interested in pharmacoeconomics and outcomes research.
- Provide an environment in which researchers, health care practitioners, and decision makers, who are interested in pharmacoeconomics and outcomes research, can share knowledge at a country level.

The chapter has recently initiated a number of Qatar-based research activities, and is currently in the process of organizing relevant educational activities for 2013/14, including in collaboration with Hamad Medical Corporation.

Sanofi Biosurgery set to bring new implant material for knee surgery to the region

Sanofi Biosurgery, a division of Sanofi that focuses on the development of innovative biological products, is working towards bringing the MACI (Matrix-induced Autologous Chondrocyte Implant) implant to the region as demand for knee surgeries increase.

Prof. Dr. Gerald Zimmerman, Orthopaedic and Trauma Surgeon at German Medical Center, said that in the UAE, many young people engage in sports, especially football, so these age groups often have articular cartilage damage in the knee joint.

"These defects are always a challenge and force athletes or enthusiasts to stop practicing sports. The MACI implant has a strong track record of effectively repairing this damage, reduce pain significantly and allows patients to return to their activities," he said.

Prof. Zimmerman gave a talk on the MACI at the International Congress Joint Reconstruction Middle East Conference in March.

He explained that the MACI implant uses a patient's own (autologous) cultured cartilage cells (chondrocytes) to repair the articular cartilage damage in the knee joint.

Ayman Mohktar, General Manager, Sanofi Gulf, said: "MACI may offer orthopaedic specialists in the UAE and Middle East an advanced, minimally invasive product to treat patients with debilitating knee pain from articular cartilage injuries in the knee. Successful treatment can significantly reduce pain and permit patients to regain function, increasing their quality of life."

WHO EMRO marks World Health Day with call for increased awareness of hypertension


The WHO Regional Office for the Eastern Mediterranean celebrated World Health Day on 7 April, with a theme focussed on high blood pressure, or hypertension. WHO is calling for intensified efforts to prevent and control hypertension, which, worldwide, is estimated to affect more than one in three adults aged 25 and over, or about one billion people.

Dr Ala Alwan, WHO Regional Director for the Eastern Mediterranean highlighted the importance of measuring blood pressure regularly. He urged governments to increase public awareness of this health issue.

The prevalence of hypertension can be reduced by addressing behavioural risk factors and raising people's awareness of the importance of: following a balanced diet, reducing salt intake, avoiding tobacco use and harmful use of alcohol, engaging in regular physical activity and adopting a healthy lifestyle.

Hypertension is one of the most important contributors to heart attacks and stroke.

In the Eastern Mediterranean Region, with a population of 600 million people, the rates of physical inactivity are higher than in any other region in the world. Overall, more than a third of men and nearly half of women in the region are physically inactive. Around 50% of adults in the region are overweight and in some countries more than 70% of women and an increasing number of children are overweight. In some countries of the region more than 50% of men use tobacco.

Dr Margaret Chan, Director-General of WHO said: "Our aim today is to make people aware of the need to know their blood pressure, to take high blood pressure seriously, and then to take control." 

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Update from around the globe

News in Brief

Dräger Academy opens in Dubai

The Dräger Academy has been launched in the Middle East region, in Dubai, where the first accredited Dräger Academy training program in Mechanical Ventilation and Acute Respiratory Failure – attended by more than 20 physicians from the region – took place in February. “I’m pleased that we at Dräger have the chance to improve and optimize the regional healthcare knowledge by offering interesting training programs with the Dräger Academy,” said Michael Karsta, president of Dräger Middle East, Africa.

Journal of Local and Global Health Science published on QScience.com

The *Journal of Local and Global Health Science* has published volume 2013 on QScience.com, the digital publishing portal for research journals. The *Journal of Local and Global Health Science* is a peer-reviewed international journal which publishes research on all aspects of both basic and applied research related to global health practiced in specific local environments, as well as the implications of local health issues in a global context. All content in the journal is ‘open access’. The journal accepts submissions in English and Arabic.

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H7N9 influenza infections continue in China

As of 23 April the number of infections from the novel H7N9 avian flu virus in China had risen to 108 cases including 22 deaths. Investigations into the possible sources of infection and reservoirs of the virus were ongoing. WHO said that until the source could be identified more infections were expected. At the time of the report the WHO said that so far there was no sign of sustained human-to-human transmission. MEH



WHO report on road traffic safety says political will needed to prevent fatalities

Only 28 countries, covering 7% of the world’s population, have comprehensive road safety laws on all five key risk factors: drinking and driving, speeding, and failing to use motorcycle helmets, seat-belts, and child restraints.

The pace of legislative change needs to rapidly accelerate if the number of deaths from road traffic crashes is to be substantially reduced, according to the *Global status report on road safety 2013: supporting a decade of action*, published 14 March by the World Health Organization (WHO).

In 2010, there were 1.24 million deaths worldwide from road traffic crashes, roughly the same number as in 2007. The report shows that while 88 Member States were able to reduce the number of road traffic fatalities, that number increased in 87 countries.

“Political will is needed at the highest level of government to ensure appropriate road safety legislation and stringent enforcement of laws by which we all need to abide,” says WHO Director-General Dr Margaret Chan. “If this cannot be ensured, families and communities will continue to grieve, and health systems will continue to bear the brunt of injury and disability due to road traffic crashes.”

“The *Global status report on road safety 2013* serves as a strong warning to governments that more needs to be done to protect all those who use the roads,” says Michael

R. Bloomberg, philanthropist and Mayor of New York City, whose foundation funded the report. “Road traffic fatalities and injuries are preventable. This report is an important next step in the effort to also keep pedestrians, cyclists and motorists safe on the world’s roads. It demonstrates that progress is being made, but we still have a long way to go.”

Mandated by the United Nations General Assembly, the Decade of Action is a

historic opportunity for countries to stop and reverse the trend which – without action – has been predicted to lead to the loss of around 1.9 million lives on the roads each year by 2020.

Global Fund says \$1.9bn available over next two years

After spending more than a year reviewing and reforming its grant process, the Global Fund to Fight AIDS, Tuberculosis and Malaria is back in business, announcing the first handful of countries slated to receive up to US\$1.9 billion in available funding over the next two years.

The Democratic Republic of Congo, Myanmar and Zimbabwe are among the six countries set to receive funding under the Global Fund’s new model, the Fund announced on 28 February.

With up to nearly two billion dollars available between now and 2014, El Salvador, Kazakhstan and the Philippines, will also receive new funding, including access to an incentive funding pool aimed at fostering ambitious, high-impact and co-funded interventions.

According to the Fund, countries were selected for financing this year based, in part, on whether they would face an interruption of services without new funding and whether they were currently being underfunded based on levels set by the new model.

The new model, part of the many reforms, has introduced a system in which countries are grouped into bands based on a calcula-

tion of financial need and disease burden.

In awarding the new funding, the Global Fund board also chose geographically diverse countries as well as non-traditional applicants. It is looking to use these new grants as a learning opportunity, according to the new executive director, Mark Dybul.

“The new funding model gives us a special chance to learn and adapt,” he said. “During this year, we will monitor various aspects of the new funding model process so that we can adapt in real time. We are a learning institution, and we will gain insight and knowledge as we work together.”

Historically, the Fund has only accepted applications from country coordinating mechanisms (CCMs), or the bodies in charge of national Global Fund processes. The Fund has now chosen to fund civil society proposals as well, including those by the Eurasian Harm Reduction Network, a group that deals with the underserved needs of injecting drug users.

According to Global Fund board documents, the Fund will be paying particular attention to how the new model improves services for underserved, most-at-risk populations like injecting drug users.

An additional 50 countries, including Malawi, Swaziland and Zambia, will receive money via renewals and the extension of existing grants, or grant reprogramming, to free up already committed funding.

First Global Vaccine Summit highlights progress towards vaccinating every child

More than 300 global leaders, health and development experts, vaccinators, celebrities, philanthropists, and business leaders gathered in Abu Dhabi on 24 April in the first Global Vaccine Summit to endorse the critical role that vaccines and immunization play in giving children a healthy start to life. Despite tremendous progress, one child still dies every 20 seconds from preventable diseases like pneumonia, rotavirus, measles, and meningitis.

The Summit, which focused on the power of vaccines, was held during World Immunization Week (April 24-30) to continue the momentum of the Decade of Vaccines – a vision and commitment to



Global leaders unite to give all children a healthy start to life

reach all people with the vaccines they need. Ending polio is a critical milestone in this vision.

Immunization reaches 80% of the world's children, saving 2.5 million lives annually. Despite these successes, 23 million children are still being missed each year, mostly from the poorest, most vulnerable communities. To reach the unimmunized, the United Nations and its partners support vaccine procurement and distribution mechanisms, strengthen local health systems, help to secure sustainable funding for immunization, and advocate to reduce inequalities in access to essential vaccines and other life-saving interventions.

Bill Gates, co-chair of the Bill & Melinda Gates Foundation, delivered a keynote to celebrate progress and honour the individuals, communities, partners and nations that have made success possible.

“Vaccines work to save lives and protect children for a lifetime,” said Bill Gates, co-chair of the Bill & Melinda Gates Foundation. “By investing in stronger immunization systems, we can protect our gains against polio and reach mothers and children with other health services.”

The world is coming together around the Global Vaccine Action Plan, endorsed by nearly 200 countries in May 2012, to develop better and more affordable vaccines and deliver them through stronger routine immunization systems. If we succeed, we can save more than 20 million lives and prevent nearly one billion illnesses by 2020. This will save nearly \$12 billion in treatment costs and achieve more than \$800 billion in economic gains

as vaccinated children live longer, healthier, more productive lives.

“The Global Vaccine Summit is an historic gathering of global leaders and innovators whose collaboration can have a significant and positive impact on ensuring a healthy global society. Under the guidance of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the United Arab Emirates and Ruler of Abu Dhabi, we remain committed to supporting the delivery of lifesaving vaccines to children around the world,” said His Highness Sheikh Mohamed bin Zayed Al Nahyan.

“Immunization is one of the most cost-effective ways to prevent disease and safeguard young lives,” said UN Secretary-General Ban Ki-moon. “The global success so far in fighting polio shows how far we can advance. Our great progress came thanks to an international alliance of partners. Today, we have a window of opportunity to end polio forever.”

The Global Vaccine Summit was held in partnership with His Highness General Sheikh Mohamed bin Zayed bin Sultan Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces, the United Nations Secretary-General Ban Ki-moon and Bill Gates, co-chair of the Bill & Melinda Gates Foundation.

Islamic Development Bank partners with GAVI to speed up vaccination

The GAVI Alliance and the Islamic Development Bank (IDB) signed a Memorandum of Understanding (MoU) on 12 March at the IDB Headquarters to help

save children's lives by accelerating the introduction of life-saving vaccines in IDB member countries.

According to the MoU signed between Dr Ahmad Mohamed Ali, President, IDB Group, and Dr Seth Berkley, CEO, GAVI, the IDB will work closely with GAVI to help secure sufficient funds for immunization. By 2020, GAVI plans to vaccinate more than 400 million children in at least 29 member countries with the objective of preventing 3.2 million deaths. An estimated US\$7 billion will be required to reach this target.

"We are joining hands with the IDB to accelerate the introduction of life-saving vaccines in IDB member countries and ensure that children have a healthy start in life," said Dr Seth Berkley. "We also aim to increase the uptake of new and underused vaccines in these countries and hopefully generate new sources of funding."

On the occasion, Dr Ahmad Mohamed Ali stated that promoting health is among the major strategic thrusts of the Vision 1440H (2020) of the IDB Group and that it was happy to enter into a cooperation agreement with GAVI to save the lives of millions of children in member countries, thereby playing a major role against child mortality. He mentioned that in the initial stage, IDB will try to support the governments of selected member countries to implement the vaccination programme through its "triple win financing model" in which it will seek collaboration with other partners while also providing the recipient countries the opportunity to contribute a portion of the cost along with IDB. This kind of tripartite partnership will ensure country ownership as well as sustainability of funding in the long term.

MSF says cost of vaccines too high

Coinciding with the Global Vaccines Summit in Abu Dhabi in April, Médecins Sans Frontières (MSF) warned that high prices for new vaccines could put developing countries in the precarious situation of not being able to afford to fully vaccinate their children in the future.

"Urgent action is needed to address the skyrocketing price to vaccinate a child, which has risen by 2,700 percent over the last decade," said Dr Manica Balasegaram,

Executive Director of MSF's Access Campaign. "Countries where we work will lose their donor support to pay for vaccines soon, and will have to decide which killer diseases they can and can't afford to protect their children against."

The 'Decade of Vaccines,' the global vaccination initiative for the next ten years, is estimated to cost US\$57 billion, with more than half going to pay for the vaccines themselves. In 2001, it cost \$1.37 to fully vaccinate a child against six diseases. While 11 vaccines are included in today's vaccines package, the total price has risen to \$38.80, largely because two expensive new vaccines – against pneumococcal disease and rotavirus – have been added, which make up three-quarters of that cost. They are only produced by Pfizer, Glaxo-SmithKline (GSK), and Merck. Newer vaccines are significantly more expensive: vaccinating a child against measles costs \$0.25, while protecting a child against pneumococcal diseases costs, at best, \$21.

MSF vaccinates millions of people each year and fully supports the introduction of new vaccines in developing countries. But negotiations between companies and the largely taxpayer-funded GAVI Alliance for the newest vaccines have not resulted in deeper price cuts that would help more children benefit. The lack of transparency by companies on vaccine manufacturing costs and their focus on profits above ensuring sustainable prices for vaccines for low-income countries are at the root of the problem, MSF said in statement.

GAVI has recently announced a new deal to reduce the price of pentavalent vaccine. This is an excellent example of what GAVI can achieve, especially when there are multiple vaccine manufacturers in a market and healthy competition. GAVI should urgently prioritise further negotiations for the two newest and most expensive vaccines and pharmaceutical companies should come to the table to offer GAVI better deals, said MSF.

Worldwide Cardiac Assist Devices market set to grow by 93% by 2019, says GlobalData

A global increase in Congestive Heart Failure (CHF) prevalence, combined with improved device adoption rates, will

see the worldwide Cardiac Assist Devices (CAD) market to grow by 93% by 2019, says the latest report produced by research and consulting firm GlobalData.

According to the company's new report, CAD sales are expected to reach a value of US\$2.3 billion in 2019, climbing at a Compound Annual Growth Rate (CAGR) of 18.8% from US\$1.1 billion in 2012.

The CAD market, comprising Intra-Aortic Balloon Pumps (IABP), Ventricular Assist Devices (VAD) and Total Artificial Hearts (TAH), is expected to experience increasing revenue due to a lack of available of heart transplants combined with an expanding population suffering from end-stage heart failure. GlobalData estimates the global CHF population to reach approximately 31 million in 2019, from 2012's total of 25 million.

Rob Littlefield, GlobalData's Analyst covering Cardiovascular Medical Devices, says: "While the prevalence of end-stage congestive heart failure continues to grow, transplantation procedure volumes have remained the same for more than a decade, providing the majority of patients with few options for treatment.

"Furthermore, as a result of significant advances in mechanical pump safety and efficacy, many patients are now looking to CAD implantation in lieu of waiting on the donor list for a heart transplantation, which could take years."

VAD is expected to remain the most profitable sector of the CAD market in coming years, driven largely by the adoption of intracorporeal VAD, including Heartware's HVAD and Thoratec's HeartMate II. VAD sector revenue growth is expected to be further supported by increased implementation of CAD in healthier patients, whose condition has not progressed to a point of necessitating heart transplantation.

Additionally, with the advent of percutaneous technologies enabling minimally invasive cardiac support, CAD are being increasingly implemented in patients where surgery is not preferable or not an option. Taking these factors into consideration, GlobalData forecasts the VAD portion of the global CAD market to reach revenue of US\$1.9 billion by 2019 from US\$635m in 2012. **MSH**



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Medical research news from around the world



Study points to rethink of red blood cell storage duration

A small study from Johns Hopkins adds to the growing body of evidence that red blood cells stored longer than three weeks begin to lose the capacity to deliver oxygen-rich cells where they may be most needed.

In a report published online in the journal *Anesthesia & Analgesia*, the Johns Hopkins investigators say red cells in blood stored that long gradually lose the flexibility required to squeeze through the body's smallest capillaries to deliver oxygen to tissue. Moreover, they say, that capacity is not regained after transfusion into patients during or after surgery.

"There's more and more information telling us that the shelf life of blood may not be six weeks, which is what the blood banks consider standard," says study leader Steven M. Frank, M.D., an associate professor of anesthesiology and critical care medicine at the Johns Hopkins University School of Medicine. "If I were having surgery tomorrow, I'd want the freshest blood they could find."

Frank acknowledges that blood banks do not have enough fresh blood for everybody, and that shorter storage periods would result in diminished inventory. But he says that the current practice of transfusing blood stored up to six weeks may need to be reconsidered.

One previous, large study published in the *New England Journal of Medicine* has already shown that cardiac surgery patients who received blood stored longer than

three weeks were almost twice as likely to die as patients who got blood that had been stored for just 10 days.

● doi: 10.1213/ANE.0b013e31828843e6

New hypothesis on why bacteria increasingly resistant to antibiotics

In a revolutionary article published in the journal *Archives of Microbiology*, a researcher from the University of Granada (Spain) provides an answer to an enigma that scientists have still not been able to solve.

According to his theory, bacteria that are non-resistant to antibiotics acquire said resistance accidentally because they take up the DNA of others that are resistant, due to the stress to which they are subjected

A University of Granada researcher has formulated a new hypothesis concerning an enigma that the scientific community has still not been able to solve and which could revolutionise the pharmaceutical industry: Why are bacteria becoming increasingly more resistant to antibiotics? His work has revealed that the use of antibiotics can even cause non-resistant bacteria to become resistant because they take up the DNA of others that are already resistant.

Mohammed Bakkali, a scientist in the Genetics Department at the Faculty of Science of the UGR, maintains that our abuse of antibiotics "forces" the bacteria to take up the DNA of other bacteria that are resistant to said antibiotics, since the presence of antibiotics exposes them to a great

stress. According to the researcher, "In this way, the non-resistant bacteria become resistant completely by accident on ingesting this DNA and can even become much more virulent, partly due to the stress we subject them to when we make an abusive use of antibiotics".

For decades, scientists from all over the world have been researching into when, how and why bacteria take up DNA from other antibiotic-resistant bacteria, thus becoming also resistant. The answers as to when there is DNA uptake (in unfavourable or stressful circumstances) and as to how the bacteria take it up are clear, but, up until now, "nobody has pinpointed the reason why bacteria ingest this genetic material", as Bakkali points out in an article published in the latest edition of the journal *Archives of Microbiology*.

Under normal conditions, a bacterium could have a lot to lose if it 'decides' to take up DNA, since it does not have a 'DNA reader' enabling it to take up only those molecules that are of use to it and the most likely is that this DNA will be dangerous, or even lethal.

They do not want that DNA, because they break it up

In his article, Mohammed Bakkali argues that, in reality, bacteria do not look for DNA to take up (they appear not to 'want' this DNA, since they are constantly degrading it; in other words, breaking it up) and that this uptake is a chance event and the sub-product of a type of bacterial motility that is part of its response to the stress that the bacteria may be subjected to.

Therefore, our current indiscriminate use of antibiotics "not only selects the resistant bacteria, but also means that the bacteria take up more DNA, due to their increased motility in response to the stress that the antibiotic subjects them to". The result is that the stress caused by the antibiotic itself induces the uptake of genetic material that can bring about resistance to the antibiotic by bacteria that, otherwise, would not have taken up that DNA nor become resistant to the antibiotic. Furthermore, this effect is strengthened by its lack of specificity, since it occurs both in



the target pathogen and in other bacteria.

The UGR researcher states that, when a bacterium takes up DNA from another antibiotic-resistant one (and which could have died due to another environmental factor), the bacterium that takes it up becomes resistant to that antibiotic. “Thus, the bacteria can go on adding to their arsenal of resistance to antibiotics and end up being resistant to a wide range of them, such as is the case of the multi-resistant strain of *astaphylococcus*, called *Staphylococcus aureus*, which creates havoc in many operating theatres.

Brain stent offers alternative to shunt for pseudotumor cerebri

A team of interventional neuroradiologists and neurosurgeons at Johns Hopkins reports wide success with a new procedure to treat pseudotumor cerebri, a rare but potentially blinding condition marked by excessive pressure inside the skull, caused by a dangerous narrowing of a vein located at the base of the brain.

The study, published in the *Journal of Neuro-Ophthalmology* online March 14, is believed to be the first to show how directly lowering pressure inside the vein alleviates the condition and improves vision.

The study on 12 patients describes the team’s novel use of intravascular ultrasound imaging to delicately thread an expandable metal stent, roughly two inches long and attached to a catheter, through an opening in the groin, all the way to the main blood vessels in the neck and shoulders draining fluid from the brain. The goal is to precisely position the stent across the narrowed portion of the vein, called the transverse sinus, where it expands, allowing blood to drain more freely and relieving fluid pressure in the brain. The vein narrowing, or stenosis, is considered to be the leading cause of pseudotumor cerebri. The condition earned its name, which translates to “false” tumour of the brain, because in the era before detailed brain imaging became available, surgeons used to operate on people with similar optic nerve swelling, suspecting brain tumours, yet they would find none.

Because the transverse sinus drains cerebrospinal fluid, constriction of the vessel causes fluid backup and raises intracranial pressure, which, if left untreated, can lead to permanent damage to the optic nerve, blurred vision and eventual blindness.

According to lead study investigator and Johns Hopkins interventional neuroradiologist Martin Radvany, M.D., the new, minimally invasive procedure, known as transverse sinus stenting, takes about two hours to perform, and could serve as a long-term, if not permanent fix to what he says is a vexing and growing problem, seen mostly in obese, premenopausal women between the ages of 18 and 40.

“Our study results, if validated in more patients, give us more than an alternative to shunts and bypassing the consequences of pseudotumor cerebri,” says study co-investigator and interventional neuroradiologist Philippe Gailloud, M.D. “Our latest research helps us get to the root of the problem so that we can stop and possibly prevent the vein from narrowing in the first place,” says Gailloud, who is also director of interventional neuroradiology at Johns Hopkins.



A video of one of the patients having the procedure is available on YouTube. www.youtube.com/watch?v=__M9v1FEHfs

Stem cells produce regenerated bone in mandible transplants

Bone transplantation is a major strategy for the repair of bone defects. However, reconstruction of the mandible (jawbone) has long been a difficult challenge for oral surgeons – at least up to now. A new study in *Stem Cells Translational Medicine* shows how stem cells can be used to successfully repair the mandible after a molar extraction and, years later, the new bone is still functioning properly.

Interestingly, the regenerated bone is also hard, rather than the spongy kind normally found in the jaw.

The new study is a follow-up to previous investigations by an international team of researchers in which they discovered that mesenchymal stem cells taken from dental

pulp and seeded on a collagen scaffold successfully repaired the mandible bone. In this latest work, they checked on patients who had received the mandible bone grafts three years earlier to assess the stability and quality of the regenerated bone and vessel network.

They found the new bone had normal function and was richly vascularized, although was much more compact than the spongy type normally found in the mandible. The team theorized that, most probably, regeneration of compact bone occurs because grafted dental-pulp stem cells do not follow the local signals of the surrounding spongy bone.

“Dental pulp is an interesting source of ready-to-use stem cells to treat bone defects,” said Anthony Atala, M.D., Editor of *Stem Cells Translational Medicine* and director of the Wake Forest Institute for Regenerative Medicine. “The finding that these cells regenerate compact bone in the mandible indicates a potential role in the treatment of oral cancer.”

Landmark global study shows cardiac benefits of Mediterranean diet

People who eat a plant-based Mediterranean diet supplemented with nuts or virgin olive oil can enjoy long-term benefits that can include a 30% reduction in the risk of cardiovascular disease, according to a landmark global study released at the sixth International Congress on Vegetarian Nutrition hosted by Loma Linda University Health, recently.

The study, to appear in the *New England Journal of Medicine*, involved 7,447 individuals (55-80 years old) at high risk of cardiovascular disease but with no symptoms.

The results favour two Mediterranean diets (one supplemented with nuts, the other with virgin olive oil) over a low-fat diet for beneficial effects on intermediate outcomes that include body weight, blood pressure, insulin resistance, blood lipids, lipid oxidation and systemic inflammation.

The study, called “PREDIMED” for “PREvención con Dieta MEDiterránea” (Prevention with Mediterranean Diet) be-

gan in 2003 and was completed in 2011. Participants were followed for an average of 4.8 years.

“The aim of PREDIMED was to determine whether a plant-based Mediterranean diet, supplemented with either tree nuts such as walnuts, almonds and hazelnuts or virgin olive oil, when compared to a low-fat diet, can help prevent cardiovascular diseases such as cardiovascular death, heart attack and stroke,” said Dr Miguel Angel Martinez of the University of Navarra, Spain, a lead investigator of the study, which was released simultaneously in Loma Linda and Spain.

“What we found was that a Mediterranean diet offers a preventive efficacy that was also assessed on secondary variables, including death from all causes, and incidence of diabetes and metabolic syndrome,” added Martinez, a physician, epidemiologist and nutrition researcher.

The Mediterranean diet is a pattern of eating similar to the traditional dietary habits of people living in the countries bordering the Mediterranean Sea. This includes fresh fruits and vegetables, seafood, whole grains and nutritious fats, including walnuts and olive oil.

“This study is a prime example of the type of international research being shared at this conference of 800 academics, researchers, dieticians and others dedicated to advancing research about the benefits of plant-based diets,” said Dr Joan Sabaté, chair of the International Congress on Vegetarian Nutrition and chair of the Department of Nutrition at Loma Linda University’s School of Public Health.

Sabaté served as principal investigator in a nutrition research study that directly linked the consumption of walnuts to significant reductions in serum cholesterol. His findings were published in the *New England Journal of Medicine* in 1993.

“Twenty years ago we released a study showing the health benefits of nuts,” Sabaté said. “Now, the results of a trial, also released at Loma Linda, further demonstrate that a plant-based diet, infused with nutritious unrefined plant fats, can have long-lasting effects for heart health and a productive and a productive life.”



What makes a nurse’s day?

A small group of experienced nurses were asked to describe the characteristics of an extraordinary day at work. The one universal theme was ‘making a difference’. The authors say it is important for managers to know what motivates nurses in order to avoid costly staff burnout and turnover. ‘Making a difference’ did not necessarily mean saving a life or even a positive clinical outcome but improving care for patients and/or their family. The authors call for more research in the area.

Nurses asked to describe what makes a day at work extraordinary say it is making a difference to patients, even if that difference isn’t as grand as saving a life, according to researchers from the United States.

Writing in the journal *Nursing Management* the authors, from Bristol Hospital in Bristol, Connecticut, say that knowing what motivates nurses is important for healthcare managers.

“To prevent costly nursing burnout and turnover, hospital managers need to create environments that foster satisfaction. To achieve this they must understand what nurses want in a job and if this changes over time, but at present this is undefined and elusive.”

Other reasons nurses offered for an extraordinary day included being able to ‘teach somebody something’, working well with colleagues as a team, and establishing a good relationship with the patient and their family.

But a typical comment from one of the nurses was: ‘The days I am most disappointed are those days where I feel like I made no difference at all... when it comes to just

a plain old ordinary day and one that’s extraordinary it’s that - making a difference.”

An extraordinary day for the nurses in the study did not necessarily depend on a good clinical outcome either, say the authors.

One nurse explained: “I think being able to accept your death is one of the biggest parts of life, and I’m impacting that person’s life... their life... their choice to die and I’m making it better... If I can make an angry family into an accepting family... when the patient and family do well, that means the world to me.”

The authors say the results of their qualitative study are not generalisable but add that it is a step towards learning what nurses value.

They suggest more qualitative studies are necessary to enable nurses to say in their own words what they find meaningful about their jobs.


Protein in malaria parasite may be new target for drug treatment

Scientists have discovered how a protein within the malaria parasite is essential to its survival as it develops inside a mosquito. They believe their findings identify this protein as a potential new target for drug treatments to prevent malaria being passed to humans.

The researchers found that when this protein – a transporter responsible for controlling the level of calcium inside cells – is absent during the parasite’s sexual reproduction stages inside a mosquito, the parasite dies before developing fully. They discovered that the calcium transporter protein is responsible for protecting the parasite from potentially lethal levels of calcium during these stages.

The findings suggest that new drug treatments could be developed to target the parasite’s sexual reproduction stages. These, unlike most current anti-malarial drugs, would block transmission of the parasite from human to mosquito, disrupting the cycle of infection.

The study was led by Dr Henry Staines at St George’s, University of London and Dr Rita Tewari of the Centre of Genetics and Genomics at the University of Nottingham. It has been published in the journal *PLoS Pathogens*.

● doi: 10.1371/journal.ppat.1003191 

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New database to speed genetic discoveries

A new online database combining symptoms, family history and genetic sequencing information is speeding the search for diseases caused by a single rogue gene. As described in an article in the May issue of *Human Mutation*, the database, known as PhenoDB, enables any clinician to document cases of unusual genetic diseases for analysis by researchers at the Johns Hopkins University School of Medicine or the Baylor College of Medicine in Houston. If a review committee agrees that the patient may indeed have a previously unknown genetic disease, the patient and some of his or her family members may be offered free comprehensive genetic testing in an effort to identify the disease culprit.

“PhenoDB is much more useful than I

even thought it would be,” says Ada Hamosh, M.D., M.P.H., a professor in the McKusick-Nathans Institute of Genetic Medicine at the Johns Hopkins University School of Medicine. “Bringing all of this information together is crucial to figuring out what our genetic variations mean.” The database is designed to capture a bevy of standardized information about phenotype, which Hamosh defines as “any characteristic of a person” – symptoms, personal and family health history, appearance, etc.

Hamosh and others developed PhenoDB for the Baylor-Hopkins Center for Mendelian Genomics (BHCMG), a four-year initiative that, together with its counterparts at Yale University and the University of Washington, is charged with uncovering the genetic roots of every disorder caused by a single faulty gene. There are an estimated 3,000 inherited disorders that have been described phenotypically in scientific papers but whose genetic causes have not yet been pinpointed, Hamosh says, but since many single-gene disorders are extremely rare, she suspects that many more have not yet made it into the literature.

The Centers for Mendelian Genomics have a powerful tool at their disposal, known as whole-exome sequencing. Just a few years ago, Hamosh explains, a geneticist trying to diagnose the cause of an inherited disease would have made an educated guess based on the patient’s signs and symptoms about which gene might be at fault, and ordered a test of that gene. If the test came back negative for a mutation, she would order a test of a different gene, and so on. But whole-exome sequencing, in which about 90% of a person’s genes are sequenced at one time, has been growing steadily cheaper, and it is this tool that the Centers will use to capture genetic sequencing information (whole-genome sequencing is the next step, but it remains too expensive for many uses, Hamosh notes, as it includes all of a person’s DNA, most of which contains no genes).

However, making sense of the deluge of data yielded by whole-exome sequencing presents its own challenges. “The average person has tens of thousands of varia-

tions from the standard genetic sequence,” Hamosh explains, “and we don’t know what most of those variations mean.” To parse these variations, she says, “one of the things that needs to change is that the lab doing the testing needs to have the whole phenotype, from head to toe.” Researchers will then be better equipped to figure out which variations may or may not be relevant to a patient’s illness. Another advantage of the database is that it enables colleagues at distant locations – such as Baylor and Johns Hopkins – to securely access the information and collaborate. Hamosh notes that the database enables different users to be afforded different levels of access – for example, a health provider will only be able to see the information he or she has entered – and that information is deidentified to protect patient privacy. In addition, providers must have patients’ consent to be included in PhenoDB.

PhenoDB would be useful for any research project that seeks to match genomic information with its phenotypic effects, Hamosh says, and with that in mind, the Baylor-Hopkins Center for Mendelian Genomics has made the PhenoDB software available for free download at <http://phenodb.net>. She predicts that similar tools will soon be incorporated into electronic health records as well, so that “doctors will have patients’ genomic information at their fingertips and can combine that with information about health history, disease symptoms and social situation to practice truly individualized medicine.”



phenodb
<http://phenodb.net>

Gene variant may play role in low back pain difference between sexes

More women than men develop chronic low back pain and sciatica. The explanation may lie with a gene variant that plays into the body’s pain regulation.

“In our study we were surprised to discover that the same gene variant may actually promote chronic pain in women and suppress pain in men,” says Professor Johannes Gjerstad, Senior Researcher at



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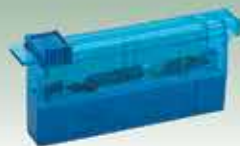
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the Norwegian National Institute of Occupational Health (STAMI).

Professor Gjerstad headed a research project encompassing nearly 300 patients suffering from disc prolapse at Oslo University Hospital and at Haukeland University Hospital in Bergen. Patients were followed up for one year after admission.

Although everyone basically has the same genes, there are many genes that come in multiple versions – an ordinary one and a variant. Generally, the effects of this genetic variation are gender-independent, but there are exceptions.

“As expected, somewhat more men than women were referred to hospital with disc prolapse,” continues Professor Gjerstad. “In the course of the study we observed that the men recovered faster than the women.”

Previous research findings on animals provided the researchers with a clue that the gene coding for the OPRM1 receptor – involved in the body’s pain regulation – may be responsible for this.

It turns out that the women with the less ordinary variant of this gene often experienced twice as much pain as the men who had the same gene variant. One year after their prolapse, on a pain scale from 0 to 10, these women reported an average intensity of around four, while the men averaged around two.

Roughly one in four persons, independent of gender, carries this unfortunate gene variant.

Previous research data shows that a gene coding for the COMT receptor plays a role in the experience of pain half a year after a disc prolapse. The gene coding for the OPRM1 receptor, however, appears to become significant only after a full year.

The patients in the study reported their pain by questionnaire. One year post-prolapse, two out of three back patients had healed completely. But the remaining third, most of them women, continued to experience discomfort.

The insights gained from the Norwegian study may ultimately help researchers to customise prevention and treatment better.

The OPRM1 receptor has no direct significance for the back’s physical condition, but rather is known to play a key role in the brain’s regulation of pain. For this reason the researchers believe their findings may

be relevant to other experiences of pain.

“We think that this OPRM1 gene variant is significant for long-term pain more generally, and we would like to investigate this further,” says Professor Gjerstad.

Researchers identify gene involved in epilepsy

Researchers at the University Department of Neurology at the MedUni Vienna have identified a gene behind an epilepsy syndrome, which could also play an important role in other idiopathic (genetically caused) epilepsies. With the so-called “next generation sequencing”, with which genetic changes can be identified within a few days, it was ascertained that the CNTN2 gene is defective in this type of epilepsy.

This was investigated by a team led by Elisabeth Stögmann in collaboration with Cairo’s Ain Shams University and the Helmholtz Centre Munich with reference to a particular Egyptian family, in which five sick children have resulted from the marriage of one healthy cousin to his, likewise healthy, second cousin. The children affected suffer from a specific epilepsy syndrome, in which different types of epileptic attacks occur. This constellation has the “advantage”, according to Stögmann, that both alleles of the gene, which is how one designates different forms of the gene, demonstrate this defect: “As a result the defect becomes symptomatic and identifiable.

“20,000 to 25,000 genes, including all the “protein coding” ones, were sequenced for this. When this was done a mutation was found in the CNTN2 gene. CNTN2 undertakes an important function in the anchoring of potassium channels to the synapses. The mutation makes it no longer possible to generate this protein and, as a consequence, the potassium channels no longer remain affixed to the synapses. The researchers suspect that the epilepsy in this family is triggered by the altered function of the potassium channels.

This discovery, which has now been published in the top journal “Brain”, is providing the stimulus for further research to investigate this particular gene in other epilepsy patients as well. Approximately one percent of the population suffers from active epilepsy in which regular epileptic fits occur.

The danger of suffering from an epileptic fit once in your life lies at approximately four to five percent. Genetic factors play a major part in the occurrence of epilepsies.

● doi: 10.1093/brain/awt068

Scientists identify 14 new genes for childhood arthritis

Scientists from The University of Manchester have identified 14 new genes which could have important consequences for future treatments of childhood arthritis. Scientists Dr Anne Hinks, Dr Joanna Cobb and Professor Wendy Thomson, from the University’s Arthritis Research UK Epidemiology Unit, whose work is published in Nature Genetics yesterday (21 April), looked at DNA extracted from blood and saliva samples of 2,000 children with childhood arthritis and compared these to healthy people.

Principal Investigator Professor Thomson, who also leads the Inflammatory Arthritis in Children theme at the National Institute for Health Research (NIHR) Manchester Musculoskeletal Biomedical Research Unit, said: “This study brought together an international group of scientists from around the world and is the largest investigation into the genetics of childhood arthritis to date. The success was, in large part, due to it being an international effort with collaborators with Cincinnati Childrens Hospital (Professor Sue Thompson), Wake Forest School of Medicine (Professor Carl Langefeld) and Emory University School of Medicine (Professor Sampath Prhalad).”

Dr Hinks, joint lead author of the study, said the findings were a significant breakthrough for understanding more about the biology of the disease and this might help identify novel therapies for the disease. “Childhood arthritis, also known as juvenile idiopathic arthritis (JIA), is a specific type of arthritis quite separate from types found in adults and there’s been only a limited amount of research into this area in the past,” she said. “This study set out to look for specific risk factors. To identify these 14 genetic risk factors is quite a big breakthrough. It will help us to understand what’s causing the condition, how it progresses and then to potentially develop new therapies.”

● doi: :10.1038/ng.2614

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Medical education and research environment in Qatar

– a new epoch for translational research in the Middle East

By Lotfi Chouchane, Ravinder Mamtani, Mohammed H Al-Thani, Al-Anoud M Al-Thani, Marco Ameduri and Javid I Sheikh

Recent advances in medical technology and key discoveries in biomedical research have the potential to improve human health in an unprecedented fashion. As a result, many of the Arab Gulf countries, particularly Qatar are devoting increasing resources toward establishing centres of excellence in biomedical research. However, there are challenges that must be overcome. The low profile of private medical institutions and their negligible endowments in the region are examples of such challenges. Business-type government controlled universities are not the solution for overcoming the challenges facing higher education and research programs in the Middle East.

During the last decade, Qatar Foundation for Education, Science and Community Development has attracted six branch campuses of American Institutions of higher learning to the Education City in Qatar, a 2500-acre area, which is rapidly becoming a model of integrating higher education and research in the region. Not-for profit, time-tested education institutions from abroad in public-private

partnership with local organizations offer favourable conditions to build robust research programs in the region. Weill Cornell Medical College in Qatar (WCMC-Q) of Cornell University is an example such an institution. It is the first and only medical school in Qatar.

WCMC-Q's interwoven education, research and public health based framework lays a sturdy foundation for developing and implementing translational medicine research programs of importance to the State of Qatar and Middle Eastern nations. This approach is yielding positive results. Discoveries from this program should influence public policy in a positive fashion toward reducing premature mortality and morbidity due to diabetes, obesity, heart disease and cancer, examples of health conditions commonly encountered in Qatar.

Introduction

A monarchy, Qatar has been ruled by the Al-Thani family since the mid-1800s. Since its independence in 1971, the nation has undergone remarkable social, economic and industrial development. Recently, the State of Qatar won the bid to host 2022 FIFA World Cup. It is evident that Qatar has transformed itself from

a poor British territory into a wealthy oil and natural gas rich state that provides ample growth opportunities for businesses, social events, education and research institutions. According to the Qatar Statistics Authority, on Sept. 30, 2010, there were 1,642,235 Qatari residents, approximately 350,000 of who are Qatari citizens. The remaining residents are expatriates chiefly from South Asia and from non-oil-rich Arab states.

Countries in the Middle East including Gulf Cooperation Council (GCC) nations such as Qatar and United Arab Emirates have experienced a reduction in their mortality rates. In general, life expectancy has increased and people are living longer, many with debilitating non-communicable diseases (NCDs), such as diabetes, cancer and heart disease^[1,2].

Health care continues to evolve in the GCC nations. The nations have committed to combating the widespread prevalence of NCDs and the morbidity associated with them^[2]. Qatar has been at the forefront of initiating new research, clinical and community projects in controlling these diseases. In general, Qatar's goal is changing from a disease based approach to a more comprehensive evidence based integrative multidisciplinary care and a

preventive approach to disease and patient management. Evidence based approach will necessitate developing programs aimed at high quality basic science and public health research with a view to improve the quality of life, and reduce morbidity and premature mortality associated with commonly occurring chronic diseases such as diabetes, obesity and cancer. Education programs, which offer opportunities for research and ideal clinical experience, are required. Developing translational research programs in the Middle East is imperative.

But building a robust, viable research culture in the Middle East is a challenge. There are several reasons for this - one, the Arab world's 200 universities have almost negligible endowments with business and lack adequate venture capital; two, most Arab universities are largely state owned and spend only around one percent of their budgets on research compared to an international average of 35 percent; three, some wealthy countries in the region are lacking in their human capacity building but have funding; and four, low and middle income nations are lacking in financial resources despite having well-educated professionals and scientists^[3].

Based on our own collective experience in global health, medical education and research, we feel business-type government controlled universities are not the solution for overcoming the challenges facing higher education and research programs in the Middle East. However, not-for profit, time-tested education institutions from abroad with local financial support and working in close collaboration with the host country's institutions show promise and may offer exciting opportunities. A case in point is Weill Cornell Medical College in Qatar (WCMC-Q). WCMC-Q's interwoven framework of education, research, public health and clinical components lays a sturdy foundation for developing evidence based translational research as discussed in this review.

We begin our review by briefly discussing the educational and research environment. Our discussion continues on Medical Education in Qatar, and provides a summary of student demographics and their interests, and pre-medical and medi-

cal education programs at WCMC-Q. This is followed by a brief description of WCMC-Q's public health and research activities. We then summarize the challenges WCMC-Q faces and the opportunities it provides to its faculty and their collaborators. Documenting our experience and the lessons learnt might be instructive to those considering establishing similar programs internationally.

Research and Education Environment in Qatar

Qatar Foundation (QF), which was established in 1995, is an independent, private, not for profit organization, whose mission is "to prepare the people of Qatar and the region to meet the challenges of an ever-changing world, and to make Qatar a leader in innovative education and research." Under the leadership of His Highness Sheikh Hamad Bin Khalifa Al-Thani, the Emir of Qatar and founder of Qatar Foundation, and Her Highness Sheikha Mozah Bint Nasser Al-Missned, Chairperson of Qatar Foundation, the Foundation is "transforming Qatari society by educating the rising generation to the highest world standards - these will be the skilled professionals who will be the country's future leaders. It is

turning Qatar into a producer of knowledge by building a research base. Some of the new ideas will reach the stage of commercialization, helping diversify the economy"^[4].

Under the umbrella of QF, there are several premier research and or education institutions. These include the Education City (EC) of which WCMC-Q is an integral part, Qatar Science & Technology Park (QSTP) and the Qatar National Research Fund (QNRF). The overall intent is to connect the industry, academic and government sectors into what is commonly referred to as the *Triple Helix* model^[4,5]. The model provides a conceptual framework for regional development.

Education City in Doha, home to six American University branch campuses including Cornell, Georgetown, Texas A&M and Carnegie Mellon, is the flagship of Qatar Foundation. It is spread over 2,500 acres. With the exception of Weill Cornell Medical College of Cornell University, programs offered by the EC universities initially were limited to undergraduate degrees but recently graduate degrees have been initiated by Virginia Commonwealth University and Texas A&M University-Qatar. Additionally, there are plans for EC universities to

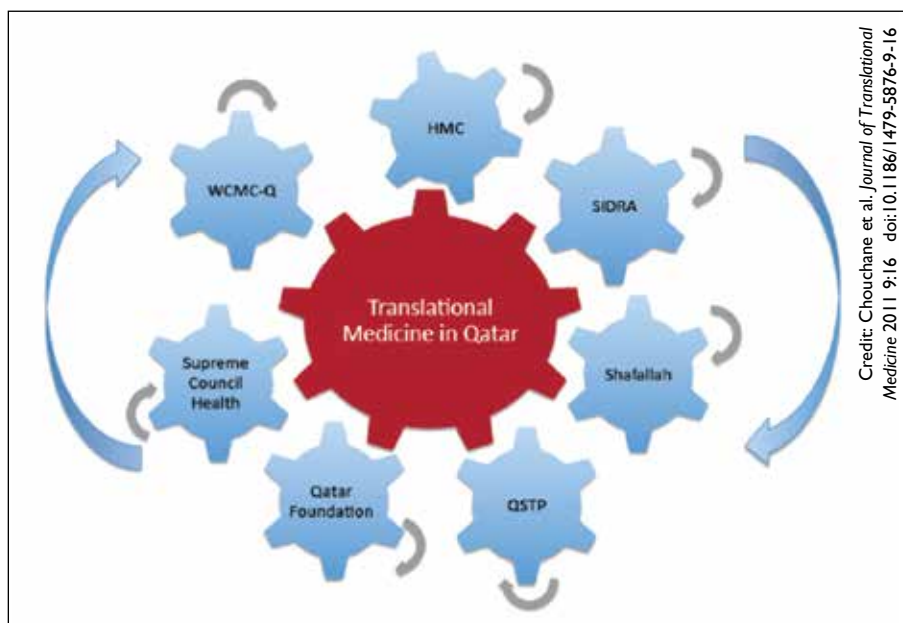


Figure 1. WCMC-Q's Collaboration with Core Qatar Partner is Key to Advancing Translational Medicine in Qatar. Each component is a cog in the "central wheel", which represents the Translational Medicine enterprise in Qatar. WCMC-Q: Weill Cornell Medical College in Qatar; HMC: Hamad Medical Corporation; SIDRA: a teaching hospital; Safallah: Special Learning and Research Center for children with disabilities; QSTP: Qatar Science and Technology Park.

Credit: Chouchane et al. Journal of Translational Medicine 2011 9:16 doi:10.1186/1479-5876-9-16



collaborate with the industry as their research programs mature.

QSTP facilitates the engagement of the private sector with the universities, as a base for multi-national and national companies to establish research centres, and an opportunity for knowledge-based entrepreneurs to create new businesses. It has already attracted tenants such as EADS, Microsoft, ExxonMobil, GE and Shell, the latter of which is to set up a \$100m gas-to-liquids research centre. R&D is focused in areas related to the economy of Qatar, such as gas and petrochemicals, healthcare, information and communication technologies, water technologies, the environment and aircraft operations. QSTP also recently announced two venture-capital funds of \$130 m to help commercialize local innovations, and the QNRF is providing public funding needed to support basic and applied research.

In accordance with its mission, the Qatar Foundation has embarked on an innovative and visionary set of initiatives to create lasting benefits for the country of Qatar and to increase the visibility of Qatar within the global community. A crucial component of these initiatives is the establishment of infrastructure aimed at improving the health and quality of life of the Qatari population. Weill Cornell Medical College in Qatar's charge includes a leadership role in the effort to address important biomedical research and healthcare needs in Qatar.

The main focus of Qatar Foundation's mission is a partnership building approach which allows institutions in Qatar with similar objectives in medical education, research, public health and healthcare to come together: WCMC-Q and its US-based sister institution WCMC-NY, Hamad Medical Corporation (HMC), Sidra Medical and Research Center, QSTP, Supreme Council of Health (SCH), and QF the Qatar Foundation (Figure 1). Qatar's commitment to research is evident in many reports and comments of scientists from around the world^[6].

Medical Education

WCMC-Q, a branch campus of Weill Cornell Medical College in New York (NY),

is the unique medical school in Qatar. It is located in Doha, Qatar, about 11,000 KM distant from its parent campus in New York. WCMC-Q is housed in Education City. WCMC-Q awards the same MD degree as the main campus in New York.

This institution, its students, faculty, educational, clinical and research resources, processes and traditions are in the early stages of development. WCMC-Q graduated its inaugural class in May 2008. Its students and faculty, as well its local affiliate Hamad Medical Corporation (HMC) faculty, are remarkably diverse in terms of their cultural, social and educational backgrounds.

WCMC-Q currently offers three separate educational programs: a) two year premedical program, b) four year medical (MD) program and c) one-year foundation program (primarily aimed at Qatari students), which provides intensive training to high school graduates in science, math and English to better prepare them for the pre-medical program.

WCMC-Q medical student demographics and interests

Tables 1 and 2 show the demographics of the current student body (Foundation, Pre-medical and Medical Programs), which are composed of students from 36 different countries with Qatari nationals constituting 18% of the student body. The male and female percentage distribution of students is about 54 and 46 respectively.

WCMC-Q education programs

Pre medical education

The Pre medical education program at WCMC-Q is a flexible two or three-year program to which students are admitted following their high school education. Most students take the two-year option with condensed mathematics and sciences courses. For those students coming from a disadvantaged high school background or in need of development in their English skills, a one-year Founda-

Table 1

Distribution of Medical, Premedical and Foundation Students by Gender (Numbers as of Sep. 2010)

	Total Number	Females	Males
Medical Students			
Class 2011	38	20	18
Class 2012	28	7	21
Class 2013	40	22	18
Class 2014	42	18	24
Total Medical Students	148	67	81
Pre-medical Students	109	52	57
Foundation	17	8	9
All Students	274	127	147
Percent distribution		46%	54%

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Table 1. Distribution of Medical, Premedical and Foundation Students by Gender (Numbers as of Sep. 2010)



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dation Program has been added before the premedical program. The Foundation Program offers pre-college courses in the sciences and an English as a Second Language (ESL) course, along with a focus on developing study skills and professionalism. This is quite different from the typical situation in the US, where, barring very few exceptions, all students entering a medical school have completed a four-year undergraduate degree.

The Premedical Program at WCMC-Q offers a range of courses chosen to meet WCMC Q admission requirements and to offer breadth of education. While most of the courses focus on mathematics, physics, chemistry, and biology, an effort has been made to offer humanities and social science courses such as psychology and medical ethics. While such a curriculum may appear rigid and too heavily science-oriented, it allows for a solid and integrated learning experience. There is a close and continuous interaction among the faculty delivering the courses, and the students have the opportunity to better appreciate the unifying themes and concepts lying behind the nominally distinct sciences.

Additionally, premedical students have the opportunity to participate in research projects under the guidance of premedical, medical, and research faculty. The Premedical Program has been very successful in producing student capable to enter the Medical Program and to perform at the high level there required.

Medical program

WCMC-Q and NY use the same curriculum and learning objectives. The curriculum, which integrates basic with clinical sciences, is progressive, challenging and rigorous. It engages students in active learning, self-directed inquiry, and small group discussions. These methods are integrated with seminars and lectures provided by faculty from WCMC-Q, NY, and Hamad Medical Corporation (HMC), an affiliate of WCMC-Q.

The medical curriculum is designed to provide students a series of integrated, interactive courses. The first and second year basic science curriculum consists of five courses and an introduction to clinical skills. These courses are - Molecules

Table 2

Distribution of Students by Citizenship. (Numbers as of September 2010)

Nationalities	Count	Percent
Qatar	48	18
Egypt	32	12
United States	29	10
India	24	9
Jordan	18	6
Syria	16	6
Canada	15	5
Lebanon	14	5
Iraq	13	5
Pakistan	13	5
Bahrain	6	2
Sudan	5	2
France	4	1
Oman	4	1
Others	33	12
Total Number of Students	274	100

Other countries include: Australia, Bangladesh, Yemen (3 each); Republic of Korea (South), Palestine-Egypt, Palestine-Lebanon, Russia, Saudi Arabia, Sri Lanka (2 each); Algeria, Bosnia, Germany, Kenya, Kuwait, Mauritania, Mauritius, Nepal, Philippines, Tanzania, Tunisia, U.A.E., United Kingdom (1 each).

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Table 2. Distribution of Students by Citizenship. (Numbers as of September 2010)

Table 3

Numbers of graduating students, who gained research and other experiences

Number(%) of students gaining certain experience

Graduating Class	Number	Research	Local public Health/Community	Global Health
Class of 2008	15	10 (66)	8 (53)	3 (20)
Class of 2009	17	9 (53)	9 (53)	4 (23)
Class of 2010	17	17 (100)	10 (59)	8 (47)

Research experience - is at least 8 weeks of approved and supervised research experience, which the students gained during their medical school education program.

Local public health - is at least the equivalent of 2 weeks of any volunteer local health related experience or any other volunteer work which contributed to improving the quality of life of people living in Qatar.

Global health experience - is at least the equivalent of 2 weeks of any supervised voluntary or for credit experience (as an elective) in countries other than the US and Qatar.

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Table 3. Numbers of graduating students, who gained research and other experiences



Members of the International Advisory Board meeting in Doha. L-R: Dr John Wong; Dr Delos (Toby) Cosgrove; Dr Victor Dzau; Professor Martin Paul; The Right Hon Professor the Lord Darzi; Hanan Al Kuwari PhD; Professor Edward Hillhouse; Sir John Tooke; Sir Keith Peters; Dr Javid Sheikh; and, Dr Steven A. Wartman.

International Advisory Board for Qatar's Academic Health System meets in Doha

The International Advisory Board (IAB) for Qatar's Academic Health System (AHS), held its third meeting in Doha in March. On the agenda were discussions about progress made for clinical transformation programs, the ongoing development of research institutions and strength of the evolving partnership between seven health, research and education organizations in Qatar.

The IAB is an advisory body formed of high-profile, international experts in the fields of health, education and research, with significant experience in the development and operation of academic health systems. The IAB reviewed the wide-range of significant milestones achieved to establish the platform towards becoming a nation-wide academic health system.

The IAB met on the eve of the first Middle East and North Africa meeting of the Association of Academic Health Centers International, co-hosted by Hamad Medical Corporation (HMC).

"We are fortunate to have such an eminent International Advisory Board. Successful collaborations across the Qatar's academic health partnership are continuing to gain momentum," said Hanan Al-Kuwari PhD, HMC's Managing Director. "This is reflected in the growing number of joint appointments of physicians between HMC and Weill Cornell Medical College in Qatar. This same process includes joint appointments in nursing with the University of Calgary – Qatar and with Qatar University in the area of pharmacy as well as joint appointments with Sidra and the Qatar Biomedical Research Institute."

Professor Edward Hillhouse, HMC's Chief of Scientific, Faculty and Academic Affairs, said the IAB discussions featured a productive discussion on the importance of managing transformation with a commitment to patient care and safety. "I believe Qatar's AHS partnership continues to reinforce the most important principle of the academic health system – that the patient is at the center of everything we do."

Dr Steven A. Wartman, President and Chief Executive Officer of the Association of Academic Health Centers and a member of the IAB applauded the depth and reach of partnership working including the emerging collaborative health projects.

"This type of partnership demonstrates effective engagement by all seven institutions, generated by both successful, and smart capacity-building. It is a significant achievement," Dr Wartman said. "It is a collaborative model others will seek to emulate."


The International Advisory Board is an advisory body formed of high-profile, international experts in the fields of health, education and research, with significant experience in the development and operation of academic health systems. Its primary functions include:

- Leverage international expertise to provide advice and guidance on the Academic Health System's overarching strategy, goals, and plans.
- Provide an international perspective on emerging global developments and challenges.
- Assist in identifying opportunities for partnership and collaboration with health,

education and research institutions both locally and globally.

- Assist in the development of metrics and Key Performance Indicators in line with international best practice.
- Help establish and develop the Academic Health System's position and reputation within networks of practice, locally, nationally and internationally.

The IAB members are:

- Hanan Al Kuwari PhD, Managing Director, Hamad Medical Corporation
- Professor Edward Hillhouse, Chief of Scientific, Faculty and Academic Affairs, Hamad Medical Corporation
- The Right Hon Professor the Lord Darzi, Chair of Imperial College Institute for Global Health Innovation and AHSC, Imperial College, London
- Dr Victor Dzau, President and CEO, Duke University Health System
- Professor Martin Paul, President, Maastricht University
- Dr Steven A. Wartman, President and CEO, Association of Academic Health Centers
- Dr John Wong, Deputy Chief Executive, the National University of Health System, Singapore
- Dr Delos (Toby) Cosgrove, CEO and President, Cleveland Clinic
- Dr Javid Sheikh, Dean, Weill Cornell Medical College in Qatar
- Sir John Tooke, Vice Provost of Health, University College London
- Sir Keith Peters, Independent Chair, Cambridge University Health Partners 



Genes & Cells, Human Structure & Function, Host Defenses, Brain and Mind, and Basis of Disease. There are two additional clinical based courses, Medicine Patients & Society I and II, which the students must complete before beginning their clinical experience in the third year. The third and fourth year clinical curriculum requires completing several required core clinical clerkships and electives, and one course, Advanced Basic Science. The students complete their core clerkships in medicine, primary care, neurology, obstetrics and gynaecology, paediatrics, psychiatry, and general surgery at HMC affiliates in Qatar. Additionally, almost all the students spend approximately 12 weeks at New York Cornell Presbyterian - Cornell and affiliated hospitals where they complete sub-internships and electives. The clerkship sites in Qatar, developed in collaboration with HMC, include Hamad General Hospital (in-patient, ER and outpatient clinics), Women's Hospital, Shafallah Center, Primary Health Centers (PHC) and other local hospitals and centres. Students also complete a two-week required clerkship in public health and another short course, Medicine, Patients and Society III aimed at promoting humanistic practice. The public health course encourages working in teams and building partnerships, which promote coordination of written and oral communication skills. These skills are vital to public health professionals and researchers.

WCMC-Q's program prepares its students exceptionally well. This is reflected in their performance on the standardized test, namely the United States Medical Licensing Examination (USMLE), which is a three-part examination for medical licensure in the United States and is sponsored by the Federation of State Medical Boards (FSMB) and the National Board of Medical Examiners (NBME). Here we report on the performance of the students who took the USMLE Step 1 and II examinations for the first time in the period 2006 - 10. As can be seen from the Table 4 the USMLE I passing rate of WCMC-Q students is 86% as compared to 93% for the US students. This difference is not statistically significant. Table 5 shows the USMLE II passing rate for both the US

Table 4
Performance of Examinees Taking USMLE Step I for First Time in The Years 2006, '07 and '08 (Students from the Classes of 2008, 09 and 10)

	WCMC-Q*	US**
Number Tested	54	55604
Number Passing	47	51947
Percent Passing	87	93

P value = 0.059 (Pearson chi square); 0.08 (Fisher's exact)
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[OPEN DATA](#)

Table 4. Performance of Examinees Taking USMLE Step I for First Time in The Years 2006, '07 and '08 (Students from the Classes of 2008, 09 and 10)

Table 5
Performance of Examinees Taking USMLE Step II Clinical Knowledge (CK) for First Time in The Years 2007-08, '08-09 and '09-10 (Students from the Classes of 2008, 09 and 10)

	WCMC-Q*	US**
Number Tested	45***	53505
Number Passing	43	51525
Percent Passing	96	96

P value = 0.683 (Fisher's exact)

*Several students from the Classes of 2008, 09 and 10 have/had taken leave of absence for personal reasons or for pursuing research. Therefore the number of students who were tested that appear in the Tables 4a and 4b do not match with the numbers of graduating students in the Table 3

**Source: Weill Cornell Medical College, Registrar's Office.

***There were three additional students who passed their USMLE CK; however, our Office does not have a record of the dates when they took the examination, and therefore, are excluded from the number tested.

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Table 5. Performance of Examinees Taking USMLE Step II Clinical Knowledge (CK) for First Time in The Years 2007-08, '08-09 and '09-10 (Students from the Classes of 2008, 09 and 10)

and WCMC-Q students is 96%.

WCMC-Q gradating class of 2010 demonstrated the high quality of their education by being able to successfully compete and secure residency spots in their fields of interest at excellent institutions in the US (See Table 6). Out of 17 graduating students, 11 (65%) are pursuing postgraduate residency training in the

US. Four (23%) have decided to take research fellowships at US institutions and the remaining two (12%) have opted for postgraduate education at HMC. These results reflect very positively on the quality of the WCMC-Q program leading to the M.D. degree.

Research is growing at WCMC-Q and will provide many opportunities to our



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students in years ahead. While opportunities for off site student field placements are limited, our partnerships with government and health care institutions are beginning to produce positive results.

Public Health Agenda and Activities

WCMC-Q is committed to working with local public health and global partner institutions that will be most appropriate at this stage to advance most effectively the mission of WCMC-Q in education, research, and patient care, as well as population well being of people in the State of Qatar.

In this context WCMC-Q is embarking on the following public health agenda in the three areas of education, research and community related matters:

A. Education: to strengthen and augment existing educational activities; and develop and implement new programs. Examples of these include a) student exchange programs and b) courses and programs related to disciplines such as research methodology, public health, nanotechnology, nutrition, bio-informatics, and public health.

B. Research: to expand and increase collaborative global and local research initiatives especially on topics of public health importance such as obesity and motor vehicle accidents. We will increase public health research on projects of relevance to the local communities in Qatar. This will be done in close cooperation with the Department of Public Health, Supreme Council of Health (SCH), Qatar and other stakeholders.

C. Community and related matters: to enhance community, health awareness and patient care related services that support the needs of people in Qatar.

Biomedical and Translational Research

WCMC-Q's research program aims to a) build a self-sustaining core of top biomedical scientists by recruiting, retaining, and training top talents, and b) establish strong research programs in Qatar which target important public health problems and healthcare issues. WCMC-Q research program is consistent with the State of Qatar's strategy on education, research, community development and health care (Figure 2).

Table 6
Residency Programs at which Class 2010 Graduates are pursuing their clinical training*

Program	Specialty	Location
1 Vanderbilt Univ Med Ctr- TN	Internal Medicine	Nashville, Tennessee - USA
2 Providence Hospital & Medical Centers	Internal Medicine	Southfield, Michigan - USA
3 George Washington University Medical Ctr	Internal Medicine	Washington DC - USA
4 Hamed Medical Corporation	General Surgery	Doha - Qatar
5 Methodist Hospital System	Internal Medicine	Houston, Texas - USA
6 NYP Hospital - Weill Cornell Med Ctr	Internal Medicine	New York, New York - USA
7 Johns Hopkins Hospital	Internal Medicine	Baltimore, Maryland - USA
8 University of Louisville School of Medicine	Obstetrics-Gynecology	Louisville, Kentucky - USA
9 North Shore-Long Island Jewish Hlth System	General Surgery	Long Island, New York - USA
10 Drexel University COM/Hahnemann Univ Hosp	Obstetrics-Gynecology	Philadelphia, Pennsylvania - USA
11 Hamed Medical Corporation	Anesthesiology	Doha - Qatar
12 Cleveland Clinic Foundation	Internal Medicine	Cleveland, Ohio - USA
13 University at Buffalo School of Medicine	Pediatrics	Buffalo, New York - USA

* There are four additional students who are pursuing their research interests at institutions in the US.
 Chouchane et al. *Journal of Translational Medicine* 2011 9:16 doi:10.1186/1479-5876-9-16
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Table 6. Residency Programs at which Class 2010 Graduates are pursuing their clinical training*

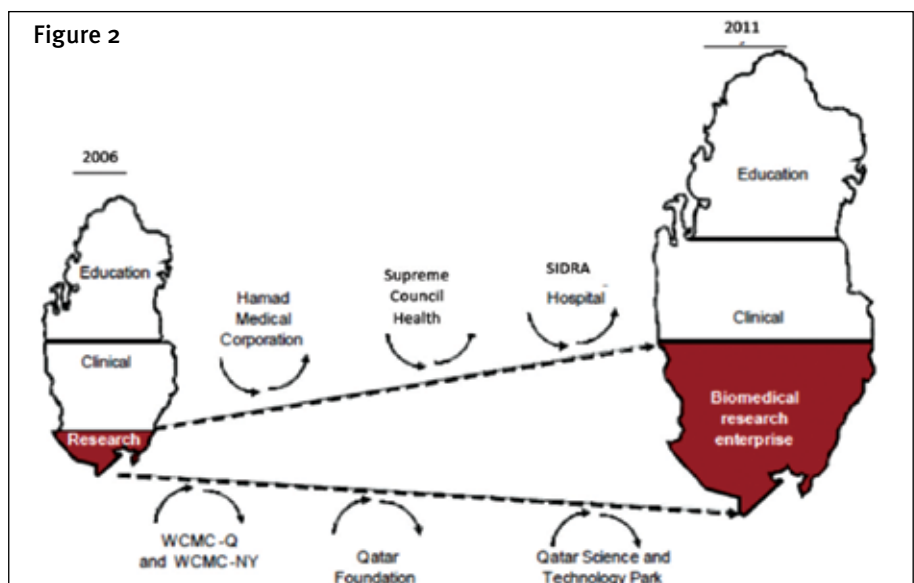


Figure 2. The growing collaborative Biomedical Research Program in Qatar.



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Challenges

WCMC-Q has made excellent progress in establishing a world-class research enterprise located in Qatar conducting cutting-edge biomedical research. This enterprise is attracting, retaining and developing research talent. The College’s project is work in progress. It will contribute to the ground-breaking scientific ideas and allow for appropriate commercialization of research findings with QSTP. The creation of such an enterprise is a long-term endeavour that faces many challenges, examples of which include: 1) the challenge faced by translational medicine, which is the difficulty in truly being a trans-disciplinary science that brings together researchers and practitioners that traditionally work within their own “silos” of practice^[7], 2) the creation of sustainable research infrastructure, 3) building a strong research community, 4) recruiting and retaining top-notch faculty and researchers, and 5) lack of recognition of Qatar as a core member of the global research community. Despite these challenges Qatar has made considerable progress and initiated many projects, which will lay solid foundation for effective clinical and preventing strategies in combating NCDs. These strategies will not only reduce the incidence of these diseases but also reduce pain and alleviate suffering associated with them. An outline of QF’s and WCMC’s projects and other initiatives appears below.

Opportunities

There are many research opportunities available to the students and faculty at WCMC-Q. An example of such opportunities is the availability of research funds through the Qatar Foundation’s Qatar National Priority Research Program (NPRP). This program funds meritorious proposals ranging from US\$20,000 up to US\$350,000 per year for a duration of one, two or three years. The program encourages local and international collaboration. More recently, QNRF launched a new program, called National Priorities Research Program - Exceptional Proposals (NPRP-EP). This new program seeks investigators with proposals of high merit, which require extra funds and more time for their completion. The program provides up to US\$5 million per project for a

HMC rolls out new hi-tech ambulance fleet

The roll-out of Hamad Medical Corporation’s (HMC) new state-of-the-art fleet of ambulances has continued with 17 new vehicles hitting the streets of Qatar in March.

The ambulances have already been deployed across the country, including for Qatar National Sports Day. Over a 12-month period HMC is deploying 100 new Mercedes Sprint ambulances equipped with a full suite of Physio-Control emergency medical response solutions, including the LUCAS Chest Compression System, LIFEPAK 15 monitor/defibrillator, LIFENET System data network and LIFEPAK 1000 automated external defibrillator (AED).


“The HMC Ambulance Service is the first national ambulance service to fully implement these cutting edge technologies across a whole fleet of vehicles,” said Dr Robert Campbell Owen, chief executive officer of the Ambulance Service. “Combined, these technologies are helping the HMC Ambulance Service and hospital-based care teams deliver advanced levels of care, helping improve patient outcomes in Qatar. The Ambulance Service aims to continuously evolve our service to meet the needs of our community, and the introduction of these new vehicles is a testament to that and our commitment to saving lives.”

LUCAS is an external, mechanical device that provides chest compressions during cardiopulmonary resuscitation (CPR) in accordance with the 2010 American Heart Association/

European Resuscitation Council Guidelines. LUCAS frees-up rescuers to perform other critical tasks and improves Ambulance Service staff safety, and unlike humans performing CPR, never gets tired.

“This represents a major commitment by HMC to provide the highest level of patient care and is a testament to the strong partnership between Physio-Control and HMC, dating back to 1996,” said Mathieu Badard, vice president and general manager, Europe, Middle East and Asia, at Physio-Control, Inc. “In addition, our Qatar distribution partner, Aamal Medical, has been instrumental in providing HMC with first-rate training and service support for the new equipment.”

The technology fitted in HMC’s new ambulances also includes:

- LIFEPAK 15 monitor/defibrillator – it offers advanced non-invasive monitoring parameters, including 12-lead ECG capture and transmission, temperature, EtCO₂, carbon monoxide, SpO₂, methemoglobin, and the only multi-parameter defibrillator available with the capability to deliver shocks up to 360-joules
- LIFENET System – a comprehensive cloud-based data network that helps Ambulance Service and hospital teams work more efficiently by sharing critical chest pain patient data to reduce time-to-treatment, and enabling device software and configuration fleet-wide
- LIFEPAK 1000 AED – an easy-to-use automatic external defibrillator (AED) designed for rugged environments 

maximum period of five years.

In continuing to nurture various opportunities, and develop and implement the translational research program, WCMC-Q will be guided by the following objectives:

1. Using bench-to-bedside research approach in addressing Qatar’s major health problems such as diabetes, cancer, obesity

and heart disease.

2. Building local research capacity by establishing sustainable training programs/courses for students and physicians.

3. Developing and nurturing viable, collaborative partnerships with local and international institutions to further enhance research-building capacity.



L-R Hassan Al Hail,
Professor Ed Hillhouse,
Dr Steven A. Wartman,
Dr Abdullatif AlKhal

Qatar's Academic Health System

– finding innovative solutions for the nation's health challenges

Qatar's unique Academic Health System (AHS) partnership and its focus on using education and research to improve healthcare, is already seeing scientists and clinicians working on targeted research projects relating to the challenges facing Qatar's growing population.

Hamad Medical Corporation (HMC), Qatar's public healthcare provider, together with six partner organizations is on a five-year journey to develop a nationwide academic health system in Qatar; a first within the MENA region. The partnership is seeing progress on research programs focusing on specific conditions that affect the population, including diabetes. It has adopted the "bench to bedside" approach for the translation of research to practical clinical benefits for patients.

"We have worked hard with our partners in the creation of this AHS to lay the solid foundations of our future success," said Professor Edward Hillhouse, HMC's Chief of Scientific, Faculty and Academic Affairs. "Our primary goal is to ensure our patients receive the best care possible, informed by the latest research development and using the latest treatments, tools and diagnostics."

The partnership is already seeing real advances in the establishment of "virtual" healthcare institutes – for cancer, cardiovascular disease, diabetes and neu-

rosience – bringing clinical services and research together to streamline patient pathways and deliver comprehensive care for specific conditions.

"These specialized virtual institutes will serve as hubs of clinical, education and research activity which are all designed to deliver a seamless package of care for our patients," said Prof Hillhouse. "This involves clinical and translational (bench to bedside) research which will make real impacts on the delivery of healthcare to our patients. The institutes will also look at innovative solutions for the healthcare challenges facing Qatar."

The institutes, developed in tandem with the National Health Strategy, will underpin the state-of-the-art Translational Research Institute, which will open in 2015. This research emphasis has also involved reaching out to world class international partners focusing on areas including personalized medicine, women's health, obesity and diabetes.

Another key component to the success of the partnership is the creation of a highly skilled and flexible healthcare workforce in Qatar.

"We are creating a world class healthcare workforce and our educational achievement has already been recognized by the Accreditation Council for Graduate Medi-

cal Education International (AGCME-I), with Qatar being only the second country outside of the United States, after Singapore, to achieve this," said Dr Abdullatif AlKhal, Deputy Chief of Medical Staff for Academic Affairs and Director of Medical Education at HMC. "Further, HMC is collaborating with Weill Cornell Medical College in Qatar and other renowned international partners to transform graduate medical education in Qatar."

Dr Steven A. Wartman, President and Chief Executive Officer of the Association of Academic Healthcare Centers said the partnership being created in Qatar was truly unique.

"Together, Qatar's AHS partners have established a clear vision and strategy for success, drawing upon the partnership's synergies as well as additional local and international expertise. Patients, and the delivery of excellent patient care, are at the forefront of the partnership's ambitious vision," he said.

Qatar's AHS is a dynamic partnership between Hamad Medical Corporation, Weill Cornell Medical College in Qatar, Qatar University, the University of Calgary – Qatar, College of the North Atlantic – Qatar, Sidra Medical and Research Center and Primary Health Care Corporation. **MEH**

Students honored for their posters

College of Pharmacy (CPH) BSc (Pharm) students and faculty received several awards at the region's largest pharmacy conference -- the 19th annual Dubai International Pharmaceuticals and Technology Conference and Exhibition (DUPHAT) on March 10-12.

BSc (Pharm) students Tasneem Masoud and Atifeh Moeinzadeh won second place out of 120 submissions for Best Student Poster Award - pharmacy theme. 4th Best Student Oral Presentation was awarded to Safae Abou Yousef for her study entitled: "Diabetes Mellitus Care in Qatar: A survey of Pharmacists Activities, Attitudes and Perceived Barriers" out of 27 presentations, and Farah Jibril, Mawadda Gajam and Hoda Gad Atwa placed 15th out of 120 submissions in the Best Student Poster Award category for: "Attitudes of Pharmacy Students on Pharmacokinetic Teaching and Application in Clinical Practice".

CPH faculty Dr Kyle Wilby placed 7th in the Best Professional Poster category for: "A Systematic Review of the Pharmacokinetic Implications of Schistosomiasis" out of 96 professional submissions.

The students and faculty were among a 15-strong CPH delegation that attended the event which is held under the patronage of H.H. Sheikh Hamdan Bin Rashid Al Maktoum and attracts more than 13,000 participants and exhibitors from around

the world including pharmacists, pharmacy students, scientists, pharmaceutical manufacturers and academia.

Also included in the delegation were Amina Radoui, Aya Elbadwi, Hoda Meena Basri, Ibtihal Abdallah and Soumaya Allouch, Drs Mohamad Izham Ibrahim and Nadir Kheir, and communications specialist Tammy King.

Commenting on the students and faculty success, CPH Dean Dr Sherief Khalifa said: "We are very proud of these achievements which underscore the level of quality the College has developed since its inception and continues to build on. DUPHAT has been a key conference for the college for the past five years, and the students are gaining more experience, knowledge and confidence from presenting at large forums such as this. This year the college was represented by the largest Qatar University student delegation since we began participating. Congratulations to them and the faculty for another strong representation at this important scientific event. Well done!

The college was also represented by an information booth manned by King to promote its undergraduate, graduate and doctoral programs with the aim to attract prospective students from pharmacy and non-pharmacy backgrounds from the region and beyond. **MEH**



Tasneem Massoud and Atifeh Moeinzadeh won 2nd place for the Best Student Poster



Safae Abu Yousef and Meena Basri stand in front of their poster

4. Establishing an Institute for Global and Public Health, which will engage in research that can positively influence public policy so as to address major health problems such as obesity and motor vehicular accidents.

Reflected in WCMC-Q objectives are several integrated translational medicine research proposals that have been developed and funded by Qatar Foundation's Qatar National Priority Research Program (NPRP). Others have been submitted for funding to the same agency. We present synopsis of three of such proposals.

1. Genomics and proteomics of breast cancer in Arab populations

The main goal of this project is to address key questions of the nature of genetic predisposition and protein biomarkers for certain types of breast cancer particularly frequent in Arab populations and to translate that to clinical management, including diagnosis, prevention and therapeutics. It aims to establish excellence in the

Middle East/North Africa region in the cancer research field, which could be an instrument to tackle the fragmentation of cancer research in the Arab countries.

2. Public health and genomic aspects of obesity in Qatar

This multidisciplinary project aims to identify and understand the a) epidemiologic risk factors of obesity, b) the functions and interactions of macromolecules in cells and c) decipher the biological mechanisms of obesity among Qataris. The study findings will be used in developing novel strategies in the treatment and prevention of obesity in Qatar and other nations in the region.

3. Nanotechnologies and treatment of obesity

This project explores the significance of nanotechnological approach in the treatment of obesity. The results of this project will play a fundamental role in setting the stage for major programs in Nano-Medicine and Stem Cell-Based therapies and

technologies in Qatar, as well as the translation of the scientific discoveries from such programs in predictive medicine for the prevention and treatment of obesity and metabolic diseases.

We should comment on one other translational research development. Given the high prevalence of diabetes and obesity in Qatar, WCMC-Q is establishing new Diabetes, Obesity and Metabolic Syndrome centre (DOMS). The DOMS Center's ultimate vision is to create a solid infrastructure, which supports the growth of collaborative and multidisciplinary research initiatives in Qatar. The Center's state of the art facilities dealing with genomics, proteomics, imaging, and computational and health quantitative sciences will be available to the scientists for their research projects. The Center will also develop educational and training programs, and partner with Supreme Council of Health on topics of public health importance to the country and the region. **▶**

Weill Cornell Medical College in Qatar – working to improve healthcare

Good health is one of the most valuable gifts we have and as a medical school, Weill Cornell Medical College in Qatar (WCMC-Q) works hard to help enhance the healthcare system in the country.

The college was established with the mission to provide the finest education possible for medical students; to conduct cutting-edge research; and to improve healthcare both now and for future generations. All of these are helping to make a real difference to the care that people in the country receive.

Through providing a world-class medical education to students from Qatar and the wider region, WCMC-Q is helping to create doctors who have a US standard of education, but who are keen to use their skills in Qatar and the wider Middle East; doctors who understand the culture and traditions of the Arab world but who possess a 21st century knowledge of medicine that is second to none. In this way the college contributes to the knowledge-based economy, the country's healthcare system, and potentially the world of education as many students will eventually combine clinical practice with teaching and academia.

Research

Linked to this is WCMC-Q's Research Division. Now numbering almost 30 separate laboratories, the research is centered on complex diseases and conditions prevalent in the region, including diabetes, obesity, metabolic syndrome, associated cardiovascular complications, and neurogenetic abnormalities. Through better understanding of the factors related to these diseases in the local population, WCMC-Q can impact the efficiency and adaptability of healthcare delivery, in the future paving the way for personalized medicine. Not only this, but through participation in the Academic Health System, the college is able to transform health locally through pioneering research and clinical discoveries in partnerships with other organizations, including Hamad Medical Corporation, Sidra Medical and Research Center and Qatar University.

Through both education and research, WCMC-Q is helping to improve the health of the community, particularly in the medium and long-term, but for the college and its leadership it also important that we have an immediate impact

on the health of the community. Initiatives like Sahtak Awalan: Your Health First do just that, educating the population about leading a healthy lifestyle and encouraging them to exercise, eat healthily and think about the negative behaviours that can impact their health.

For today and tomorrow, WCMC-Q is determined to use its resources and human capital to improve the lives of people throughout Qatar, the region and the world. **MEH**



WCMC-Q joins global medical education initiative

Weill Cornell Medical College in Qatar (WCMC-Q) has joined an elite group of prestigious universities promoting global dialogue and international exchange in medical education that aims to connect educators and students around the world.



Dr Javaid Sheikh Dean of Weill Cornell Medical College in Qatar

The United States Educational Commission for Foreign Medical Graduates (ECFMG) has launched the Global Education Medicine (GEMx) initiative.

This will allow medical schools from around the world to establish strong relationships with other schools to provide students with a wide range of high-quality educational opportunities.

WCMC-Q Dean Dr Javaid Sheikh welcomed the association with GEMx. "This is a facility that will be of significant benefit to our students and faculty. It is a tribute to the hard work and academic leadership shown and we are delighted to be associated with the Global Education Medicine initiative."

ECFMG has formed an advisory committee that includes representatives from medical schools including Australia, India, Ireland, Mexico, and Qatar, as well as representatives from ECFMG's non-profit foundation, the Foundation for Advancement of International Medical Education and Research.

WCMC-Q's Associate Dean for Global and Public Health, Dr Ravinder Mamtani, has been selected to serve as a member of the GEMx Advi-

sory Committee.

"Inclusion in this prestigious program means that we will now be able to provide even greater opportunities to our medical students," said Dr Mamtani.

"Through this mechanism that has been established, it will allow our students to apply for electives almost anywhere in the world in schools of their preference. It

is a great opportunity. It is also a great opportunity for students of other accredited medical schools to come to WCMC-Q.

"A wide range of presentations at international forums by our faculty is bringing WCMC-Q into the limelight. Indeed, this is a tribute to the high-quality work being done on our campus; the performance by our students who are doing as well as the US and Canadian students; a very strong research program; high caliber faculty and clinical program; global health initiatives; dedicated staff and also community outreach efforts. That is how we came to be invited to participate in this program."

GEMx is an exciting new service that will facilitate and promote international exchange in medical education, providing medical schools and students with access to the two most essential components of effective exchange programs: information and community.

Development of the web-based GEMx application system is underway. ECFMG expects to launch a pilot of the new service in late 2013. **MEH**



The above multidisciplinary projects with national and global partners have investigators from different backgrounds. The research findings from these projects have the potential of significantly improving the treatment, management, and prevention of commonly occurring non-communicable diseases such as diabetes, cancer and obesity. The findings will also help in the development and implementation of population based health promotion programs.

Conclusion

Promising collaborative multidisciplinary translational research as illustrated in this review is an encouraging development in Qatar and its neighbouring GCC nations by extension. WCMC-Q's interwoven education, research and public health based framework provides a robust platform for translational medicine research programs. This approach is yielding positive results. Discoveries from this program should influence public policy in a positive way. Our approach encourages local and global collaboration and partnership with investigators and research institutions from around the world. Our research initiatives have sparked optimism among public health officials, clinicians, and researchers to fully seize the new opportunities in reducing premature mortality and morbidity associated with NCDs such as diabetes, cancer, heart disease and obesity. We feel many studies that are under way in Qatar will provide promising prevention strategies and lifesaving treatments for the people in the State of Qatar and its neighbouring nations.

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The authors

Lotfi Chouchane^{1*}, Ravinder Mamtani¹, Mohammed H Al-Thani², Al-Anoud M Al-Thani², Marco Ameduri¹ and Javaid I Sheikh¹

* Corresponding author: Lotfi Chouchane
loc2008@qatar-med.cornell.edu

1 Weill Cornell Medical College in Qatar, Education City, P.O. Box 24144, Doha, Qatar

2 Supreme Council of Health, P.O. Box 42, Doha, Qatar

Qatar University Canadian-accredited College of Pharmacy collaborate with Al-Ahram Canadian University in Egypt

Dr Nadir Kheir, College of Pharmacy, Qatar University collaborated with Dr Nermien Esmat, Faculty of Pharmacy, Al-Ahram Canadian University, Egypt and her senior pharmacy student Nisreen El-Mahdawy on a project entitled: Effect of Daily Mental Exercise and Omega-3 on Improving Social Interaction in Autistic Children in Egypt: A Case Study.

The collaborative research is the first between the College of Pharmacy, Qatar University and a pharmacy college in Egypt. It was jointly presented at the DUPHAT 2013 conference held in Dubai, United Arab Emirates from 10-12 March 2013. This poster won the 8th best student poster award in pharmacy theme award out of a total of 120 student posters that were competing at the conference.

The project addresses autism, which ranks the 3rd most common developmental disability worldwide with a significant number of cases in Qatar and



The Qatar University CPH and Egyptian Al-Ahram Canadian University collaborative poster

Egypt. Dr Kheir's work and publications in the area of quality of life of caregivers of children with autism and burden of autism in Qatar represented the trigger for related studies in the region.

This collaborative research project addresses an important child disorder of interest to both Qatar and Egypt and is in line with our CPH mission of serving as a pharmacy resource for Qatar, the Middle East Region and the world. **MEH**

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● The electronic version of this article is the complete one and can be found online at: <http://www.translational-medicine.com/content/9/1/16>

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Changing the face of health training in Qatar

In addition to the internationally recognized programs accredited by the Canadian Council for Accreditation of Pharmacy Programs, the Council on Accreditation for Respiratory Therapy Education and the National Examination Board in Occupational Safety and Health, the campus of the College of the North Atlantic – Qatar (CNA-Q) hosts an annual skills competition that features a vital inter-disciplinary Health Sciences competition.

At the 4th Annual Skills Competition in February, students and facilitators from other institutions took part in six action-packed medical emergencies set up throughout the campus (including a shooting scene, a fire, and a drowning),

with each scenario involving each of the health sciences disciplines.

Students worked in teams of eight – a combination of Dental Assistant, Occupational Health & Safety, Medical Radiography, Emergency Medical Science, Respiratory Therapy and Pharmacy Technician for CNA-Q students, Nursing from University of Calgary-Qatar and Pharmacy from Qatar University.

This practice gives students a unique opportunity for hands-on experience that will help them fine-tune their skills individually and as a life-saving unit, said Irene O'Brien, Dean, School of Health Sciences.

"Everybody on each team brings something to the care of the patient – each student is featured in their discipline at

least twice," explained O'Brien. "I went to every scene and by the time they reached the third scenario, you could really see the teams start to gel and work with a real flow. Logistically, it's like a symphony."

This skills competition is the only event of its kind in the country and gives Qatar's health and emergency practitioners and edge in the industry.

"This event illustrates the value of technical education, and how it translates to tangible, employable, real world skills for our students and graduates," said Dr Ken MacLeod, President of CNA-Q. "From an educational standpoint, this will make our graduates some of the most qualified HSE professionals in the country." **MEH**



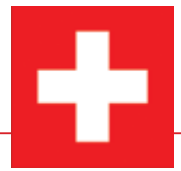
كلية الصيدلة
College of Pharmacy
QATAR UNIVERSITY جامعة قطر



"I look forward to a prosperous future as a graduate from the College of Pharmacy program. I see the many opportunities for young Qatari females in the profession of pharmacy. My career aspiration is to present at international pharmacy conferences, sharing my knowledge about the exciting changes happening in the profession from a patient care and policy perspective in Qatar."

Shorouk, 1st year Qatari pharmacy student

www.qu.edu.qa/pharmacy



Universal, equitable healthcare for all

The Swiss healthcare system is admired by many countries around the world as a system that ensures universal and equal healthcare to all people resident the country. *Middle East Health* provides an overview of the workings of this system which has resulted in improved quality of care and high patient satisfaction.

The Swiss healthcare system is a combination of public, subsidised private and totally private systems, which upholds the principles of universality and equality by mandating individuals to purchase health insurance on the private market, providing financial assistance to those on lower incomes and regulating the insurance market in order to protect those with poor health. The result is high quality care for all, excellent patient satisfaction, strong uptake of new technology and drugs, short waiting lists and impressive healthcare outcomes. This has led to an increasing number of admirers and even exportation of the system to other countries.

OECD figures suggest that 65.2% of health spending in Switzerland is public, somewhat below the OECD average of 72.2%.

Public health is overseen by the Federal Office of Public Health (FOPH). The aim of the FOPH is to promote and maintain

the good health of all people living in Switzerland.

On the one hand, it seeks to promote people's awareness and thereby enable them to take responsibility for their own health. On the other, it wants a general and consistent improvement of everyone's health through health promotion, disease prevention and health protection campaigns and the curing of illnesses and alleviation of suffering caused by disease and accidents.

In order to achieve these aims, the FOPH deals with issues such as

- epidemiology and infectious diseases,
- substance abuse and drug prevention,
- food safety,
- noise and radiation protection,
- assessment and checks on chemicals and toxic products,
- stem cell research and bioterrorism, and
- health and accident insurance.

Table 1: Vital Statistics

Total population	7,664,000
Gross national income per capita (PPP international \$)	49,960
Life expectancy at birth m/f (years)	80/84
Probability of dying under five (per 1 000 live births)	4
Probability of dying between 15 and 60 years m/f (per 1 000 population)	74/43
Total expenditure on health per capita (Intl \$, 2010)	5,394
Total expenditure on health as % of GDP (2010)	11.5

Figures are for 2009 unless indicated. Source: Global Health Observatory



The current Swiss healthcare system came into effect in 1996 under the Health Insurance Law (LAMal) of 18 March 1994, which sought to “introduce a perfect managed competition scheme across Switzerland, with full coverage in basic health insurance”. The LAMal enlarged the package of services previously covered by statutory health insurance and made this ‘basic package’ – defined by the Swiss federal government and regulated by the Federal Office of Public Health – compulsory across the Swiss confederation.

The Swiss system is highly decentralised, meaning that the 26 Swiss cantons are largely responsible for the provision of health care and insurance companies operate primarily on a regional basis. Meanwhile, the role of national government is restricted by the constitution to one largely of public health and regulation.

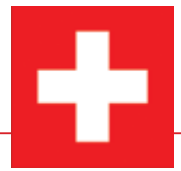
Individuals can only seek treatment in their canton of residen-

Table 2: Key Figures

Population Health	2007
■ Share of the population aged 15 and over (%) who consider themselves to be in good or very good health	86.8
■ Share of the population aged 15 and over (%) with a long-term health problem	27.3
Factors influencing health	2007
■ Share of physically inactive persons (% of the population aged 15 and over)	15.9
■ Men	13.8
■ Women	17.9
Daily alcohol intake (% of the population aged 15 and over)	
■ Men	19.6
■ Women	9.0
Share of smokers (% of the population aged 15 and over)	27.9
■ Men	32.3
■ Women	23.6
Mortality	2010
■ Infant mortality (per 1000 live births)	3.8
■ Number of deaths from all causes of which	62,649
■ Cardiovascular diseases	21,959
■ Malignant tumours	16,277
■ Accidents	2,413
■ Suicides	1,004
Service providers and health workers	2011
■ Number of hospital beds /1000 inhabitants	4.8
■ Accommodation places available in homes for the elderly and nursing homes /1000 inhabitants	11.6
■ Number of doctors in the ambulatory sector/100,000 inhabitants	204
■ Number of dentists/100,000 inhabitants	52
Services and use of services	2007/2011
■ Doctors' consultations in 2007 (% of the population aged 15 and over)	79.9
■ Dentists' consultations in 2007 (% of the population aged 15 and over)	65.3
■ Hospitalisation rates (patients) in acute care hospitals /1000 inhabitants in 2010	125.4
■ Accommodation rate for people aged 80 and over in homes for the elderly and nursing homes, as % of population aged 80 and over in 2011	27.3

Source: Federal Statistical Office (FSO)

● This article is an excerpt from a paper originally published by the Civitas Health Unit in the United Kingdom



cy and may not be treated in hospitals that aren't accredited to receive reimbursement for providing 'basic treatment.' This inevitably cuts back on choice, but is seen as a necessary cost-saving measure.

The 'basic' package

The 'basic' package is in fact very extensive and has expanded over time. The basic package is divided into three categories: Sickness Insurance, Maternity Insurance and Accident Insurance and below are some examples of the treatment covered:

- Hospital stay and outpatient care in any general ward of the canton of residency;
- Nursing care, of up to 60 hours per week at home or in a nursing home;
- Examination, treatment and nursing in a patient's home by a physician or chiropractor;
- Rehabilitation ordered by a physician, including health resorts;
- Physiotherapy and ergotherapy (max. 9 sessions)*;

- Nutritionist/diabetic consultation (max. 6 sessions)*;
 - Emergency treatment abroad;
 - Transportation and rescue costs (50% of emergency transport costs up to CHF 5,000 per year and 50% of non-life threatening transport up to CHF 500 per year);
 - Legal abortion;
 - Maternity costs, including 7 routine examinations, post-natal examination, child-birth and 3 breast-feeding consultations;
 - Serious and inevitable dental treatment;
 - Contribution to spectacles and contact lenses of CHF180 per year for children and CHF 180 over 5 years for adults.
 - Complementary medicines (alternative and homeopathic remedies)
- *After physician referral

Health insurance

Health insurance covers the costs of medical treatment and hospitalisation of the insured. However, the insured person pays part of the cost of treatment. This is done (a) by means of an annual excess (or deductible, called the franchise), which ranges from CHF 300 to a maximum of CHF 2,500 as chosen by the insured person (premiums are adjusted accordingly) and (b) by a charge of 10% of the costs over and above the excess up to a stop-loss amount of CHF 700.

The insured person pays the insurance premium for the basic plan up to 8% of their personal income. If a premium is higher than this, the government gives the insured person a cash subsidy to pay for any additional premium.

The insured person has full freedom of choice among the recognised healthcare providers competent to treat their condition (in his region) on the understanding that the costs are covered by the insurance up to the level of the official tariff. There is freedom of choice when selecting an insurance company (provided it is an officially registered *caisse-maladie* or a private insurance company authorised by the Federal Act) to which one pays a premium, usually on a monthly basis.

To discourage over-utilisation of services, individuals who do not submit health insurance claims receive an increasing reduction in their insurance premiums each year. After 5 years this can

reach as much as 45% - a clear incentive to adopt healthier lifestyles.

A number of provisos attached to the basic package ensure that "vulnerable groups have good access to healthcare," thus maintaining the principle of universality:

- All individuals must purchase a basic package insurance plan or face a penalty.
- Insurers must charge the same price to every individual that buys a particular health care plan: in other words they cannot vary premiums based on the health status of each consumer. To ensure that insurers abide this rule a risk equalisation solidarity body called 'Foundation 18' (named after the law that created it) redistributes funds from those health plans with lower health risks to those with higher, based on the age and sex of enrollees.
- Individual cantons provide tax-financed, means-tested subsidies directly to those unable to afford basic package premiums (not to the insurer). According to the Federal Office of Public Health (FOPH) 30.5% of insured individuals required this financial assistance in 2009.

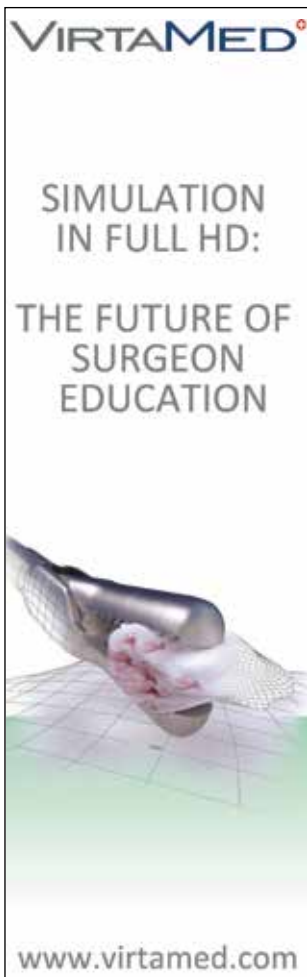
Supplementary insurance

Supplementary insurance is voluntary and refers to health care beyond the scope of the basic package. There is no obligation on the part of individuals to purchase it, although many in Switzerland do, and the provisos attached to the basic package don't apply here: the market is regulated by the Federal Office of Private Insurance (FOPI) but the Office does not prevent companies from charging higher premiums to those individuals they deem to be of higher health risk.

Examples of supplementary insurance packages include:

- most dental care;
- The freedom to choose any hospital for 'basic' treatment;
- Ensuring increased comfort and privacy during treatment; such as "privat", a one-bed room;
- Guarantees of receiving treatment from the most senior physicians.
- A non-smoker package, which offers savings of up to 20%. Since its introduction in 1995, this option has attracted about 30% of that particular insurer's new members. MEH

Source: This is an excerpt from an article by Civitas for the British NHS.





MC BODY, the Swiss company

The secret of success

The Swiss company based in Dubai presents **Swiss quality**, advanced technologies, innovations and convincing results all over the world. The MC BODY line covers the area of non- or minimally invasive medical cosmetic aesthetics.

The innovative products, as well as the philosophy of the company convinced again the market at the Arab Health 2013. The demand and the acceptance of the systems and products of the MC BODY line continue to increase every month in the Middle and Far East.

The MC BODY product line are not just systems, they are a philosophy, which remains during the full life cycle of each product.

In MC BODY Systems, it is always the experience which creates the future.

The own products of the company are designed in Switzerland, partly implemented and tested in the own MC BODY clinic and used daily.

The MC BODY line rises and differs itself in many aspects from other systems on the market. This begins not only with the ingenious design of the systems, it's the whole range of points, which makes the difference.

All systems have the ability to upgrade or update. In other words, should treatment programs or treatment options be developed, your own MC BODY system develops further.

The time of the permanent purchases of "identical or complementary" technologies belongs now to the past. MC BODY, a system which "adapts".

But as well the artificial intelligence of the systems, the possibility of real-time analysis or the fact that a control or adjustment of the systems can be handled via a



remote maintenance, are just a few compelling arguments.

This fact has certainly driven and promoted the success of the systems and products, as well as the growth of the brand in the international market.

A sign for it, is, that there are already various MC BODY clinics and competence centers, such as in the UAE in Dubai/Jumeirah.

In Sharjah a further one is planned.

In countries like Kuwait, Saudi Arabia and Iran, but also in Egypt, Algeria, Qatar and India further clinics and competence centers will be opened within the next few months.

MC BODY clinics already exist in Switzerland, Russia and England.

The systems of the MC BODY family are all certified CE or medically CE and are produced after the guidelines of TÜV Süd and are subject to the regulations of the certification of ISO 9001 und ISO 13485.

The products, as well as the systems of the MC BODY line, find their application in professional establishments like hospitals, clinics, doctors, medical spas and chosen centers.

The word "synergy" accompanied in the past the development of the systems and will always be the basic in the future.

This is what the management and the team, including the engineers of the MC BODY company, stand for.

The MC BODY system line is a new generation of systems, possibilities and the key to success.

This synergy enables that the various systems can complete each other or have an overlapping effect and reaches always the best result during the treatments.

It is always a combination that leads to success.

Combinations of technologies like in the MC BODY product line open also the possibility to complete some invasive techniques especially on the pre and/or post operation treatment.

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The secrets of success

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product line

Experience values

We, the team of MC BODY, are not theoreticians and never want to be one's. The experience values of the daily use, the feedbacks from the national and international market and from their experience are very important parameters, which we receive from our customers. These get analysed through us and are taken up in our intellectual and idea world.

Exactly this is one of our fortitudes and for sure the basis of the success. We run since over 20 years several institutes and know about the desires in an institute or in a practice and know the wishes of the customer. The MC BODY team is a motivated, qualified, innovative and dynamic team and is at the daily pulse of beauty and wellness.

The MC BODY plus systems embodies the most modern technology on the market following the highest standard of safety, effectiveness and quality.



MC BODY +B1

Low frequency ultrasound system, which deploys its non-invasive effect through cavitation. Due to the unique feedback mechanism to control the working parameters (rate of spread speed of the sonic wave, compression, temperature and deflection of the point of the biggest source efficiency), it's technological the best choice for a non-invasive adiposities treatment for the full body for big or small areas.

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The newest synergy of technology for great and long results. The combination of 4 technologies: vacuum, soft laser, radiofrequency and light therapy for a wide use in aesthetic, sport and as complementary procedure in medical treatments. This System gives the skin the elasticity back, fibroblasts are activated so the production of elastin and collagen is increased. This enables in addition the fibroblast, reduces wrinkles, tightens the tissues and improves the skin rejuvenation!



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The body optimizer ...at the edge of the medicine! Radiofrequency/bipolar resistive and microcurrent technologies, a treatment, that finds a tremendous acceptance in connection with great satisfaction on the market of the non-invasive, medical cosmetic aesthetics. Anti-Aging for Face & Body additionally equipped with a micro current system. Specially fabricated and electrodes enable effective treatments in face, neck and bosom, décolleté and don't miss their effect even in the treatment of cellulite, firming of the abdomen, buttocks and legs.



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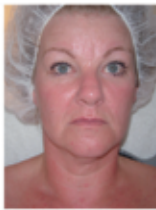
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Bahrain's King Hamad University Hospital installs RFID system to track staff, patients, hospital assets

With a capacity of 311 beds and 1731 employees, King Hamad University Hospital (KHUH) was established as part of a strategy to develop a centre for organ transplant surgeries and trauma care in the Kingdom of Bahrain.

From the very outset, there was a desire to use not only state-of-the-art medical technology, but also the most sophisticated information systems to eliminate bureaucracy and support rapid, robust diagnostic and therapeutic decision-making.

This led to 18 months of intense effort to examine and re-engineer almost every system ahead of the hospital opening in 2012. The IT implementation at KHUH was validated when it was voted the unanimous winner of the 'Healthcare Deployment of the Year award' at Computer News Middle East's awards on 14th Oct 2012. The judges recognized KHUH as the most technologically advanced hospital in the region.

A jewel in the crown of the KHUH project is a fully integrated asset management, biomedical engineering, real time location and passive RFID (radio-frequency identification) solution built around Infor Enterprise Asset Management (EAM). This unique combination of systems delivers an easy to use, integrated system to monitor and track staff, patients and hospital assets, analyse personnel data to continually improve work procedures and reduce waste and operational cost.

The solution combines the Infor EAM platform; Ekahau's real time location system, Impinj, Active Identity passive RFID;

Unitech medical PDAs and RFID tags from Omni-ID. Integrating all of these systems, Symphony from Azimuth, the Bahrain based systems integrator, developed with their offshore partner MCT India delivers a state of the art, fully integrated solution for the hospital.

Information is delivered via desktop and mobile applications that not only monitor the location of staff, equipment and patients, but also apply business rules for alerting staff in the event of equipment failure, staff or patient assistance requests, infant security and more.

Integration between asset management, resource management and clinical information systems provides a truly holistic view of the hospital. Adding real time to this equation presents a huge opportunity to truly understand day-to-day operations and effect clinical outcomes and patient experience in ways that could never be imagined in the past with paper driven processes.

Facilities management and beyond – the operational perspective

At the core of this holistic operational view is Infor EAM. The application provides a full platform to manage day to day maintenance and housekeeping activities, spanning general and preventative maintenance, resource planning, contractor management and spares management.

The call centre function is used to address all faults, request or issues within the hospital. The bulletin board supports the

call centre engineers to perform first line diagnostics and also provide information on specific equipment.

The system ensures that the hospital complies with all statutory requirements by scheduling and controlling maintenance, cleaning, replacement and inspection tasks required for medical equipment. Furthermore, the reports within Infor EAM help hospital managers analyse performance and develop continual improvement programs.

This continual improvement begins with active monitoring. By integrating Ekahau Wi-Fi tags, the Ekahau Real Time Location System Controller (ERC) and the Symphony user interface, the redesigned 802.11 Wi-Fi network is optimised to locate people and assets in real time and provides room level separation across the entire facility.

The primary purpose of this is to monitor the movement of controlled assets and pharmaceuticals, capturing their details and passing them to Symphony where business rules can be applied, generating alerts to relevant staff when these rules are broken, such as monitoring controlled drug cabinet keys to avoid them leaving the premises. The system now alerts staff, managers and security as the keys leave their designated area of the hospital to ensure that this simple mistake can be avoided.

Elsewhere, nurses no longer search for equipment room by room. Individual staff tags provide the ability for them to rapidly search for commonly needed items. Here



Using RFID technology to log into X-ray systems

Many healthcare providers use badges with embedded radiofrequency identification (RFID) chips to monitor entry into restricted areas. Now those same badges can be used to automatically log authorized users onto X-ray imaging systems – which saves time for both technologists and patients.

RFID readers are built into some new generation imaging systems and healthcare providers can work with their suppliers to add external RFID readers to older CR and DR X-ray imaging systems. These RFID readers use wireless technology to transfer data from the badge to automatically log employees onto medical imaging systems – eliminating the need for technologists to remember multiple log-in numbers and/or passwords used by each imaging system.

“Extending the use of RFID technology to grant access to imaging systems is a huge advantage for healthcare facilities,” said Helen Titus, marketing director, X-ray Solutions, Carestream Health. “The next step is to combine RFID readers with fully featured administrative analysis and reporting software. This allows radiology managers to view technologists’ activities and have instant access to data about imaging exam volumes, repeat exam rates, repeat reasons and exposure settings.”

Boca Raton Regional Hospital (Boca Raton, Florida, US.) recently installed Carestream’s DRX-Revolution Mobile X-ray systems that enable technologists to log in by passing their badges containing RFID tags in front of the system’s built-in radio-frequency reader.

“With RFID technology, our technologists are online instantly and can select a patient from the work list and begin imaging. This is much faster than the manual process of logging in with names and passwords – and it helps us meet HIPAA requirements for the privacy of patient records,” said Gail McNamara, director of the hospital’s Imaging Services Department. “Now I have an accurate record of which technologist conducted each exam and what files each technologist viewed.” MEH

the integration with Infor EAM means that that the ‘nearest’ item found is also the ‘nearest working’. Should a fault be found, nurses can simply press a button on the item of equipment and a work order is raised and passed directly to an available biomedical engineer.

From a management perspective, tedious and time consuming processes have been reduced or removed. For example, refrigerator temperature monitoring previously involved staff taking temperature readings frequently. This process has now been completely removed as the system automatically takes readings every 15 minutes from 50 refrigerators, alerting engineering and management personnel should the required operating limits be exceeded.

Equally, for biomedical engineers, paper-driven activities have been replaced by a tightly integrated solution that enables the online management of breakdown and preventive maintenance tasks. This is based on mobile enabled asset capture, work order management and inspections, but still provides the look and feel of original reports, albeit now system generated and on-demand.

The solution will also soon be tightly integrated with the hospital’s Building Management System, Wonderware, which will again utilise Infor EAM to automate the production of work orders for facilities management engineers. This will, in turn, assist the management in improving the reliability of all systems supporting the clinical staff in their primary role.

Going further than the cost of an asset – the financial perspective

By integrating into the ERP system within KHUH, Infor EAM provides management with a clear overview of maintenance costs and the effectiveness of activities

undertaken. The application enables an understanding of overall efficiency and where savings can be made or augmentation required.

The finance department also benefits from an automated, auditable method of asset inventory management and improvements in asset security to help reduce both loss and over-provision.

Such extensive integration has enabled Infor EAM to go beyond being a platform for clinical staff to know what equipment is available for use and where it is, reducing the time spent looking for it in the first place. KHUH now has a single planning platform for equipment maintenance, cleaning and preparation that enables clinical management to plan capacity and patient intake, reducing unnecessary patient admission waiting times.

Alongside the single call centre function, a unique set of reports has been developed to assist the staff to analyse performance and implement continual improvement with regards to patient waiting times, room turn-around time, issue resolution and patient complaints.

“We now have a complete real time, operational understanding of the facility,” commented Sheikh Khalid Bin Hamad AL-Khalifa, IT director, King Hamad University Hospital. “Infor EAM has delivered an ability to focus management attention on those areas that will keep KHUH at the very forefront of medicine in the Middle East.”

“We have delivered an holistic solution that remains focused on improving client care and delivering the very best clinical outcomes, despite taking in data from a wide range of sources. This will be the benchmark by which medical care is judged throughout the region and indeed, the world.” MEH

Interview



David Hatton

Functionality, ease of use, flexibility are key

Middle East Health speaks to David Hatton, Healthcare Information Systems Business Manager for the Emerging Markets region at Carestream Health, about the company's PACS / RIS.

■ **Middle East Health:** What new PACS offerings have you recently introduced?

David Hatton: Carestream had a banner year for new PACS offerings in 2012 including: a vendor-neutral Vue Motion viewer that provides referring physicians with convenient access to images and reports on web-enabled devices including iPads; a semi-automatic lesion management module native in Vue PACS that tracks and trends oncology follow-up; a digital breast tomosynthesis module that enables reading from its PACS workstation for DBT exams (along with other digital mammography modalities); and MyVue, a secure patient imaging portal that allows patients to access, manage and share their own imaging exams and reports with other healthcare providers. We also debuted a native voice recognition/digital dictation module that

includes automatic population of DICOM measurements and a real-time radiology dashboard that provides valuable insight into departmental performance.

■ **MEH:** What do customers look for in PACS?

DH: Healthcare providers look for functionality that delivers a highly productive workflow, ease of use, and a flexible platform that can integrate with other systems and support new features that address emerging demands. Radiologists are specifically looking for a single PACS solution that enables them to look at images, perform post processing and read imaging studies – all at the same time.

■ **MEH:** What new RIS offerings have you introduced over the last year?

DH: We introduced the storage and

tracking of radiation dose information on our RIS, which is laying the groundwork to support cumulative dose tracking – an important patient care initiative worldwide. Carestream's RIS tracks and displays dose history by capturing exposure information from the modality. In the future we will be able to allow physicists at user sites to enter formulas that can be used to calculate dose and ultimately will enable tracking cumulative dose for each patient. Last year Vue RIS became one of the first RIS platforms to be certified as both a complete EHR for eligible providers and an EHR module for hospitals.

■ **MEH:** Have you noticed more of a demand for vendor neutral archiving?

DH: Customers are looking for an intelligent vendor-neutral archiving

solution that can offer advanced features such as: on-site or cloud-based disaster recovery; scalable archiving to handle the needs of multiple departments, sites or even facilities (and handle multiple patient ID or DICOM tags); and built-in intelligence that manages multiple storage platforms for economies of scale. Healthcare providers also want a standards-based, vendor-agnostic platform that can interface with any front end image management solution. Carestream's Vue Archive, combined with its vendor-neutral viewer, meets these challenges.

■ **MEH: What products have you introduced that are compatible with mobile devices like smartphones and iPads?**

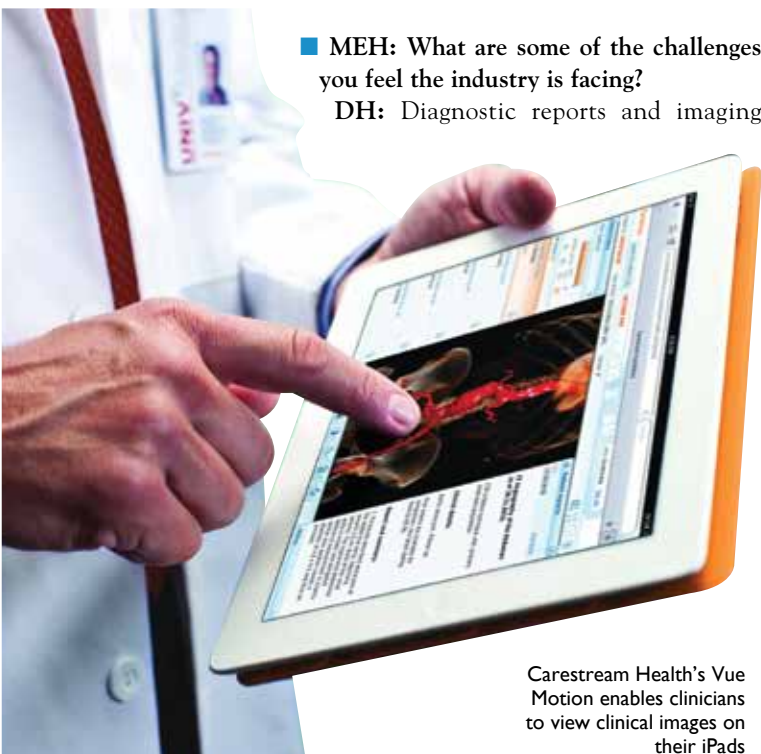
DH: Clinicians can use our Vue Motion viewer on their iPads to view imaging studies, reports and other patient data and the MyVue patient portal allows patients to access their studies and radiology reports from web-enabled devices including iPads.

■ **MEH: What else have you seen customers ask for in terms of PACS and RIS?**

DH: It's time for many healthcare providers to replace their legacy PACS or RIS systems, but data migration to newer architectures can be both costly and time consuming. Carestream addresses the need for a better option with our ability to 'take over' a legacy DICOM archive. This allows healthcare providers to upgrade PACS solutions while avoiding data migration and enabling uninterrupted service. The funding that would be required for data migration can then be invested in flexible RIS/PACS/archiving solutions that will meet needs for years to come and support future upgrades.

■ **MEH: What are some of the challenges you feel the industry is facing?**

DH: Diagnostic reports and imaging



Carestream Health's Vue Motion enables clinicians to view clinical images on their iPads

studies are becoming commodities. To avoid commoditization, medical imaging service providers need to interact within the larger enterprise – such as providing tools that enhance collaboration with referring physicians and enable clinician access to patient image data from the EMR. Greater patient engagement can be achieved through a secure online portal that allows patients to easily download and share their imaging studies and radiology reports with healthcare providers of their choice.

■ **MEH: Do you have any predictions for the future of the industry?**

DH: The future of radiology lies in smarter solutions that collect and deliver information in a way that makes it more useful for physicians and clinicians. For example, the format for a final diagnostic report can be enhanced to provide referring physicians with more clinical insight into the patient's condition. This will benefit providers through increased referring physician satisfaction and utilization. For example, Carestream's reporting solution can embed a key image, anatomical bookmarks and even oncology assessments within the report to aid clinicians in making treatment decisions. **MEH**



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Philips' solutions help improve collaboration across the enterprise by rapidly delivering images and information, and extending the reach of advanced clinical tools. These solutions are delivered with various purchase and service models that address the specific needs of diverse customers.

In the Middle East, Philips works closely with healthcare institutions to provide comprehensive, patient-centred solutions in clinical informatics that support clinical practice, increase overall productivity and the level of care delivered to their patients.

Philips' IntelliSpace Picture Archival and Communication System (PACS) has been reshaping the medical imaging and information industry landscape. IntelliSpace PACS interfaces into a health care institution's existing infrastructure to ensure complete integration, enabling all departments to prove ROI (Return on Investment) at each stage of deployment.

In 2012, Philips announced a multi-year deal with the Sidra Medical Center in Qatar to manage clinical informatics software solutions for the new all-digital academic and medical research centre.



Philips will provide the fully-integrated IntelliSpace PACS, to address Sidra's Clinical Imaging Workflow across the Clinical Imaging Continuum. The solution will inter-operate seamlessly using industry communications standards, adhering to the globally accepted standard framework.

The design of IntelliSpace PACS reflects the realities of hospital environments from a clinical, financial, technological and operational perspective. From small community hospitals to large multi-site academic institutions, IntelliSpace PACS image distribution, always online long term PACS storage and advanced radiology reading stations scale and integrate into a hospital's existing network. A

standards-based, single database solution, IntelliSpace architecture was designed to improve workflow and efficiency across the entire enterprise for clinicians, technologists, the IT department and administrators.

IntelliSpace PACS was designed by clinicians who believe that improved patient care is the most important goal when developing a product and a PACS software solution. Clinical time should be spent on diagnosis and therapy, not trying to decipher multiple tabs and buttons. From an easy-to-use interface to having all images archived online and immediately available with the click of the mouse, IntelliSpace PACS provides the tools needed to deliver the best possible care to patients. MEH

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Bold initiative to revolutionise study of the brain

On April 2 at the White House, US President Barack Obama unveiled the “BRAIN” Initiative – a bold new research effort to revolutionize our understanding of the human mind and uncover new ways to treat, prevent, and cure brain disorders like Alzheimer’s, schizophrenia, autism, epilepsy, and traumatic brain injury. *Middle East Health* reports.

The BRAIN Initiative – short for *Brain Research through Advancing Innovative Neurotechnologies* – builds on the President’s State of the Union call for historic investments in research and development to fuel innovation, job creation, and economic growth.

“We have the chance to improve the lives of not just millions, but billions of people on this planet,” said the President, “It will require us to embrace the spirit of discovery that made America – America.”

Obama compared the BRAIN Initiative to the Human Genome Project, which mapped the entire human genome and ushered in a new era of genetics-based medicine. “Every dollar spent on the human genome has returned \$140.00 to our economy,” the president said. Instead of charting genes, BRAIN will help visualize the brain activity directly involved in such vital functions as seeing, hearing and storing memories, a crucial step in understanding how to treat diseases and injuries of the nervous system.

Launched with approximately \$100 million the BRAIN Initiative promises to accelerate the invention of new technologies that will help researchers produce real-time pictures of complex neural circuits and visualize the rapid-fire interactions of cells that occur at the speed of thought.

Such cutting-edge capabilities, applied to both simple and complex systems, will open new doors to understanding how brain function is linked to human behaviour and learning, and the mechanisms of brain disease.

This initiative is one of the Administration’s “Grand Challenges” – ambitious but achievable goals that require advances in

science and technology. In his remarks, the President called on companies, research universities, foundations, and philanthropists to join him in identifying and pursuing the Grand Challenges of the 21st century.

In the last decade alone, scientists have made a number of landmark discoveries that now create the opportunity to unlock

The BRAIN Initiative includes:

- **Key investments to jumpstart the effort:** The National Institutes of Health, the Defense Advanced Research Projects Agency, and the National Science Foundation will support approximately \$100 million in research beginning in FY 2014.
- **Strong academic leadership:** The National Institutes of Health will establish a high-level working group co-chaired by Dr. Cornelia “Cori” Bargmann (The Rockefeller University) and Dr. William Newsome (Stanford University) to define detailed scientific goals for the NIH’s investment, and to develop a multi-year scientific plan for achieving these goals, including time-tables, milestones, and cost estimates.
- **Public-private partnerships:** Federal research agencies will partner with

companies, foundations, and private research institutions that are also investing in relevant neuroscience research, such as the Allen Institute, the Howard Hughes Medical Institute, the Kavli Foundation, and the Salk Institute for Biological Studies.

- **Maintaining our highest ethical standards:** Pioneering research often has the potential to raise new ethical challenges. To ensure this new effort proceeds in ways that continue to adhere to our highest standards of research protections, the President will direct his Commission for the Study of Bioethical Issues to explore the ethical, legal, and societal implications raised by this research initiative and other recent advances in neuroscience.



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Francis Collins, director of the US National Institutes of Health, and President Barack Obama announce the BRAIN initiative at the White House

the mysteries of the brain, including the sequencing of the human genome, the development of new tools for mapping neuronal connections, the increasing resolution of imaging technologies, and the explosion of nanoscience. These breakthroughs have paved the way for unprecedented collaboration and discovery across scientific fields. For instance, by combining advanced genetic and optical techniques, scientists can now use pulses of light to determine how specific cell activities in the brain affect behaviour. In addition, through the integration of neuroscience and physics, researchers can now use high-resolution imaging technologies to observe how the brain is structurally and functionally connected in living humans.

While these technological innovations have contributed substantially to our expanding knowledge of the brain, significant breakthroughs in how we treat neurological and psychiatric disease will require a new generation of tools to enable researchers to record signals from brain cells in much greater numbers and at even faster speeds. This cannot currently be achieved, but great promise for developing such technologies lies at the intersections of nanoscience, imaging, engineering, informatics, and other rapidly emerging fields of science and engineering.

Investment

To make the most of these opportunities, the National Institutes of Health, the Defense Advanced Research Projects Agency,

and the National Science Foundation are launching this effort with funding in the President’s FY 2014 budget.

- **National Institutes of Health:** The NIH Blueprint for Neuroscience Research – an initiative that pools resources and expertise from across 15 NIH Institutes and Centers – will be a leading NIH contributor to the implementation of this initiative in FY 2014. The Blueprint program will contribute funding for the ini-

We have the chance to improve the lives of not just millions, but billions of people on this planet. It will require us to embrace the spirit of discovery that made America – America.

tiative, given that the Blueprint funds are specifically devoted to projects that support the development of new tools, training opportunities, and other resources. In total, NIH intends to allocate approximately \$40 million in FY 2014.

- **Defense Advanced Research Projects Agency (DARPA):** In Fiscal Year 2014, DARPA plans to invest \$50 million in a set of programs with the goal of understanding the dynamic functions of the brain and demonstrating breakthrough applications based on these insights. DARPA aims to develop a new set of tools to

capture and process dynamic neural and synaptic activities. DARPA is interested in applications – such as a new generation of information processing systems and restoration mechanisms – that dramatically improve the way we diagnose and treat soldiers suffering from post-traumatic stress, brain injury, and memory loss. DARPA will engage a broad range of experts to explore the ethical, legal, and societal issues raised by advances in neurotechnology.

- **National Science Foundation:** The National Science Foundation will play an important role in the BRAIN Initiative because of its ability to support research that spans biology, the physical sciences, engineering, computer science, and the social and behavioural sciences. The National Science Foundation intends to support approximately \$20 million in FY 2014 in research that will advance this initiative, such as the development of molecular-scale probes that can sense and record the activity of neural networks; advances in “Big Data” that are necessary to analyse the huge amounts of information that will be generated, and increased understanding of how thoughts, emotions, actions, and memories are represented in the brain.

Private sector partners

The initiative will include partnerships with a number of companies, foundations, and private research institutions already investing in neuroscience research. For instance, the Allen Institute for Brain Science, which began studying the neu-

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ral code in 2012 as part of an expansion supported by a \$300 million pledge from institute founder Paul G. Allen, will invest more than \$60 million annually in BRAIN Initiative-related projects. Elsewhere, the Howard Hughes Medical Institute has committed at least \$30 million to related research, while the Salk Institute for Biological Studies will dedicate more than \$28 million to cross-disciplinary research through its Dynamic Brain Initiative, and the Kavli Foundation expects to invest \$4 million annually over ten years in related research and activities.

Key private sector partners have made important commitments to support the BRAIN Initiative, including:

- **The Allen Institute for Brain Science:** The Allen Institute, a nonprofit medical research organization, is a leader in large-scale brain research and public sharing of data and tools. In March 2012, the Allen Institute for Brain Science embarked upon a ten-year project to understand the neural code: how brain activity leads to perception, decision making, and ultimately action. The Allen Institute's expansion, with a \$300M investment from philanthropist Paul G. Allen in the first four years, was based on the recent unprecedented advances in technologies for recording the brain's activity and mapping its interconnections. More than \$60M annually will be spent to support Allen Institute projects related to the BRAIN Initiative.

- **Howard Hughes Medical Institute:** HHMI is the Nation's largest nongovernmental funder of basic biomedical research and has a long history of supporting basic neuroscience research. HHMI's Janelia Farm Research Campus in Virginia was opened in 2006 with the goal of developing new imaging technologies and understanding how information is stored and processed in neural networks. It will spend at least \$30 million annually to support projects related to this initiative.

- **Kavli Foundation:** The Kavli Foundation anticipates supporting activities that are related to this project with approximately \$4 million dollars per year over the next ten years. This figure includes a portion of the expected annual income from the endowments of existing Kavli Institutes and endowment gifts to establish new Kavli Institutes over the coming decade. This

figure also includes the Foundation's continuing commitment to supporting project meetings and selected other activities.

- **Salk Institute for Biological Studies:** The Salk Institute, under its Dynamic

Brain Initiative, will dedicate over \$28 million to work across traditional boundaries of neuroscience, producing a sophisticated understanding of the brain, from individual genes to neuronal circuits to behavior. To



Medical travel to the United States from the Middle East

The United States of America has the reputation of having the most technologically advanced and highest quality healthcare system of any developed nation in the world. Patients traveling outside their home country for medical care often put the U.S. on the top of their list for its cutting edge technology and life-saving protocols for some of the world's rarest and most complex conditions. The degree of super-specialization among U.S. physicians is unparalleled anywhere else in the world.

The U.S. healthcare industry is one of the largest in the world and represents 16.2% of the U.S. gross domestic product. Healthcare organizations provided 14.3 million jobs in 2008 and are projected to add 3.2 million new jobs by 2018. Twenty of the fastest growing occupations are in health care. International patients who come to U.S. academic medical centers do so because they need care that local providers are either unable to provide at all or are unable to provide at the level of quality desired. Interview research with nationally-ranked academic medical centers that have an international patient program confirmed that growth in inter-

national patient revenues was due primarily to an increased demand for high-sophistication services, also referred to as "quarternary care" or complex care.

Between 2009 and 2012, Middle Eastern citizens accounted for at least 43,000 inpatient and outpatient visits to major US academic medical centers. More than half of those were for diagnostic assessments in ambulatory settings. Another 21% of these visits included hospitalizations, which were mostly elective encounters. Only 14% involved ambulatory surgery, and 7% were for emergency department visits. The most frequent reasons for visits by setting of care included: inpatient cancer surgery and therapy, and cardiovascular care accounting for about half of the hospitalizations combined, followed by general surgery and gastrointestinal conditions (almost 10% each).

Middle Eastern citizens visited US academic medical center emergency departments for care of orthopedic injuries, gastrointestinal and neurological conditions as well as chest pain, respiratory conditions and other injuries. The majority of Middle Eastern patients (more than 70%) seen at US academic

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truly understand how the brain operates in both healthy and diseased states, scientists will map out the brain's neural networks and unravel how they interrelate. To stave off or reverse diseases such as Alzheimer's and Parkinson's, scientists will explore the changes that occur in the brain as we age, laying the groundwork for prevention and treatment of age-related neurological diseases.

These private sector partners are home to many pioneering scientists, for example, the Salk Institute is home to several pioneering tool builders, such as Edward M. Callaway, already famous among systems neuroscientists for using a modified rabies virus to trace neuronal connections in the visual system.

"Scientists have known since the time of Galileo that new tools can open up whole new lines of research," says Callaway, holder of the Audrey Geisel Chair in Biomedical Science. "But for us, tools aren't just mechanical instruments, they can be viruses, genes, chemical dyes, or even photons."

The BRAIN Initiative builds on discussions among a group of leading neuroscientists and nanotechnologists that were initiated at a 2011 conference organized by the Allen Institute and the Kavli and Gatsby Charitable foundations. The initiative's focus on leveraging emerging technologies dovetails with advances in computational neuroscience, engineering and physics that are enabling scientists to develop tiny tools to better explore the brain.

"We want to understand the brain to know how we reason, how we memorize, how we learn, how we move, how our emotions work. These abilities define us, yet we hardly understand any of it," said Miyoung Chun, vice president of science programs at the Kavli Foundation. "An interdisciplinary network of scientists and engineers working together could make new, powerful prosthetics, lead to new treatments of devastating brain disorders, create improved educational strategies, and smart technologies that mimic the brain's extraordinary abilities."

Salk neuroscientist Terrence J. Sejnowski summed up his excitement over the promise of BRAIN: "Imagine how it must have felt to be a rocket engineer when Kennedy said we would reach for the moon. You know there's an almost unimaginable amount of hard work ahead of you – and yet you can't wait to get started." MEH

Continued from page 54

medical centers were adults (age 18-64); 18% were children (age 0-17); and 10% were seniors (age > 64). More than half (53%) of the patients were male and 47% female. About 76% of the cases were identified as moderate to major severity of illness based on 3M APR-DRG grouper severity score assignments.

There is clear evidence that the healthcare export market is undergoing transformative change internationally. Outside of the U.S., destination brands (e.g., Singapore, India) are becoming as strong, and in some cases stronger, than individual hospital brands. Other countries housing medical travel providers have begun capitalizing on this by collaborating at the national level to "brand" their countries as medical travel destinations. The need for a similarly collaborative approach in the United States is clearly evident.

The U.S. hospitals remain competitive in the International marketplace for patients traveling outside their home country for medical care. The U.S. is not a destination that is

competing as the low-cost provider for routine services. Rather, U.S. hospitals are leveraging their technological advancements and high quality and customer service to attract those patients who are seeking the best care option available. Many U.S. hospitals have committed to serving the International Patient community and have services including translators, scheduling, travel arrangements, remote medical record review and second opinion available via teleconference and others. These hospitals have trained their staff to be sensitive to the special needs of the International Medical Traveler and have invested in the services desired by patients traveling to the U.S. for medical care.

• For more information on the USCIPP or the information contained in this article, please contact: Molly Allen, MPA, MS-HSM Program Director, US Cooperative for International Patient Programs mallen@uhc.edu www.uhc.edu/InternationalPatients

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Telemedicine service helps lower mortality rate in paediatric pilot program

Ricardo Muñoz, MD and **Alejandro López, MD** report on a Paediatric Cardiac Critical Care Pilot Program at Children's Hospital of Pittsburgh at University of Pittsburgh Medical Center (UPMC) which demonstrates the potential of telemedicine to improve care for patients around the world.



■ Alejandro López, MD



■ Ricardo Muñoz, MD

Paediatric cardiac critical care is a field in which decisions requiring a high degree of clinical expertise must be made in a timely fashion. But physicians with specialist training in paediatric cardiac intensive care are in demand worldwide. In some countries, other resource challenges exacerbate the difficulty of providing adequate care for a growing population of surviving children with complex congenital heart defects. Results from a 10-month pilot international telemedicine initiative involving paediatric cardiac intensive care units (CICUs) in the United States and Colombia demonstrate the potential of telemedicine to improve medical care for paediatric cardiac patients around the world, as reported in the March 2012 issue of *"Telemedicine and eHealth"*.

Background

The Fundación Valle del Lili in Cali, Colombia, is a 368-bed tertiary care teaching

hospital with a 10-bed paediatric intensive care unit (PICU), a six-bed cardiac intensive care unit (CICU), and two full-time paediatric cardiac intensive care specialists. Children's Hospital of Pittsburgh of UPMC in Pittsburgh, Pennsylvania, has a 36-bed PICU, a 12-bed CICU, two full-time cardiac intensive care specialists, and one full-time paediatric intensive care specialist with vast experience in cardiac critical care.

Collaboration between the paediatric CICUs at the two institutions began in 2008 with the initiation of a telephone-based system to provide as-needed medical consultations. Although this system was useful, it had the obvious limitation that the specialists in Pittsburgh were unable to see the patients in Cali, evaluate their general appearance, and review diagnostic images. The exchange of information was based solely on the subjective interpretation of the local intensive care specialist.

In February 2010, a telemedicine system was implemented at both CICUs. The system consists of two identical mobile carts, each equipped with a videoconferencing unit, a 22-inch monitor, a wireless Internet connection, and a portable power supply that enables the cart to run for up to two hours without being connected to an electrical outlet. One cart was located in the office of Ricardo Muñoz, MD, chief of the Paediatric Cardiac Intensive Care Unit at Children's Hospital. The other cart was located in the CICU at Valle del Lili.

Study methods

A study was conducted of telemedicine consultations for 53 paediatric patients admitted to the CICU at Valle del Lili between March 1 and Dec. 31, 2010. All consultations were carried out between Dr Muñoz and one of the two on-call cardiac intensive care specialists at Valle del Lili, María Motoa, MD, and Gabriel Santiago, MD.



The Telemedicine Center at Children's Hospital of Pittsburgh

Whenever the specialists in Cali felt they needed advice to manage a patient, they contacted Dr Muñoz by e-mail, which was converted to and immediately delivered as a page. Consultations were usually limited to more complex and sicker patients.

Upon receiving a page from the specialist in Cali, Dr Muñoz placed a phone call through the videoconferencing system to begin a consultation. The patient's case was presented to Dr Muñoz via videoconference. The mobile cart at Valle del Lili was moved within the CICU as needed to provide Dr Muñoz with any visual information he needed about the case. Data such as vital signs, pressure values, electrocardiograms, relevant laboratory test results, and diagnostic imaging studies were presented for Dr Muñoz's review.

Following the presentation of the clinical case, Dr Muñoz offered recommendations for further evaluation, treatment, or both. These recommendations most often related to surgery, management of arrhythmias, and cardiac catheterization studies. Once the videoconference ended, the specialist at Valle del Lili decided how best to follow Dr Muñoz's recommendations in managing their patient.

Results

Approximately two to three telemedicine contacts per week occurred during the study period. A total of 71 recommendations were given for 53 patients, of whom 70% were male and 72% were surgical cases. The patients' average age was 10 months, ranging from 7 days to 20 years.

The length of the telemedicine consultations ranged from 10 minutes to 45 minutes, with an average of 20 minutes. In addition to the on-call videoconferences for consultations on specific patients, the medical staff of the two CICUs participated in scheduled monthly multidisciplinary videoconferences to review other cases and engage in medical education.

At the end of the 10-month study period, a survey was conducted to gauge the Valle del Lili participants' satisfaction with the telemedicine service. Nine people – the two cardiac intensive care specialists, the cardiac surgeon, the chief of nursing, and five intensive care fellows rotating in the CICU – were sent an electronic link to a 12-question Internet-based survey that could be completed and submitted anonymously. Eight of the nine recipients (89%) responded to the survey.

Six respondents said they used the tele-

medicine system one or more times per week; two said they used it two to three times per month. All respondents agreed to continue using the system and said they would recommend it to other paediatric intensive care specialists. All reported being satisfied or very satisfied with both the technical and medical aspects of the system (see table).

Four survey respondents said they always followed the recommendations offered in the telemedicine consultation, three said they did so regularly, and one did so half the time. Although an objective method was not used to quantify clinical outcomes in cases in which telemedicine recommendations were given, six respondents attributed improvements in the patients' clinical condition to the telemedicine recommendations. Eighty-four percent of respondents said that at least 50% of the time the telemedicine recommendations had led them to make a change in their plans for

Table: Specific Aspects of the Telemedicine System with which Survey Respondents Indicated Satisfaction

Technical Aspects	Medical Aspects
Internet connection speed	Timeliness of the remote specialist's response
Audio and video signal quality	Time the remote specialist dedicated to the clinical cases
Frequency of communication interruptions	Local feasibility of the remote specialist's clinical recommendations
Mobility of the telemedicine cart	Immediate clinical outcome Concurrence of the local team with the remote specialist's recommendations

the patient's medical care. All respondents agreed that the scheduled monthly multidisciplinary videoconferences were useful.

Discussion

The results of this study show that telemedicine is a feasible tool for paediatric cardiac intensive care specialists around the world who seek medical advice from an experienced international centre. Use of the Internet to transmit data made the telemedicine system highly versatile, easy to access, low in cost, user friendly, and secure. Issues relating to poor connectivity or poor quality of the audio or video signal were seen in fewer than 5% of all calls made through the videoconferencing system.

According to the two intensive care specialists at Valle del Lili, two of the most important changes that have taken place in that paediatric CICU since the inception of the telemedicine program are more opportune surgical decisions and increased use of cardiac catheterization studies. An extracorporeal membrane oxygenation (ECMO) program – an advanced form of life support for patients whose heart and lungs are failing – began at Valle del Lili after the telemedicine program went into operation; however, recommendations related to ECMO were infrequent, possibly due to the few patients treated with ECMO at Valle del Lili during the study period.

Total mortality in the paediatric CICU at Valle del Lili during the period of the telemedicine study was 4%, compared with 9.3% in the previous year. The study design precludes attributing this decline in mortality to the telemedicine program. It is the authors' opinion, however, that prospective studies that address mortality as a specific outcome will confirm this observation.

Expansion of the telemedicine initiative

During the period of this study the paediatric CICU at Children's Hospital did not have an intensive care specialist providing telemedicine consultations full time. In July 2011, Alejandro López, MD, joined the medical staff of the CICU in the role of full-time telemedicine specialist. A native of Mexico, Dr López trained in paediatric cardiology at Massachusetts General Hospital and Children's Hospital of Boston

and served as chief of the Echocardiography Laboratory at the Instituto Nacional de Pediatría in Mexico City for three years before joining Children's Hospital.

Since Dr López's appointment as full-time telemedicine specialist, the telemedicine initiative has expanded to encompass four paediatric CICUs in Latin America: three in Colombia and one in Mexico. In addition to Valle del Lili, the participating paediatric CICUs in Colombia are the Fundación Cardiovascular de Colombia in Bucaramanga and the Clínica Cardiovascular Congregación Mariana in Medellín.

In January 2013 technical tests were initiated for a telemedicine collaboration between Children's Hospital and the Hospital Infantil de México Federico Gomez in Mexico City, the oldest dedicated paediatric hospital in Latin America, which is a tertiary referral centre for all paediatric subspecialties and a national referral centre for complex paediatric cardiac surgery. Once fully operational, this program will encompass both consultations for post-operative or medically complex paediatric cardiac patients and participation in weekly surgical rounds.

Since his appointment in July 2011, Dr López has participated in more than 900 telemedicine consultations. He conducts tele-assisted medical rounds in paediatric patients with complex or critical heart disease, providing consultations daily on weekdays and as needed on weekends and holidays. He interacts directly with the remote physicians and evaluates each clinical situation based on the patient's history, laboratory findings, and the results of diagnostic imaging studies, using this information to provide recommendations to the remote team relating to further diagnostic testing and medical, interventional, or surgical treatment.

Many consultations involve reading cardiac ultrasounds in "real-time"; occasionally Dr López assists in real time with additional diagnostic testing or medical interventions such as electrophysiology tests and treatment, adjustments of mechanical ventilation, and ECMO tests or adjustments. In one case, he assisted in real-time with a cardiopulmonary resuscitation.

The authors are now working with their Latin American counterparts to design

a prospective, randomized study with the aim of quantifying the results of telemedicine consultations for paediatric cardiac intensive care patients treated at the centres in Colombia and Mexico. Study outcomes will be presented in terms of mortality, frequency of complications, length of stay in the CICU, and costs.

In conclusion, this pilot initiative demonstrates that telemedicine is a feasible option for paediatric intensive care specialists who seek experienced assistance in the management of complex paediatric cardiac patients. Real-time remote assistance, provided by means of relatively simple, easily installed technology, may improve medical care for paediatric cardiac patients in developing countries. **IMEH**

The Authors

Ricardo Muñoz, MD, FAAP, FCCM, FACC, is chief of the Cardiac Intensive Care Division and director of the Cardiac Recovery Program for Children's Hospital of Pittsburgh of UPMC. He is also Children's Medical Director for Global Business and Telemedicine. Dr Muñoz attended medical school at the Universidad del Norte, Barranquilla, Colombia and completed his residency in paediatrics at the Hospital Militar Central, Bogotá, Colombia, Massachusetts General Hospital, and Children's Hospital Boston. He also completed fellowships in paediatric critical care medicine at Massachusetts General Hospital and in paediatric cardiology at Children's Hospital in Boston.

Email: munorx@upmc.edu

Alejandro López, MD, is clinical assistant professor of Telemedicine at Children's Hospital of Pittsburgh of UPMC. He is trained in paediatric cardiology at Massachusetts General Hospital and Children's Hospital of Boston and served as chief of the Echocardiography Laboratory at the Instituto Nacional de Pediatría in Mexico City for three years before joining Children's Hospital of Pittsburgh.

Email: lopezmagallona@upmc.edu

The difficult process of providing aid to Syria



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

The crisis in Syria continues to dominate many news headlines and few of us can be unaware of the plight of the hundreds of thousands who have either been displaced internally or who have escaped the conflict by seeking refuge in neighbouring countries. Britain, Germany, Kuwait, the United Arab Emirates, and the USA are just some who have pledged to help fund humanitarian efforts for those still in Syria, as well as the refugees now in Lebanon, Jordan, Turkey and Iraq.

I read with interest the Médecins Sans Frontières article in the last issue of *Middle East Health* about the situation in Lebanon and the frustrations the aid agencies there are experiencing due to the need for refugees to be registered before assistance can be given. As Durbin's 'NGO's and Charities' division has been involved in the supply of medicines to Syria itself, I thought I would share something about the process that we have to go through in conjunction with the aid agencies and freight forwarding companies to get medicines into the country and the difficulties

that we also face.

With more than half the public hospitals having been damaged or destroyed, and medical supplies already severely low, getting fresh supplies into Syria and to the right areas, is of vital importance. Unfortunately for those who have been injured in the conflict however, practicality and politics do not always work in tandem. With aid workers, depots and vehicles all having come under fire at times, the logistics of supplying a country in crisis is not always a straight forward exercise, and the planning process can be a complex one.

For Durbin it begins by working closely with the aid agencies to provide exactly what items they need in the required quantities. As straight forward as this may seem it is crucial that we can be relied upon to work speedily and get this right, and it is where our long experience in sourcing quality pharmaceuticals worldwide comes into its own. For the Syrian crisis this has mainly been large volumes of antibiotics, painkillers and anaesthetics plus disinfectants, bandages and other consumable items. Due to trade embargoes that are in place from the EU, UN and other countries, we then need to obtain permission from the British Government 'Export Control Organisation' before any shipment can go ahead. Exemptions are in place for medicines, but as embargo regulations can be complex and subject to change, being familiar with these is essential. The need to supply accurate and detailed paperwork is paramount or unnecessary delays can occur.

How to ship is the next consideration but with Damascus Airport closed the alternatives have been limited. Cold storage items are being flown into Beirut and then by refrigerated truck from there, but for practical reasons including cost, most bulk shipments are having to go by

sea to Latakia port. It is at this point that most delays have occurred so far unfortunately, as the aid agencies have to apply for a duty waiver before any goods can be cleared and at times the process has been painfully slow. With most agencies having limited staff 'on the ground' due to safety concerns, onward transportation is then often being placed with local hauliers, although 'local knowledge' can of course be an advantage here. Some aid is getting through to where it needs to be thankfully, but the whole process is more long winded than any of those involved would wish it and inevitably delays mean lost lives.

It is heartening none-the-less to know that the world has not given up on the many who have been left suffering due to the Syrian crisis. Contributions continue to pour in from around the globe and organisations like the United Nations, Médecins Sans Frontières, the Red Cross, Islamic Relief, the Syrian Arab Red Crescent and others, continue to co-ordinate relief efforts despite all the difficulties, frustrations and setbacks that they face on a daily basis. We should all feel proud of the work they do on our behalf. **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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Anna Surinyak/MSF

The number of people seen with injuries caused by the security forces as well as those injured when falling from the fence or when fleeing from the police has increased.

Morocco: Violence against migrants escalates

Migrants from sub-Saharan Africa are suffering a sharp increase in violence at the hands of security forces in Morocco and at border areas, resulting in serious health problems, the international medical humanitarian organization Doctors Without Borders/Médecins Sans Frontières (MSF) said.

A report released by MSF, *Trapped at the Gates of Europe*, documents the violence migrants are subjected to on a daily basis. Since December 2011, MSF teams have witnessed an increase in the number of police raids, during which migrants are beaten and their belongings destroyed. An increasing number of people are also being expelled to Algeria, including pregnant women, injured people, and minors.

“Since April last year we have seen people with broken arms, legs, hands, and jaws as well as broken teeth and concussions, amongst other injuries,” said David Cantero, MSF head of mission in Morocco. “The injuries documented by MSF are consistent with migrant accounts of attacks by security forces.”

The indiscriminate raids and expulsions constitute renewed acts of violence by Moroccan and Spanish security forces to dissuade migrants from climbing fences surrounding the Spanish territory of Melilla. In 2012 alone, MSF teams in Oriental region, near Melilla, treated more than 1,100 injured people.

The stringent border controls are forcing more people to remain in Morocco,

where they are vulnerable to abuse at the hands of authorities are denied specialized care and protection from the authorities.

“Renewed cooperation between Morocco and Spain, which, according to the parties, is focused on the fight against cross-border crime, illegal migration, and drug trafficking, is having a serious impact on the physical and mental health of sub-Saharan migrants,” Cantero said. “Migration policies privilege internal security criteria over respect for fundamental human rights.”

One of the most urgent problems outlined in the report is sexual violence, experienced for the most part by migrant women and girls. While it is impossible to determine the full extent of this violence, MSF’s medical data reveal an alarming situation: from 2010 to 2012, MSF teams provided specialized treatment to close to 700 survivors of sexual violence.

The report also reveals the difficult circumstances endured by sub-Saharan migrants, many of whom are forced to live in precarious conditions in the open and to beg in order to survive. Almost half of the 10,500 medical consultations conducted by MSF teams between 2010 and 2012 were for pathologies related to poor living conditions. Many patients also show symptoms of anxiety and depression, among other mental health conditions.

While civil society and nongovernmental organizations, together with Morocco’s Ministry of Health, provide some health

services to migrants, there is an overall lack of mental health services and comprehensive care for survivors of sexual violence, for both migrants and Moroccans. Some migrants are also reluctant to visit health centers, for fear of expulsion from the country.

MSF urges the Moroccan and Spanish governments to cease the abuse perpetrated by their respective security forces, comply with international and national human rights agreements, and guarantee that sub-Saharan migrants are treated humanely, regardless of their legal status.

MSF teams in Morocco have increasingly found themselves confronted with medical and psychological needs that stem from a lack of protection and an abuse of sub-Saharan migrants’ fundamental human rights. MSF is handing over its activities in Morocco and, at the same time, calling for concrete action to address the contradiction between policies that view migration through a security lens, and those that protect and uphold human rights. The involvement of Moroccan associations and civil society will be crucial if long-term change is to be achieved.

● MSF has worked in Morocco since 1997. Since 2003 the organization has focused its operations on guaranteeing access to health care for migrants. MSF handed over its activities in Rabat in 2012 and is currently handing over its remaining operations in Oujda and Nador. MEH

St. Luke's Episcopal Hospital is first in Texas to use new FDA-approved catheter-based heart pump for high-risk patients

St. Luke's Episcopal Hospital (SLEH), home of Texas Heart Institute (THI), is the first in Texas and among the first in the nation to use a new heart pump that allows the heart to rest while cardiologists perform minimally invasive heart repairs on high-risk patients.

Known as the Impella CP (Cardiac Power), the pump received clearance in September 2012 from the U.S. Food and Drug Administration (FDA). The device is inserted via a soft-flexible tube, or catheter, through a small incision in the groin and threaded through the femoral artery and eventually into the left ventricle of the heart. Once in position, the Impella CP takes over the pumping function of the heart, pumping 3.5 liters of blood per minute through the body, which is approximately 80 percent of what a healthy heart can pump.

THI-affiliated interventional cardiologist Andrew Civitello, MD, said the Impella CP is an improvement on two previous versions of the pump – the Impella 2.5 and Impella 5.0. The Impella 2.5 only pumps 2.5 liters of blood per minute, half the amount of a healthy heart, and the larger Impella 5.0 pumps 5 liters

per minute, equivalent to what the heart pumps, but requires insertion through a much larger incision because of the device's size, therefore requiring surgery.

"The Impella CP is a happy medium that can support the heart during minimally invasive procedures performed in the Cardiac Catheterization Laboratory, eliminating the need for surgery," said Dr Civitello, who has been involved with this family of heart pumps since the FDA approved the first for use in the United States. He was on a panel of cardiologists invited to give input to the developer, Abiomed, Inc., and is among those who recommended development of a pump the size of the Impella CP.

This latest version of the pump makes procedures possible that could be very risky for patients with weakened hearts.

"As a tertiary heart center, we get patients who are referred from other centers and who have run out of options," Dr Civitello said. "This allows us to perform treatments that could not be performed at most hospitals."

The new pump benefits three groups of patients, he said. The first are those who need coronary revascularization, a procedure that restores the blood supply to the heart, and whose hearts are too weak for either open-heart surgery or standard angioplasty.

This was the case with the first patient

treated at SLEH using the Impella CP. On November 9, 2012, interventional cardiologist Leo Simpson, MD, used the pump to support the heart of 46-year-old Lloyd Willis during a procedure in the Catheterization Lab to unblock a heart artery. Willis suffered from unstable angina due to severe coronary artery disease.

A husband and father of three sons, Willis said he had been treated for heart disease since 2005, beginning in Louisiana. Treatment included numerous heart catheterizations, stents and heart bypass surgery.

"Every time I have a heart catheterization, I almost die from it," Willis said.


Willis, who most recently worked in construction, was told a couple of years ago that he no longer could work in that field because of his heart condition. He also noticed he lacked enough air when he was singing at his church, prior to his recent procedure at SLEH.

Now, "I feel great," Willis said, noting it's not only easier to sing, but he also has more energy.

"It definitely saved his life," said Monica Willis, his wife.

A second group of patients, who can benefit from the Impella CP, are those with ventricular tachycardia, a life-threatening fast heart rhythm.

The third group are those in cardiogenic shock, a condition that results when the heart fails to pump effectively. It can be due to damage to the heart muscle, frequently from an acute heart attack, and causes dangerously low blood pressure. The Impella CP can be used to stabilize patients until they can be surgically implanted with a left ventricular assist device (LVAD), a device that helps the heart pump blood.

● St. Luke's offers advanced diagnosis, treatment and prevention programs with a specialized, customer-oriented international component. To find out more about St. Luke's International Service or to schedule an appointment, please call +1 832-355-3350 or email international@sleh.com 





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Obesity makes fat cells act like they're infected

The inflammation of fat tissue is part of a spiraling series of events that leads to the development of type 2 diabetes in some obese people. But researchers have not understood what triggers the inflammation, or why.

Scientists from The Methodist Hospital recently reported in *Cell Metabolism*, that fat cells themselves are at least partly to blame – high calorie diets cause the cells to make major histocompatibility complex II, a group of proteins usually expressed to help the immune system fight off viruses and bacteria. In overweight mice and humans the fat cells, or adipocytes, are issuing false distress signals – they are not under attack by pathogens. But this still sends local immune cells into a tizzy, and that causes inflammation.

“We did not know fat cells could instigate the inflammatory response,” said principal investigator and Methodist Diabetes & Metabolism Institute Director Willa Hsueh, M.D. “That’s because for a very long time we thought these cells did little else besides store and release energy. But what we have learned is that adipocytes don’t just rely on local resident immune cells for protection – they play a very active role in their own defense. And that’s not always a good thing.”

In pinpointing major histocompatibility complex II (MHCII) as a cause of inflammation, the researchers may have also identified a new drug target for the treatment of obesity. Blocking the MHCII response of adipocytes wouldn’t cure obesity, Hsueh said, “but it could make it possible for doctors to alleviate some of obesity’s worst consequences while the condition itself is treated”.

“The expression of MHCII in adipocytes does not seem to be helpful to the body,” said co-lead author Christopher Lyon, Ph.D. “It is not at all clear what the advantage would be,

given all the negative long-term consequences of fat tissue inflammation in people who are obese, including insulin resistance and, eventually, full diabetes. This just appears to be a runaway immune response to a modern high calorie diet.”

Hsueh added: “The bottom line is, you’re feeding and feeding these fat cells and they’re turning around and biting you back. They’re doing the thing they’re supposed to do – storing energy – but reacting negatively to too much of it.”

The scientists studied fat cells from obese, female humans (via biopsy) and overfed male mice. The researchers said that while they expect similar MHCII expression to occur in overweight male humans and female mice, further studies are needed to establish this.

The immunology of adipocyte inflammation is complex. It begins with the import of excess nutrients from the bloodstream, which are converted and stored as fat and stimulate the production of the hormone leptin. Excess leptin, spurred by a high calorie diet, excites CD4 T cells to produce a second signaling molecule, interferon gamma, which causes adipocytes to produce MHCII. This dialogue between


The bottom line is, you're feeding and feeding these fat cells and they're turning around and biting you back.

adipocytes and T cells appears to initiate the inflammatory response to high fat diet – Hsueh and her group found that overfed mice lacking MHCII experienced less inflammation.

Interferon gamma from T cells exacerbates the inflamed adipocytes’ behavior and causes another type of immune cell, M2 macrophages, to be converted to their pro-inflammatory (M1) version.

“It was known that macrophages and T cells are major players,” said lead author Tuo Deng, Ph.D. “But no one knew what the start signals were to ignite inflammation.

Hsueh says her group plans to investigate whether the inflammatory response in overfed mice can be blocked when MHCII expression is specifically reduced in adipocytes. Hsueh says that if she and her group can identify the antigen(s) that MHCII is presenting to T cells in fat tissue, medical researchers would have a new approach to target adipose inflammation in obese patients.

Also contributing to the *Cell Metabolism* paper were Laurie Minze, Jianxin Lin, Jia Zou, Joey Liu, Yuelan Ren, Zheng Yin, Dale Hamilton, Patrick Reardon, Vadim Sherman, Helen Wang, Kevin J. Phillips, Paul Webb, Stephen Wong, and Rong-fu Wang. The project was supported by grants from the John T. MacDonald Foundation, the National Institutes of Health, and the American Diabetes Association. 

Overfed adipocytes

Overfed adipocytes produce MHCII, a complex of proteins normally produced during pathogenic attack. MHCII and leptin produced by the adipocytes cause nearby CD4 T cells to become excited, eventually leading to inflammation. Inflammation of fat tissue causes a wide range of health problems for overweight and obese people.

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HEALTH





Medhealth Cairo 2013 ... another successful conference and expo

Medhealth concluded its 12th edition at the Cairo Marriott Hotel on 13 March 2013. Held simultaneously with the Arab Health Ministers Council, Medhealth Cairo 2013 was a great achievement. With nine ministers of health sitting together on the Arab Hospitals Federation (AHF) panel and discussing the topic: "Investment in the adolescent health is the future of healthcare". As many as 373 participants from 16 countries attended the forum.

This event is now firmly established on the healthcare events calendar.

The scientific agenda, designed in partnership with ARADO, Imperial College London, Executive Board of the Health Ministers Council and the AHF featured more than 25 local and regional speakers who shared their expertise and experience with the attendees about various subjects related to the future of the Arab healthcare sector.

Parallel to the conference, a specialized exhibition provided a platform for pharmaceutical and medical companies as well as health institutions from various Arab countries.

The event, held in strategic partnership with Qatar's Hamad Medical Corporation, Ministry of Health in Kingdom of Saudi Arabia, Tamer Covidien, Al Jeel, Roche & GE Healthcare, has proven



Feedback

- 72% of the attendees stated that the scientific program of the conference was excellent
- 73% rated Medhealth as a good opportunity to network with key decision makers

once again to be the leading forum in the Arab world where Arab ministers of health along with key decision makers and policy makers gather to network with some of the biggest stakeholders in the industry.

During Medhealth Cairo 2013, the AHF presented awards to several people to honour them for their outstanding contributions to healthcare in the region.

They are:

- 1- **Distinguished Arab Personality Award in Relief Work.**
HRH Prince Turki Bin Talal Bin Abdul Aziz Al-Saud – Chairman of the Advisory Board of the Arab Open University in Riyadh
- 2- **Pioneer Leadership Award in Healthcare.**
H.E. Dr. Ahmed Bin Mohammed Bin Obaid Al Saidi – Minister of Health, Sultanate of Oman
- 3- **Leading Initiative Award for E-Health.**
Ministry of Health, Kingdom Saudi Arabia
- 4- **Leading Initiatives Award against Non Communicable Diseases.**
Ministry of Public Health, Lebanon
- 5- **Leading Initiatives Award in Supporting Health Awareness Campaign.**
Hamad Medical Corporation, Qatar
- 6- **Arab Pioneer Institution Award for Humanitarian Aid.**
Children's Cancer Hospital 57357, Egypt
- 7- **Humanitarian Initiative Award.**
Ambassadors for Voluntary Work in Egypt

■ Medhealth 2014 will be held in March next year. For more information visit: www.ahfonline.net

Conference set to look at healthcare needs and issues in Iraq

Iraq Healthcare Conference
Erbil International Fair Ground, Iraq
27-28 May 2013



International Fairs & Promotions (IFP) – Iraq, Sesam, and Zenith have formed an alliance to launch the Iraq Healthcare Conference 2013, which will take place on May 27 and 28 at the Erbil International Fair Ground, Kurdistan Region, Iraq.

Under the auspices of both the Ministries of Health in the Kurdistan Regional Government and the Iraqi government in Baghdad, and with the combined skills, expertise and reputation of three front-runners in the trade fair and conference organizing industry, the Iraq Healthcare Conference 2013 is expected to be the largest specialized conference of its kind in Iraq, addressing all aspects of the Iraqi healthcare sector, which has an estimated value of US\$6 billion.

Commenting on the event, Dr Rekawt Hama Rashid, Minister of Health of the Kurdistan Regional Government, said: “The organizers of the Iraq Healthcare Conference are committed to carrying out all the sessions in this highly acclaimed conference, which will be covering all the recent medical developments.

“The organizers will make sure to focus on the latest international studies, techniques and technologies in the world of medicine in order to enhance the knowledge and skills of those present.”

Boris Ritter, General Manager of Sesam, said: “We are very excited about contributing to the launch of the largest health conference in Iraq, in partnership with International Fairs & Promotions (IFP) - Iraq. We are expecting to make this event the go-to destination for healthcare specialists by providing them with the opportunity to network

with industry professionals, discover new techniques and technologies, and identify the abundant business opportunities in Iraq's healthcare sector. Our experience in organizing specialized regional events, along with the vast relations our partners have acquired over the years, will guarantee the success of this event.”

To further demonstrate the scientific importance of this event, the event is supported by the Cambridge Academy for Higher Education (CAHE), a dedicated healthcare and pharmaceutical research institution, and Iraq Health, a non-governmental non-profit think-tank seeking to improve health in Iraq.

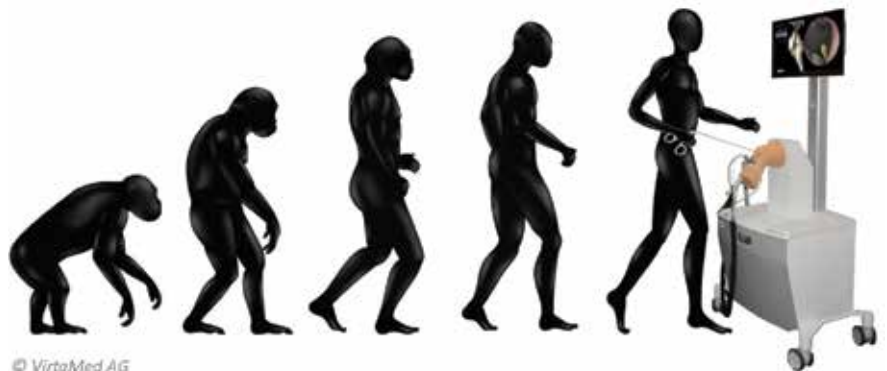
Philips Healthcare one of the conference sponsors, will anchor a forum presentation platform dedicated to Oncology, and in particular PET CT (Positron Emission Tomography - Computed Tomography) imaging. Philips's Ingenuity TF PET/CT is optimized for oncology imaging, offering TruFlight technology for exceptional speed and full-fidelity PET imaging to enhance patient care.

The conference will be held over two days during which many internationally-renowned speakers, including professors and experts such as Salman Rawaf, Professor of Public Health at the Imperial College in London, will discuss the future of the healthcare industry in the region, as well as prospects in medical services, pharmaceuticals, and medical insurance in Iraq, in addition to many other issues.

■ For more information about the event and the participation procedure, visit www.iraqhealthcareconference.com

■ Middle East Health is an official media partner

Surgical evolution – made in Switzerland



In an ideal, perfect world, complications would be trained in a safe and risk-free environment with no live patients involved. The training tool would look and feel exactly the same as “the real thing”. And it would teach the right way to do a procedure and correct any slight little mistake a trainee would commit.

Swiss engineers have made all of the above possible, and even more: Virtual reality simulators offer high-fidelity graphics in HD. Original instruments from the

operating room are equipped with sensors. They work just as in real life, train all the skills necessary and thus facilitate the transition to the OR. And an endless variety of various pathologies awaits the trainee – a variety that surgeons would only encounter during years of practice.

Hints and colored “ghost tools” show the best way to deal with a specific patient case. Experts define scores for objective performance feedback after each surgical procedure. Metrics include safety, correct

handling of the instruments and how well the surgeon dealt with the pathology.

Until now, the company VirtaMed based in Zurich, Switzerland, offers surgical simulators for training in four disciplines. These are hysteroscopy, transurethral resection of the prostate, knee arthroscopy and – in prototype state – shoulder arthroscopy.

● For a live demo of this innovative educational tool and for more information on future product developments visit: www.virtamed.com

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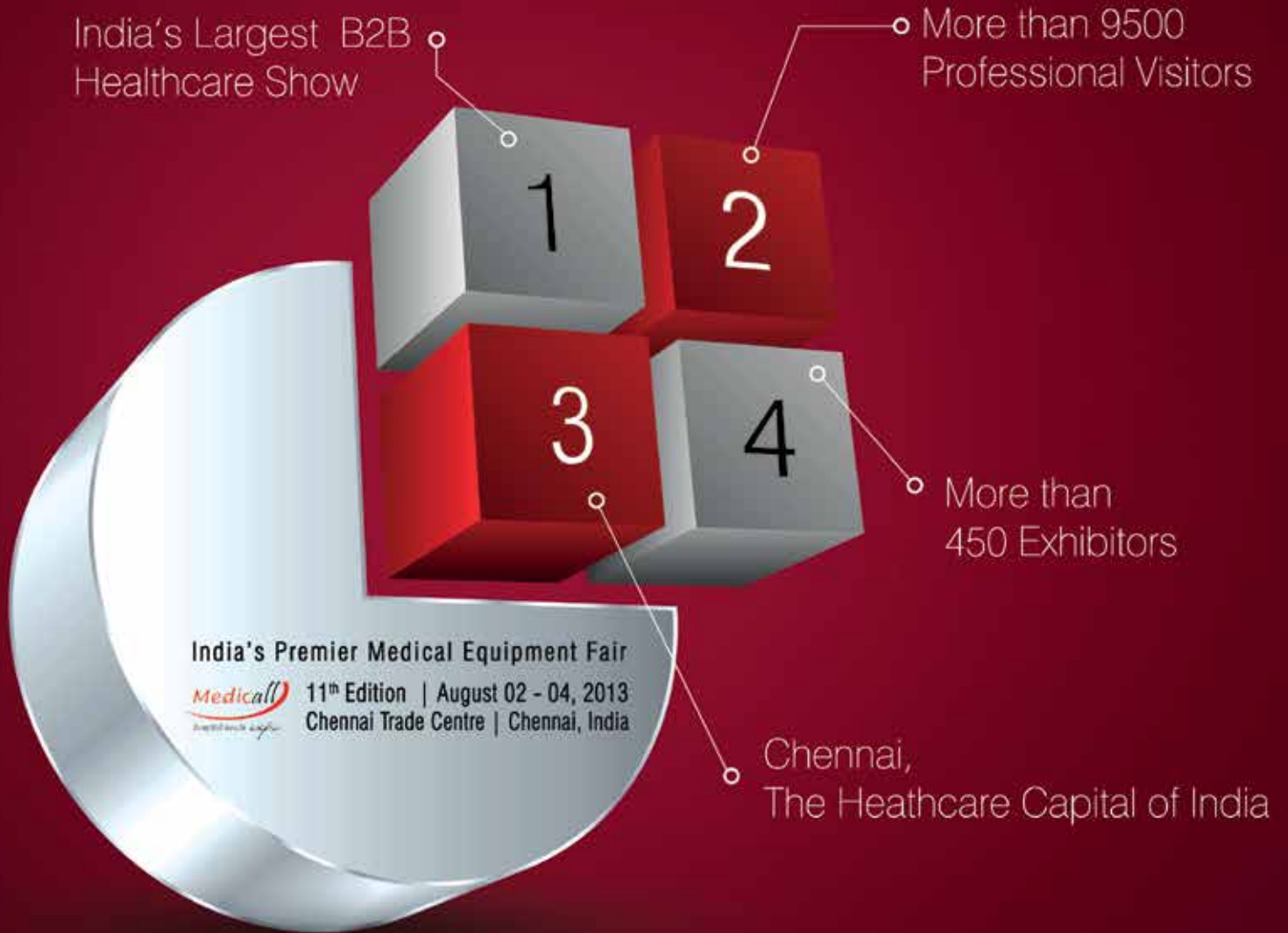
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Intersurgical launches Adult and Paediatric Compact Breathing Systems

Following the success of the Compact extendable breathing systems for adults, Intersurgical has launched a new paediatric range, with features that offer distinct advantages:

- **Supplied concertinaed** increases the number of systems per box, for more cost effective storage and disposal, resulting in significant space savings. A standard box of Compact systems could provide a hospital with an extra three weeks supply*.
- **Adjustable length** means the tubing can be extended/collapsed to suit your exact needs
- **Shallow profile tube** improves laminar gas flow and lower resistance to flow
- **Softer material** results in a quiet, non-disruptive sound when expanded and collapsed
- **Flexibility** allows for easy tube positioning, without the need for additional connections - ideal for head and neck surgery
- **Compliance** is excellent when extended, at 0.28ml/mbar per metre of tube - less than that required in the ISO 5367:2000 standard

The Paediatric Compact breathing system is available in three lengths: 1.5m, 2.0m, and 3.0m (extended length). A one-litre reservoir bag with limb options is also available.

Contact your local distributor to try the product yourself.

- Visit: www.intersurgical.com/products/adjustable-breathing-systems

* Comparison based on a hospital with four operating theatres changing the breathing system on a daily basis. Example systems used: Intersurgical code 2150 (Compact II) and code 2000 (Flextube).

Ampronix's Scanmaxx lets you connect PC to PACS

The Scanmaxx USB2DVI4MP is a multipurpose unit. It's the first medical external video card that allows you to easily and directly connect your desktop or laptop to two PACS displays at resolutions up to 4 MP at the same time.

Why not avoid the chaos of opening your PC and adding additional internal video cards? In addition, Scanmaxx USB2DVI4MP eliminates the concern of software conflicts that can occur when adding a secondary video card.

The Scanmaxx USB2DVI4MP is compatible with Windows XP, Vista and Windows 7 operating systems. It works with both USB 2.0 and 3.0. This unit is compact and is easy to store in any space. It also includes three USB 3.0 hubs, audio and Gigabit Ethernet. All these features will streamline your work flow and allow you to quickly and easily connect all your workspace peripherals.

- For more information, visit: www.ampronix.com



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



Zio tech provides Audio Visual solutions to leading hospitals

The fastest-growing system integration company in the GCC lists an impressive line-up of hospital clients.



Zio Technologies is one of the best-known names in the system integration field in the GCC. A turnkey solutions provider that set up shop a little more than 10 years ago, Zio has grown to a multi-million dollar company that dominates the marketplace. Involved in every significant project in the region, Zio employs a large team of technical professionals and has offices at Abu Dhabi, Dubai and Bahrain.

"There was a time long ago when we would celebrate the novelty of a million-dollar project; today it has become normal to be awarded projects over \$10 million," says Parag Vadodaria, CEO, Zio Technologies.

The hospitals on Zio's client list read like a who's who among regional caregivers: Cleveland Clinic Abu Dhabi, Al Wasl Hospital, American Hospital, Canadian Specialist Hospital, Sheikh Khalifa Hospital, Iranian Hospital and Latifa Hospital among several other leading names.

The company specialises in integrated Audio Visual Solutions including modern Nurse calling and Videoconferencing systems (for operations and doctor meetings) among others, and employs a team of dedicated professionals capable of customising solutions for clients. "It is a matter of great pride that half our business is driven by repeat customers or referrals, which says a lot for our support services," says Vadodaria.

● For more information, visit: www.ziogulf.com



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To find out more please visit www.himssme.org/13/ or email Liz Pugh on lpugh@fdbhealth.com to pre-book an appointment.

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Agenda

Selected schedule of regional medical meetings, conferences and exhibitions

Event	Date	Contact
■ MAY 2013		
International Cardiology Symposium	16 – 18 May, 2013 Dubai, UAE	www.ics2013.com
Health Facilities Infrastructure	26 – 28 May, 2013 Riyadh, KSA	www.healthfacilitiesaudi.com
Iraq Medicare 2013	27 – 29 May, 2013 Kurdistan Region, Iraq	info@iraqmedicare.com www.iraqmedicare.com
■ JUNE 2013		
M+Health	3 – 5 June, 2013 Dubai, UAE	www.mplushealth.com
Hospital Health Middle East	3 – 5 June, 2013 Dubai, UAE	www.hospitalbuild-me.com
EFORT Congress 2013	5 – 8 June, 2013 Istanbul, Turkey	EFORTexhibition@mci-group.com www.efort.org/istanbul2013
Beirut International Medipharma Fair	13 – 15 June 2013 Beirut, Lebanon	info@promoteam-ltd.com
■ AUGUST 2013		
FDI Istanbul 2013	28 – 31 August, 2013 Istanbul, Turkey	Congress@fdi2013istanbul.org www.fdi2013istanbul.org
■ SEPTEMBER 2013		
Emergency Medicine & Hyperbaric Medicine Conf. & workshop	1 – 4 Sept, 2013 Jeddah, KSA	jcme@kfshrc.edu.sa
Advanced Technologies	5 – 9 Sept, 2013 Amman, Jordan	www.estro-education.org
12th Asian Oceanian Congress on Child Neurology	14 – 18 Sept, 2013 Riyadh, KSA	www.aoccn2013.com
MedHealth & Wellness 2013	23 – 25 Sept, 2013 Muscat, Oman	melissa.daleja@omanexpo.com www.omanexpo.com
■ OCTOBER 2013		
Iraq Health Expo 2013	3 – 6 October, 2013 Basra, Iraq	info@pyramidsfair.com www.iraqhealthexpo.com
8TH World Congress of Immunopathology Respiratory Allergy & Asthma	12 – 15 October, 2013 Dubai, UAE	info@wipocis.org www.wipocis.org
Thalassemia International Federation World Congress TIF2013	20 – 23 October, 2013 Abu Dhabi, UAE	pco@tif2013.org www.tif2013.org

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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Mubarak found hope and healing in Pittsburgh.

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