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War Zone

There is a desperate need for meds in Syria but getting them in is no easy task

In the News

- Bahrain to launch organ donor programme
- 100,000 infected with leishmaniasis in Syria
- Researchers find key to gene-silencing activity
- More than 30% of world's population live with allergies
- New guidelines for blood glucose reporting

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

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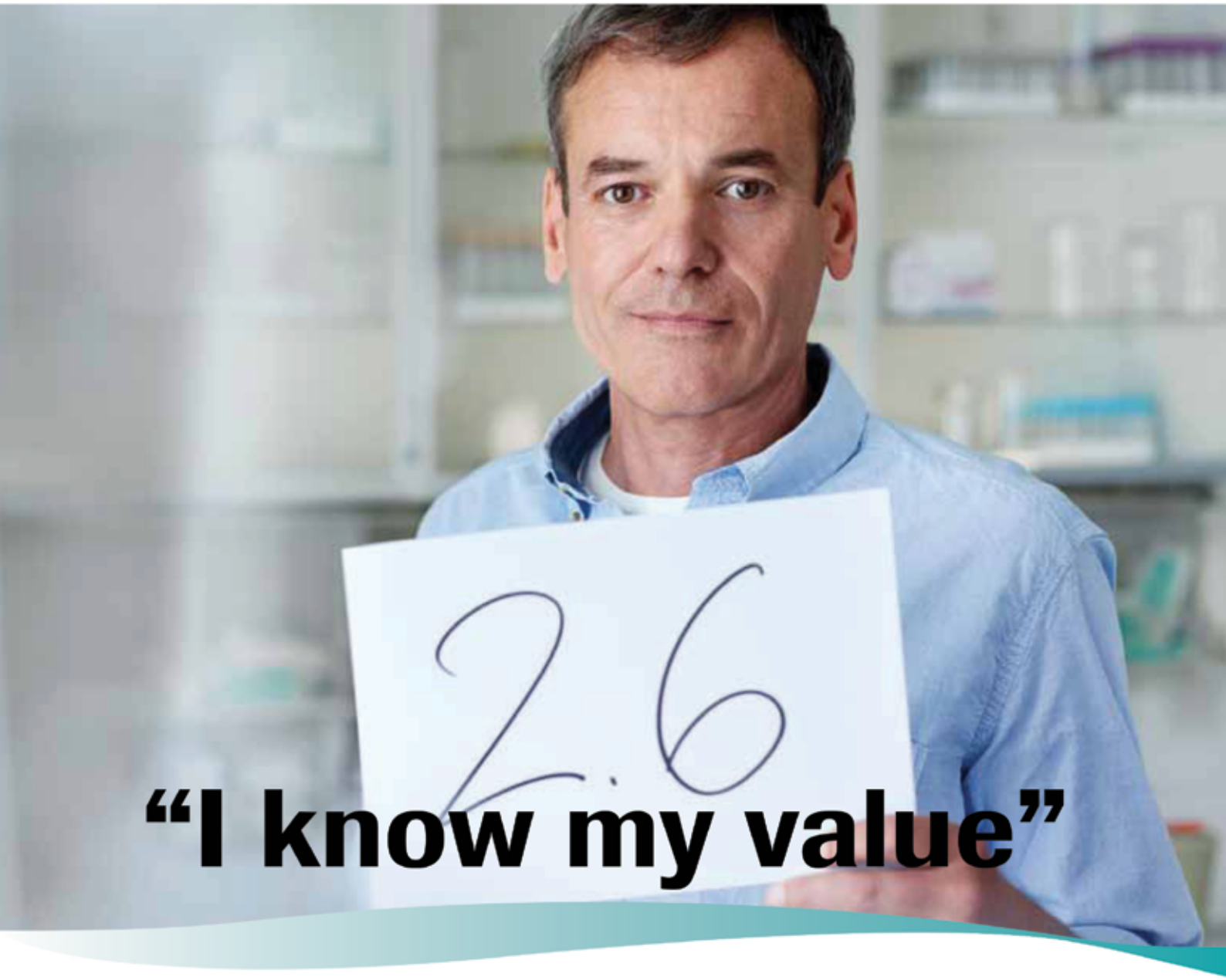

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Prognosis

Hot market!

July is usually a relatively quiet month for us on the marketing front, but not this year. Clearly the Middle East is seen as one of the few remaining growth markets in the world and an attractive place to do business. This is evidenced by the record number of clients advertising in this Summer issue – clients who want to make themselves and their products known to the Middle East market. By choosing *Middle East Health*, they obviously believe they have chosen the right vehicle to do so – and we thank them for their support.

With treatment costs at as low as a tenth of that of America and the UK for certain procedures, but still with English as the medical 'lingua franca', India is fast becoming an attractive destination for medical tourists. The Associated Chambers of Commerce and Industry of India says the country's medical tourism sector is expected to grow by 30% a year, making it a US$2 billion industry by 2015 – a very healthy sum. In this issue we speak to some of India's leading hospitals about what they have to offer medical tourists, how many and what type of tourists they are receiving, and how they see the future.

The deadly novel coronavirus that has taken hold in Saudi Arabia, and affected a number of other countries in the region and Europe, has been named Middle East Respiratory Syndrome Coronavirus or MERS CoV. At the time of going to press there had been 70 laboratory confirmed cases and 40 deaths, some of them asymptomatic, meaning that people could be carrying and spreading the virus without even knowing they have it. Health leaders from countries affected by the virus met in Cairo in late June to discuss measures to combat the spread of MERS CoV. Some urgent calls for action emanated from this important meeting, and you should make time to read our timely report on page 24.

And don't forget to read "The Back Page" at – you guessed it – the back of the mag. In each issue we use this page to highlight some futuristic technology that has found its way into medical devices to ease and facilitate the lives of patients or make the work of doctors simpler and more efficient. In this issue we look at a new communication aid developed by Fraunhofer Institute for Optronics, System Technologies and Image Exploitation at the request of Otto Bock Mobility Solutions that expands the functionality of electric powered wheelchairs by connecting up the existing wheelchair control system to a mobile phone, PC, TV or games console via Bluetooth. What a wonderful boon for chair-bound people!

The speed of technological development in medicine is indeed both exciting and astounding. The On the Pulse section of this magazine is a good place to keep pace with these product developments, and is one of the most popular sections of our website. If you are an advertising client and have new tech going into your products – send your product news to the editor and, if it's news-worthy, we'll publish it here.

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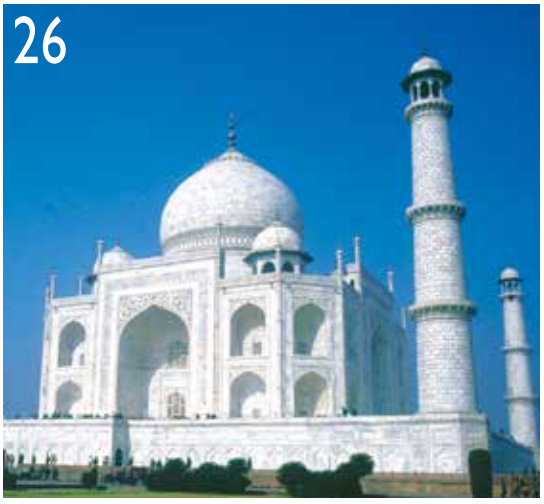

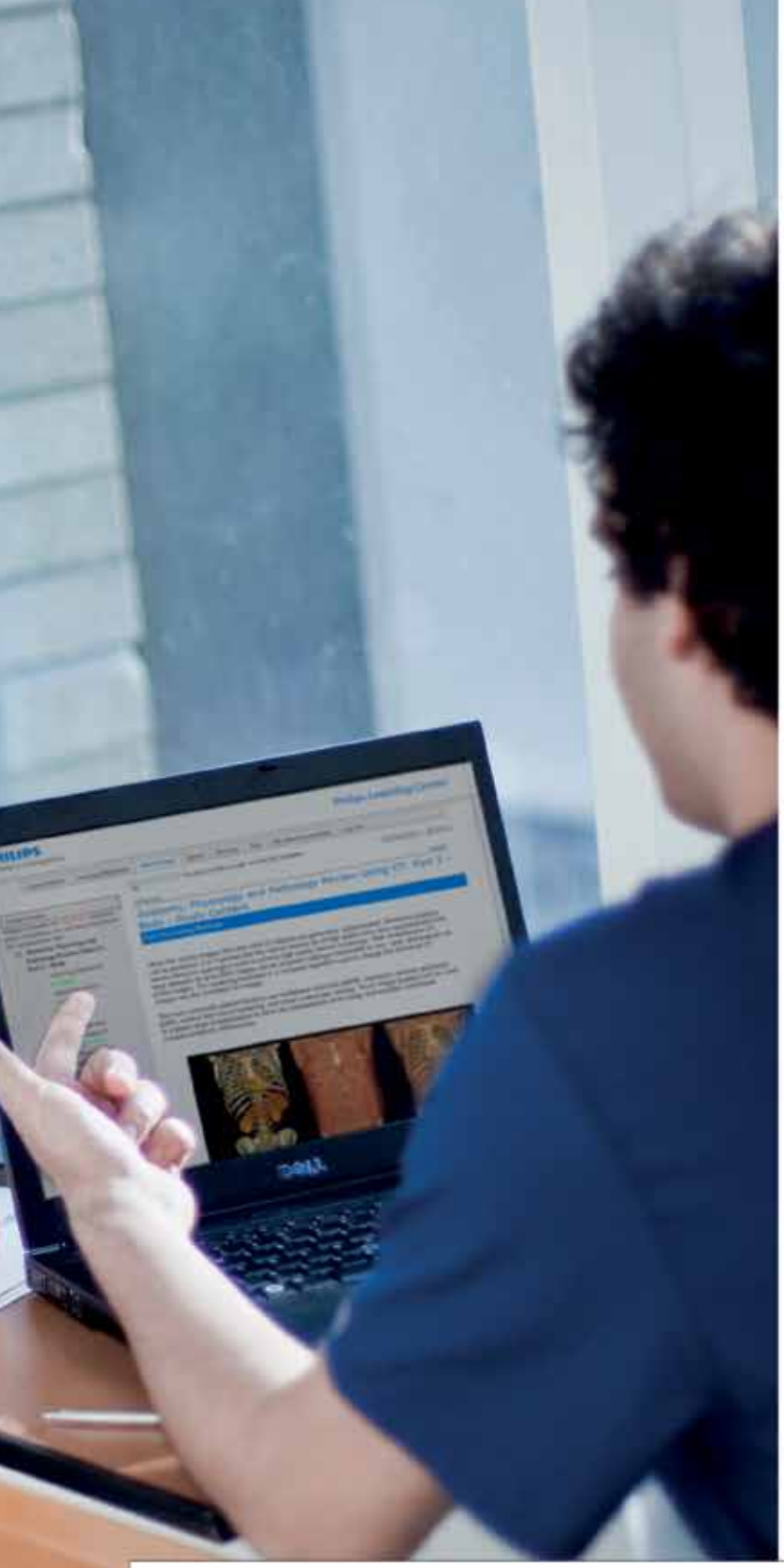

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PHILIPS

middle east monitor

Update from around the region

Hafsa Shebli

UAE woman becomes first certified female pathologist in Emirates

Hafsa Shebli, has become the first female pathologist in the UAE. Working at Tawam Hospital in Al Ain, she has been certified by the American Society of Clinical Pathologists (ASCP).

UAE national Hafsa Shebli is a qualified Bachelor of Science degree holder in Cellular and Molecular Biology from the UAE University. She joined the Anatomic Pathology Section of the Tawam Laboratory Department in 2005 and after working for six years there decided to pursue higher studies in Cytology in Melbourne, Australia. She returned to the UAE after completing her course.

Humaid Al Mansouri, Deputy Chief Executive Officer of Tawam Hospital said: "Hafsa shines as an example of our efforts towards developing UAE national talent. Her enthusiasm, ability to learn quickly and eagerness to acquire new skills were noticed by supervisors who encouraged her to push for further studies. Her hard work and dedication then took over and she achieved this milestone despite being a wife and mother of two young children. We are proud to have her as a colleague. She is an inspiration to our staff and more are expected to follow her example."

Assad's forces strike hospital

The UOSSM (The Union of Syrian Medical Relief Organizations) reported 24 June that Al Raqqa Hospital, the only working hospital in the city of Raqqa, was targeted by two airstrikes by President Bashar al-Assad's forces in the on-going civil war in the country. One strike hit the ICU department and the other one hit the Internal medicine department. The attack caused extensive damage to the building and medical equipment.

Doctors issued an urgent call for the provision of ventilators, monitors, and other ICU medical equipment.

"The UOSSM is outraged by the attack on this medical facility and urges the UN and the international community to provide protection to medical facilities and personnel," the organisation said in a statement.

- See video footage of bombing *http://youtu.be/fcST-NR4w40*

Bahrain to launch organ donation database

Coinciding with the launch of the Bahrain Foundation for Organ Relief, the Kingdom is in the process of establishing its first organ donation database. The new database will involve the distribution of organ donor cards similar to those carried by people in the West.

The Foundation is in the final stages of securing permission from Bahrain's Health Ministry to carry out the organ donation drive. The Minister of Health, His Excellency Sadiq Al Shehabi, has personally backed the effort to expand organ donation in Bahrain.

The Bahrain Foundation for Organ Relief will be launched during a two-day cultural event on October 17 and 18.

100,000 infected with leishmaniasis in Syria

UOSSM calls on the World Health organization (WHO) and the international medical agencies to assist the local health care providers and public health centers inside Syria and on the Turkish border in treating the escalating number of leishmania cases in northern Syria, and to support the local health centers in their efforts to control the spread of the disease. According to *Today's Zaman*: "Approximately 100,000 people have been infected with the leishmaniasis in the past two years after civil war broke out in Syria, compared with before the conflict when the number of cases in Syria had been reduced to 3,000-4,000."

The increase in the number of cases of leishmania in Turkey, impose an additional dimension to the crisis, making the outbreak on the verge of being regional public health crisis.

According to WHO, leishmaniasis is a poverty-related disease, and is associated with malnutrition, displacement, poor housing, illiteracy, gender discrimination, weakness of the immune system and lack of resources. Leishmaniasis is also linked to environmental changes.

Daher Zidan, pharmacist and project manager with UOSSM, has been working on the collecting and analyzing data, said: "The sharp increase in the number of reported cases of leishmania in Aleppo and

Idlib provinces, denotes the re-emerging of the disease, that is directly linked to the extensive annihilation of public health infrastructure, and the abandonment of Syrian local authorities from municipal maintenance and services.

"The majority of those cases were reported in areas that are heavily affected by the conflict, and areas with high poverty and inaccessibility to good sanitation, due to water shortage and garbage build up that amplifies the growth of the sand fly."

Zidan briefly noted key recommendations to control the spread leishmania: "Transmission involves sand fly bites to humans and injection of the protozoal parasite. Therefore it is essential that this fly is eliminated, in addition to implementing other preventive and control measures. There should also be an extensive treatment programme and the creation of specialized centres to control leishmania."

The UOSSM has initiated a well-organized program directed to treat the old and new cases of leishmania, and coordinate the local municipal services for better spray and application of insecticide to get rid of the sand fly. The UOSSM's estimated that the budget needed to treat and control leishmania is about US$180,000, and urges the WHO and International medical and humanitarian organizations to contribute, in order to eradicate leishmania from the region.

UOSSM said it views the leishmania outbreak as regional public health crisis that necessitates collaborative efforts between local and international public health providers.

Malaria in Saudi Arabia

According to a report in *Arab News* the Saudi Arabian Health Ministry said there have been 2,788 cases of malaria diagnosed in the Kingdom of Saudi Arabia since 2011.

Most malaria victims come from the Tahama region like Jazan and Al Qunfutha. Most cases occur during the rainy season and about 97% originate outside the kingdom.

The Tahama region and Jazan are some of the most crucial areas for malaria in the kingdom and are not covered by the control program because of poor roads,

communication difficulties, and lack of manpower. But the situation has improved with the registration of 59 cases in Jazan at 80% and Aseer at 13.04%, while the other areas didn't register any cases.

The rise in the number of cases started in January this year in all areas and began to fall in March. It is expected to rise again in October and continue until December, especially in Jazan. Statistics show there is a decline in the number of malaria cases beginning in March and reaching lowest rates between May to September, and rising in October.

Mubadala 's contribution to healthcare in Abu Dhabi

The Emirate of Abu Dhabi continues to invest in healthcare facilities as part of its Vision 2030 plan to develop a robust, world class healthcare system and Mubadala Healthcare plays an instrumental role in the implementation of this plan, according to Suhail Mahmood Al Ansari, Executive Director, Mubadala Healthcare.

Al Ansari was speaking during a lecture at a knowledge-sharing platform organized by Masdar Institute of Science and Technology. The lecture was attended by top officials from the government and private sector in the UAE, international healthcare industry leaders, as well as faculty and students from Masdar Institute.

Dr Fred Moavenzadeh, President, Masdar Institute, said: "The lecture follows a successful knowledge-sharing initiative that was organized earlier this month under the framework of developing Abu Dhabi's human capital. We thank the country's leadership for supporting us to play an important role in strengthening the knowledge development in the UAE and we believe the knowledge exchange will benefit all stakeholders."

Al Ansari said: "Mubadala Healthcare's network of facilities and services are helping to address the region's most pressing healthcare needs. These facilities, coupled with the clinical expertise of our globally renowned medical partners, help to enable the delivery of the highest standards of care, safety and patient experience."

Mubadala Healthcare has eight facilities offering healthcare in a range of primary and specialty care areas, through collaborations with medical organisations like Imperial College London and Cleveland Clinic.

Islamic scholars support polio vaccination

Islamic scholars from around the world, meeting in Islamabad in June, came out strongly in support of polio vaccination. They suggested that talks with Taliban and grass-roots level advocacy by religious scholars as the best possible option for the government to win the fight against the disease, according to a report in *The Express Tribune*.

The conference follows a meeting of Muslim scholars in March in Cairo, which aimed to draw up strategies to effectively overcome current social and political challenges to polio eradication in Pakistan.

The scholars who came from Saudi Arabia, Egypt, Yemen and other countries, expressed concern over 260,000 children in north and south Waziristan in the Federally Administered Tribal Areas of Pakistan where no vaccination campaign has been conducted due to the ban on polio immunisation since June 2012. The Polio Eradication Initiative has been adversely affected by misinformation about the oral polio vaccination that sometimes has religious underpinnings, says the report.

Scholars said all community leaders and health professionals should consider polio eradication as a public health emergency and express their support publicly to ensure that all children are fully immunised against all preventable diseases.

"Depriving a child of polio drops is equal to committing a sin. Protecting your child from disease is a religious obligation," Dr Mohammad Wesam Abbas Khidr, Secretary General of Fatwa Dar al-Ifta al-Masriyyah, was quoted as saying.

He said the Islamic religion does not allow killing of innocent people who are providing their service for the noble cause of saving people's life. A total of 14 polio workers and two policemen guarding them have been killed in Pakistan to date.

Qatar launches five-year primary healthcare strategy

Qatar has launched its National Primary Health Care Strategy 2013-2018, which will be implemented by the Primary Health Care Corporation (PHCC). The five-year plan will focus on improving health promotion, screening, urgent care, chronic non-communicable diseases, home care, mental health, maternal and newborn care, and children and adolescent care.

When this strategy is fully implemented, hospital and primary care will be equal partners in a scenario where self-care will also play an important role, the PHCC said in a statement.

This strategy also comprises other measures like the opening of new health centres, with more than 1,300 new employees, and the digitalization of medical records in all centres by December 2015.

The strategy identifies what is meant by primary health care and surveys current primary health care provision in Qatar. The document looks at major health needs and how these could be met through more and improved health care and introduces guidelines to achieve this.

Tied to this strategy are 10 pledges made by PHCC, among them is the commitment to publish annual reports showing how they are assessing and meeting patients' needs and strive to provide continuity of care by ensuring that all patients have a doctor they can see on a regular basis.

Other pledges include the establishment of a Patient Helpline, ensuring that by 2014 there will be home care services in place meeting the eligibility criteria, as well as an appointment service assuring consultation times of 12 minutes.

One of the challenges the strategy will address is the fact that more people visit hospitals than health centres. A recent survey found that, in the last year, 48% of people visited a public hospital and 32% a private hospital, while only 30% did so to a private clinic and only 29% to a Primary Health Care Centre.

Over 75% of the population is registered in a PHCC centre, and 78% of their visits are for non-specified health needs. The strategy forecasts that the situation in Qatar will undoubtedly worsen in future years because of unhealthy life styles. MEH

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Update from around the globe

News in Brief

Global Atlas of Asthma

More than 300 million patients suffer from asthma globally and this figure is expected to rise to 400 million by 2025. In an effort to counter this, the European Academy of Allergy and Clinical Immunology (EAACI) has published a "Global Atlas of Asthma". This Atlas aims to provide a platform for strategic planning for asthma in a multifaceted way, integrating research and education and global policies. The Atlas was due to be launched at the EAACI annual meeting in late June.
Visit: *www.EAACI.org*

UOSSM saddened by volunteer doctor's death in Syria

The Union of Syrian Medical Relief Organisations (UOSSM) says it is deeply saddened by the death of Dr Isa Abdur Rahman, 26, a British doctor who left his home, family and job in the UK to help civilians wounded by the conflict in Syria. He was working as a volunteer in the north-western city of Idlib with the British charity Hand in Hand for Syria (HIHS). Dr Rahman died after the makeshift hospital he was working in was shelled. The HIHS charity blamed Syrian government forces for targeting the non-military site, which also killed two civilians on Wednesday 22 May. According to a report published by *Canadian Medical Association Journal*, (CMAJ, May 7, 2013), at least 130 doctors have been killed and 477 imprisoned during Syrian two-year civil war.

$100,000 awarded for wearable air pollution sensor

New technology that creates a personal, portable, and wearable air pollution sensor, developed under the My Air, My Health Challenge, was announced at the Health Datapalooza in June in Washington, D.C. The grand prize of US$100,000 was awarded to Conscious Clothing.

More than 30% of the world's population living with allergies

The number of people suffering from allergy or asthma is growing faster than ever before. More than 30% of the world's population is now being affected by allergies. Two hundred and fifty million people are estimated to suffer from food allergies. In developed countries like the United States, one in five people suffer from either allergy or asthma. The strongest increase in allergies and asthma is seen in developing countries.

The sharpest increase in allergies is observed in children who primarily suffer from food and respiratory allergies; and one of four school-age children in Europe live with allergic disease.

Among the new findings on allergy and asthma presented at the World Allergy and Asthma Congress 2013 in Milan in June is new Australian research by David Martino and team from Murdoch Children's Research Institute, Melbourne, providing proof for pre-birth programming of food allergies. This means food allergies are not acquired after birth or at a later stage in life, but children are born with allergies due to specific environmental factors during pregnancy.

In short, there is further scientific proof that allergies can originate at foetal stage. Babies can be born with a tendency to develop food allergies due to the living conditions of their mothers, including nutrition during pregnancy. This was proven for food allergies that occurred in infants in the first 12 months of life.

In scientific terms, a biochemical process called DNA methylation plays a central role in normal prenatal immune development. The DNA methylation is sensitive to environmental disruption. The Australian study provides evidence that disruption, or external environmental influences during pregnancy, increases the risk for food allergy. Based on this evidence the study concluded that food allergies are programmed before birth.

"Allergies and asthma are rising sharply. There is a clear correlation between increasing wealth and standard of living and allergies and asthma. That is why we see the strongest increase in emerging countries. Children suffer most from this trend. With the new research presented at the World Allergy and Asthma Congress on the early origins of allergies and biomarkers triggering asthma, we are confident to contribute to prevention and better treatment of millions of people suffering from what has become a serious threat to global health", said Prof. Cezmi Akdis, President of the European Academy of Allergy and Clinical Immunology (EAACI) and Congress President.

New guidelines for standardizing blood glucose reporting

Most adults and children with type 1 diabetes are not in optimal glycemic control, despite advances in insulin formulations and delivery systems and glucose monitoring approaches. Critical barriers to optimal glycemic control remain. A panel of experts in diabetes management and research met to explore these challenges, and their conclusions and recommendations for how to improve care and optimize clinical decision-making are presented in a white paper in *Diabetes Technology & Therapeutics (DTT)*, a peer-reviewed journal from Mary Ann Liebert, Inc., publishers. The paper is available free online.

Lead author Richard Bergenstal, MD, International Diabetes Center at Park Nicollet (IDC), outlines the critical issues impacting diabetes management as identified by the panel of luminaries in the field of diabetes during meetings facilitated by the IDC and funded by the Helmsley Charitable Trust. The team of authors emphasizes the critical need for standardization in the collection, reporting, visualization, and analysis of glucose monitoring data, and proposes clear and practical recommendations for implementing these solutions.

The expert panel included *DTT* Editor-in-Chief Satish Garg, MD, DTT Senior Editor Irl Hirsch, MD, and Andrew Ahmann, MD, Timothy Bailey, MD, Roy Beck, MD, PhD, Joan Bissen, Bruce Buckingham, MD, Larry Deeb, MD, Rob-

ert Dolin, MD, Robin Goland, MD, David Klonoff, MD, Davida Kruger, MSN, Glenn Matfin, MB ChB, MSc, Roger Mazze, PhD, Beth Olson, BAN, RN, Christopher Parkin, MS, Anne Peters, MD, Margaret Powers, PhD, Henry Rodriguez, MD, Phil Southerland, Ellie Strock, ANP-BC, William Tamborlane, MD, and David Wesley.

"Glucose monitoring is an essential part of effective diabetes management, and although it has come a long way, both health care providers and patients are frustrated that glucose data reporting has not been standardized," says Satish Garg, MD, Editor-in-Chief of the Journal and Professor of Medicine and Pediatrics at the University of Colorado Denver. " The recommendations reported in this white paper are a good first step toward improving health care outcomes in type 1 diabetes."

The white paper is accompanied by three Commentaries: one by *DTT* Editor-in-Chief Satish Garg, MD, one by Francine Ratner Kaufman, MD, Medtronic and Children' s Hospital, Los Angeles, and one by Aaron Kowalski, PhD and Sanjoy Dutta, PhD, Juvenile Diabetes Research Foundation.

doi:10.1089/dia.2013.0051.

on the WEB *Diabetes Technology & Therapeutics* – Recommendations for Standardizing Glucose Reporting and Analysis to Optimize Clinical Decision Making in Diabetes: The Ambulatory Glucose Profile (AGP)
http://www.liebertpub.com/dia

Health leaders say polio could be eradicated by 2018

At the Global Vaccine Summit in Abu Dhabi in April, the Global Polio Eradication Initiative (GPEI) presented a comprehensive six-year plan, the first plan to eradicate all types of polio disease – both wild poliovirus and vaccine-derived cases – simultaneously. Global leaders and individual philanthropists signalled their confidence in the plan by pledging close to three-quarters of the plan's projected US$5.5 billion cost over six years. They also called upon additional donors to commit up front the additional US$1.5 billion needed to ensure eradication.

The new plan capitalizes on the best opportunity to eradicate polio, with the number of children paralyzed by this disease at the lowest level ever: just 223 cases in 2012 and only 19 so far this year. The urgency is linked to the tremendous advances made in 2012 and the narrow window of opportunity to seize on that progress and stop all poliovirus transmission before polio-free countries become re-infected.

"After millennia battling polio, this plan puts us within sight of the endgame. We have new knowledge about the polioviruses, new technologies and new tactics to reach the most vulnerable communities. The extensive experience, infrastructure and knowledge gained from ending polio can help us reach all children and all communities with essential health services," said World Health Organization Director-General Margaret Chan.

The Polio Eradication & Endgame Strategic Plan 2013-2018 was developed by the GPEI in extensive consultation with a broad range of stakeholders. The plan incorporates the lessons learned from India's success becoming polio-free in early 2012 and cutting-edge knowledge about the risk of circulating vaccine-derived polioviruses. It also complements the tailored Emergency Action Plans being implemented since last year in the remaining polio-endemic countries – Afghanistan, Pakistan and Nigeria – including approaches in place to vaccinate children in insecure areas.

At the Summit global leaders announced their confidence in the plan's ability to achieve a lasting polio-free world by 2018 and pledged their financial and political support for its implementation.

"Ending polio will not only be an historic feat for humanity, but also a huge part of our efforts to reach every hard-to-reach child with a range of life-saving vaccines," said UNICEF Executive Director Anthony Lake.

The plan addresses the operational challenges of vaccinating children, including in densely populated urban areas, hard-to-

reach areas and areas of insecurity. The plan includes the use of polio eradication experience and resources to strengthen immunization systems in high-priority countries. It also lays out a process for planning how to transition the GPEI's resources and lessons, particularly in reaching the most marginalized and vulnerable children and communities, so that they continue to be of service to other public health efforts. It is estimated that the GPEI's efforts to eradicate polio could deliver total net benefits of US$40-50 billion by 2035 from reduced treatment costs and gains in productivity.

Research facility at the forefront of a revolution in health

A research facility at the forefront of a revolution in health and medical research has opened in the UK recently.

The MRC-NIHR Phenome Centre will examine around one hundred thousand blood and urine samples every year. It will analyse phenomes - the biological results of people's genes and environment - to help determine the causes of disease and indicate how treatments can be tailored for individual patients.

The centre will enable scientists to better understand and tackle diseases that are triggered by environment as well as genetic causes, and increase the potential to develop strategies for their prevention and treatment.

Ongoing genomics research is helping scientists to understand why some people develop diseases, but most common diseases are influenced by both genetic and environmental factors, such as diet and lifestyle. Studying the phenome will help determine how the environment and genes combine to affect biochemical processes that lead to disease.

The new centre, a collaboration between Imperial College London, King's College London, and analytical technology companies the Waters Corporation and Bruker Biospin, is funded by the Medical Research Council (MRC) and the National Institute for Health Research (NIHR). It is based at Imperial where its director is Professor Jeremy Nicholson, head of the Department of Surgery and Cancer.

Professor Nicholson said: "The sequencing of the human genome generated a lot of excitement among scientists and the public, but studying our genes has revealed less than we had hoped about common diseases such as cancer, diabetes and heart disease. By studying the phenome we can examine the effects of our genes, our lifestyle and our environment. What we discover about the causes of disease can be used to inform healthcare."

The MRC-NIHR Phenome Centre uses millions of pounds worth of nuclear magnetic resonance and mass spectrometry technology to give the most accurate readings to date of the exact chemical make-up of people's blood and urine. The equipment measures the chemicals, such as fats, sugars, vitamins and hormones, produced by our bodies as well as those that come from our food, drink and medicines, and the air we breathe. It can even detect the different types of bacteria naturally occurring in the gut, which can influence our health.

The new centre will provide a service to researchers throughout the UK, offering fast, efficient and high-quality analysis of people's phenomes.

WHO calls for action to prevent 1.24 million road traffic deaths yearly

More than 270,000 pedestrians lose their lives on the world's roads each year accounting for 22% of the total 1.24 million road traffic deaths. The World Health Organization is calling on governments to take concrete actions to improve the safety of pedestrians.

Under the banner "Make Walking Safe", the Second United Nations Global Road Safety Week was held in May. With events registered in nearly 70 countries, the week sought to draw attention to the needs of pedestrians; generate action on measures to protect them; and contribute to achieving the goal of the Decade of Action for Road Safety 2011-2020 to save 5 million lives.

There are many steps which can be taken to protect pedestrians on the roads. The newly released Pedestrian safety: a road safety manual for decision-makers and practitioners, produced by WHO and partners, promotes a focus on combined enforcement, engineering and education measures, which include among others:

- adopting and enforcing new and existing laws to reduce speeding, curb drinking and driving, decrease mobile phone use and other forms of distracted driving;
- putting in place infrastructure which separates pedestrians from other traffic (sidewalks, raised crosswalks, overpasses, underpasses, refuge islands and raised medians), lowers vehicle speeds (speed bumps, rumble strips and chicanes) and improves roadway lighting;
- creating pedestrian zones in city centres by restricting vehicular access;
- improving mass transit route design;
- developing and enforcing vehicle design standards for pedestrian protection, including soft vehicle fronts;
- organizing and/or further enhancing trauma care systems to guarantee the prompt treatment of those with life-threatening injuries.

Dr Oleg Chestnov, WHO Assistant Director-General of Noncommunicable Diseases and Mental Health, said: "We are all pedestrians, and governments should put in place measures to better protect all of us. This will not only save lives, but create the conditions needed to make walking safe. When roads are safe, people will walk more, and this in turn will improve health and protect the environment."

Pedestrians are among the most vulnerable road users. Studies indicate that males, both children and adults, make up a high proportion of pedestrian deaths and injuries. In developed countries, older pedestrians are more at risk, while in low-income and middle-income countries, children and young adults are often affected. Both children and adults with disabilities suffer higher rates of injury as pedestrians compared to their non-disabled peers.

The proportion of pedestrians killed in relation to other road users is highest in the African Region (38%) and lowest in the South-East Asia Region (12%). In some countries, the proportion of pedestrian fatalities can reach nearly two thirds of road traffic deaths, such as in El Salvador (62%) and Liberia (66%). MEH

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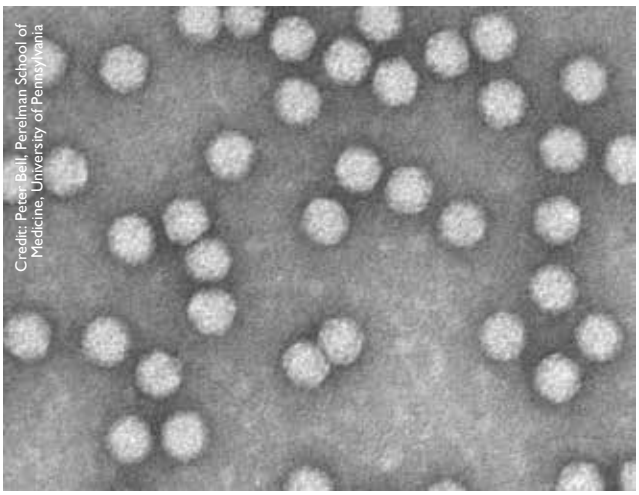

Electron micrograph of AAV particles (particle size is about 25 nm).

New gene therapy shows broad protection in animal models to pandemic flu strains

Researchers at the Perelman School of Medicine, University of Pennsylvania have developed a new gene therapy to thwart a potential influenza pandemic. Specifically, investigators in the Gene Therapy Program, Department of Pathology and Laboratory Medicine, directed by James M. Wilson, MD, PhD, demonstrated that a single dose of an adeno-associated virus (AAV) expressing a broadly neutralizing flu antibody into the nasal passages of mice and ferrets gives them complete protection and substantial reductions in flu replication when exposed to lethal strains of H5N1 and H1N1 flu virus. These strains were isolated from samples associated from historic human pandemics – one from the infamous 1918 flu pandemic and another from 2009.

Wilson, Anna Tretiakova, PhD, Senior Research Scientist, Maria P. Limberis, PhD, Research Assistant Professor, all from the Penn Gene Therapy Program, and colleagues published their findings online in *Science Translational Medicine* ahead of print. In addition to the Penn scientists, the international effort included colleagues from the Public Health Agency of Canada, Winnipeg; the University of Manitoba, Winnipeg; and the University of Pittsburgh. Tretiakova is also the director of translational research, and Limberis is the director of animal models core, both with the Gene Therapy Program.

"The experiments described in our paper provide critical proof-of-concept in animals about a technology platform that can be deployed in the setting of virtually any pandemic or biological attack for which a neutralizing antibody exists or can be easily isolated," says Wilson. "Further development of this approach for pandemic flu has taken on more urgency in light of the spreading infection in China of the lethal bird strain of H7N9 virus in humans."

Influenza infections are the seventh leading cause of death in the United States and result in almost 500,000 deaths worldwide per year, according to the US Centers for Disease Control. The emergence of a new influenza pandemic remains a threat that could result in a much loss of life and worldwide economic disruption.

Human antibodies with broad neutralizing activity against various influenza strains exist but their direct use as a prophylactic treatment is impractical. Now, yearly flu vaccines are made by growing the flu virus in eggs. The viral envelope proteins on the exterior, namely hemagglutinin, are cleaved off and used as the vaccine, but vary from year to year, depending on what flu strains are prevalent. However, high mutation rates in the proteins result in the emergence of new viral types each year, which elude neutralization by preexisting antibodies in the body.

This approach has led to annual vaccinations against seasonal strains of flu viruses that are predicted to emerge during the upcoming season. Strains that arise outside of the human population, for example in domestic livestock, are distinct from those that normally circulate in humans, and can lead to deadly pandemics.

These strains are also not effectively controlled by vaccines developed to human strains, as with the 2009 H1N1 pandemic. The vaccine development time for that strain, and in general, was not fast enough to support vaccination in response to an emerging pandemic.

Knowing this, the Penn team proposed a novel approach that does not require the elicitation of an immune response, which does not provide sufficient breadth to be useful against any strain of flu other than the one for which it was designed, as with conventional approaches.

The Penn approach is to clone into a vector a gene that encodes an antibody that is effective against many strains of flu and to engineer cells that line the nasal passages to express this broadly neutralizing antibody, effectively establishing broad-based efficacy against a wide range of flu strains.

Efficacy of the treatment was tested in mice that were exposed to lethal quantities of three strains of H5N1 and two strains of H1N1, all of which have been associated with historic human pandemics (including the infamous H1N1 1918).

Flu virus rapidly replicated in untreated animals all of which needed to be euthanized. However, pretreatment with the AAV9 vector virtually shut down virus replication and provided complete protection against all strains of flu in the treated animals. The efficacy of this approach was also demonstrated in ferrets, which provide a more authentic model of human pandemic flu infection.

"The novelty of this approach is that we're using AAV and we're delivering the prophylactic vaccine to the nose in a non-invasive manner, not a shot like conventional vaccines that passively transfer antibodies to the general circulation," says Limberis.

"There's a long history of using antibodies for cancer and autoimmune disease, but only two have been approved for infectious diseases," notes Tretikova. "This novel technique has allowed for the development of a prophylactic passive vaccine that is cost effective, easily administered, and quickly manufactured."

The team is working with various stakeholders to accelerate the development of this product for pandemic flu and to explore the potential of AAV vectors as generic delivery vehicles for countermeasures of biological and chemical weapons.

Researchers discover molecule that triggers sensation of itch

Scientists at the US National Institutes of Health report they have discovered in mouse studies that a small molecule released in the spinal cord triggers a process that is later experienced in the brain as the sensation of itch.

The small molecule, called natriuretic polypeptide b (Nppb), streams ahead and selectively plugs into a specific nerve cell in the spinal cord, which sends the signal onward through the central nervous system. When Nppb or its nerve cell was removed, mice stopped scratching at a broad array of itch-inducing substances. The signal wasn't going through.

Because the nervous systems of mice and humans are similar, the scientists say a comparable biocircuit for itch likely is present in people. If correct, this start switch would provide a natural place to look for unique molecules that can be targeted with drugs to turn off the sensation more efficiently in the millions of people with chronic itch conditions, such eczema and psoriasis.

The paper, published online May 24 in the journal Science, also helps to solve a lingering scientific issue. "Our work shows that itch, once thought to be a low-level form of pain, is a distinct sensation that is uniquely hardwired into the nervous system with the biochemical equivalent of its own dedicated land line to the brain," said Mark Hoon, Ph.D., the senior author on the paper and a scientist at the National Institute of Dental and Craniofacial Research.

Hoon said his group's findings began with searching for the signalling components on a class of nerve cells, or neurons, that contain a molecule called TRPV1. These neurons, with their long nerve fibres extending into the skin, muscle, and other tissues, help to monitor a range of external conditions, from extreme temperature changes to detecting pain.

Yet little is known about how these neurons recognize the various sensory inputs and, like sorting mail, know how to route them correctly to the appropriate pathway to the brain.

To fill in more of the details, Hoon said his laboratory identified in mice some of the main neurotransmitters that TRPV1 neurons produce.

The scientists screened the various neurotransmitters, including Nppb, to see which ones corresponded with transmitting sensation.

"We tested Nppb for its possible role in various sensations without success," said Santosh Mishra, lead author on the study and a researcher in the Hoon laboratory. "When we exposed the Nppb-deficient mice to several itch-inducing substances, it was amazing to watch. Nothing happened. The mice wouldn't scratch."

Further experiments established that Nppb was essential to initiate the sensation of itch, known clinically as pruritus. Equally significant, the molecule was necessary to respond to a broad spectrum of pruritic substances. Previous research had suggested that a common start switch for itch would be unlikely, given the myriad proteins and cell types that seemed to be involved in processing the sensation.

Hoon and Mishra turned to the dorsal horn, a junction point in the spine where sensory signals from the body's periphery are routed onward to the brain. Within this nexus of nerve connections, they looked for cells that expressed the receptor to receive the incoming Nppb molecules.

"The receptors were exactly in the right place in the dorsal horn," said Hoon, the receptor being the long-recognized protein Npra. "We went further and removed the Npra neurons from the spinal cord. We wanted to see if their removal would short-circuit the itch, and it did."

Hoon said this experiment added another key piece of information. Removing the receptor neurons had no impact on other sensory sensations, such as temperature, pain, and touch. This told them that the connection forms a dedicated biocircuit to the brain that conveys the sensation of itch.

But the scientists had stepped into a conundrum. Previous reports had suggested that another neurotransmitter called GRP might initiate itch. If that wasn't the case, where did GRP fit into the process?

They tested the receptor neurons that express GRP, finding the previous reports were correct about this molecule relaying the signal to the central nervous system. GRP just enters the picture after Nppb already has set the sensation in motion.

Mayo Clinic first to test stem cells in pediatric CHD patients

Mayo Clinic has announced the first U.S. stem cell clinical trial for pediatric congenital heart disease. The trial aims to determine how stem cells from autologous umbilical cord blood can help children with hypoplastic left heart syndrome (HLHS), a rare defect in which the left side of the heart is critically underdeveloped.

The trial will test the safety and feasibility of delivering a personalized cell-based therapy into the heart of 10 infants affected by HLHS. Today, treatment for babies born with HLHS involves three heart surgeries to redirect blood flow through the heart, or transplantation. The surgeries -- designed to provide adequate blood flow in and out of the heart, allowing the body to receive the oxygen-rich blood it needs – are typically performed over the first few years of life. For this study, stem cells from newborns with HLHS will be collected from the umbilical cord following birth. The cord blood will be sent to a Mayo Clinic lab for processing, where the stem cells will be separated from the other cells in the blood. The stem cells will then be frozen for preservation. During the baby's second surgery for HLHS – typically performed at 4 to 6 months of age – the stem cells will be injected into the heart muscle.

"We want to see if these stem cells will increase the volume and strength of the heart muscle to give it greater durability and power to pump blood throughout the body," says Harold Burkhart, M.D., a pediatric cardiovascular surgeon with the Mayo Clinic Children's Center.

About 960 babies are born with hypoplastic left heart syndrome each year in the US, the Centers for Disease Control and Prevention estimates. In this syndrome, the left side of the heart can't properly supply blood to the body because the lower left chamber (left ventricle) is too small or, in some cases, may not exist, Dr. Burkhart says. In addition, the valves on the left side of the heart (aortic valve and mitral valve) don't work properly, and the main artery leaving the heart (aorta) is smaller than normal, he says.

"The care of these children with HLHS has been continuously improving since the first surgical procedure became available three decades ago, yet cardiac transplantation continues to be the limiting factor for far too many individuals," says Timothy Nelson, M.D., Ph.D., director of the Todd and Karen Wanek Family Program for HLHS in Mayo Clinic's Center for Regenerative Medicine. "Applying stem cell-based regeneration may offer a viable solution to help these children develop new tissues and grow stronger hearts."

Qatar's Sidra collaborates with US NIH to research new cancer therapies

A group of scientists including Sidra Medical and Research Center's Chief Research Officer, Dr. Francesco M. Marincola, has discovered that a gene called Bach2 may play a central role in the development of a range of allergic and autoimmune diseases, such as multiple sclerosis, asthma, Crohn's disease, celiac disease, and type-1 diabetes. The research has implications for the development of new therapies to target cancer. The findings were published in the prestigious journal *Nature* on June 2, 2013

The authors suggest that these findings may have implications for cancer treatment, since cancers use regulatory T cells to prevent their own destruction by anti-tumor immune responses. The team is now working toward manipulating the activity of the Bach2 gene with the goal of developing a new cancer immunotherapy. As this study was conducted in mice, it must be replicated in humans before its findings can be applied in a clinical setting.

"Sidra Medical and Research Center will continue along this line of research through direct collaboration with the US National Institutes of Health (NIH) to extend this observation toward its practical application to modulate the outcome of immune diseases by genetically regulating the function of Bach2 or other factors that regulate immune cell function," said Marincola. "At Sidra we will carry out research to expand the scientific community's understanding of a broad range of diseases that affect women and children around the world. I am delighted that we will be able to use our unique resources and expertise to expand this vital piece of research."

Suicide risk factors mapped

A collaborative study between Lund University in Sweden and Stanford University in the US, showed that the rate of suicide among men is almost three times that of women. Being young, single and having a low level of education were stronger risk factors for suicide among men, while mental illness was a stronger risk factor among women. Unemployment was the strongest social risk factor among women, whereas being single was the strongest among men.

Because the study covered a range of different diseases in both in-patient and outpatient care as well as social factors, the researchers gained insight into which factors are particularly important to bear in mind when assessing the risk of suicide.

"Better strategies are needed for collaboration between different disciplines and wider society in order to reduce the risk of suicide for individuals who suffer from, for example, depression, anxiety, COPD, asthma and certain social risk factors," says principal investigator Professor Jan Sundquist.

Of those who committed suicide, 29.5% of women and 21.7% of men had visited a doctor in the two weeks prior to their suicide, and 57.1% of women and 44.9% of men had visited a doctor within the 13 weeks prior to their suicide.

"This shows that many had contact with the health service a relatively short time before committing suicide. The results have clinical significance for those working in both primary care and other outpatient and in-patient care, including psychiatry. Besides the health service, social support services may need to be involved in the work to reduce the number of suicides in society," says Sundquist.

doi: 10.1017/S0033291713000810

Study shows Vit D supplement key for kids undergoing CHD surgery

Until now, there has been no research dedicated to the importance of Vitamin D supplementation in children with congenital heart disease (CHD). However, over the past few years, researchers at the Children's Hospital of Eastern Ontario (CHEO) Research Institute and Cardiovascular Surgery Program teamed with the Canadian Critical Care Trials Group to understand the impact of cardiac surgery on the Vitamin D status of infants and children, due to be published in July in Anesthesiology.

"The importance of Vitamin D levels and supplementation in healthy infants and children is well established," said Dr Dayre McNally, a clinical researcher and intensivist at CHEO and assistant professor in the Department of Pediatrics at the University of Ottawa. "Now we have more compelling evidence that children with congenital heart disease require even higher levels of Vitamin D intake in the months preceding surgery."

This evidence comes from a study that looked at 58 children who had cardiac surgery at CHEO. Blood was collected at the time of admission to the Pediatric Intensive Care Unit immediately following surgery, and revealed that almost all of the children had low Vitamin D levels. With additional tests, the researchers were able to determine why. "Our results show that almost all children are Vitamin D deficient post-operatively as a result of borderline acceptable levels prior to surgery, combined with a 40% decline during the operation."

The role of Vitamin D in the growth and maintenance of bone health is well known. However, recent studies have also suggested Vitamin D to be important for the proper functioning of other organs including the heart, lungs and immune systems. This study by Dr McNally confirms this, as patients with lower post-operative Vitamin D levels were more prone to requiring more life-sustaining therapies (medications to support heart function, longer duration of assisted breathing) and stayed in the Intensive Care Unit for longer periods of time. MEH

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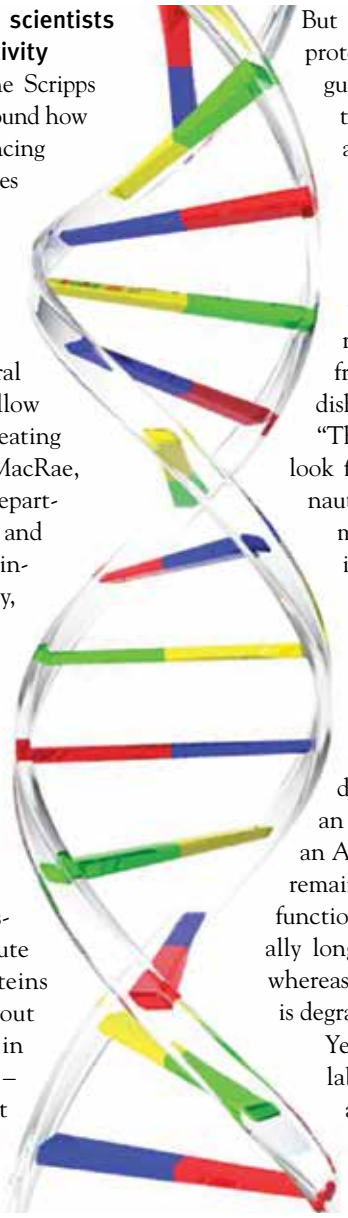
gene pool

Genetic research news from around the world

Scripps Research Institute scientists find key to gene-silencing activity

A team led by scientists at The Scripps Research Institute (TSRI) has found how to boost or inhibit a gene-silencing mechanism that normally serves as a major controller of cells' activities. The discovery could lead to a powerful new class of drugs against viral infections, cancers and other diseases.



"Learning to control natural gene silencing processes will allow an entirely new approach to treating human disease," said Ian J. MacRae, assistant professor in TSRI's Department of Integrative Structural and Computational Biology and principal investigator for the study, which appears as the cover story in the May 9, 2013 issue of the journal *Molecular Cell*.

The gene-silencer in question is Argonaute 2, a molecular machine in cells that can grab and destroy the RNA transcripts of specific genes, preventing them from being translated into proteins. Argonaute 2 and other Argonaute proteins regulate the influence of about a third of the genes found in humans and other mammals – and thus are among the most important modulators of our cells' day-to-day activities. Argonautes' gene-silencing functions also help cells cope with rogue genetic activity from invading viruses or cancer-promoting DNA mutations.

Yet Argonautes' workings are complex and not yet entirely understood. For example, before it starts a search-and-destroy mission against a specific type of target RNA, an Argonaute 2 protein takes on board a target-recognition device: a short length of "guide RNA," also known as a microRNA (miRNA). The miRNA's sequence is mostly complementary to the target RNA's – a sort of chemical mirror-image – so that it can stick tightly to it.

But how do an Argonaute protein and its miRNA guide, having formed their partnership, manage to part company? It has been a scientific mystery and technical conundrum for researchers, who have found it hard to separate Argonaute proteins from miRNAs in the lab dish.

"That problem led us to look for a way to get Argonautes to unload these miRNAs," said Nabanita De, a postdoctoral fellow in MacRae's laboratory who was first author of the new study.

In an initial set of experiments, the team demonstrated that when an miRNA hooks up with an Argonaute 2, the pair do remain locked together and functioning for an exceptionally long time: days to weeks, whereas solo miRNA normally is degraded within minutes.

Yet prior studies by other laboratories have hinted at the existence of mechanisms that can hasten the separation of miRNAs from Argonautes. Some viruses, for example, produce decoy target RNAs that virtually nullify the activity of the corresponding miRNAs, seemingly by destabilizing the miRNA-Argonaute pairing. A key feature of these decoy target RNAs is that they make an almost perfect complementary match to the miRNAs – especially at one end of the miRNAs, known as the three-prime or 3' end. In this respect, they match the miRNAs much better than the natural gene transcripts that the miRNAs evolved to target.

De confirmed that decoy RNAs designed to match miRNAs this way can greatly hasten the miRNAs' "unloading" from Argonautes, thus effectively dialing down these miRNAs' normal gene-silencing activities. By contrast, mismatches at the 3' end delayed unloading, enhancing the gene-silencing activity.

Why do these matches and mismatches have such effects on the miRNA-Argonaute pairing? The mechanisms aren't obvious. But De noted that mismatches at the opposite end of miRNAs – the 5' end –have the opposite effect. "Targets with 5'-end mismatches are actually better at unloading miRNAs from Argonaute," she said.

"The next thing we're trying to figure out is how all that works," said MacRae. "We have some guesses but no clear answer."

In a study reported last year, MacRae's laboratory used X-ray crystallography to determine the first high-resolution atomic structure of an Argonaute 2-miRNA complex. Now the team is working on a structural study of the complex as it grabs a target RNA. "When we can see the structural details of that interaction, then I think we'll have a much better handle on this loading and unloading process," said MacRae.

Scientists already have begun developing gene-silencing drugs that work like miRNAs; they are taken up by Argonaute proteins as guide RNAs and lead to the silencing of targeted gene transcripts. Pharmaceutical companies also are developing drugs that bind directly to miRNAs to inhibit their activity. The findings here suggest a new and, in principle, more powerful class of miRNA inhibitors/enhancers, aimed at destabilizing or stabilizing the miRNA-Argonaute complex.

"I can think of many applications for these," said MacRae. "One of the most obvious would be against hepatitis C virus, which requires a certain miRNA in liver cells for efficient replication; an RNA-based drug that speeds up the unloading of this virus-enhancing miRNA would be a powerful approach for shutting down the virus." MEH

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Chan sounds warning bell on novel coronavirus

24 resolutions adopted at WHA

After seven days of intense discussions, the 66th World Health Assembly (WHA) concluded with agreement on a range of new public health measures and recommendations aimed at securing greater health benefits for all people, everywhere.

In all, 24 resolutions and 5 decisions were adopted by the nearly 2000 delegates representing the World Health Organization's (WHO) Member States.

Addressing participants at the closing ceremony, Dr Margaret Chan, the WHO Director-General, thanked delegates for their efficiency and productivity during the debates. At the same time, she sounded an alarm on a new threat that she warned requires urgent international attention.

"Looking at the overall global situation, my greatest concern right now is the novel coronavirus. We understand too little about this virus when viewed against the magnitude of its potential threat. Any new disease that is emerging faster than our understanding is never under control," Dr Chan said. "These are alarm bells and we must respond. The novel coronavirus is not a problem that any single affected country can keep to itself or manage all by itself. The novel coronavirus is a threat to the entire world."

The President of the 66th World Health Assembly, Dr Shigeru Omi, spoke after Dr Chan. "Together we achieved a lot," said Dr Omi. "One of the key outcomes of this Assembly is the universal health coverage that is now recognized as the key concept to underpin the work of global health in many years to come."

Key outputs of this year's Assembly

Budget 2014–2015

The World Health Assembly approved the proposed programme budget in totality for the first time in WHO's history. The budget for WHO for the next biennium (2014–2015) is US$3977 million. It responds to Member States' request for a realistic budget based on income and expenditure patterns.

Disability

A resolution on disability urges Member States to implement as States Parties the Convention on the Rights of Persons with Disabilities; develop national action plans and improve data collection. Member States are encouraged to ensure that all mainstream health services are inclusive of persons with disabilities; provide more support to informal caregivers, and ensure that people with disabilities have access to services that help them acquire or restore skills and functional abilities as early as possible.

The resolution also requests the Director-General to provide support to Member States in implementing the recommendations of the World Report on Disability; to mainstream the health needs of children and adults with disabilities in WHO's technical work; to ensure that WHO itself is inclusive of people with disabilities; to support the High-Level Meeting of the UN General Assembly in September 2013.

e-Health

A resolution on e-Health standardization and interoperability notes the importance of standardized, accurate, timely data and health information to the functioning of health systems and services, while also highlighting that the security of this information, and privacy of personal clinical data, must be protected. Also noted was evaluation of information and communications technologies in health interventions.

Global Vaccine Action Plan

Member States reiterated their support to the Global Vaccine Action Plan to prevent millions of deaths by 2020 through more equitable access to vaccines for people in all communities, and for the proposed Framework for Monitoring, Evaluation and Accountability (which is linked to the Commission on Information and Accountability for Women's and Children's Health).

Delegates also supported the independent review process to assess and report progress. It acknowledged the leadership demonstrated by the Strategic Advisory Group of Experts on immunization in this process. Speakers highlighted the need to mobilize greater resources to support low- and middle-income countries to implement the Plan and monitor impact; ensure that support to countries to implement the Plan includes a strong focus on strengthening routine immunization; and to facilitate vaccine technology transfer.

Health conditions in the occupied Palestinian territory

A resolution on the health conditions in the occupied Palestinian territory including east Jerusalem and the occupied Syrian Golan reaffirms the need for full coverage of health services, while recognizing that the acute shortage of financial and medical resources is jeopardizing access of the population to curative and preventive services.

International Health Regulations (IHR)

The newly identified influenza H7N9 and MERS-CoV (novel coronavirus) outbreaks lent even greater relevance to discussions on the IHR. Delegates voiced widespread support for the IHR. The Director-General told delegates that WHO was committed to supporting countries affected by MERS-CoV and to helping "unpack the barriers" standing in the way of the full implementation of the IHR. The Secretariat stressed the need for countries to provide the necessary resources to ensure IHR work can continue in countries and at WHO.

All documents are available in the six official languages at the World Health Assembly. A team of Secretariat staff work late into the night to make sure that documents are ready for the next morning's discussions.

Mental Health Action Plan: 2013-2020

A resolution on WHO's comprehensive mental health action plan 2013-2020 sets four major objectives: strengthen effective leadership and governance for mental health; provide comprehensive, integrated and responsive mental health and social care services in community-based settings; implement strategies for promotion and prevention in mental health, and strengthen information systems, evidence and research for mental health. The plan sets important new directions for mental health including a central role for provision of community-based care and a greater emphasis on human rights. It also emphasizes the empowerment of people with mental disabilities and the need to develop strong civil society and health promotion and prevention activities. The document proposes indicators and targets such as a 20% increase in service coverage for severe mental disorders and a 10% reduction of the suicide rate in countries by 2020 that can be used to evaluate levels of implementation, progress and impact.

Dr Margaret Chan, Director-General of WHO speaking at the plenary session of the Sixty-sixth World Health Assembly.

Millennium Development Goals (MDGs)

The Secretariat reported substantial progress towards the MDGs and their targets – notably in reducing child and maternal mortality, improving nutrition, and reducing morbidity and mortality due to HIV infection, tuberculosis and malaria. Progress in many countries that have the highest rates of mortality has accelerated in recent years, although large gaps persist among and within countries.

The Health Assembly adopted a resolution urging Member States to sustain and accelerate efforts towards the achievement of the health-related MDGs and to ensure that health is central to the post-2015 UN devel-

There are four technical briefings at the World Health Assembly on key public health issues. This technical briefing was on accelerating achievement of health-related Millennium Development Goals.

opment agenda. The resolution calls on the Director-General to ensure that WHO consultations on the issue are inclusive and open to all regions and to advocate for resources to support acceleration of the MDG targets.

Noncommunicable Diseases (NCDs)

A global action plan for the prevention and control of NCDs (including heart disease, stroke, diabetes, cancer and chronic lung diseases) comprises a set of actions. When performed collectively by Member States, UN organizations and other international partners, and WHO these actions will set the world on a new course to achieve nine globally agreed targets for NCDs including a reduction in premature mortality from NCDs by 25% in 2025. The action plan also contains a monitoring framework, including 25 indicators to track mortality and morbidity; assess progress in addressing risk factors, and evaluate the implementation of national strategies and plans.

WHO is requested to develop draft terms of reference for a global coordination mechanism through a consultative process culminating in a formal meeting of Member States in November 2013. WHO was also tasked to provide technical support to Member States and to develop a limited set of action plan indicators to inform on the progress made with the implementation of the action plan in 2016, 2018 and 2021.

Pandemic influenza preparedness

Delegates noted the first annual report of the pandemic influenza preparedness (PIP) framework. The report covers three main areas: virus sharing, benefit sharing, and governance.

It was noted that many countries still lack basic capacities (i.e. in laboratories and disease surveillance). A similar concern was highlighted on the regulation and deployment of influenza vaccines during a pandemic.

Poliomyelitis

Delegates endorsed the new Polio Eradication and Endgame Strategic Plan 2013-2018 to secure a lasting polio-free world and urged for its full implementation and financing. At the same time, the Assembly received stark warning of the ongoing risk the disease poses to children everywhere, with confirmation of a new polio outbreak in the Horn of Africa (Somalia and Kenya). Noting the generous pledges made to support polio eradication at the Global Vaccine Summit, delegates urged donors to rapidly convert these pledges into contributions. The WHA pointed out that this funding was critical for accelerated implementation of the Plan, given the complexity and scale of introducing inactivated polio vaccine worldwide.

Delegates condemned the deadly attacks on health workers in Pakistan and Nigeria, and called on all governments to ensure the safety and security of frontline health workers.

Social determinants of health

The Secretariat noted improved performance in the four areas highlighted a resolution on the outcome of the World Conference on Social Determinants of Health: consideration of social determinants of health in the assessment of global needs for health; support to Member States in implementing the Rio Political Declaration on Social Determinants of Health; work across the United Nations system on advocacy, research, capacity-building and direct technical support; and, advocating the importance of integrating social determinants of health perspectives into forthcoming United Nations and other high-level meetings related to health and/or social development.

'Novel coronavirus is biggest concern' warns Chan in closing remarks at the WHA

Looking at the overall world health situation, my greatest concern right now is the novel coronavirus.

We understand too little about this virus when viewed against the magnitude of its potential threat.

Any new disease that is emerging faster than our understanding is never under control.

We do not know where the virus hides in nature. We do not know how people are getting infected. Until we answer these questions, we are empty-handed when it comes to prevention.

These are alarm bells. And we must respond.

The novel coronavirus is not a problem that any single affected country can keep to itself or manage all by itself. The novel coronavirus is a threat to the entire world. As the Chair of committee A succinctly stated: this virus is something that can kill us.

Through WHO and the International Health Regulations, we need to bring together the assets of the entire world in order to adequately address this threat. We need more information, and we need it quickly, urgently.

As I have announced, joint WHO missions with the Kingdom of Saudi Arabia and Tunisia will take place just as soon as possible. The purpose is to gather all the facts needed to conduct a proper risk assessment. I thank these countries for their cooperation and collaboration.

I thank Member States for supporting my views on the seriousness of this situation.

● See report on p24.

Universal health coverage

The WHA adopted a resolution on the importance of educating health workers as part of universal health coverage. Member States expressed their ongoing commitment to ensuring that all people obtain the health services they need without the risk of financial ruin. They emphasized that universal health coverage is not just about health financing but requires strong health systems to provide a range of quality, affordable services at all levels of care

Member States expressed strong support for WHO's action plan and reiterated their call for a monitoring framework to help them to track progress towards universal health coverage. Many delegates expressed support that universal health coverage should feature in the post-2015 development agenda.

WHO reform

The delegates received an update on the progress of WHO reform. Implementation of reform is under way with the majority of the outputs on track. Deliberations highlighted ongoing efforts needed to strengthen WHO's workforce model to address country needs. Additional work is required to reinforce measurement of performance as part of the reform to demonstrate WHO's impact at country level. Member States are also expecting the results of the taskforce on roles and responsibilities at the three levels of the Organization.

Counterfeit medical products

Delegates supported the decision to establish an open-ended working group to identify the actions, activities and behaviours that result in SSFFC (substandard / spurious / falsely-labelled / falsified / counterfeit) medical products. Participants highlighted the need for increased cooperation and collaboration among national (and regional) regulatory authorities including the exchange of best practices and knowledge.

12th General Programme of Work (GPW)

The delegates adopted the GPW outlining the high-level strategic vision for the work of WHO over the next six years. The document explains how the Organization will contribute to the achievement of health outcomes and impacts. The GPW reflects on the changing political, economic and institution context in which WHO is working. It also takes into consideration the current epidemiological and demographic trends and how they could impact on people's health and health systems in countries. Member States agreed to highlight the importance of antimicrobial resistance and the risk it poses to health gains. MEH

World's health experts meet in Cairo to stem outbreak of deadly Middle East Respiratory Syndrome Coronavirus

Countries need to strengthen their abilities to control, detect, and treat cases of the new coronavirus which has killed more than 50% of the people who get it. This was one of several urgent actions needed at a national level to stem the growing outbreak of the disease, according more than 100 public health experts who met at WHO's Eastern Mediterranean Regional Office (WHO EMRO) in Cairo in June. *Middle East Health* reports.

The novel coronavirus was recently named the Middle East Respiratory Syndrome Coronavirus (MERS-CoV). Globally, from September 2012 to *Middle East Health* press date (24 June), WHO has been informed of a total of 77 laboratory-confirmed cases of infection with MERS-CoV, including 40 deaths.

CIDRAP News reports that six of the nine cases reported in Saudi Arabia in late June were asymptomatic, suggesting the possibility that people can unknowingly carry and spread the virus.

As of 24 June, WHO has received reports of laboratory-confirmed cases originating in the following countries in the Middle East: Jordan, Qatar, Kingdom of Saudi Arabia (KSA), and the United Arab Emirates (UAE).

France, Germany, Italy, Tunisia and the United Kingdom also reported laboratory-confirmed cases; they were either transferred there for care of the disease or returned from the Middle East and subsequently became ill.

In France, Italy, Tunisia and the United Kingdom, there has been limited local transmission among patients who had not been to the Middle East but had been in close contact with the laboratory-confirmed or probable cases.

Most of the cases have occurred in KSA and so far, about 75% of the cases in that country have been in men and most have occurred in people with one or more major chronic conditions.

The newly emergent virus is a part of the coronavirus family that includes the severe acute respiratory syndrome coronavirus (SARS - CoV), first recognised as a global threat in March 2003 and by July 2003, had resulted in 8,098 SARS cases in 26 countries, with 774 deaths.

Dr Keiji Fukuda, WHO Assistant Director-General for Health Security and the Environment

According to a WHO Global Alert report, June 20, the newest cases indicate that the source of infection, which has still not been determined, remains active in the Middle East and is present throughout a large area, including new regions in Saudi Arabia.

Although the exact timing and nature of exposures that result in infection is usually unknown, evidence in cases exposed over a range of time suggests that, at least in a minority of cases, the incubation period may exceed one week but is less than two weeks.

Knowledge

At a meeting in Riyadh earlier in June the WHO noted that large gaps in our knowledge about this virus remain. Although extensive work has been done and is ongoing, it should be remembered that it often takes time for scientific investigations to produce results.

Secondly, international concern about these infections is high, because it is possible for this virus to move around the world. There have been now several examples where the virus has moved from one country to another through travellers.

Vigilance

Consequently, all countries in the world need to ensure that their health care workers are aware of the virus and the disease it can cause and that when unexplained cases of pneumonia are identified, MERS CoV should be considered. If cases of MERS CoV are found, they should be reported to WHO under the terms of the International Health Regulations (2005).

Diagnosis

Evidence is also accumulating to suggest that nasopharyngeal swabs are less sensitive for detecting infection with MERS-CoV than specimens taken from the lower respiratory track. WHO now strongly recommends the collection of lower respiratory specimens such as sputum, endotracheal aspirate or bronchoalveolar lavage for diagnostic polymerase chain reaction (PCR) when possible. If initial testing of a nasopharyngeal swab is negative in a patient strongly suspected to have MERS-CoV infection, patients should be retested using a lower respiratory specimen or a repeat upper respiratory specimen with an additional oropharyngeal specimen if lower respiratory specimens are not possible.

> Healthcare providers are advised to maintain vigilance. Clinicians are reminded that MERS-CoV infection should be considered even with atypical signs and symptoms, such as diarrhoea, in patients who are immunocompromised. – WHO

Epidemiology

There appears to be three main epidemiological patterns.

In the first pattern, sporadic cases occur in communities. At present, we do not know the source or how these people became infected.

In the second pattern, clusters of infections occur in families. In most of these clusters, there appears to be person-to-person transmission, but it seems that this transmission is limited to people who are in close contact with a sick family member.

The third pattern comprises clusters of infections in health care facilities. Such events have been reported in France, Jordan and KSA. In these clusters, the sequence seems to be that an infected person is admitted to hospital where that person then transmits the virus to other people in the health care facility.

In a statement WHO said two important points need to be stressed.

First, there is no evidence of widespread person-to-person transmission of MERS-CoV. Where it has been suspected that the virus has been transmitted from person to person, it appears that there had been close contact between somebody who was sick and another person: a family member, a fellow patient or a health care worker.

Secondly, many fewer infections with MERS-CoV have been reported in healthcare workers in KSA than might have been expected on the basis of the previous experience of SARS. During the SARS epidemic, healthcare workers were at high risk of infection. The MERS-CoV is different from the SARS virus. Although the reason why fewer healthcare workers have been infected with MERS-CoV is not clear, it could be that improvements in infection control that were made after the outbreak of SARS have made a significant difference. In this context, infection control measures in KSA appear to be effective.

WHO EMRO meeting

At the WHO EMRO meeting in Cairo, the experts – who came from all countries affected by the virus in the Middle East and North Africa and Europe – agreed that there is a list of priority actions which need to be agreed internationally and implemented nationally.

At an international level, fast and complete reporting of cases, with contact histories, clinical care and treatment outcomes in as much detail as possible, and collected in a uniform manner across countries, is necessary for the international public health community to be able to build up a picture of what works and what doesn't in combatting this virus.

"Having the same tools and protocols in all countries allows us to draw on and implement best practice from around the world, and to pool our information and resources most effectively on an international level," said Dr Ala Alwan, WHO Regional Director for the EMR, who chaired the meeting. "This meeting has taken us an important step in that direction."

"At the moment we have an important window where cases have still been relatively few and human transmission is relatively limited," added Dr Keiji Fukuda, WHO Assistant Director-General for Health Security and the Environment. "We need to exploit this chance to agree and implement the best public health measures possible across the board for, in so doing, we stand the best chance of controlling this virus before it spreads further."

In the area of mass gatherings, the participants agreed that Member States should to develop specific plans when MERS-CoV might be an additional risk for an event, and they also highlighted the need for standardised protocols for serological testing, and systematic and sequential sample collection.

In the area of communications, the value of fast and transparent reporting of cases both to the public and to WHO via the system of International Health Regulations National Focal Points was highlighted, while the needs to better understand the probability and means of hospital-based transmission of the disease, and to ensure hospitals had adequate knowledge and facilities to treat cases, including the most severe ones, were also highlighted.

"Collecting and sharing epidemiological, clinical, immunologic, and genetic information related to MERS-CoV infections in the right way is essential if the disease is to be better characterized in terms of source, exposure and presentation. Coordinated and intersectoral global action to increase regional and inter-regional collaboration between countries, WHO and other international partners is vital," the meeting concluded.

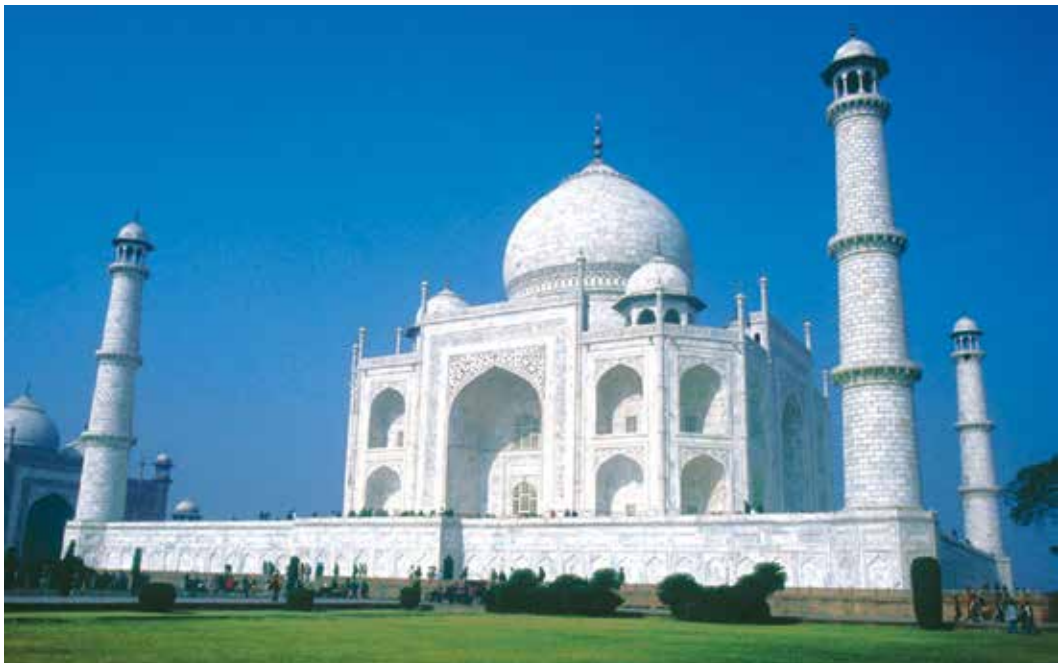
WHO requested all Member States to promptly assess and notify WHO of any new case of infection with MERS-CoV, along with information about potential exposures that may have resulted in infection and a description of the clinical course. Investigation into the source of exposure should promptly be initiated to identify the mode of exposure, so that further transmission of the virus can be prevented.

At the time of going to press (June 22) WHO did not advise special screening at points of entry with regard to this event nor does it currently recommend the application of any travel or trade restrictions.

Vaccine

Meanwhile, Novavax Inc, a biopharmaceutical company, reported 6 June that is had successfully produced a vaccine candidate designed to provide protection against the recently emerging MERS – CoV.

The company believes that its MERS-CoV vaccine candidate may provide a path forward for a vaccine for this emerging threat. MEH



India makes its mark on the global medical tourism map

More than 50 countries have identified medical tourism as a national industry. Many hospitals in these countries have established international patient services departments in an effort to facilitate medical tourism and attract foreign patients to their facilities, thus securing additional and often lucrative income. *Middle East Health* travelled to India to speak to some of the country's leading doctors and visit the hospitals they work in.

By definition medical tourism is an opportunity for patients to travel for medical care and take advantage of reduced costs, improved wait times and superior quality healthcare. The ease of international travel has also helped.

Realising the benefits this can have on the national economy governments in some of these countries have stepped into the fray to facilitate medical tourism by easing visa restrictions for this category of tourist as well as promoting the industry through various marketing events.

Services typically sought by travellers include elective procedures as well as complex specialised surgeries, such as joint replacement (knee/hip), cardiac surgery, dental surgery, and cosmetic surgeries. Individuals with rare genetic disorders may travel to another country where treatment of these conditions is better understood. However, virtually every type of health care, including psychiatry, alternative treatments, convalescent care and even burial services are available.

In India medical tourism is growing rapidly due to the attractive costs for medical procedures and the advanced medical technologies available at the hospitals treating foreign patients. Other attractions include an increasing compliance with international quality standards, such as Joint Commission International accreditation, and the fact that English is widely spoken by doctors and nurses.

According to a report in *The Times of India*, the government is taking steps to address infrastructure issues that hinder the country's growth in medical tourism. The government has also removed visa restrictions on tourist visas that required a two-month gap between consecutive visits for people from Gulf countries which is likely to boost medical tourism. A visa-on-arrival scheme for tourists from select countries has been instituted which allows foreign nationals to stay in India for 30 days for medical reasons.

Dr Ullas Pandurangi, cardiologist was quoted in a *Times of India* report as saying: "The easing of visa norms is a welcome move as patients can meet the doctors, go back and discuss the details with their families, and return for the procedure. Earlier, most of these discussions took place over email or through intermediaries. There is nothing like a patient visiting the doctor personally."

Mallika Mohandas, of MIOT hospitals, told the newspaper: "Though most patients come on medical visas, the easing of restrictions on tourist visas will help patients' relatives."

A report on Al Jazeera points out that treatment costs in India start at around a tenth of the price of comparable treatment in America or Britain.

The most popular treatments sought in India by medical tourists are alternative medicine, bone-marrow transplant, cardiac bypass, eye surgery and hip replacement.

	US	UK (Private)	SINGAPORE	INDIA
Bone Marrow Transplant	upto 200,000	upto 200,000	-	upto 25,000
Bypass Surgery	35,000	25,000	-	6,000
Breast Lump Removal	-	3,200	1,000	700
Haemorrhoidectomy	-	3,800	1,500	1000
Knee Joint Replacement	-	15,000	7,000	5,000
Lasik Surgery	4,000	2,800	1,600	700
No Stitch Cataract Surgery	4,500	2,600	-	700
In-vitro fertilisation (IVF) cycle	15,000	-	-	1,800
Hernia Correction	2,800	2,700	2,500	1,000
Dental Implants	3500	2800	1600	800

Figures are approximate costs in US dollars.
Source: Forerunnershealthcare

The Associated Chambers of Commerce and Industry of India says India's medical tourism sector is expected to experience an annual growth rate of 30%, making it a US$2 billion (Rs9,500 crore) industry by 2015.

India is known in particular for heart surgery, hip resurfacing and other areas of advanced medicine.

The Associated Chambers of Commerce and Industry of India says India's medical tourism sector is expected to experience an annual growth rate of 30%, making it a US$2 billion (Rs9,500 crore) industry by 2015. This is being driven by rising costs for medical treatment in the West as patients and insurance companies in the US and Europe seek cheaper options.

Key hospitals associated with medical tourism in India include: Wockhardt, several hosptals in the Fortis group, Max Super Speciality Hospital, Miot Hospital, Global Hospitals, Manipal Hospital and Narayana Hrudayalaya among others.

Chennai, the health capital

The city of Chennai (formerly Madras) is known as 'India's health capital'. It has a long history associated with medicine. For example, Madras Medical College was set up in 1835, making it one the oldest colleges of European medicine in Asia.

According to *The Hindu*, hospitals across the city bring in an estimated 150 international patients every day to Chennai. The city has an estimated 12,500 hospital beds, of which only half is used by the city's population with the rest being shared by patients from other Indian states and foreigners.

Medical tourism is not new here. Even before the term had been coined and even before the advent of corporate hospitals – a phenomenon that began with the establishment of Apollo Hospital in 1983 – patients flocked here from across the country, says the report.

Dr P.V.A. Mohandas, founder and managing director of MIOT Hospitals, is quoted as saying: "I remember, when I was a medical student, patients came to the GH (Government Hospital) from Karnataka, Andhra Pradesh, Kerala and parts of Orissa too. They arrived in train-loads at Central Station – all to seek the expertise of doctors in Madras.

Although the scope of Chennai's medical tourism has changed – MIOT hospitals attracts patients from around the world and many from the region including Sri Lanka, Bangladesh, Nepal and Pakistan – the faith patients place in the doctors of Chennai has not. And it is this constant that is far more powerful than any marketing campaign because it has resulted in the spread of the city's medical expertise through word of mouth, according to doctors working in the city.

The *Times of India* reports that at least 15 people from Gulf countries land in Chennai every day for medical treatment.

Arab patients feel at home here as a number of restaurants serve their food here. One outlet on Greams Road also delivers Arab-style food to hospitals across the city. With the easing of restrictions, the hospitality and food sector will also benefit, the newspaper says.

Combining treatment with travel opens up the opportunity to do some sightseeing for the patient and accompanying relatives. In this regard India is a particularly attractive destination, providing a wealth of tour opportunities including the famous Taj Mahal, the magnificent forts of Rajastan, the back waters of Kerala and the beautiful beaches of Goa, to name just a few. MEH

Why seek treatment in India?

The Indian ministry of tourism outlines the following reasons for foreign patients to seek treatment in India.

- Low cost – even the most budget-conscious medical tourist can afford first-rate service and luxury amenities
- Most of the doctors and surgeons at Indian hospitals are trained or have worked at some of the medical institutions in the US, Europe, or other developed nations.
- Most doctors and nurses are fluent in English.
- Top-of-the-line medical and diagnostic equipment from global international conglomerates is available at many Indian hospitals.
- Indian nurses are among the best in the world. Nearly 1000 recognized nurse-training centres in India, mostly attached to teaching hospitals, graduate nearly 10,000 nurses annually.

The procedure for seeking medical treatment at a foreign hospital

The typical process is as follows: the person seeking medical treatment abroad contacts a medical tourism provider. The provider usually requires the patient to provide a medical report, including the nature of ailment, local doctor's opinion, medical history, and diagnosis, and may request additional information. Certified physicians or consultants then advise on the medical treatment. The approximate expenditure, choice of hospitals and tourist destinations, and duration of stay, etc., is discussed. After signing consent bonds and agreements, the patient is given recommendation letters for a medical visa, to be procured from the concerned embassy. The patient travels to the destination country, where the medical tourism provider assigns a case executive, who takes care of the patient's accommodation, treatment and any other form of care. Once the treatment is done, the patient can remain in the tourist destination or return home.


MIOT Hospital


Global Hospital

Interview

Treating foreign patients in India is a growing trend

While travelling in India earlier this year we spoke to many hospitals across the country about their medical tourism services. The following is a selection of answers to our questions from five of India's leading hospitals.

What percentage of patients are international patients?

- **MIOT Hospital:** 16% of our patients are international patients
- **Fortis Hospital:** Approx. 9% patients are international patients.
- **Manipal Hospital:** 6-7%
- **Wockhardt Hospital:** Wockhardt currently has less than 5% of its patient base from international geographies. However considering that such numbers come to us without any presence in the metro cities which were till recently not connected with flights from outside the country, it is a decent business. Our numbers have grown significantly with launch of our new hospital in Goa last year which specializes in catering to international patients.
- **Global Hospital:** Around 20 - 25%

Which countries do they come from?

- **MIOT Hospital:** MOIT primarily serves patients from Nigeria, Ethiopia, Kenya, Sudan and Oman
- **Fortis Hospital:** Middle East – Iraq, Saudi Arab, Oman and Yemen.
Africa – Nigeria, Congo, Ghana, Rwanda, Tanzania.
SAARC – Afghanistan, Pakistan, Bangladesh, Nepal
CIS – Uzbekistan, Kazakhstan, Russia
Rest of the world – Fiji & pacific, Ireland, USA, UK
- **Manipal Hospital:** Africa, Middle East, Iraq, Iran, Australia, Canada, US, Mauritius, Maldives and SAARC countries.
- **Wockhardt Hospital:** We receive patients from around the world – primarily from US, UK, African countries like Nigeria, Kenya. Wockhardt being the only hospital with a decade-long association with Harvard Medical Institute, USA which enabled us to ensure world class clinical care for our patients.
- **Global Hospital:** SAARC, Middle East, Africa

How many patients from the Middle East?

- **MIOT Hospital:** 8% of our patients come from the Middle East Region.
- **Fortis Hospital:** Approx. 35% - 40% patients come from Middle Eastern countries.
- **Manipal Hospital:** About 650 patients in 2012
- **Wockhardt Hospital:** We have recently opened Middle East as business region. The Goa hospital has been a preferred destination for the patients from this region.

Wockhardt's Institute of Aesthetics has been a major success as it is the only dedicated facility for aesthetic/cosmetic procedures in the picturesque location of Goa. Patients actually visit Goa for treatment and also enjoy the state of Goa (which apparently hosts highest number of international tourists in India). Goa also becomes first choice for the patients who want to ensure confidentiality when they receive treatment (especially cosmetic)

Post spread of information in the Middle East markets we have received approximately 6% of our international patients coming from this zone. We are in talks with various corporates and expect to offer our premium services in the Middle East market on a large scale.

- **Global Hospital:** On an average 70-75%

What medical specialties are available at your hospital?

- **MIOT Hospital:** MIOT has 41 specialties to offer, our centres of excellence are Orthopaedics, Cardiology, Nephrology, Oncology, Organ Transplants, Bone Marrow Transplant among others.
- **Fortis Hospital:** Fortis Healthcare provide its medical services in almost all specialties as under:
  - Cardiac sciences
  - Neurosciences
  - Orthopedics & Joint Replacement
  - Spine surgery
  - Renal Sciences
  - Mother and Childcare
  - Oncology
  - Rheumatology
  - Endocrinology
  - Trauma Services
  - Emergency Medicine
  - Pediatrics
  - Stem cell therapy
  - Bariatric Surgery
  - Plastic and reconstructive surgery
  - Robotic Surgery
  - Transplants – Kidney, Liver, Heart, Lung and Bone Marrow
- **Manipal Hospital:** We have 56 specialties……everything except Burns.
- **Wockhardt Hospital:** Wockhardt Hospital is a tertiary care super-specialty hospital chain. Our hospitals are well equipped and we have clinical talent equivalent to the best in the fields of Cardiac, Orthopedics, Neurology (Brain & Spine), Kidney Transplants, Oncology (Surgical & Medical), Aesthetics, General surgeries.
- **Global Hospital:** Global Hospitals group is India's largest Multi Organ Transplant centre besides having centre of excellence across major specialties such as Cardiac sciences, Neuro Sciences. Oncology, Urology, Nephrology, Orthopaedics surgeries etc.

Why do Middle East patients visit your hospital? What treatments do they generally seek?

- **MIOT Hospital:** Some of the factors which makes MIOT the preferred hospital:

Highly skilled & internationally trained doctors and surgeons – 100% dedicated to the institute available 24x7

Cutting edge technologies – from diag-

Wockhardt Hospital:

Manipal Hospital

Fortis Hospital

nostic scans to scopes, miniature instruments to computer navigations.

We strive for the quick recovery of our patients - with Care, Compassion & Commitment

Patient from the Middle East know about us through word of mouth. We have seen patients who experience our services become our Ambassadors in spreading our message of care to their loved ones in the region & that been our strength over the years. They seek our services in all our Centres of Excellence mentioned above.

Fortis Hospital: Patients from this region are travelling to seek medical treatment at Fortis Healthcare for following reasons:

- Best medical treatment – Fortis Healthcare offers its best medical services in all field of medical discipline through its network hospitals across the country. Almost all tertiary care services and advance medical technologies are available at Fortis; which are not available at many parts of Middle East and that too under supervision of expert & experienced medical team.
- Language interpretation services – Arabic speaking staff is available in hospitals.
- Accreditation – Fortis Healthcare has both JCI and NABH accreditation at its many hospitals and NABL accreditation for its laboratories. Patients get attracted to seek their medical treatment in such institutions. This is one of the reasons for patients to travel to Fortis Healthcare.
- Reduced price – Fortis Healthcare offers its treatment with top quality healthcare services at low rates. In India treatment cost starts at around a tenth of price of comparable treatment in USA or UK.

Manipal Hospital: Ortho and Spine, Cancer Care, Cardio, Neuro and Nephrology.

Wockhardt Hospital: While it is too early for us to comment on the patient segmentation – we have received good response for our aesthetic procedures, cardiac, ortho (joint replacements) and oncology segments from the region.

Global Hospital: We have with us internationally renowned Medical professionals across most of the specialties, such as Prof. Mohamed Rela - one of the world's foremost Liver Transplant surgeons.

India's first and only HALAL certified hospital.

- Multi Organ Transplant surgeries such as: Liver, Heart Kidney, Lungs
- Complex Neuro Surgeries
- Adult and Paediatric Cardiac Surgeries
- Ortho and Spine surgeries
- Oncology (Medical, Surgical and Radiation) etc.

What International Patient Services do you provide?

MIOT Hospital: MIOT International Patient Care office is equipped with modern communication equipment like email, fax, 24-hour helpline and staffed with trained coordinators. This office affords easy access to patients across the globe and it puts at ease the patient's anxiety relating to his travel and stay. Our services include: Appointment with Doctors - Our services begin even prior to patient's arrival in MIOT – appointments with the concerned doctors are coordinated.

Fortis Hospital:

- Airport pick up & drop
- 24/7 Arabic interpreter
- Single window "Relationship Manager"
- Currency exchange and wire transfer facility
- Internet connectivity
- Car hire facility for the attendant
- Cuisine choice
- Regular patient progress updates
- Guest house facilitation
- Post discharge query handling

Manipal Hospital: We provide Pre, Arrival and post arrival services

- Pre-Arrival- Visa assistance, Quote assistance, accommodation assistance, appointments and doctors assistance.
- Arrival- Airport transfers, translator facilities, visa extensions, local SIM card and internet facilities, international cuisine and travel assistance. We provide a case manager right through their stay, legal mandates and repatriation services in case of eventuality.
- Post-Arrival- follow-up consultation, Medication facility and Doctors conference calls.

Wockhardt Hospital: Patient is taken care of ' Flight to Flight' i.e. from the arrival of patient in India to the departure of patient post treatment. We arrange for all services like visa assistance and translations, etc. For most services patients are not charged separately unless a very specific and customised service is required.

Global Hospital:

- VISA assistance
- Airport Transfer services- Ambulance/ Hospital car
- Cost estimate for all anticipated treatment
- Scheduling for all medical appointments
- Booking of hotels/ Service apartments/ guest houses
- Language translators services- Arabic/ French/ Somali
- Air ambulance arrangements
- International Multi- cuisine, Cafeteria- Halal food
- International TV channels- English, Arabic, French
- Dedicated Travel desk
- Spa and concierge services
- Shopping facility
- Support on Tourism MEH

Interview

Spinal surgeries are safe and successful nowadays

Middle East Health speaks to Dr Vidyadhara S, Senior Spine Surgeon, Manipal Spine Care Centre, at Manipal Hospitals, Bangalore, India – about the evolution of spinal surgeries and the Manipal Spine Care Centre.

Dr Vidyadhara S

Middle East Health: Why were spinal surgeries considered unsafe until recently?

Dr. Vidyadhara S: The spine is the most complex organ wherein the spinal cord is protected in a bony canal made of 33 bones and discs as well as 96 facet joints which give movement to the neck and back. The bony canal is about 10-15mm in diameter and working in such a small space has always been a challenge. In the past there were not many training programmes. Surgeons attempting to do spinal surgeries were trying to help the patient get relieved of their problems by getting in there with their best of knowledge of anatomy. Mistakes did happen and lots of patients became para-/quadri-plegics. Even 20-30 years back, the spinal surgeries were fraught with a very high risk of 50-80% in various centers across the world. In the last 2 decades, we have seen evolution of lot of training centers in spine surgery and also the technological advantage with the use of microscopes, endoscopes, navigation, etc has made spine surgery as safe as it can be. We now can easily achieve 99% safety and success in almost all the spinal surgeries at Manipal Spine Care Centre. Today, our results are at par with the best of centers of Spine Surgery across the world. This can be attributed to the most appropriate and correct surgical procedure recommended and adopted by the concerned spine surgeon for the individual patient depending up on their medical conditions.

MEH: When does one decide on surgery for a problem in the spine?

VS: About 90% of patients with back and neck pain do not need surgery. More than 95% of spinal surgeries are done for one of the following 3 indications.

1. Gross weakness of limbs,
2. Urine/motion incontinence/inability to pass urine, and
3. Functionally disabling pain for longer than 3 consecutive months.

The first two indications are absolute – as they mean cry of the dying nerve and delay in surgery means more the damage – and the third indication is relative (as the pain is subjective). However, the exceptions are the congenital / developmental spinal deformities, spinal tumors, spinal fractures, spinal infections etc. Indications for surgery in all of these conditions are very highly individualized and needs to be decided by a specialist.

MEH: What are the latest developments in back / neck pain surgery?

VS: Whenever indicated, most of the age-related degenerative conditions can be treated by minimally invasive surgeries with the use of operating microscopes, endoscopes, image intensifiers, etc. The patient's hospitalization would be restricted to 2-3 days and patient would be on his feet in 4-8 hours after surgery. This is possible because of better techniques of smaller incisions, better vision, improved soft tissue healing techniques, and lesser blood loss. In many people suffering from back/neck pain, we do try injection techniques / radiofrequency ablations before taking decision favoring surgery as the last resort.

MEH: Please explain the progress made in motion preservation spinal surgery.

VS: Most spinal surgeries are directed towards two major problems in the spine, namely neural compression and spinal instability/deformity. The principles of surgeries are neural decompression and spinal stabilization respectively. These goals can be achieved using open/minimally invasive spine surgery techniques. However, following the neural decompression or Discectomy, the normal spinal mobility can be preserved using Artificial Disc Replacements in the neck and Interspinous Process Spacers or Posterior Dynamic Stabilization Devices in the low back.

MEH: What is your opinion on the advances in Osteoporotic Wedge Fracture management?

VS: Fractures are common causes of morbidity and mortality in elderly postmenopausal ladies especially. They can happen even without much of impact or injury. The patient finds instability back pain which is worse of any change of position that the patient attempts such as turning on bed, getting up from sitting and lying down position. Today, we perform vertebra/Kyphoplasty for these fractures which aim to fill the fractured bone with bone cement which gives instant pain relief, enabling them to regain the activities of daily living. These are day-care-procedures and are done through needles (no incisions/stitches). These procedures are increasingly being used

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in spinal tumor surgeries as well. Younger patients with fracture of spine can get Percutaneous Spinal Stabilization using minimally invasive gadgets.

MEH: What spinal deformity surgeries are possible at Manipal Hospital?

VS: We do all spinal deformity surgeries using Multi-Modal Neuromonitoring to reduce the risk of neurological injury while deformity reduction to a least. In complex bony deformities we have the Neuro-Navigation system to help us use the corrective spinal instrumentation safely. We treat wide range of spinal deformities ranging from pediatric to adult, congenital to neuromuscular or syndromic, etc. We have performed various spinal osteotomies, Spino-pelvic fusions and vertebral column resections safely and successfully. We have been affiliated with Scoliosis Research Society (USA) and are submitting our MandM data to their registry.

MEH: Why should patients consider treatment at Manipal Spine Care Centre?

VS: Manipal Spine Care Centre is a comprehensive unit consisting of dedicated fellowship-trained Spine Surgeons (trained in Orthopedics and Neurosurgery), Pain Physicians, Interventional Radiologists, Physiotherapists, Rehabilitation Specialists, Neuropsychologists, and support staff. We have state of the art pre-, intra- and post-operative care facilities and infrastructure so that the patient gets the best of care with a personal touch. At MSCC, we see around 7,500 out-patients and perform about 900 spinal surgeries in a year. MEH

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The scar-less approach to surgery

Dr Muffazal Lakdawala, Director, Minimal Access, Bariatric & Minimal Access Centre of Excellence, Fortis Memorial Research Institute, Gurgaon, India, explains scar-less surgery in response to typical questions he receives from patients.

Dr Muffazal Lakdawala, Director, Minimal Access, Bariatric & Minimal Access Centre of Excellence, Fortis Memorial Research Institute, Gurgaon

I am suffering from gall stones and have been advised laparoscopic removal of the gall bladder by my surgeon. Recently, I read in a magazine about "scar-less surgery". Can the gall bladder surgery be "scar-less"? If yes, then is it safe? Is it more expensive?

Scar-less surgery is soon going to be the norm for a lot of surgeries that are being done through laparoscopy nowadays. It is regularly being done at FMRI. In this procedure, a tiny 2cm cut is made in the navel and a special port is inserted through it. The complete surgical procedure is carried out through this 'one' port. Once the surgery is over, the incision site is closed and no scar is visible as it gets deeply buried inside the navel. The gall bladder surgery is one of the most commonly performed surgeries by this method. It is as safe as other conventional methods of operating. It causes lesser pain and the patients are much happier as it leaves no scar. Since a special trocar is used in this surgery, the cost is marginally higher for single incision/scar-less surgery.

I am 23 years old and weigh about 102 kg. I don't have any other medical problems. My parents are looking for a match for me but I would like to undergo bariatric surgery before I get married. Can my surgery be scar-less so that I can keep it confidential? And in how much time will I start looking slim?

Yes, bariatric surgery can be scar-less. We can do it through a small cut in your navel. It's a 2cm cut deep in your navel through which the entire surgery is performed. We have the largest series of bariatric surgeries in Asia done through the scar-less method. Once the cut heals, there will be practically no scar. Externally there will be no signs of surgery, so if you choose to keep it confidential, it can be kept that way. Sleeve gastrectomy will be best suited for someone of your profile. You can lose about 33% of your excess weight in the first 3 months itself and will continue to lose weight for another year or so.

I am told scar-less surgery is risky and needs special instrumentations?

If done with a team experienced in scar-less surgeries, it is as safe as conventional laparoscopy. It does not necessarily need a lot of fancy equipment, just a different port and increased skill from the surgeon.

What's the difference between laparoscopy and single incision surgery?

Both are minimally invasive approaches at doing abdominal surgeries. Both use similar instruments.

In Laparoscopy we use 3 to 6 cuts about .5 to 1.5cm in size depending on the surgery, whereas in Single Incision Surgery we make only one cut about 2cm deep in the navel which eventually hides the scar. Thus, making it scar-less. MEH

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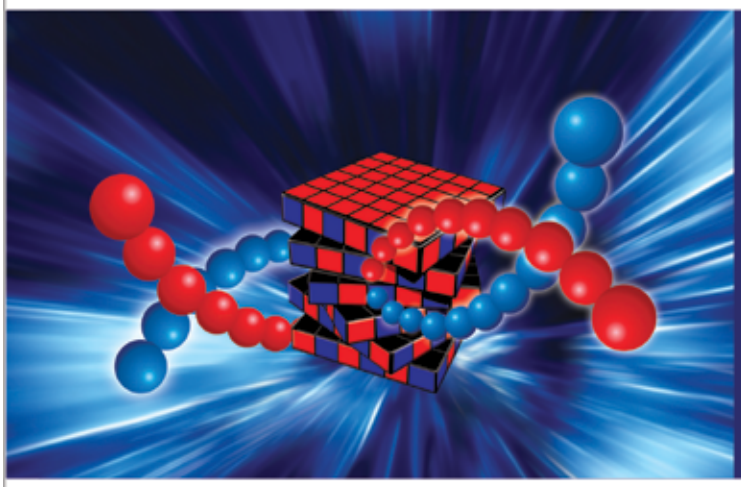

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Curing obesity and achieving diabetes remission through key hole bariatric and metabolic surgery

Obesity and Diabetes are worldwide epidemics associated with increased morbidity and mortality. Bariatric surgery (weight loss surgery) and metabolic surgery (diabetes surgery) are highly effective tools to dramatically improve patient health.

Bariatrics is the science of causes, prevention and treatment of obesity, whereas metabolic surgery deals with diabetes (T2DM), explains Dr Prashant Verma, Wockhardt Hospitals, India. As obesity crosses a BMI of 35 it raises the likelihood of chronic disease and if it crosses 35 with associated chronic disease it will require some intervention to get rid of flab (unwanted fat) and associated diseases.

Dr Verma says that obesity and diabetes leads to lowering patient's QOL (Quality of life) and causes complications like blindness, kidney failure, heart disease, stroke, arthritis, depression, OSA (obstructive sleep apnoea) and some cancers including of the colon, uterus and breast.

The people of GCC are prone to obesity and diabetes because of a number of factors including sedentary lifestyle and an unhealthy diet. About 20% of the UAE population suffer from diabetes.

Most Arabs are unaware of recent advances in surgery for reducing obesity and achieving remission of diabetes by key hole surgery. In this surgery the stomach size is reduced in volume or the stomach is by passed to create changes in gastrointestinal anatomy which causes sustained weight loss and has metabolic effects which cause diabetes remission.

Bariatric and metabolic surgery, a commonly adopted procedure in the Western world, is the best and only scientifically proven long lasting surgical intervention. It's not liposuction.

The keyhole surgery is carried out under general anaesthesia and lasts 1-2 hours. The patient can go home after three days post op and can start routine work in 15 days as there is minimal pain or scars from the surgery of surgery.

For diabetics "it means that their eyes, kidneys, hearts and nervous system have more time without suffering the side-effects of the disease", Dr Verma says.

Dr Verma, of Wockhardt Hospitals, has been trained in this specialized surgery at Asia's premier Center of Excellence in Taiwan, where he studied keyhole surgery and, specifically, how it can reverse obesity and diabetes. He has also studied in India, Australia and Thailand. He is a member of the esteemed American Society of Metabolic and Bariatric Surgery (ASMBS) and WALS.

The main advantage of this type of surgery is that post-operative pain is minimal and the patient can return to work relatively soon after discharge from hospital.

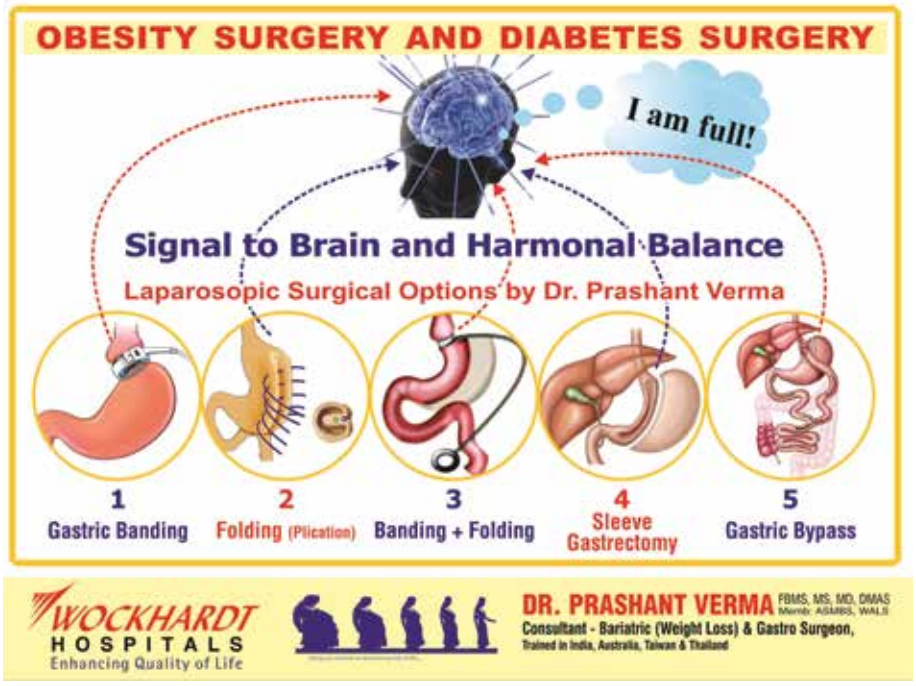
If done by skilled hands this surgery is safe.

Speaking about possible complications, Dr Verma pointed out that there was a risk in everything we do in our lifetime, howver, with advanced skills and instruments the risks are minimal but can include mild bleeding, clot formation, infection or suture leak.

Dr Prashant Verma

He added: "For some morbidly obese patients the risk to life from not undergoing a surgery could be bigger than the possible complications involved in undertaking the procedure."

- Wockhardt email: *treatment@wockhardthospitals.com*



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Interview

Towards a better lifestyle

Middle East Health speaks to Dr Sudarshan Ballal, MD, the Medical Director and Chairman of the Medical Advisory Board at Manipal Hospital in Bangalore, about renal failure and haemodialysis.

Dr Sudarshan Ballal, MD

***Middle East Health*: Do patients suffering from End Stage Renal Failure have to undergo haemodialysis, a procedure that requires the patient to be at a hospital for 5-6 hours three times a week? What other dialysis options do such patients have?**

Dr Sudarshan Ballal MD: There are only three options for patients with End Stage Renal Failure: a) Haemodialysis done two to three times a week for four hours each time; b) Kidney transplantation, which is the best option; and c) Chronic ambulatory peritoneal dialysis (CAPD)

MEH: Is CAPD safe and as effective as haemodialysis?

SB: It certainly is as safe and effective as haemodialysis in most instances

MEH: What are the advantages it offers over haemodialysis? What kind of lifestyle can a patient on CAPD realistically look forward to?

SB: The greatest advantage is that it can be done at home either by the patient himself or herself or by an associate and you only need to visit the doctor once in four to six weeks. It gives the patient tremendous advantage in being independent and also the ability to travel as you can carry the supplies with you or have it delivered to your destination. In patients with severe heart problems and heart failure, it has an added advantage of maintaining haemodynamic stability as compared to haemodialysis. Overall it is great for patients who value their independence and also those who stay in remote areas where there is no access to haemodialysis.

MEH: Could you explain the basic mechanism of CAPD?

SB: In this form of dialysis, a soft catheter (hollow tube) is implanted into the abdomen (peritoneal cavity) surgically (though it can be implanted less invasively). Once the surgical wound is healed, dialysis will be initiated introducing sterile dialysis fluid containing high concentrations of dextrose (sugar) into the abdomen. The layer of intra-abdominal membrane called peritoneal membrane will act as a filter and draw all the impurities and excess water into the solution by an osmotic process. This solution will be left behind for

3-4 hours for equilibration and then drained. Again fresh solution will be infused after the drain. The entire process of draining and re-infusion takes about 30 minutes each time and the cycle is repeated 3-4 times a day. After proper training for a few days, the patient or an attendant can do this dialysis at home.

MEH: What are the risks involved in this procedure?

SB: The most common risk is that of infection or peritonitis, especially if the proper technique is not followed. The other risks are internal injury inside the abdomen like perforation of the intestine or internal bleeding during placement of the catheter. Because most peritoneal dialysis solutions have high concentrations of glucose, the patient's blood sugars could go up and need close monitoring and treatment if needed

MEH: Is there enough awareness about this procedure in India? Are there any new advances being made in this field to make it more accessible and/or reduce complications/risks?

SB: Unfortunately, there is not enough awareness about this modality in our country and certainly more awareness needs to be created among patients with End Stage Renal Failure. One of the major limiting factors in the use of this procedure in our country is the cost involved and the manufacturers of the products need to work with the medical fraternity in reducing it. There have been many innovations in this modality, like the introduction of double bag system and automated peritoneal dialysis machines called cyclers which have significantly reduced the rate of infections. Newer non glucose containing solutions like icodextrins have reduced the risk of high sugars and peritoneal membrane damage in the long run.

● Dr. Sudarshan Ballal MD, FRCP (UK), is the Medical Director & Chairman of Medical Advisory Board at Manipal Hospital. He is also the director of the Manipal Institute of Nephrology & Urology.

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Dr. Vasan S. S.
Director and Consultant Uro Andrologist at Manipal Hospital

Sperm banking and cryopreservation

Sperm banking is the preservation of sperm by freezing so that they may be used subsequently for artificial insemination or other assisted reproduction techniques. Preservation of sperm is advisable for men who are in danger of losing their fertility or having it impaired. Successful sperm preservation gives the possibility of fathering a child at a later date.

Malignancy & Sperm cryopreservation

Fertility may be damaged by chemotherapy used for blood cancers, radiotherapy or by surgery around the reproductive system, such as that carried out for testicular cancer. There are two possible effects of chemotherapy or radiotherapy:

(I) that no sperm will be present after the therapy or

(II) That therapy will have the potential to affect the DNA (the genetic component) of the sperm.

When to do sperm cryopreservation

Once the malignancy is diagnosed, sperm banking is the first step to be undertaken before any form of chemotherapy or radiotherapy involving the testicles is to be administered. This is because these cancer therapies affect the testicular function and in particular damage the quality of sperms generated. There is a high risk of infertility. Many men are rendered azoospermic following treatment. Spermatogenesis often returns in these men; however, the timing of the return (ranging from months to years) and the sperm quality when it returns is variable and unpredictable

If chemotherapy or radiotherapy has begun, we can still store sperm, but it is less satisfactory than the pre-treatment sperm cryobanking.

Options available

Although available in India the options of sperm cryopreservation are not always discussed with the patients .The availability of resources, urgency to treat, awareness among oncologists regarding assisted reproductive technology are the key issues that influence a successful outcome. Also in pre pubertal and young adolescents, obtaining mature sperms is always not possible.

So patient counselling and access to sperm banking should be a standard approach of patient education and decision making before the start of cancer therapy. Ejaculate sperm cryopreservation or sometimes microsurgical testicular sperm extraction (MESA) and cryopreservation in order to compensate for the tumour induced impairment of spermatogenesis is advised.

Technology

Conventional slow freezing protocol (cooling rates of 1-10*C/min), has been in use successfully since many years now. However the formation of ice crystals inside the sperms is a major limitation. This damages the sperms during the thawing process when the sperms are brought to normal temperature. This is overcome by the vitrification technique or the rapid freezing (cooling rate of 40-1000*C).

Pre-treatment sperm cryopreservation remains the only means of ensuring semen availability for future use and studies have documented use of cryopreserved sperm with good results up to 15 years after initial preservation. Fertility rates have improved with the use of assisted reproductive technology like ICSI. Based on current evidence there is no increased biologic and genetic risk to the offspring of cancer survivors. MEH

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Case study for sperm preservation

Shubdha and Abhishekh (names changed) were happily married for six years. In 2009 he was diagnosed with acute myeloid leukemia and had to undergo chemotherapy and bone marrow transplantation. The couple was devastated at the turn of events as they were leading a normal life with many future plans, the priority being planning to conceive and have an addition to their family.

As the above treatment had a significantly high risk of developing permanent sterility, he was referred to MARS (What is the expansion of MARS) and advised regarding sperm cryopreservation before going ahead with his cancer treatment.

However, the cancer specialist wanted to start his treatment as early as possible and the couple were given only two days to decide on sperm cryopreservation.

On evaluation of his semen, majority of sperms were not only defective but also exhibited poor motility. Normal sperms were very few. The couple was counselled and these facts were told to them. The poor chances of survival of these sperms post thawing was indicated to them.

Considering the seriousness of the situation and their keen desire to go ahead with sperm preservation here at MARS, we decided to use a new freezing protocol of Vitrification for this cryopreservation (a type of deep freeze preservation). This was in order to maximize the chances of survival of sperms with minimal damage post thawing. We were able to successfully achieve cryofreeze of one vial of his sperms.

In due course, Abhishekh completed his bone marrow transplantation and recovered well from this cancer. The couple returned back to MARS in Jan 2012 with the hopes of achieving pregnancy using the cryofrozen sample. The couple underwent the first cycle of intracytoplasmic sperm injection (ICSI) in March 2012. On the day of ICSI, the frozen sample was thawed and sperm selection was done using sperm birefringence technique in order to select the most normal sperm from the sample.

After 15 days of embryo transfer the pregnancy test proved positive and the couple were overjoyed. An early pregnancy ultrasound scan showed twin babies and this further added to their joy. The pregnancy progressed well without any complications and today they are proud parents of two healthy babies. MEH

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Her smile is back

Three-year-old braves a liver transplant

By **Dr Gomathy Narasimhan**

She was a healthy, normal three-year-old child until she suddenly became sick and got admitted to a hospital in the Middle East. Diagnosed with Acute Liver Failure from Viral Hepatitis, she urgently needed a new liver, hence, it warranted an emergency liver transplantation. She was immediately put on a ventilator for a week and her parents were advised to immediately take her to Global Hospitals in India one of the most renowned liver disease & transplantation management centres in the world, for further management.

Uncle to the rescue

In her uncle, she found her saviour as he willingly came forward to donate his liver as he was found to be medically suitable to donate. The child was treated at the Pediatric Liver Intensive Care Unit, with all the supportive care and under close surveillance to prevent further deterioration from sepsis, as patients with acute liver failure are more prone to infections.

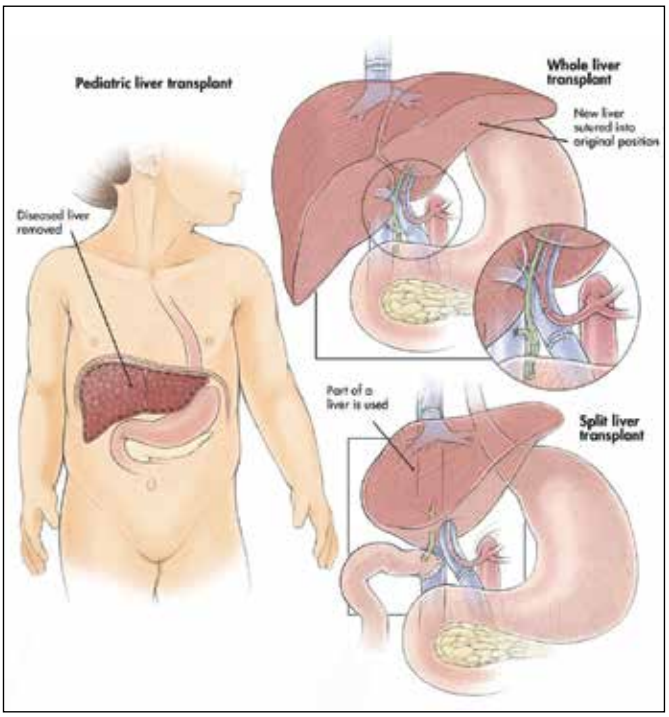
Management of liver disease in both adults and children is challenging from various perspectives and involves a multidisciplinary approach with close co-ordination and team work. Expertise from multiple specialties – hepatology, transplant surgery, liver anaesthesia, paediatric and adult Intensive care, transplant infectious disease, radio diagnosis, interventional radiology, liver pathology, paediatric intensive care and nursing, specialised nutrition and dietetics, transplant co-ordination are all vital to make this successful. The importance of this can be well exemplified by the details of the treatment undergone by the three-year-old girl at Global Health City, Chennai, India which is part of Global Hospitals Group, one of India's foremost multi-super specialty tertiary care hospital chains.

LDLT or APOLT – What is the most suitable transplant procedure?

Now, the crucial decision was in deciding between conventional "Living Donor Liver transplantation (LDLT)" and "Auxiliary Partial Orthotopic Liver transplantation (APOLT)" for the child. The difference between the two surgical procedures is that in the conventional LDLT it would involve removing the whole of the child's liver that is acutely affected by viral hepatitis and replacing it with a portion of the liver from the donor and subsequently the child has to be on lifelong immune suppression in order to prevent rejection of the liver graft. While in APOLT, a portion of the patient's liver is removed and the donated liver is placed in that space made free, and at the same time, retaining a portion of the patient's own native liver which is acutely affected by the virus. The rationale behind this is that ALF is secondary to acute severe damage to a liver which has been healthy so far and the acute liver cell loss leads to risk of mortality.

The liver has the capacity to regenerate once the insult is over, but the patient needs liver cell function until the time of recovery of the liver. Hence, in APOLT, the donated liver provides the liver cell mass in the acute phase and once the native liver recovers, immune suppression can slowly be withdrawn thereby avoiding lifelong medications and its side effects.

Professor Mohamed Rela, Head of the Liver Transplant program for Global Hospitals Group, credited with the largest experience in APOLT and paediatric liver transplant and a Guinness World Record Holder for performing a liver transplant on a 5-day-old baby took the crucial decision to perform APOLT on the child.



Two months following transplant

Professor Mohamed Rela and his highly experience team performed the APOLT successfully. The child recovered well after two months of hospitalization which involved one month in the ICU, aggressive nutritional support and rehabilitation and most importantly with a good liver function. The differential function of the child's own liver to the transplanted liver was monitored with HIDA scan and liver biopsy periodically. After one year following transplantation, the native liver function was improving and she is currently on gradual immune suppression withdrawal.

The key aspects in liver disease and transplantation are the decisions on whom, when and how to do liver transplant and the pivotal role that multi disciplinary involvement and team work play in the overall outcome. This is highlighted in the treatment of this child.

● **Dr Gomathy Narasimhan** is a Consultant Liver Transplant Surgeon at Global Hospital and Health City, Chennai.

Non-alcoholic fatty liver disease

Doctors from Manipal Hospital in Bangalore look at non-alcoholic fatty liver disease, its epidemiology, diagnosis, management and other factors.

Introduction

Non-alcoholic fatty liver disease (NAFLD) is a condition defined by excessive fat accumulation in the form of triglycerides (steatosis) in the liver. A subgroup of NAFLD patients have liver cell injury and inflammation in addition to excessive fat (steatohepatitis). The latter condition, designated NASH, is virtually indistinguishable histologically from alcoholic steatohepatitis (ASH). While the simple steatosis seen in NAFLD does not correlate with increased short-term morbidity or mortality, progression of this condition to that of NASH dramatically increases the risks of cirrhosis, liver failure, and hepatocellular carcinoma (HCC).

Epidemiology

NASH is an increasingly common chronic liver disease with worldwide distribution that is closely associated with diabetes and obesity, which have both reached epidemic proportions. There are significant cultural and geographic differences in the prevalence of obesity. According to a recent study done in West Bengal prevalence rates of NAFLD, NAFLD with elevated alanine aminotransferase, and cryptogenic cirrhosis were 8.7%, 2.3%, and 0.2%, respectively.

Pathogenesis

One global hypothesis for the pathogenesis of NASH is the "multi-hit hypothesis," with metabolic syndrome playing a major role. Insulin resistance is related to obesity and is central to the pathogenesis of NAFLD. In addition, oxidative stress and cytokines are important contributing factors, together resulting in steatosis and progressive liver damage in genetically susceptible individuals.

Risk factors and associated conditions

- Insulin resistance/metabolic syndrome
- Hypertriglyceridemia
- Highest risk in 40 – 65 yrs old
- Positive family history, genetic predisposition
- Sedentary lifestyle, lack of exercise
- Hepatitis c
- Rapid weight loss
- History of obstructive sleep apnea
- Total parental nutrition
- Drugs like amiodarone, steroids, estrogens, methotrexate, tetracycline, Antiretroviral drugs etc

Prognosis and complications

- Disease can progress from NAFLD to NASH to cirrhosis/liver failure and HCC.
- Concurrence of NAFLD with hepatitis C or human immunodeficiency virus
- (HIV) worsens their prognoses and decreases their responses to therapy.
- NASH-related (cryptogenic) cirrhosis increases the risk of hepatocellular carcinoma (HCC).

Independent predictors for progression of fibrosis/ adverse outcome:

– Age > 45–50
– BMI > 28–30 kg/m2
– Degree of insulin resistance
– Diabetes
– Hypertension
– Elevated serum alanine (ALT) and aspartate aminotransferase (AST)
– Presence of necrotic inflammation on initial liver biopsy

Diagnosis

Patient history and clinical evaluation

Patient symptoms:

– In most cases, NASH does not cause any specific symptoms.
– There are sometimes vague symptoms of fatigue, malaise, and abdominal discomfort.

The presence of any of the following, especially with a history of abnormal AST/ALT, should lead to a work-up for NAFLD/NASH:

– Presence of obesity, especially morbid obesity (BMI > 35)
– Diagnosis of type 2 diabetes mellitus
– Diagnosis of metabolic syndrome
– History of obstructive sleep apnea – Presence of insulin resistance
– Chronic elevation of AST/ALT, otherwise unexplained

Detailed patient history of alcohol consumption – threshold < 20 g/day in women, < 30 g/day in men. This is critical, as no diagnostic test can reliably distinguish between ASH and NASH.

Laboratory, imaging tests and liver biopsy

Elevated ALT and AST:

In 10% of NASH patients, ALT and AST may be normal, especially with Simple steatosis. AST/ALT ratio < 1—this ratio is usually > 2 in alcoholic hepatitis.

Typical imaging test results confirming fat accumulation in the liver:

– Ultrasound is the usual screening test for fatty liver

Fibroscan is a non invasive test to diagnose liver fibrosis using liver stiffness measurement. It is easy to use, painless and reproducible test. It assesses sample size of 100 times larger than compared to liver biopsy. It also detects the fat and quantifies it.

– The magnetic resonance imaging (MRI) test has a quantitative value, but cannot distinguish between NASH and ASH.

Tests to exclude:

- Viral hepatitis – hepatitis B surface antigen, hepatitis C virus antibody or HCVRNA, hepatitis A antibody IgM, hepatitis E antibody (in an appropriate geographical setting); it should be noted that the patient may have coexisting viral hepatitis as well as NAFLD/NASH.
- Alcohol-related liver disease including alcoholic steatohepatitis.
- Autoimmune liver disease.
- Congenital causes of chronic liver disease: hereditary hemochromatosis, Wilson's disease, alpha-1-antitrypsin deficiency, polycystic ovary syndrome.
- Drug-induced liver disease.

Liver biopsy

Liver biopsy should be considered in patients with suspected NAFLD in whom competing etiologies for hepatic steatosis and co-existing chronic liver diseases cannot be exclude without a liver biopsy.

Management

Targets for therapy are insulin resistance and oxidative stress. Although several treatment options are being evaluated, the value of most treatments remains uncertain, or the effects reverse when they are discontinued. The goals of treatment for ▶

NASH are to reduce the histologic features and improve insulin resistance and liver enzyme levels.

Treatment of metabolic conditions

Proper control of diabetes, hyperlipidemia, and cardiovascular risks is recommended. Vitamin E can be used in biopsy proven non diabetic NASH. Omega 3 fatty acids may be considered as first line agent to treat hypertriglyceridemia in pts with NAFLD. Pioglitazone may be considered in diabetic NAFLD patients.

Summary

- NAFLD and NASH are diagnoses of exclusion and require careful consideration of other diagnoses. Just as the clinician cannot diagnose NASH on the basis of clinical data alone, the pathologist can document the histological lesions of steatohepatitis, but cannot reliably distinguish those of nonalcoholic origin from those of alcoholic origin.
- Diet and exercise should be instituted for all patients.
- Liver biopsy should be reserved for those patients who have risk factors for NASH and/or other liver diseases.
- Patients with NASH or risk factors for NASH should first be treated with diet and exercise. Vitamin E may be added in these patients.
- Experimental therapy should be considered only in appropriate hands and only in patients who fail to achieve a 5–10% weight reduction over 6 months–1 year of successful lifestyle changes.

MIOT Hospitals provides some of the most advanced multi-specialty care in India

MIOT International is a leading multi-speciality hospital in India was founded by Padmashri Prof. Dr. P.V.A. Mohandas, with the vision of building a world class hospital in India. From its humble beginning in Chennai as a hospital specialising in Orthopaedics and Trauma in 1999, MIOT quickly realised its aim provide complete and holistic care for patients. Since then MIOT has have evolved steadily and several of their departments have earned a reputation for their high standards and excellent outcomes.

Today, MIOT Hospitals has grown up to be a leader in the industry with its world class multispecialty (more than 41 specialities and sub-specialities) offerings within a span of 14 years.

Being the leading centre for Orthopaedics and Orthopaedic Research, MIOT Hospitals has world class specialties in the fields of Joint Replacement Surgeries, Orthopaedics and Trauma Care. MIOT also has specialised centres for Nephrology, Thoracic & Cardio Vascular Care, Neurology and Neuro Surgery, Paediatric Cardio Surgery, Gastroenterology & Liver diseases, Organ Transplants and Cancer Treatment (Surgical, Medical and Radiation Oncology) and many other specialties.

Major clinical services

MIOT is always committed in providing the best possible patient care. Being patient-centric means that they are always looking for ways to make procedures safer and more comfortable for patients, with better outcomes. As a result MIOT has emerged as a key centre for innovations, forming many Centres of Excellence, all made possible with their physicians and other healthcare professionals.

1. MIOT "Joint for Life"

Can an artificial joint actually last a lifetime? "Yes, it's possible!" says the MIOT Department of Hip Arthoplasty. Worldwide there has been a tremendous increase in Knee and Hip Replacement Surgeries. A key element in a replacement surgery is the artificial joint that is used. The surgeon is responsible for selecting the best joint for the patient based on – age, bone compatibility and quality, future activity, associated medical problems and lifestyle. The right joint fits smoothly and will leave a patient comfortable, active and fit for life. The wrong implant will lead to discomfort, wear and tear and possibly, another surgery in a few years. The surgeons at MIOT are masters in this field having perfected their techniques over 35,000 – Hip and Knee replacement, Shoulder Replacement and Arthroscopic surgeries. By combining their expertise in the scientific selection of implants with well-honed surgery techniques MIOT is able to promise patients a "Joint for Life".

2. MIOT's Global Centre for Ideal Joints

MIOT Hospitals - a forerunner in the field of Orthopaedics and the pioneer in Joint Replacement Surgery. In 35 years MIOT has performed 35,000 successful Hip Replacements and Replacement Surgeries with excellent outcomes. MIOT Hospitals is the first hospital in the Asia Pacific Region to introduce Minimally Invasive Computer Navigated Joint Replacement Surgery.

Prof. Dr. P.V.A. Mohandas

MIOT is also a leading practitioner of Revision Surgery for Joint Replacement in India. This is a specialisation that requires a high degree of planning, customised components and surgical skills. Patients from all over India and neighbouring countries come to MIOT for these specialist surgeries.

MIOT Hospitals launched MIOT's Global Centre for Ideal Joints to serve as a centre of excellence and a reference point for Joint Replacement Surgery in this part of the world.

3. MIOT Institute of Cancer Cure

MIOT Institute of Cancer Cure (MICC) has been making rapid strides in the battle

against cancer by introducing some cutting-edge technology, new specialties, medications and approaches. The institute's state-of-the-art histopathology lab identifies and stages the cancer, while also using genetic probes to zero in on the right kind of drugs to fight it. The latest in its line of advanced methodologies is the True Beam STX.

TrueBeam STx – The world's most advanced radiotherapy

It has made radiotherapy faster, safer, more accurate and effective for cancer patients. This path-breaking equipment can target moving tumours precisely, delivering an accurate dosage, at least four times faster than conventional methods.

MIOT is the first hospital in South Asia, and only the third hospital in the world to commission this revolutionary technology.

Comprehensive Treatment plan

There are three primary treatment approaches to cancer: Medical oncology (chemotherapy), onco-surgery and radiotherapy. Patients may be advised to undergo either one or a combination of these treatments. MIOT has the most effective approach in the 'Tumour Board' where specialists from these three treatment modes work with doctors from MIOT's other specialties like Orthopaedics, Liver specialists, neurosurgeons, etc. MIOT has 35 specialists available to consult on oncology.

4. MIOT Heart Revive Center

MIOT Heart Revive Center is a 24X7 comprehensive heart care centre dedicated to handling, diagnosing and treating all emergencies relating to cardiac disorders – be it heart failure, abnormal heart beats, heart attack due to blockage of arteries, irregular heartbeats – within the golden hour.

MIOT Heart Revive Center addresses the lacunae in existing emergency heart care treatment by addressing all the elements, critical to reviving the heart: It is the only centre that is manned by teams of cardiologists 24X7. Of its handpicked team of heart specialists, several have undergone extensive training in cardiac care centres in the UK. It's the only centre in India with two state-of-the-art Cath Labs, ready to operate at all times.

The most advanced FD 10 Cardiac CATH labs with innovative OCT guidance system

that is superior to the conventional angiogram. MIOT is the first centre in Tamil Nadu and only the third centre in India to acquire this guidance system.

For surgeries, the world renowned MIOT Centre for Thoracic & Cardiac Care is on campus, which performs more than 1000 cardiac related surgeries annually.

5. MIOT Center for Thoracic and Cardiac Care

MIOT Hospitals is the preferred centre for Aortic Aneurysm Repair. Surgery in this condition is complex and challenging. By using an endovascular technique, the team of highly reputed surgeons at MIOT's Centre for Thoracic and Cardio Vascular Care have treated aneurysm through keyhole surgeries. The team have successfully treated more than 500 aortic aneurysms both surgically and with endovascular grafting.

6. MIOT Institute of Nephrology

MIOT Institute of Nephrology was founded by a team of doctors with over 25 years' experience in treating patients with various kidney ailments including general nephrology, dialysis and kidney transplants. The team is has the experience of treating more than 15,000 patients from all over India and neighbouring countries like Maldives, Sri Lanka, Malaysia and Bangladesh. It houses one of the largest dialysis units in India.

7. Center for Gastrointestinal and Liver Diseases

The MIOT Advanced Center for Gastrointestinal and Liver Diseases is a Center of Excellence for the treatment of digestive and liver diseases. This centre offers comprehensive care through a coordinated approach to all digestive and liver diseases for both adults and children, using the latest, state-of-the-art diagnostic facilities.

8. MIOT Institute of Haematology, Haemato-oncology & Bone Marrow Transplant

Delving into the mystery and science of blood, MIOT International has recently launched the MIOT Institute of Haematology, Haemato-oncology and Bone Marrow Transplant. A dedicated centre for all haematological needs, this latest entrant to MIOT's repertoire will provide highly specialised treatment for all conditions of the blood. The centre's comprehensive, world class facility is easily among the most advanced in India. It is also the first to perform T-replete Haplo-identical transplant in India successfully. MEH

Getting medical aid kits into Syria is no easy task

Getting humanitarian supplies into conflict zones like Syria is no mean feat, often requiring negotiations with warring parties, braving insecurity and facing repeated delays and logistical challenges.

But aid workers can make it happen. In one of the latest examples, 54 tons of much-needed medical supplies arrived in Syria in April, destined for people living close to the frontlines of the conflict in the biggest city Aleppo.

"More than 60% of the hospitals [in Aleppo] are out of service. Many are at the frontline and used by armed personnel," said Fares Kady, medical coordinator for the Syrian Arab Red Crescent (SARC) and the focal point for the World Health Organization (WHO) in Aleppo.

IRIN tracked the shipment, from the first phone call from a WHO official in Switzerland, all the way to the doctors in battle-scarred Syria on 13 April.

Switzerland

Olexander Babanin is a supply officer with the WHO Crises Support team in Geneva. In October last year he made a call to a medical supplies company in The Netherlands to order medical kits to restock the standby supplies at the UN Humanitarian Response Depot in Dubai.

"When the logistic supply chain starts, it is often not known where the medical assistance will in the end exactly go," Babanin told IRIN.

"[It] all depends on requirement and availability. My job is to make sure that warehouses are full, but of course never too full."

The international humanitarian logistical network means emergency stocks can be pre-positioned in key parts of the world for rapid mobilization.

Medical kits like the ones that ended up in Aleppo are standardized packages of drugs and medical equipment, designed to be useful in a variety of regions and situations.

The Interagency Emergency Health Kit (IEHK) is composed of some 90 different types of drugs and 90 medical consumables and equipment packed in 44 boxes.

A single medical kit weighs just over a ton and its content meets the needs of 10,000 persons for three months.

WHO is the coordinating authority for international health within the UN system, and every five years an inter-agency committee consisting of pharmacists and technical staff from different relief organizations decides what essential drugs and medical supplies will be included in the medical kit.

The aim is to meet priority health care needs of a displaced population without medical facilities or a population with disrupted medical facilities.

The Netherlands

At the end of 2012 in the town of Gorinchem in the western Netherlands employees of the Medical Export Group (MEG), a commercial firm, pack the medications, spinal needles, surgical equipment, and other items into labelled boxes.

Like Babanin from WHO, the MEG packers are not aware of the final destination for the aid. The company specializes in providing medical packs internationally for humanitarian organizations.

The IEH Kits are loaded onto a ship at the port of Rotterdam, 40km away, and shipped to Dubai in the United Arab Emirates.

United Arab Emirates

By January the latest emergency shipment is in Dubai, home to the Middle East UN Humanitarian Response Depot (UNHRD) run by the World Food Programme (WFP), which as well as delivering food aid, provides logistical support to much of the UN.

Nevien Attalla is the pharmacist with UNHRD in Dubai, and helped the WHO medical aid along the next part of the journey.

"The request comes in through the UNHRD customer service mailbox. To support any emergency response we manage assets so they are readily available for deployment within a 24/48 hour time frame," Attalla told IRIN.

For this outbound shipment, she has to seek approvals from the UAE's Ministry of Foreign Affairs, the Ministry of Health and the Narcotic & Precursor Chemical Unit in the capital Abu Dhabi.

She also arranges WFP supporting letters for each border crossing. As soon as the shipment is cleared the aid items are packed up for transportation by truck to Syria.

The medical aid is stocked at UNHRD's 22,500 square metre covered storage space in a desert area far from Dubai's skyscrapers.

The warehouses, part of Dubai's International Humanitarian City are close to Jebel Ali port, the world's largest man-made harbour, and also Dubai World Central-Al Maktoum airport.

The heat in this place is often unbearable. However, inside the warehouses it is mostly fresh and cool.

"We have 5,000 square metres which are temperature-controlled between 18 and 25 degrees Celsius. There is also a cold room to guarantee the storage for cold chain pharmaceutical goods," Doris Mauron Klopfenstein, who works in logistics for UNHRD, told IRIN.

Syria

The hardest and final section of the journey begins on half a dozen trucks - driven by Syrian truck drivers, a requirement set by the Syrian government.

The two-year conflict in Syria has caused widespread disruption of the health care system; the 54 tons (52 kits) provide enough lifesaving medicines and supplies to cover emergency health needs for three months for an estimated population of half a million, potentially a tempting target for armed groups.

Since the beginning of the conflict WFP has reported more than 20 attacks on warehouses, trucks and cars in Syria.

The truck drivers hired by a WFP subcontractor set off from Dubai and take a route through Saudi Arabia, Jordan and then into Syria.

"The convoy remained several days at the Jordanian-Syrian border because of heavy fighting between Damascus and Dera'a Governorate," said Elizabeth Hoff, head of the WHO office in Damascus.

Heading to the capital they cross through ever-changing government and rebel zones, and are frequently held up at checkpoints. But regular closures at the airport in Damascus and the length of the sea route mean trucks are the best option.

On 27 March the trucks finally arrive at the WFP warehouse in Alkisweh, rural Damascus. WHO and SARC carry out an assessment of the supplies, and then the aid is dispatched to Aleppo, 360km to the north.

WHO distributes 70% of such supplies through the Syrian Ministry of Health and the Ministry of Higher Education, and 30% through NGOs.

"Needs in Aleppo are increasing constantly. The health system is reeling due to the lack of medicine and medical instruments, especially for chronic diseases, and poor accessibility [geographical, social, economic and security], raising more challenges to the Syrian dilemma," said Kady.

About six million people live in Aleppo Governorate, but since the conflict started an additional 1.5 million internally displaced persons have sought refuge in the city.

"This journey [Damascus-Aleppo] usually takes about four hours. Nowadays this road is very important for all parties of the war. The shipment passed almost 60 checkpoints and it took 11 hours," said Kady.

On 13 April the goods are then distributed to their final destinations - two main hospitals in Aleppo and 10 health centres.

Syrian doctor Kady hopes for more supplies: "Opening new offices for humanitarian assistance and installing a safe road like a humanitarian corridor to Aleppo would be so important to decrease the suffering of people."

But the possibility of further deliveries from Dubai is slight at the moment given the growing insecurity.

While UN officials continuously urge all parties to respect humanitarian principles and ensure safe access for relief supplies, "for the moment no further shipment of medications is planned from Dubai due to the continuing bad security situation in the entire southern part of Syria," said Hoff. MEH

French Govt provides medical relief

The Union of Syrian Medical Relief Organizations (UOSSM) issued a statement late June thanking officials in the French Government for their generous donation of medical aid to northern Syria. UOSSM said it values the efforts to coordinate the medical and humanitarian work with UOSSM. Reuters reports (June 21, 2013) that France made its largest medical delivery to northern Syria on 21 June, including antidotes for nerve agents, channelling non-lethal equipment as well as medical aid through the UOSSM.

"We are grateful to the French Government for their commendable efforts and the donation to Syrian people, intended to alleviate the suffering and provide some of the growing medical needs," Dr Tawfik Chamaa, UOSSM spokesperson said. " We have more than 8 million Syrians in urgent need of medical care in addition to food and shelter assistance. While we acknowledge the difficulties associated with delivering the relief aid inside Syria, we are extremely disturbed by the on-going deliberate targeting of medical facilities and hospitals inside Syria. We are struggling to deliver and provide the basic medical supplies to serve millions of Syrians, who are either trapped in besieged areas or incapable to flee the fighting zones. We call on international medical organisations, the WHO, and the international community to increase and broaden their medical and humanitarian support to Syrians inside the country and in the refugee camps."

● The UOSSM is a non-governmental association based in Paris - *www.uossm.org*

Parents who suck on their infants´ pacifiers may protect their children against developing allergies

Allergies are very common in industrialized countries. It has been suggested that exposure to harmless bacteria during infancy may be protective against the development of allergy. However, it has been difficult to pinpoint which bacteria a baby should be exposed to, and at what time and by which route this exposure should ideally occur.

Swedish researchers at the Sahlgrenska Academy, University of Gothenburg, now report that a simple habit may give significant protection against allergy development, namely, the parental sucking on the baby's pacifier.

In a group of 184 children, who were followed from birth, the researchers registered how many infants used a pacifier in the first 6 months of life and how the parents cleaned the pacifier. Most parents rinsed the pacifier in tap water before giving it to the baby, e.g., after it had fallen on the floor. However, some parents also boiled the pacifier to clean it. Yet other parents had the habit of putting the baby's pacifier into their mouth and cleaning it by sucking, before returning it to the baby.

It was found that children whose parents habitually sucked the pacifier were three times less likely to suffer from eczema at 1.5 years of age, as compared with the children of parents who did not do this. When controlled for other factors that could affect the risk of developing allergy, such as allergy in the parents and delivery by Caesarean section, the beneficial effect of parental sucking on the pacifier remained.

Pacifier use per se had no effect on allergy development in the child. Boiling the pacifier also did not affect allergy development in a statistically proven fashion.

No more upper respiratory infections were seen in the children whose parents sucked on their dummies, as compared with the other children, as evidenced by diaries kept by the parents in which they noted significant events, such as infections.

Saliva is a very rich source of bacteria and viruses, and the researchers believe that oral commensal microbes are transferred from parent to infant when they suck on the same pacifier. When the composition of the bacterial flora in the mouth was compared between infants whose parents sucked on their pacifiers and those whose parent did not, it was found to differ, supporting this hypothesis.

According to "the hygiene hypothesis", the development of allergy can be attributed in part to a paucity of microbial stimulation during early infancy.

"Early establishment of a complex oral microflora might promote healthy maturation of the immune system, thereby counteracting allergy development," says professor Agnes Wold who led the study.

The study, which is published in the scientific journal *Pediatrics*, was performed by a team that consisted of paediatricians specialized in allergic diseases, as well as microbiologists and immunologists. The research team has previously conducted large-scale studies on the gut microbiota in relation to allergy development and showed in 2009 that a complex gut microbiota very early in life reduces the risk of allergy development.

doi: 10.1542/peds.2012-3345

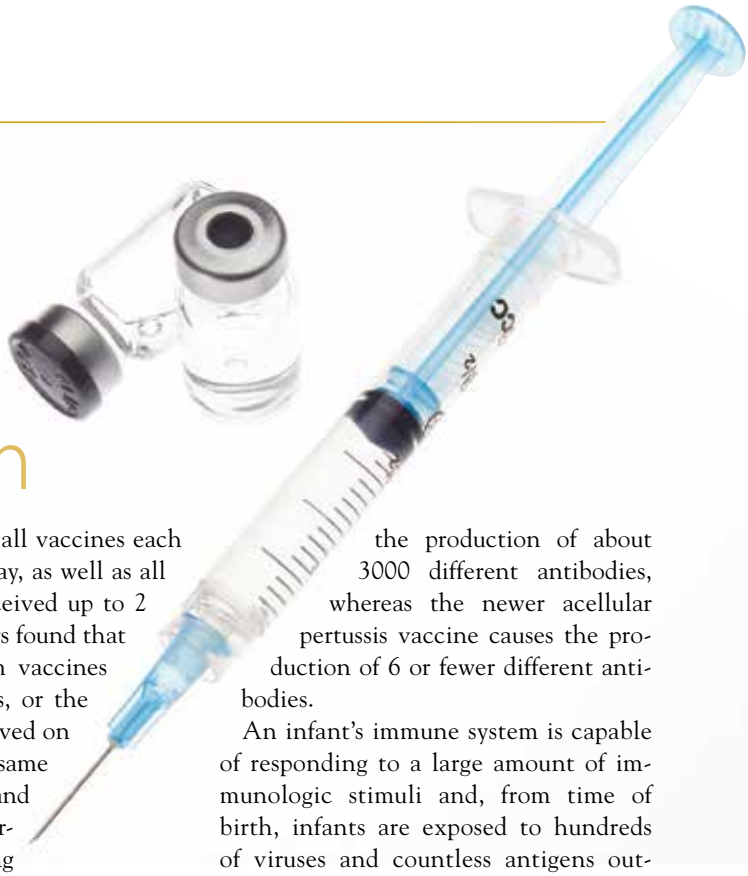
First successful treatment of cerebral palsy

First successful treatment of cerebral palsy with autologous cord blood

Doctors in Germany have succeeded in treating cerebral palsy with autologous cord blood. Following a cardiac arrest with severe brain damage, a 2.5 year old boy had been in a persistent vegetative state – with minimal chances of survival. Just two months after treatment with the cord blood containing stem cells, the symptoms improved significantly; over the following months, the child learned to speak simple sentences and to move. "Our findings, along with those from a Korean study, dispel the long-held doubts about the effectiveness of the new therapy," says Dr Arne Jensen of the Campus Clinic Gynaecology. Together with his colleague Prof Dr Eckard Hamelmann of the Department of Paediatrics at the Catholic Hospital Bochum (University Clinic of the RUB), he reports in the journal *Case Reports in Transplantation*.

At the end of November 2008, the child suffered from cardiac arrest with severe brain damage and was subsequently in a persistent vegetative state with his body paralysed. Up to now, there has been no treatment for the cause of what is known as infantile cerebral palsy. "In their desperate situation, the parents searched the literature for alternative therapies," Arne Jensen explains. "They contacted us and asked about the possibilities of using their son's cord blood, frozen at his birth."

Nine weeks after the brain damage, on 27 January 2009, the doctors administered



Vaccines and autism

Although scientific evidence suggests that vaccines do not cause autism, even in the United States approximately one-third of parents continue to express concern that they do; nearly 1 in 10 parents refuse or delay vaccinations because they believe it is safer than following the US Centers for Disease Control and Prevention's (CDC) schedule. A primary concern is the number of vaccines administered, both on a single day and cumulatively over the first 2 years of life. In a new study published in *The Journal of Pediatrics*, researchers concluded that there is no association between receiving "too many vaccines too soon" and autism.

Dr Frank DeStefano and colleagues from the CDC and Abt Associates, analyzed data from 256 children with autism spectrum disorder (ASD) and 752 children without ASD (born from 1994-1999) from 3 managed care organisations. They looked at each child's cumulative exposure to antigens, the substances in vaccines that cause the body's immune system to produce antibodies to fight disease, and the maximum number of antigens each child received in a single day of vaccination.

The researchers determined the total antigen numbers by adding the number of different antigens in all vaccines each child received in one day, as well as all vaccines each child received up to 2 years of age. The authors found that the total antigens from vaccines received by age 2 years, or the maximum number received on a single day, was the same between children with and without ASD. Furthermore, when comparing antigen numbers, no relationship was found when they evaluated the sub-categories of autistic disorder and ASD with regression.

Although the current routine childhood vaccine schedule contains more vaccines than the schedule in the late 1990s, the maximum number of antigens that a child could be exposed to by 2 years of age in 2013 is 315, compared with several thousand in the late 1990s. Because different types of vaccines contain varying amounts of antigens, this research acknowledged that merely counting the number of vaccines received does not adequately account for how different vaccines and vaccine combinations stimulate the immune system. For example, the older whole cell pertussis vaccine causes the production of about 3000 different antibodies, whereas the newer acellular pertussis vaccine causes the production of 6 or fewer different antibodies.

An infant's immune system is capable of responding to a large amount of immunologic stimuli and, from time of birth, infants are exposed to hundreds of viruses and countless antigens outside of vaccination. According to the authors: "The possibility that immunological stimulation from vaccines during the first 1 or 2 years of life could be related to the development of ASD is not well-supported by what is known about the neurobiology of ASDs." In 2004, a comprehensive review by the Institute of Medicine concluded that there is not a causal relationship between certain vaccine types and autism, and this study supports that conclusion.

doi: 10.1016/j.jpeds.2013.02.001

on the WEB US CDC's 2013 Recommended Immunizations for Children from Birth Through 6 Years Old
http://www.cdc.gov/vaccines/parents/downloads/parent-ver-sch-0-6yrs.pdf

with autologous cord blood

the prepared blood intravenously. They studied the progress of recovery at 2, 5, 12, 24, 30, and 40 months after the insult. Usually, the chances of survival after such a severe brain damage and more than 25 minutes duration of resuscitation are 6%. Months after the severe brain damage, the surviving children usually only exhibit minimal signs of consciousness. "The prognosis for the little patient was threatening if not hopeless," the Bochum doctors say.

After the cord blood therapy, the patient, however, recovered relatively quickly. Within two months, the spasticity decreased significantly. He was able to see, sit, smile, and to speak simple words again. Forty months after treatment, the child was able to eat independently, walk with assistance, and form four-word sentences. "Of course, on the basis of these results, we cannot clearly say what the cause of the recovery is," Jensen says. "It is, however, very difficult to explain these remarkable effects by purely symptomatic treatment during active rehabilitation."

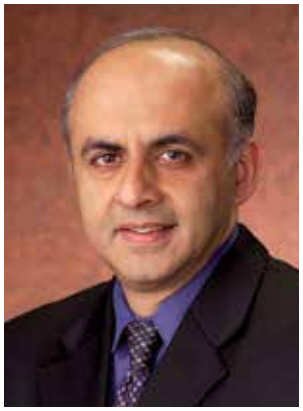
In animal studies, scientists have been researching the therapeutic potential of cord blood for some time. In a previous study with rats, RUB researchers revealed that cord blood cells migrate to the damaged area of the brain in large numbers within 24 hours of administration. In March 2013, in a controlled study of one hundred children, Korean doctors reported for the first time that they had successfully treated cerebral palsy with allogeneic cord blood.

doi: 10.1155/2013/951827

Study shows increase in liver transplantation for hepatoblastoma while improving outcomes

Liver transplantation for hepatoblastoma, the most common liver malignancy in children, is on the rise because more tumors are being detected earlier, improving outcomes for these sick patients, according to a study by Children Hospital of Pittsburgh of UPMC.

Results of the study, "Analysis of national and single-center incidence and survival after liver transplantation for hepatoblastoma: New trends and future opportunities," led by Rakesh Sinshi, MD, co-director, Pediatric Transplantation at the Hillman Center for Pediatric Transplantation at Children's Hospital, were published in the February 2013 issue of *Surgery*.



Rakesh Sindhi, MD, co-director of Pediatric Transplantation and director of Pediatric Transplant Research at Children's Hospital of Pittsburgh of UPMC

Dr Sindhi and the group observed outcomes in 35 children with hepatoblastoma who received transplants over three decades at Children's Hospital, making this the largest published single center experience in the United States. Nearly twice as many patients received liver transplants for the malignancy at Children's Hospital in the most recent decade compared to the previous two decades. This observation led the group to ask whether the incidence of this malignancy and of liver transplantation for hepatoblastoma has increased in the United States, thereby posing additional challenges in allocating the scarce resource of pediatric livers available for transplantation, and whether increased use of liver transplantation has improved post-transplantation outcomes for children diagnosed with this form of cancer.

To evaluate national trends, the researchers reviewed data from the National Cancer Institute's Surveillance, Epidemiology and End Results (SEER) registry representing 9.451% of the U.S. population from 1975 to 2007; the United Network for Organ Sharing (UNOS) from 1988 to 2010; and Children's Hospital from 1987 to 2011.

The group found that estimated hepatoblastoma cases in the United States increased four-fold between 1975 and 2007, liver transplantation for hepatoblastoma during the last two decades increased 20-fold between 1988 and 2010, with 153 liver transplants occurring in the last 5 years, and hepatoblastoma surpassed other inoperable liver malignancies requiring liver transplantation from 2.8% to 7.5%.

"For several years, it has been recognized that many children with hepatoblastoma were born early. Advances in the care of premature babies, and their increased survival as a result, is an important reason for the increased incidence of this tumor," said Dr Sindhi.

Estimates suggest that more than six in 10 children with hepatoblastoma can be cured with surgical removal of the mass after chemotherapy. Liver transplantation is appropriate if the tumor is confined to the liver, but cannot be removed safely because of its location or involvement of many parts of the liver. Three of four children treated with transplantation can be cured.

Recurrences usually occur within the first two years after transplantation in one-sixth of children undergoing liver transplantation. Recurrences are more common if the liver tumor was accompanied by spread to other organs before transplantation, or if the tumor was less responsive to chemotherapy. Remarkably, if the tumor outside the liver is removed completely with either chemotherapy or surgery before transplantation is undertaken, half of such children can still be cured with liver transplantation. In this regard, hepatoblastoma tumors are very different from the liver cancer that can develop in adult and older age groups. They also found that hepatoblastoma tumors with "anaplastic" or highly aggressive tumor cells were less likely to recur after liver transplantation than what has been reported previously after surgical resection. MEH

● **Rakesh Sindhi**, MD, is co-director of Pediatric Transplantation and director of Pediatric Transplant Research at Children's Hospital of Pittsburgh of UPMC. Dr Sindhi received his medical degree from the Armed Forces Medical College in Pune, India and completed general surgery residency at the Tufts-New England Medical Center in Boston, MA. He completed a transplant surgery fellowship at the University of Nebraska in Omaha, NE, and immunology research fellowship at Children's Hospital of Cincinnati in Ohio. Dr Sindhi joined the transplant surgical faculty at UPMC in 1998 after similar positions at the UC-Davis Medical Center in Sacramento, CA, and the Medical University of South Carolina in Charleston, SC. Since 1999, Dr. Sindhi has performed pediatric liver and intestinal transplantation at Children's Hospital of Pittsburgh of UPMC. Dr Sindhi's clinical interests include liver transplantation for cancer, outcomes assessment and prediction, and development of novel immunosuppressive strategies. His research interests include personalized prediction of post-transplant outcomes and identification of novel pathways for congenital organ failure using cellular and genomic discovery methods. Dr Sindhi has authored or co-authored three patents, 101 publications, and has licensed non-invasive blood tests to predict transplant rejection.
Email: *rakesh.sindhi@chp.edu*

Nourah traveled over 10,900 kilometers to be treated at **Cincinnati Children's Hospital Medical Center.**

BEST CHILDREN'S HOSPITALS
U.S.News & World Report
HONOR ROLL 2013-14

She needed a rare, life-saving treatment in which Cincinnati Children's has 40 years of experience performing. Children from more than 82 countries have chosen Cincinnati Children's for their care.

- Ranked third in the *U.S. News & World Report* Honor Roll of 2013-14 Best Children's Hospitals
- Ranked in the top 10 in the following specialties: cancer, nephrology, pulmonology, orthopedics, urology, gastroenterology, neurology and neurosurgery, cardiology and heart surgery, as well as diabetes and endocrinology

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من افضل مستشفيات الأطفال في الولايات المتحدة الأمريكية
مستشفى سنسناتي للأطفال

Cincinnati Children's
Hospital Medical Center

Nourah, age 7
Rare Lung Diseases Program patient
Kuwait

Case study: Hemophagocytic Lymphohistiocytosis (HLH)

By **Alexandra (Lisa) H. Filipovich,** MD, Director of the Immune Deficiency and Histiocytosis Program at Cincinnati Children's Hospital Medical Center

This case study describes diagnosis and treatment performed in the HLH Center in the Cancer and Blood Diseases Institute at Cincinnati Children's Hospital Medical Center. A two-year girl was referred from the United Arab Emirates with history of relapsing HLH, a life-threatening genetic condition. The only curative therapy is hematopoietic cell transplantation (HCT).

Clinical history

At 18 months of age, the patient fell ill with fevers, skin rashes, irritability and loss of appetite. Soon after admission to the local hospital, she developed respiratory distress and severe swelling requiring mechanical ventilation and hemodialysis. She was found to be in liver failure, with very low blood counts and persistently elevated blood markers of inflammation. A bone marrow biopsy revealed hemophagocytosis (bone marrow cells "eating" normal blood cells), the hallmark of HLH. Treatment was started with steroids and chemotherapy. Although some symptoms improved initially, her condition worsened one month later and a recurrence of active HLH followed soon after. The disease had spread to involve the brain.

Our approach

Soon after, the family came to Cincinnati for additional diagnostic testing and curative treatment with HCT. Although the patient had siblings who appeared to be perfect matches for the transplant, not enough was known about the genetic cause of her disease and the possibility existed that one of the matching siblings could also be at risk to develop HLH. This is where the capabilities of the Diagnostic Immunology Laboratory (DIL) and the Molecular Genetics division at Cincinnati Children's came into play. These clinical laboratories are the only ones in North America that can test for all known genetic causes of HLH. In short order, the causal gene defect was identified in the sick child and other siblings were found not at risk for the same condition. The patient's older brother was identified as the bone marrow donor.

In the meantime, the patient required on-going chemotherapy and high dose steroids, as well as chemotherapy delivered directly into the spinal fluid (intrathecal chemotherapy) to better control the HLH in the brain. After months of illness and high dose steroid treatment, she gained a great deal of weight, contributing to poor mobility, bed sores, and heightened risk of infections.

The HCT was performed at two years of age. Due to the patient's condition, we used a reduced intensity course of pre-transplant chemotherapy (RIC). Studies at Cincinnati Children's comparing outcomes of RIC versus conventional HCT for HLH had shown that post-transplant survival following RIC was superior to the conventional approaches to pre-transplant chemotherapies (90% vs. 50% long-term disease-free survival). Although the patient still required some intrathecal chemotherapy post HCT, she began to strengthen and achieved a full recovery with normal brain function in a matter of months. She was able to return to the U.A.E. before her third birthday, cured of HLH. At a follow up visit to Cincinnati Children's one year later, the patient appeared svelte and energetic – a normal, happy child.

Summary

While this child was fortunate to have a perfect match for HCT, not all patients with HLH will have suitable HCT donors and other therapeutic approaches are being developed to control the disease. Current research at Cincinnati Children's is investigating the feasibility of gene therapy for patients without suitably matched HCT donors, and the use of small molecule therapy for cases of HLH in adults that tend to be milder, but recurrent. Molecular studies are underway to unravel the complex immunology of active HLH disease in order to identify targeted biologic agents with fewer side effects.

Once universally lethal, HLH is now curable. MEH

About Cincinnati Children's

Cincinnati Children's is ranked third among all Honor Roll hospitals in *U.S. News and World Report's* Best Children's Hospitals issue. Cincinnati Children's is also ranked #1 in Cancer Care and #3 in Urology and Gastroenterology. In the last five years, patients visited Cincinnati Children's from 83 countries around the world.

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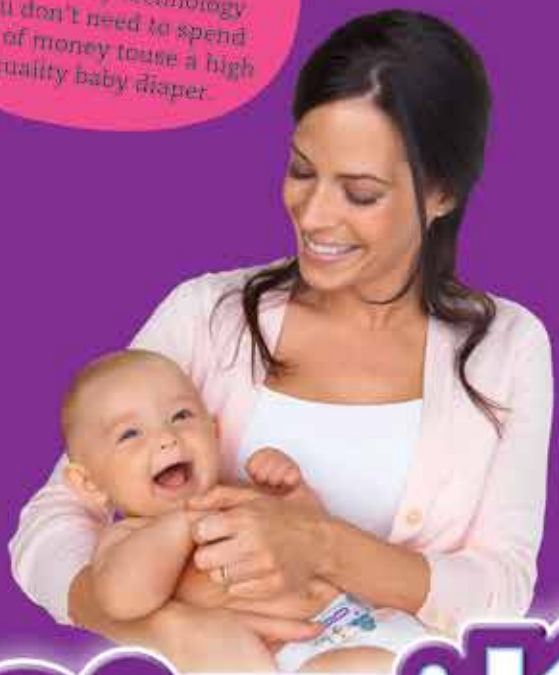

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Case study: Anorectal malformation

By **Shumyle Alam**, MD, Director of the Urogenital Center at Cincinnati Children's Hospital Medical Center

This case study describes work at Cincinnati Children's Hospital Medical Center that identified a set of urologic concerns including a neurogenic bladder in a child referred primarily for treatment of his anorectal malformation (ARM).

Clinical history

The patient was born with an anorectal malformation and left hydronephrosis. He was born to a G4P5 healthy female. Family history was positive for kidney stones on his father's side. After birth, he had a colostomy performed and urology consultation obtained for hydronephrosis of the left kidney (Figure 1). He also suffered from multiple urinary tract infections. The urologic opinion was to perform an incision of the stricture of the ureter using an endoscopic technique and place a stent. No mention was made of the urinary tract infections.

The family elected to bring the child to the Colorectal Center at Cincinnati Children's for care of the ARM and to defer urologic care until after the surgery.

Our approach

A trigger list was constructed by Shumyle Alam, MD, and the Urogenital Center nurses to help the Colorectal Center identify patients at increased risk for urologic problems associated with ARM. The list defined at-risk children who might need urologic intervention, assessing their long term needs and risk for renal damage.

Diagnosing neurogenic bladder

This patient was identified as high risk for urologic problems based on his history of hydronephrosis, urinary tract infection, and known bladder neck fistula.

His chart was forwarded to our office and a testing and evaluation plan was determined.

A nuclear medicine glomerular filtrate (GFR) study was performed as well as a voiding cystourethrogram (VCUG) and MRI of the spine. The VCUG demonstrated grade V vesicoureteral reflux (Figure 2). The GFR demonstrated normal overall renal function and the MRI demonstrated a normal spinal cord without evidence of tethering.

The family was counselled at length regarding the bladder neck fistula. It was previously expected that children with ARM and normal spinal imaging would have good bladder function after ARM repair. Based on our experience at Cincinnati Children's, we now know that this group of males with ARM represents the most concerning patient population regarding bladder dysfunction.

Plans were made to initiate clean intermittent catheterization after his ARM repair, if necessary.

Surgical course

Dr. Alberto Peña performed repair of the ARM and Dr Alam performed the cystoscopy to delineate the patient's anatomy in March 2011. The patient recovered without incident, but as predicted, failed his voiding trial and was placed on intermittent catheterization. A team of nurses in the Urogenital Center helped the family learn catheterization and it went without incident. The success of the intervention was directly related to assessing the patient's needs, preparing the family before surgery, and having a team of individuals to support and teach the parents after surgery.

A video-urodynamics study confirmed a neurogenic bladder. A lasix renal scan demonstrated symmetric renal function but delayed drainage of the left side. Once catheterizations were achieved without difficulty, a left sided extravesical reimplant was performed at the time of the colostomy closure. The patient recovered without incident; after a few months, he was brought back to the OR for a dismembered pyeloplasty as the hydronephrosis did not resolve. During surgery, he was found to have a crossing vessel causing the hydronephrosis. (Figure 3). This was a very important finding, as it was not a stricture but a vascular anomaly. An incision would have resulted in massive blood loss.

The patient recovered without incident and is now dry of urine, with normal renal function bilaterally, and his bowels are managed with enemas.

Summary

This case demonstrates the benefit of multidisciplinary evaluation that all patients receive at the Colorectal Center and Urogenital Center at Cincinnati Children's. All charts are reviewed and the trigger list helps ensure that no urologic conditions are missed.

The patient described had a unique set of conditions that were addressed efficiently in one visit. We have learned that a thorough evaluation and treatment plan before surgery helps to minimize anaesthetics, improves family understanding and expectations, and may result in better outcomes. A collaborative, multidisciplinary model helps achieve these goals. MEH

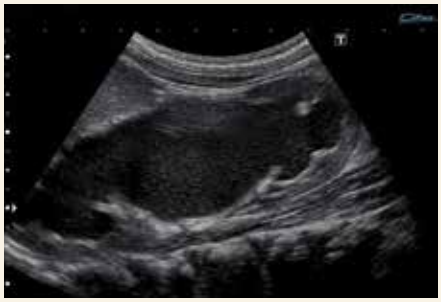

Figure 1: Ultrasound of hydronephrotic left kidney taken on presentation at Cincinnati Children's

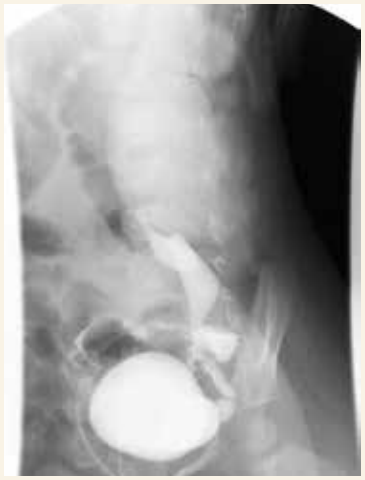

Figure 2: VCUG demonstrating grade V reflux into a massively dilated renal pelvis

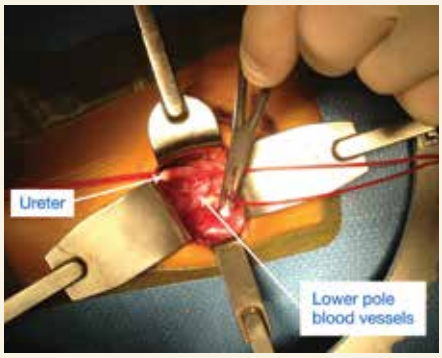

Figure 3

Healthier Children. A Better World.™

As a teaching hospital affiliated with the University of Toronto, The Hospital for Sick Children (SickKids) is one of the leading paediatric academic health science centres in the world. It has been improving the lives of children for more than 130 years.

SickKids International was established to enhance the reach of the hospital globally and to achieve greater impact through collaboration and coordination. Located in Toronto, Canada, one of the world's most culturally diverse cities, SickKids is ideally positioned to meet the paediatric health care needs of the international community.

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As the largest paediatric academic health sciences centre in Canada and one of the world's leading centres for child health, The Hospital for Sick Children (SickKids) collaborates with partners around the world to advance the health of children through integrated child health education, research and clinical initiatives.

Through SickKids International, with its international advisory services and International Patient Office, SickKids engages in opportunities to enhance child health and build sustainable system capacity. Undertaking research and providing education and care in the global context is essential to fulfilling SickKids' vision for *Healthier Children. A Better World.* SickKids furthers this vision by contributing to paediatric sustainability and self-sufficiency for health systems across the globe.

A large part of SickKids' international work is focused on offering paediatric education and training to health-care professionals around the world. Education services are customized to specific learning needs and can take place at SickKids in Toronto, Canada, or in the health-care professionals' home country.

SickKids also provides high-quality advisory services to governments, organizations and institutions that are engaged in health-care delivery. These collaborations draw on the expertise and experience of SickKids' team, a diverse network of skilled and knowledgeable professionals spanning the range of children's health concerns.

"It is rewarding to see our expertise and innovations being culturally adapted and implemented in other parts of the globe and having a significant impact on improving the quality of life of children worldwide," said Cathy Séguin, Vice-President of International Affairs at SickKids. "Our strategy is to share our knowledge and help other organizations build capacity in their own countries."

SickKids' international programs have reached children in more than 75 countries. SickKids is currently providing advisory services to centres in Qatar, India and Ireland, and education and training to more than 110 people from more than 20 countries.

SickKids in Qatar

SickKids recently celebrated the third anniversary of its international partnership project with Hamad Medical Corporation (HMC) in Doha, Qatar. A five-year partnership between SickKids and HMC was signed in February 2010 to provide advisory services for the development and operation of a new 217-bed, 45,000-square foot, state-of-the-art children's hospital. The facility SickKids is helping to create will be the first hospital in Qatar specializing in paediatric care. Located in Sidra Medical and Research Centre, a large, not-for-profit healthcare complex in the heart of Doha, this project has been designed according to international best practice standards in paediatric care and will have a tremendous impact on health care in Qatar.

The project's scope encompasses every aspect of paediatric health care in the country, from primary to tertiary paediatric services, with a focus on developing paediatric clinical programs, developing staff through education and training, and developing child health research in Qatar. Working with its partners in Qatar to share international best practices in paediatric care, SickKids staff is providing expertise in the areas of paediatric medicine, surgical services, interprofessional practice and education, family-centred care and research.

To improve the academic standards of paediatricians in Doha, SickKids has provided substantial training in continuing education, faculty development and enhancement of the residency program.

On the national stage, the work SickKids' staff is doing with their partners in Doha is influencing policies for children's health in Qatar. SickKids team members from Oncology and Child Psychiatry are providing primary consultancy advice for the Qatar National Strategies in each of these specialties.

Educational events, such as the Nursing Leadership Symposium and Child Health Research Day, two areas where SickKids and HMC are working hard to create a strong foundation for future growth, demonstrate the collaborative relationship between SickKids and HMC.

The nursing symposium explored the many ways nursing leaders can take positive action through evidence-based best practices and research, and the benefits such action can have on patient care. Speakers at the symposium included nursing professionals from both SickKids and HMC. Open to researchers in HMC and across Qatar, the annual Child Health Research Day highlights the importance of research in a world-class paediatric health organization and showcases the child health research done by HMC investigators.

"The Qatar project continues to be an incredible experience for the SickKids staff who are able to share their expertise in paediatric care," said Séguin. "It's exciting to see how our work to establish a state-of-the-art children's hospital in Qatar has blossomed to include learning experiences such as the nursing symposium and research day, which will further enhance child health services for Qatar." MEH

Children examined in MRI without anaesthesia

For the first time, Bochum clinicians have been able to show on the basis of a large sample, that it is possible to examine children's heads in the MRI scanner without general anaesthesia or other medical sedation. In many cases it was sufficient to prepare the young patients for the examination in an age-appropriate manner in order to take away their fear of the tube. And the results speak for themselves: of the 2,461 image sequences recorded with 326 patients, the participating radiologists classified 97% as "diagnostically relevant". At the same time, through his study, the associate professor Dr Christoph M. Heyer (BG Bergmannsheil University Hospital, Bochum) has been able to demonstrate for the first time the value of the so-called BLADE sequences for the comprehensive examination of children in the MRI scanner. The study is published in the November 2012 issue of the journal *"RöFo - Fortschritte auf dem Gebiet der Röntgenstrahlen und der bildgebenden Verfahren."*

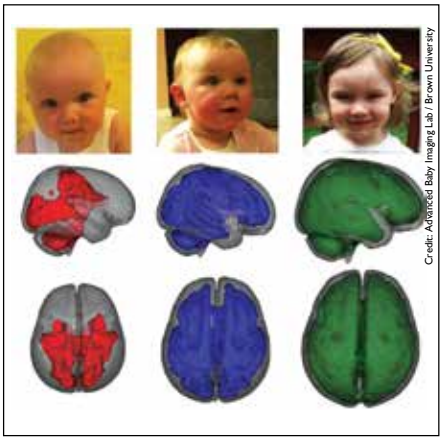
Magnetic resonance imaging (MRI) as a radiation-free process plays a key role within paediatric diagnostic radiology imaging. It is indispensable when it comes to depicting the central nervous system of children. Although the advantages of MRI over other test methods are sufficiently well known, many institutions and practices shy away from using it with young children. On the one hand, they assume that the children will not keep still enough to achieve sufficient image quality for diagnosis. On the other hand, they shun the organisational effort and expense involved when they need to sedate or anesthetise the children in order to achieve an unimpeded workflow. For this, the young patients have to be admitted to the ward with a parent. They also have to have a peripheral venous indwelling cannula inserted and be administered sedatives or anaesthetics.

There is another way

Assistant professor Heyer and colleagues have shown that there is another way of doing things. They examined 326 patients with an average age of 7.2 years in the Paediatric Radiology Outpatient Clinic at the Department of Diagnostic Radiology, Interventional Radiology and Nuclear Medicine at the Bergmannsheil University Hospital without sedation or general anaesthesia. All the young patients were previously prepared for the MRI in an age-appropriate manner, given enough time to visit the scanner room, were allowed to take their cuddly toys into the MRI and their parents were with them. In addition, the Bochum clinicians recorded MRI sequences using the so-termed "BLADE" technique so as to exclude "blurring" as far as possible.

With this concept the doctors succeeded in examining 41% of the three year olds, 91% of the four-year olds and 98% of patients over the age of five without sedation. The in total 2,461 image sequences acquired were reviewed by two radiologists, and in a total of 97% of cases declared to be diagnostically usable. The Paediatric Radiology Outpatient Clinic at the BG University Hospital Bergmannsheil specialises in MRI and CT examinations of children and adolescents of all ages. It is headed by assistant professor Heyer, the double specialist for paediatrics and diagnostic radiology/paediatric radiology.

● **Reference:** Dispensing with Sedation in Pediatric MR Imaging of the Brain: What is Feasible? Heyer CM, Lemburg SP, Sterl S, Holland-Letz T, Nicolas V, Fortschr Röntgenstr 2012, 184:1034-1042 |
doi: 10.1055/s-0032-1313065 MEH



MRI images, taken while children were asleep, showed that infants who were exclusively breastfed for at least three months had enhanced development in key parts of the brain compared to children who were fed formula or a combination of formula and breast milk. Images show development of myelization by age, left to right.

MRI study shows breastfed babies have enhanced brain development

A new study by researchers from Brown University finds more evidence that breastfeeding is good for babies' brains.

The study made use of specialized, baby-friendly magnetic resonance imaging (MRI) to look at the brain growth in a sample of children under the age of 4. The research found that by age 2, babies who had been breastfed exclusively for at least three months had enhanced development in key parts of the brain compared to children who were fed formula exclusively or who were fed a combination of formula and breast milk. The extra growth was most pronounced in parts of the brain associated with language, emotional function, and cognition, the research showed.

This isn't the first study to suggest that breastfeeding aids babies' brain development. Behavioural studies have previously associated breastfeeding with better cognitive outcomes in older adolescents and adults. But this is the first imaging study that looked for differences associated with breastfeeding in the brains of very young and healthy children, said Sean Deoni, assistant professor of engineering at Brown and the study's lead author.

"We wanted to see how early these changes in brain development actually occur," Deoni said. "We show that they're there almost right off the bat." ▶

Deoni leads Brown's Advanced Baby Imaging Lab. He and his colleagues use quiet MRI machines that image babies' brains as they sleep. The MRI technique Deoni has developed looks at the microstructure of the brain's white matter, the tissue that contains long nerve fibres and helps different parts of the brain communicate with each other. Specifically, the technique looks for amounts of myelin, the fatty material that insulates nerve fibres and speeds electrical signals as they zip around the brain.

Deoni and his team looked at 133 babies ranging in ages from 10 months to four years. All of the babies had normal gestation times, and all came from families with similar socioeconomic statuses. The researchers split the babies into three groups: those whose mothers reported they exclusively breastfed for at least three months, those fed a combination of breast milk and formula, and those fed formula alone. The researchers compared the older kids to the younger kids to establish growth trajectories in white matter for each group.

The study showed that the exclusively breastfed group had the fastest growth in myelinated white matter of the three groups, with the increase in white matter volume becoming substantial by age 2. The group fed both breast milk and formula had more growth than the exclusively formula-fed group, but less than the breast milk-only group.

"We're finding the difference [in white matter growth] is on the order of 20% to 30%, comparing the breastfed and the non-breastfed kids," said Deoni. "I think it's astounding that you could have that much difference so early."

Deoni and his team then backed up their imaging data with a set of basic cognitive tests on the older children. Those tests found increased language performance, visual reception, and motor control performance in the breastfed group.

The study also looked at the effects of the duration of breastfeeding. The researchers compared babies who were breastfed for more than a year with those breastfed less than a year, and found significantly enhanced brain growth in the babies who were breastfed longer – especially in areas of the brain dealing with motor function.

Deoni says the findings add to a substantial body of research that finds positive associations between breastfeeding and children's brain health.

"I think I would argue that combined with all the other evidence, it seems like breastfeeding is absolutely beneficial," he said.

doi: 10.1016/j.neuroimage.2013.05.090

MRI used to track cancer-beating nanoparticles

Small particles loaded with medicine could be a future weapon for cancer treatment. A recently-published study shows how nanoparticles can be formed to efficiently carry cancer drugs to tumour cells. And because the particles can be seen in MRI images, they are traceable.

Both therapeutic and diagnostic in function, the so-called "theranostic" particles were developed by a team including KTH Professor Eva Malmström-Jonsson, from the School of Chemical Science, as well as researchers at Sweden's Chalmer's University and the Karolinska Institute in Stockholm.

Malmström-Jonsson says that the particles, which the team developed for breast cancer treatment, are biodegradable and non-toxic. Their research was published in the science journal *Particle & Particle Systems Characterization*.

The study resulted in a method to make nanoparticles spontaneously build themselves up with tailored macromolecules. The formation requires a balance between the particle's hydrophilic (capable of dissolving in water) and hydrophobic (not dissolvable in water) parts. The hydrophobic portion makes it possible to fill the particle with the drug.

A relatively high concentration of the natural isotope 19F (fluorine) makes the particles clearly visible on high-resolution images taken by MRI (magnetic resonance imaging). By following the path of theranostic nanoparticles in the body, it is possible to obtain information about how the drug is taken up by the tumour and whether the treatment is working.

Scientists filled nanoparticles with the chemotherapy drug doxorubicin (known as chemo), which is used today to treat bladder, lung, ovarian and breast cancer. In experiments on cultured cells, they showed that the particles themselves are not harmful but can effectively kill cancer cells after being loaded with the drug.

The next step is to develop the system to target tumours that are difficult to treat with chemotherapy, such as brain tumours, pancreatic cancer, and drug-resistant breast cancer tumours.

"By targeting groups on the surface, or by changing the size or introducing ionic groups on our nanoparticles, one can increase the selective uptake in these tumours," says Andreas Nystrom, an associate professor of nanomedicine at the Swedish Medical Nanoscience Center and Department of Neuroscience, Karolinska Institute.

Professor Eva Malmström-Jonsson

In the long term, research can result in tailored chemotherapy treatments that seek out tumour cells. This would enable the toxic drug to be delivered more specifically to the tumour, making the treatment more effective while reducing side effects.

"What we want to do is try to give nanoparticles a homing function on the surface so that the drug is as effective as possible and can be transported to the right place," Malmström-Jonsson says.

doi: 10.1002/ppsc.201300018

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Scenes from Beirut

Lebanon's leading hospitals continue to attract foreign patients

Lebanon is renowned as a tourist destination. It has many attractions including several UNESCO World Heritage sites. Its Mediterranean climate is a major drawcard with cool winters with good skiing in the mountains and dry warm summers with attractive beaches along the coast. In fact, Beirut was chosen in 2012 by *Condé Nast Traveler* as the best city in the Middle East, beating Tel Aviv and Dubai. The city is also famous for its night life appealing to the world's trendy travellers.

On the medical tourism front, Beirut has several world class hospitals covering all medical specialties. The country's has for many years been well known for its expertise in cosmetic plastic surgery, however its expertise in specialties such as cardiology and oncology is also becoming more widely renown and attracts patients from across the region.

Mounes Kalaawi, partner and chief executive of Clemenceau Medical Center (CMC), says 85% of foreigners who seek treatment in Lebanon do so for medical reasons other than cosmetic surgery.

According to a recent report in *Executive* magazine, international patients account for roughly 20% of the total


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Medical attractions

Lebanon offers many attractions for medical tourists including:

- Relatively low cost compared to Europe and the United States
- Short waiting lists for procedures
- High availability of hospital beds
- Highly qualified medical staff
- High physician and nurse to patient ratios
- Highly experienced and multi lingual nursing staff
- Internationally accredited hospitals

Key hospitals involved in medical tourism in Beirut

- American University Medical Center
- Clemenceau Medical Center
- Hôtel-Dieu de France
- Middle East Institute of Health
- Saint George Hospital

number of patients in hospitals actively seeking medical tourists. Those patients are mainly from the region — 80% of Clemenceau Medical Center's international patients are Arab — and feel that their countries cannot provide a competitive level of healthcare.

Dia Hassan, president and CEO of Bellevue Medical Center (BMC), was quoted as saying: "I was a consultant for some hospitals in the Gulf, and I can tell you that their level of treatment is not as advanced as ours."

Mohamad Sayegh, dean of the Faculty of Medicine and vice president of Medical Affairs at the American University of Beirut Medical Center (AUBMC) noted, for example, that the Iraqis don't have good resources for radiation therapy, so they come to Lebanon for treatment.

The number of Iraqis who come to AUBMC for treatment, mainly for cancer cases, has risen from 39% of the 2,297

Clemenceau Medical Center is one of world's top ten best hospitals for medical tourism

Clemenceau Medical Center (CMC), affiliated with Johns Hopkins International, was ranked one of the world's top ten best hospitals for medical tourism in 2012 for the second time by the Medical Travel Quality Alliance (MTQUA). CMC Hospital was the only healthcare facility in the Arab world and Middle East region that made the list. MTQUA assessment was based on strict criteria including patient safety and security, medical quality and outcomes and International patient management.

"We at CMC are extremely proud to be identified as one of the leading health care institutions around the world. This award comes after we have achieved further distinctions in marketing, patient satisfaction and medical travel achievement since our first nomination and listing in MTQUA in 2010." said Dr Mounes Kalaawi, Chief Executive Officer of CMC hospital. "Such awards set forth, Lebanon on the medical tourism world and allowing it to resume its role as the Pearl of Healthcare in the Middle East."

This ranking comes in recognition of CMC's continuous efforts to establish an internationally renowned reputation in the medical tourism sector. JCI accreditation in 2009 and 2012 has contributed to enhancing CMC's position of the Medical Tourism World map. Since its inception, CMC worked tirelessly to bring the world's best expertise, and adopting the world's best practices and standards to the region, which inspired trust in Lebanese society & the Arab region. CMC's experts lecture at the most advanced and specialized medical travel conferences shedding light on medical tourism in Lebanon & the Middle East.

CMC has established an International Patient Services Department to work with patients visiting the hospital from outside Lebanon to facilitate their referral through the provision of a complete scope of services; A multilingual staff is available to coordinate all aspects of a patient's stay, such as the management of medical consultation and hospital admission, travel and hotel arrangements for patients and their families including an air ambulance depending on the distance and the condition of the patient, assistance in choosing the right doctor, scheduling of all medical appointments, coordination of admission process, processing of second medical opinion, and remote consultations via telemedicine, if needed.

This International Patient Services Department works closely with patients to make sure all referrals are smooth and that all requests are attended to in an efficient manner.

- Meanwhile, at the Hospital Build Awards 2013, held in Dubai in June, Clemenceau Medical Center won the "Best Healing Environment" award. The hospital was also commended for "Best Hospital Design", "Best Physical Environment" and "Best Sustainable Hospital Project" awards.

"Today's win is an achievement that we will honour by continuing to innovate our facility and services to meet and exceed the highest international quality standards and to expand not only locally but regionally as well in order to benefit the middle east region from state-of-the-art medical care," said Dr Kalaawi. MEH

It's not by chance that Lebanon is the N°1 medical destination in the Middle-East

Clemenceau Medical Center is a world class hospital with a world class expertise in all medical specialties. CMC provides the Executive Check Up program which is a unique and customized wellness program for continued health and well being. CMC is the only medical center in Lebanon to provide the technology of Robotic Surgery.

In 2013, CMC won the Best Healing Environment award at the Hospital Build Awards, and was highly commended for Best Hospital Design, Best Physical Environment and Best Sustainable Hospital Project awards. It also won the Arab Health Award for Excellence in Imaging and Diagnostics at the 2013 Arab Health Exhibition and Congress. JCI accredited twice, CMC has been voted one of the 25 most beautiful hospitals worldwide and one of the top ten world's best hospitals for medical travel.

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international patients in 2010 to 58% of the 2,497 international patients in 2012. Both AUBMC and CMC plan to establish cancer centres in the coming years to keep up with the growing demand for such treatment, according to the *Executive* report.

CMC recently introduced robotic surgery to the region – which is much sought after as a non-invasive form of surgery.

Lebanon's Agency for Investment Development in Lebanon reports that growth in the medical tourism industry is growing by up to 30% a year since 2009. The country's tourism ministry is working closely with the medical sector and top-class hotels to create an organised, quality medical destination.

Major hotel and spa chains work with local clinics, travel agencies and the tourism ministry to create comprehensive healthcare and recuperation packages for foreign visitors. And the Government is involved in this industry and assists to make the process as easy as possible.

By expanding the medical tourism sector means creating new job opportunities and increase in the number of tourists coming to Lebanon. Because of this, the Lebanese government has established solid partnerships between medical facilities, travel agencies and the ministry of tourism. Attractively-priced travel packages are helping to boost the number of medical tourists, especially from the GCC countries.

According to the IMTJ (International Medical Travel Journal), the recent regional instability is affecting Lebanon's medical tourism industry and some hospitals have experienced a decline recently in the number of foreign patients.

Kalaawi was quoted as saying: "We have a steady flow of international patients but this flow goes up and down according to the regional stability. The events of 2012 saw a reduction of international patients by 50% from certain nationalities."

However, there has been an increase in the number of Syrian patients due to the war in that country and decline in the availability of healthcare there.

Lebanon is particularly attractive for patients from the Gulf countries such as Kuwait, Saudi Arabia and the UAE because there are no language barriers – most doctors are fluent in English, Arabic and French – and hospital staff are aware of the intricacies of Middle Eastern culture.

Although visitors from neighbouring Arab countries make up most of medical tourism patients due to its proximity, Lebanon is actively trying to attract more southern Europeans, Asians and North Americans to its hospitals.

Major hospitals like AUBMC and Clemeceau Medical Centre have dedicated departments to cater to international medical tourists and offer a comprehensive concierge service including remote consultation, travel arrangements, visas, accommodation arrangements for accompanying relatives, translation services and executive hospital suites for wealthy patients. MEH

Lebanon's Agency for Investment Development reports that the medical tourism industry in Lebanon has been growing by up to 30% a year since 2009.

AUBMC's passionate pursuit of advancing healthcare

The American University of Beirut Medical Center's (AUBMC) name is synonymous with advancing and revolutionizing medical care in Lebanon and the region since 1902. The AUBMC's mission has been and will continue to be an academic medical centre dedicated to the passionate pursuit of improving the health of the community in Lebanon and the region through the delivery of exceptional and comprehensive quality care to their patients, excellence in education and training, and leadership in innovative research.

AUBMC has led the way by pioneering medical services and providing exceptional standards of quality health care for over a century. Today, AUBMC – thriving to meet the needs of over 300,000 patient visits annually – is the only medical institution in the Middle East to have earned the three international accreditations of the Joint Commission International (JCI), Magnet, and the College of American Pathologists (CAP), attesting to its superior standards in patient-centred care, nursing, and pathology/laboratory services.

Persevering to provide the highest standards of excellence in patient-centred care, education, and research in the Middle East, in the summer of 2010 AUBMC launched an ambitious new vision, the AUBMC 2020 Vision, propelling the Medical Center and medical care in the region to new levels of excellence.

As part of the AUBMC 2020 Vision and their commitment to providing the best healthcare services to patients, AUBMC has introduced many "first" and "only" healthcare advances to Lebanon and/or the region. These include the recruitment of 89 top-tier physicians in three years as well as breakthroughs and advancements in oncology, cardiology and many more.

AUBMC is committed to raising the level of health care in Lebanon and the region to standards similar to the best academic medical centres in the West. All of this is to provide patients in the Middle East with the level of care they deserve. After all, AUBMC says their lives are dedicated to yours. MEH

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Determining Value in Healthcare

The final installment in the five part series and the presentation of a new model for evaluating healthcare services

Part 5 of the 5-part series

on the WEB Determining Value in Healthcare
The complete series can be found online at www.MiddleEastHealthMag.com

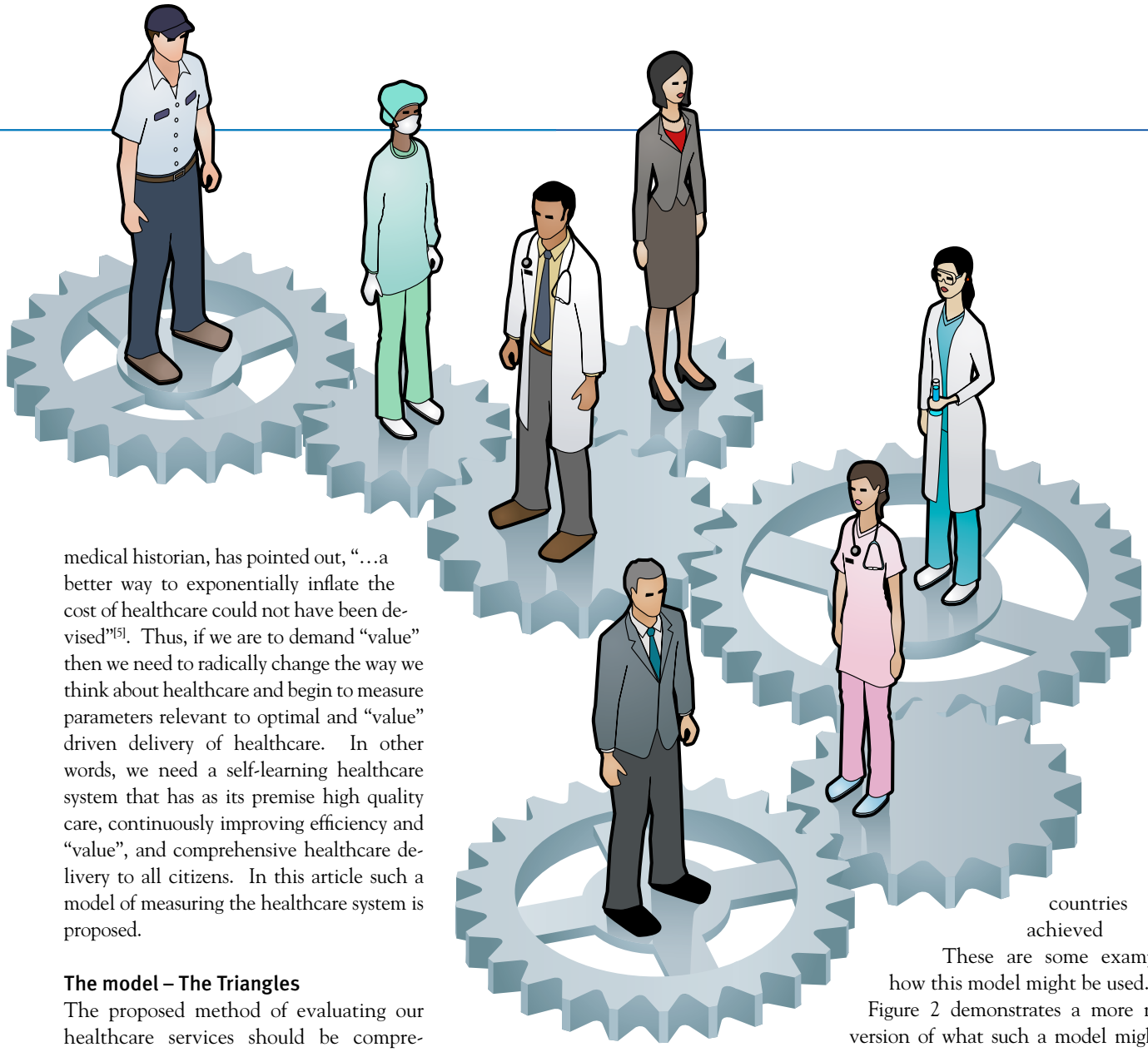
By **Arby Khan**, MD, FACS, MBA

Summary of Previous Articles

The first article in the series emphasized the difficulty in determining "value" in healthcare but nevertheless established a definition of "value". Here is the difficulty - most people would agree that a 21 year old male who has appendicitis, presents to the emergency room, has his appendix removed uneventfully, returns home in one day, goes back to college or work in seven days, and then returns to a normal life certainly represents "value" for healthcare resources spent (approximately $15,000 spent but the result is a long, productive life). On the other hand consider this example – a 78-year-old female who has a history of high blood pressure, diabetes, and heart disease, presents with chest pain, is admitted to the intensive care unit, stays there for eight weeks, and then passes away (approximately $400,000 spent). Was there "value" in spending $400,000 in eight weeks? When healthcare is involved, and consequently people and emotions, it is very difficult to establish "value". It is difficult to satisfy every stakeholder's definition of "value" – however a decision has to be made, and "value" from society's perspective seems to be the best way to approach the concept of "value". The subsequent four articles provided a historical perspective on the evolution of healthcare in the United States and described how disparate, but powerful, stakeholders molded the system to serve their individual interests. This led to a fragmented, expensive healthcare system that, as of 2010, excluded 50 million Americans from access to healthcare. These articles also highlighted critical lessons learnt by analyzing the historical development of the US healthcare system and provided counsel to countries in the Middle East that are in the process of developing their healthcare systems.

Introduction

Providing comprehensive healthcare to all citizens and creating "value" at the same time is a challenging task. To create "value", healthcare systems need to measure, quantitatively, elements critical to the efficient and cost effective delivery of high quality, universal health care[1-4]. Perhaps more importantly, these critical elements need to be measured and presented in a way that allows easy visualization of how well the health care system is functioning and where it needs improvement. How well healthcare is being delivered, to what percentage of the population, and at what cost (i.e. "value") are some, but by no means all, of these critical elements. Historically, and as described in the previous articles, the fee-for-service model in the United States fostered the development of a health care system that measured and improved financial returns and paid little, if any, attention to outcomes, prevention, or efficiency. The more the hospitals and physicians did, and the more the cost, the more they got paid. As Paul Starr, the renowned



medical historian, has pointed out, "…a better way to exponentially inflate the cost of healthcare could not have been devised"[5]. Thus, if we are to demand "value" then we need to radically change the way we think about healthcare and begin to measure parameters relevant to optimal and "value" driven delivery of healthcare. In other words, we need a self-learning healthcare system that has as its premise high quality care, continuously improving efficiency and "value", and comprehensive healthcare delivery to all citizens. In this article such a model of measuring the healthcare system is proposed.

The model – The Triangles

The proposed method of evaluating our healthcare services should be comprehensive enough that it measures all the relevant parameters, be flexible enough to change – and change fast, and be able to give an overall view of how efficiently healthcare is being delivered. A simplified version of the basics of such a model is provided in Figure 1 (please read figure legend before proceeding). It would be critical for Middle Eastern countries that are in the process of developing their healthcare systems to keep such a model in mind as it would help avoid the costly mistakes made by the US over the last 80 years.

Figure 1 is an abbreviated and idealized introduction to this model. In this model, line BD (Birth, Death) represents the continuum of life without disease or, at least without disease that prevents an individual from performing the daily activities of life – i.e. baseline, productive functioning. Prevention of disease is, by far, the most cost-effective medical intervention and the proposed method of measuring healthcare delivery will provide, at a glance, the percent population that is utilizing adequate preventive healthcare. For example, in Figure 1, only 47% of the population (all numbers in all figures are percent of total population) uses routine primary care visits (RPCV). Additionally, none of the inadequately insured individuals is using RPCV. This provides clear indication of where improvement efforts need to be expended. If an individual falls off the productive continuum of life (that is, falls off line BD), as everyone does at some point in time, he/she enters one of the triangles of the healthcare delivery process. Here, the goal should be to treat the individual as quickly, efficiently, and cost-effectively as possible and return him/her to line BD (i.e. baseline functioning). At a glance, this representation of the healthcare delivery process also tells us what percent of the population is inadequately insured. Most importantly, regularly looking at this representation and seeing how many individuals have inadequate insurance, is a constant and necessary reminder that consistent efforts should be expended to reduce the number of inadequately insured (red triangles) to zero (many European countries have achieved that). These are some examples of how this model might be used.

Figure 2 demonstrates a more realistic version of what such a model might look like (please read figure legend before proceeding). As noted above, the triangles each represent a particular service in the health care delivery system – such as routine primary care visits (RPCV), outpatient procedures (OPP), etc. Note that line BD, and the 'inflow', 'process', and 'recovery' sides of each triangle, are designed in a way that emphasizes the premise that prevention, that is staying on the black line BD, is the best option and that, if an individual "falls" into a triangle, then swift return to line BD (baseline functioning) is critical. Thus, the model keeps at the fore, that if entry into a triangle is necessary, it is best to 'optimize' (1) the ease of getting there (inflow), (2) the efficient delivery of the treatment (process), and (3) the rapidity with which the individual is returned to line BD and once again becomes a useful member of society (recovery). How then do we optimize inflow, process, and recovery?

Figure 3 demonstrates the details that underlie inflow, process, and recovery, and how "value" can be extracted by using these triangles to document the health-

care process (please read legend before proceeding). Each side of every triangle, or an independent healthcare service, needs to be measured in multiple ways. Ideally, every aspect of inflow, process, and recovery needs to be measured. However, that may not be necessary. It may be that only certain critical elements are sufficient to adequately measure and monitor the 'inflow'. Similar measurement parameters can be created for 'process' and 'recovery'. How many, and which parameters should be measured, will vary considerably for most triangles. That is the inherent flexibility in this system. It may be that the inflow process for RPCV needs only 3 measurements to determine if it is performing well whereas the inflow process for OPP may need 17 measurements. However, what needs thought and analysis is what are the critical elements that need measurement, how will they be measured and analyzed, and how will they convey the level of function and efficiency of any given healthcare service. If parameters are identified that are critical, but cannot be measured, then methods to measure them should be developed. An additional flexibility in this model is that any number of triangles, or healthcare processes, can be added into this system (see Figure 4). Thus, the model will accommodate growth in healthcare services. The more triangles that are added, the more comprehensive the model becomes – and this leads to more actionable data that provides precise areas to target for process improvement.

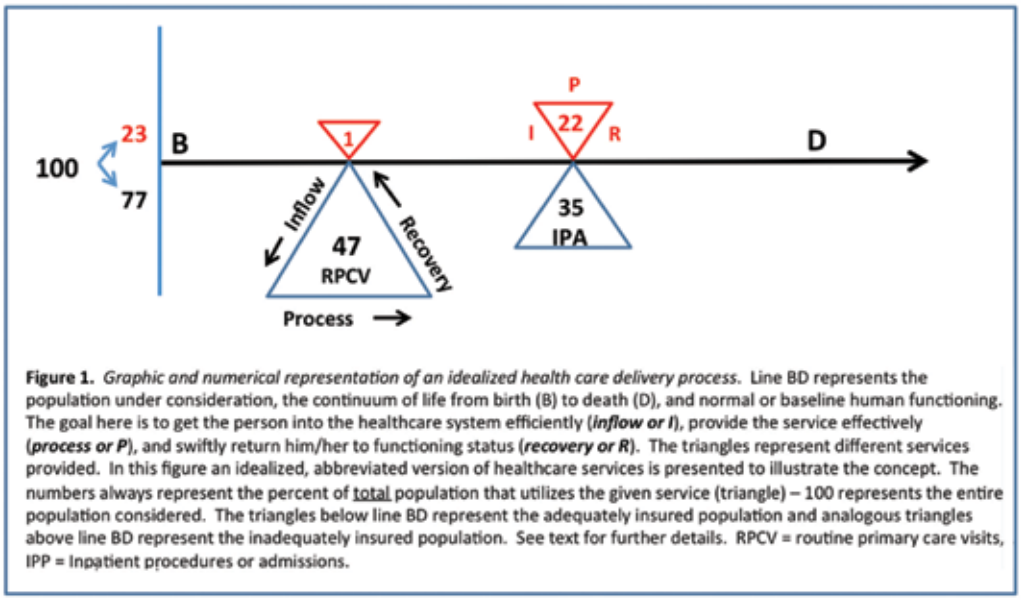


Figure 1. *Graphic and numerical representation of an idealized health care delivery process.* Line BD represents the population under consideration, the continuum of life from birth (B) to death (D), and normal or baseline human functioning. The goal here is to get the person into the healthcare system efficiently (***inflow or I***), provide the service effectively (***process or P***), and swiftly return him/her to functioning status (***recovery or R***). The triangles represent different services provided. In this figure an idealized, abbreviated version of healthcare services is presented to illustrate the concept. The numbers always represent the percent of total population that utilizes the given service (triangle) – 100 represents the entire population considered. The triangles below line BD represent the adequately insured population and analogous triangles above line BD represent the inadequately insured population. See text for further details. RPCV = routine primary care visits, IPP = Inpatient procedures or admissions.

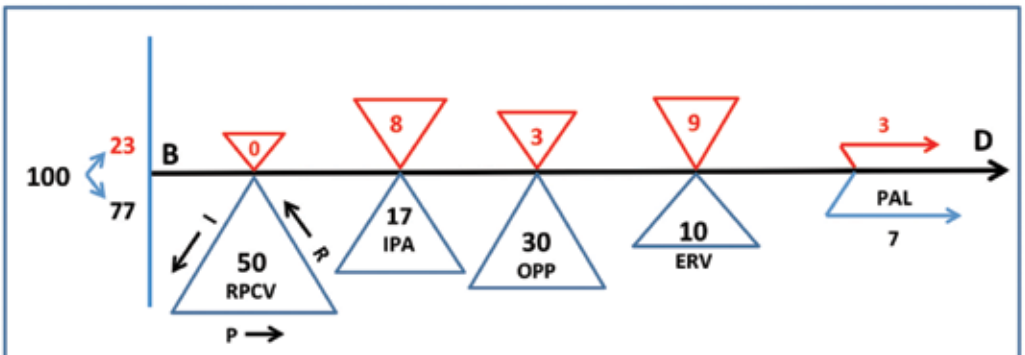


Figure 2. *Graphic and numerical representation of a realistic healthcare delivery process.* 100 represents the total number of individuals being followed – they could represent a health plan, a city, or a country. In this figure, 23% of the population is inadequately insured whereas 77% is deemed to have adequate insurance. 50% of the population utilized routine primary care visits (RPCV), 17% had in-patient procedures or admissions (IPAs), 30% had out-patient procedures (OPP), 10% had emergency room visits (ERV), and 7% left the usual productive cycle of life and required permanent assisted living (PAL). These numbers will not add up to 77% because the same patient may use multiple services. The analysis, for triangles above line BD is identical in the uninsured patients. Each triangle represents the ***inflow (I)*** – the side closest to B, ***process (P)*** – the side parallel to line BD, and ***recovery (R)*** – the side closest to D, of any given healthcare service. See text for further details.

It is probably evident by now that underlying inflow, process, and recovery, or each side of any triangle, is a lot of data regarding the critical elements that measure the efficiency of that side. How should this data be analyzed? This can be done in two ways and displayed as a "dashboard" (not shown in figures). Whereas a complete discussion of how the underlying data can be analyzed and a dashboard created is beyond the scope of this article, a brief summary would be useful. The data can, in general, be analyzed in two ways. First, one can compare a certain critical element to those of many other hospitals and determine a percentile rank. Second, one can decide on an absolute goal. Let's look at an example to clarify the concept. Let's take OPP which is utilized by 30% of the adequately insured population and look at one critical element for process shown in Figure 3 – what percentage of first operations start on time? One could use a percentile ranking and determine that in a particular hospital 65% of the cases start on time - which may represent a percentile ranking of 78 (that is, if compared to all other hospitals, this particular hospital is better than 78% of the hospitals looked at). Thus, this hospital, whereas reasonably efficient compared to other hospitals, can still improve. On the other hand it could be determined that if 90% of first cases start on time, that

> It would be critical for Middle Eastern countries that are in the process of developing their healthcare systems to keep such a model in mind as it would help avoid the costly mistakes made by the US over the last 80 years.

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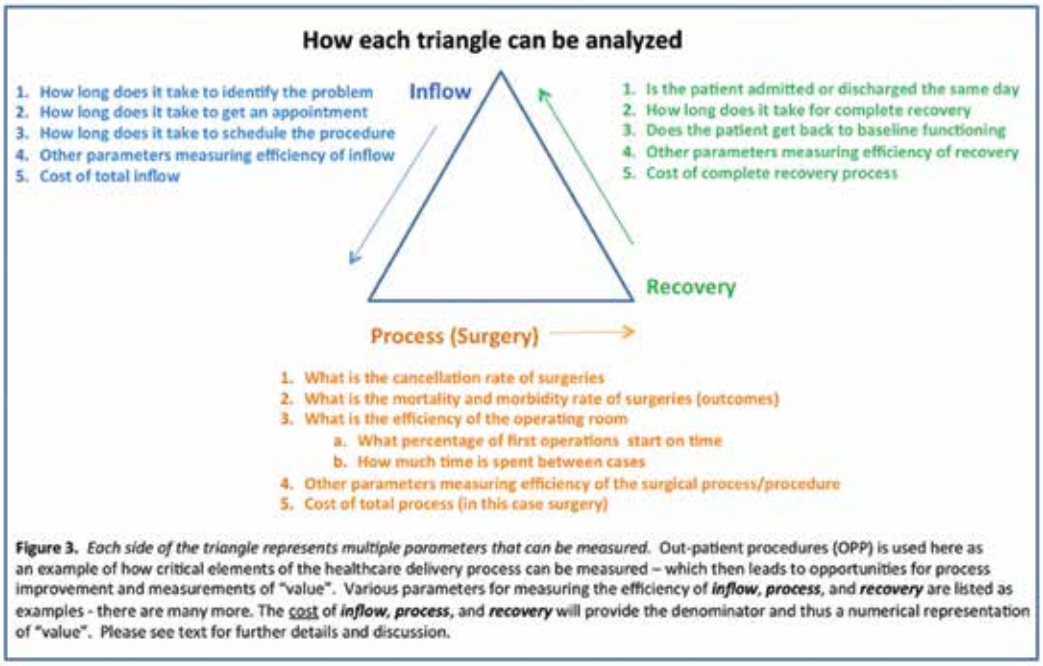

Figure 3. *Each side of the triangle represents multiple parameters that can be measured.* Out-patient procedures (OPP) is used here as an example of how critical elements of the healthcare delivery process can be measured – which then leads to opportunities for process improvement and measurements of "value". Various parameters for measuring the efficiency of ***inflow***, ***process***, and ***recovery*** are listed as examples - there are many more. The cost of ***inflow***, ***process***, and ***recovery*** will provide the denominator and thus a numerical representation of "value". Please see text for further details and discussion.

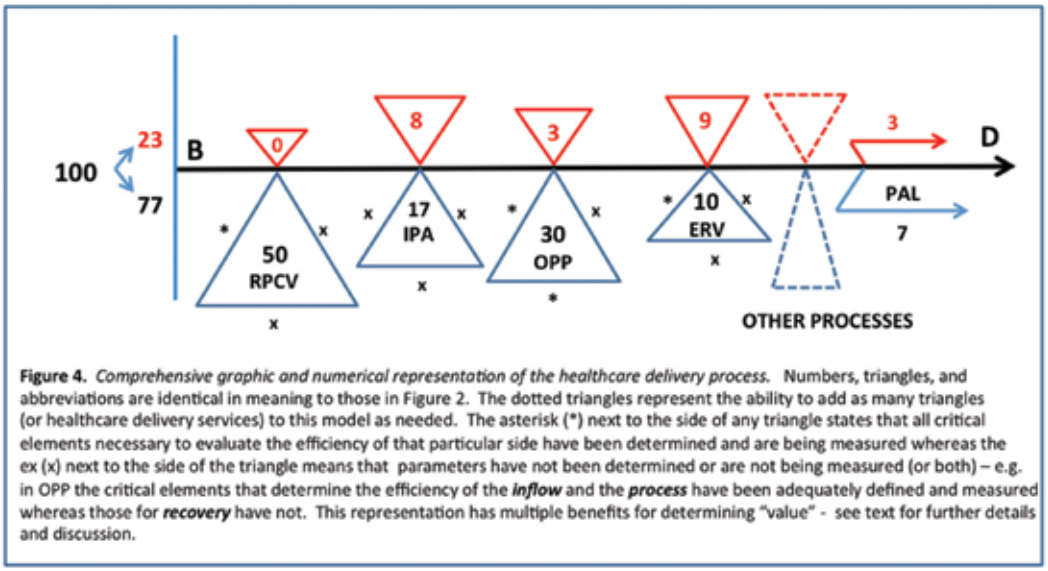

Figure 4. *Comprehensive graphic and numerical representation of the healthcare delivery process.* Numbers, triangles, and abbreviations are identical in meaning to those in Figure 2. The dotted triangles represent the ability to add as many triangles (or healthcare delivery services) to this model as needed. The asterisk (*) next to the side of any triangle states that all critical elements necessary to evaluate the efficiency of that particular side have been determined and are being measured whereas the ex (x) next to the side of the triangle means that parameters have not been determined or are not being measured (or both) – e.g. in OPP the critical elements that determine the efficiency of the ***inflow*** and the ***process*** have been adequately defined and measured whereas those for ***recovery*** have not. This representation has multiple benefits for determining "value" - see text for further details and discussion.

represents an efficient process, thus creating an absolute measure against which all hospitals would be judged. Either one or the other is acceptable depending on the critical element measured. Of course, cost for all sides of the triangle – inflow, process, and recovery – will be critical to measure so that "value" can then be determined. The reader will by now be imagining a very complex "dashboard" that underlies these rather innocuous looking triangles – and the reader would be correct. A complete model would measure hundreds (if not thousands eventually) of parameters, analyze them in a statistically sound manner, and determine a relative, or absolute, numerical ranking for that parameter. So, e.g., an analysis might reveal that 'inflow' to OPP can be improved in a certain hospital by decreasing wait times since their wait times are much longer than a previously determined, acceptable or optimal, duration. A similar analysis would also be made for all the measured parameters for all sides of all triangles in the model and a final "dashboard" would reveal where improvement efforts are needed. Thus, the overall model, shown in Figure 2, would identify a general area (inflow, process, recovery, RPCV, etc.) that needs improvement. The dashboard would then provide the details of exactly what critical elements within that general area need improvement. If the overall model shows there no critical elements present then these need to be defined and measured.

Figure 4 demonstrates what the final "bird's eye view" of the model of measuring healthcare delivery might look like (please read figure legend before proceeding). It is important to note that the asterisk (*) in this figure only states that the parameters, or critical elements, needed to determine the efficiency of that particular side of the triangle have been determined – it does NOT state that these parameters have been optimized. Optimization can only be determined by looking at the dashboard discussed above (not illustrated). In analyzing Figure 4, one can arrive at the following major conclusions:

It can be used for any given population – enrollees in a small insurance company, a city, a state, or an entire country (depending on how accurately and uniformly the data can be measured).

1. Only 50% of the population is using RPCV. Thus adequate prevention is deficient
2. None of the inadequately insured are using routine primary care visits (RPCV)
3. 23% of the total population is inadequately insured and 77% adequately insured.
4. Many healthcare services, or triangles, have sides that don't have definitive, accurately measured, parameters that could evaluate adequate and optimal functioning
5. 10% of the population does not return to line BD (baseline, productive functioning)
6. The inpatient procedures and admissions (IPA) triangle do not have adequate critical elements defined that measure this service's efficiency or "value".
7. More triangles are needed and can be added whenever necessary
8. Of the triangles that have asterisks (*) it would be necessary to evaluate the dashboard to determine if optimal function has been achieved for either inflow, process, or recovery

9. This diagram could be compared to last year's to determine if there have been improvements in certain triangles – e.g. has the RPCV triangle gotten bigger or smaller or, in other words, is preventive care reaching an increasing percentage of the population?

The above are just some of the conclusions evident from Figure 4 – there are many more. This model, representing the functioning of the healthcare system, provides actionable data which guides healthcare leaders to direct resources towards the most critical deficiencies.

Conclusion and Summary

A complex system such as healthcare delivery cannot be completely described and evaluated in a short article. However, what can be done is provide the overall goal, direction, and the impetus to change the way we think about and evaluate healthcare. The model presented in this article attempts to do just that – provide an overall direction and a way to measure whether we are indeed moving in that direction. *In this model, the overall goal is to create a self-learning healthcare delivery system that continuously improves "value" delivered while providing comprehensive, universal healthcare.*

There are myriad authors that have opined broadly on "value" in healthcare (please see first article[6]) and its references) and the entire range of issues are beyond the scope of this article. However two points merit repetition. First, "value" as defined in the first article[6] and as is usually, and broadly, defined[3, 7] – (outcomes/cost) – is a ratio, and one could argue that inferior care provided at even lower cost could increase "value". That is, of course, a valid criticism[8] and it should be emphasized that "value" as defined here is only, well, valuable, if the outcomes remain the same or continue to improve. Second, the question of "value from whose perspective" is important[8-10]. Of the many stakeholders identified (society/economic, patient, provider, payer, employer, health product/device manufacturer), it would seem at first that it would be hard to reconcile any two stakeholders' perspectives. However, if any two perspectives should be, and perhaps even can be, reconciled, they should be those of the patient and of society/economic. The argument would go as follows: if the healthcare system can be optimized from an operational standpoint and made efficient enough then there should be enough money left to take care of any individual patient's unique needs. The method and model provided in this article has the potential to reconcile these two perspectives. Additionally, this model proposes to measure the correct parameters, or critical elements, in the correct way[2] and apply that knowledge to create a self-learning healthcare system that will provide efficient, high quality healthcare for the optimum cost.

This model is clearly a work in progress and will take decades to perfect. However, the journey must begin – and difficult questions like what is "adequate insurance", what is "optimal functioning or efficiency", what elements are indeed "critical" to measure, and myriad others will need answers. As long as we head in the right direction, the complex task of perfecting a model that effectively evaluates the healthcare system will no doubt be completed.

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– The views expressed in this article are those of the author and do not necessarily represent the views of the institutions for which Dr Khan has worked or currently works.

Choong-jin Kim, President, Korea E & Ex Inc.

KIMES expo in Seoul expands on back of local growth

The organisers of the 29th edition of KIMES – Korea International Medical & Hospital Equipment Show – held another successful exhibition and conference at the COEX (Convention & Exhibition Center) in Seoul from 21-24 March this year.

KIMES 2013 had the theme: "A healthcare world that realises the value of happiness" with the purpose to provide assistance to further development of the medical equipment industries in Korea and neighbouring nations, and promotion of trade in medical equipment on both the domestic and international fronts.

KIMES is widely supported by government organisations and associations in Korea including: Ministry of Trade, Industry and Energy; Ministry of Health & Welfare; Ministry of Food & Drug Safety; Seoul Metropolitan Government; Korea Trade-Investment Promotion Agency (KOTRA); Korea Health Industry Development Institute; Korean Medical Association; Korean Hospital Association; Korean Medical Women's Association; Korean Nurses Association; Korea Medical Devices Selling Association and Korean Medical News.

Middle East Health is a media partner with KIMES.

We attended the exhibition and spoke to a number of exhibitors and attendees. Exhibitors generally expressed their positive outlook of the event saying they had received good responses from qualified visitors and that they believed the event had a positive impact on their business. They said the market continues to expand on the back of rapid growth of the Korean medical industry.

This was reiterated by Choong-jin Kim, the President of Korea E & Ex Inc, the show organiser – who pointed out at the official opening that the government has appointed the medical industry as the one of the leading industries expected to propel the Korean economy in the future. To support this stand the government has provided a blueprint of financial and political backing for the industry.

He noted that "regardless of today's global shifts, it is clearly recognised that trade exhibitions are still of prime importance to the economy".

"Especially in times of crisis, domestic and international economic partners need exhibition platforms to send positive signals to their strategic markets to launch innovative products, to discuss crisis-management measures and, using this knowledge, respond quickly, flexibly and correctly."

Choong-jin Kim explained that globalisation of the medical healthcare service industry sector is the main issue in Korea currently, and to achieve the specialisation of the industry, it should be based on

sharing of information and visions.

KIMES 2013 attracted 68,203 visitors to the four-day event who came to see some 1,015 companies from 37 countries including 101 companies from the USA, 57 from Japan, 79 from Germany, 89 from China and 467 from Korea, among others.

A number of Korean companies were highlighted as playing an important role in the Korean economy. These included: Samsung, Listem, JW Choongwae, DK Medical, UB Care, BIT Computer and LG+.

A number of international brands were also noted for their role in making the event an attractive option for visitors. These included GE, Siemens, Philips, Fuji, Shimadzu and Hitachi.

Interestingly at this year's event there were several Korean regional pavilions each showing what their regions have to offer the medical industry. Some of these included the Wonju Medical Industry Techno Valley, Daegu Province pavilion, Gyeongsangnam-do Province and the Gyeonggi-do pavilion.

In an effort to promote trade, KIMES organisers help arrange the visit of a number of buyer delegations from countries such as Indonesia, Vietnam, Russia and Europe. They facilitated the initiative by providing B2B match making consultation. Companies at the show said this definitely increased business activity.

Running alongside the exhibition were more than 100 sessions of seminars. They covered topics ranging from government policies on the medical devices market to the latest medical device technologies and financial technology for the doctors.

Jung-gi Hong, Ministry of Health and Welfare, explained that the medical device industry is "a high value added industry with a lot of potential growth due to the ageing society and the desire for wellbeing".

He noted that there were a number of challenges facing the government and criticised the state of the domestic medical device industry saying its competitive power was quite weak compared to advanced countries, the workforce in thisindustry was relatively small and domestic demand was low.

"It is necessary to establish a support plan to secure the competitiveness of the domestic medical device industry since the industry is facing domestic and international challenges."

He said in order to be in the top 7 global medical device manufacturing countries, the government is trying to setup a long and short term development plan for the industry to create global companies. MEH

"Visitors' Fields of Interest"

Classification	KIMES 2012 Answers (%)	KIMES 2013 Answers (%)	
Consultation & Diagnosis Equipment	13.7%	13.3%	↘
Clinical Examination Equipment	4.9%	4.4%	↘
Radiology Equipment	6.6%	7.3%	↗
Surgical Apparatus & Equipment	7.7%	7.3%	↘
Cure Apparatus & Equipment	6.7%	6.5%	↘
Physiotherapy Apparatus	7.9%	9.0%	↗
Ophthalmic Apparatus	1.9%	2.1%	↗
Dental Apparatus	1.4%	2.6%	↗
Central supply Equipment	2.1%	2.0%	↘
Medical Accom./Emergency Eq.	5.0%	5.2%	↗
Medical Information System	7.4%	8.0%	↗
Oriental Medicine & Equipment	3.4%	3.0%	↘
Animal & Related Equipment	-	0.9%	↗
Pharmaceutical Equipment	2.4%	1.4%	↘
Cosmetic Dermatology & Healthcare Equipment	9.4%	10.0%	↗
Medical Device Components & Service	6.1%	5.4%	↘
Disposable Apparatus, Other	13.3%	11.6%	↘
Total	100.0%	100.0%	

Iraq Healthcare Conference 2013

Shaping good healthcare for Iraq

From May 27-28, renowned regional and international healthcare experts convened at the Iraq Healthcare Conference 2013 in Erbil, Iraq (Kurdistan Region) to discuss the current state of the Iraqi health system and to develop urgently needed strategies to shape a strong public health system for Iraqi citizens. The Iraqi health system is in pressing need of targeted investments to ensure a brighter future for the health of all Iraqi people.

Covering all aspects from medical education to health insurance to hospital management, the conference participants agreed on lack of expertise and leadership skills as decisive flaw of the Iraqi healthcare sector. Professor Salman Rawaf of WHO Centre Imperial College London called for a thorough review of Ministry of Health & Governorates structures and functions, pointing out that key players in politics must be moved and the Ministry of Health instead be staffed "with doctors and healthcare specialists at State Secretary level."

Prof Rawaf harshly criticized that the lack of medical expertise and leadership skills in the ministry which led to a waste of resources, seeing that "the Ministry of Health every year sends back 60% of its budget to the Ministry of Finance, as they do not know where to invest".

Conference participants were also unhappy about the poor quality in (continuing) medical education, hospital standards and the lack of regulations and proper legal frameworks.

Delegates from Healthcare Accreditation Council Jordan and Logistics for Consultation and Development Egypt offered valuable case studies on how to set, implement and sanction international quality

standards in health centers and hospitals. Regulations and accreditation for medical staff in Iraq, according to some of the experts, are so poor that anyone can open a medical practice, regardless of whether they ever went to medical school.

> This year we laid the foundation for what is to become the largest annual health conference in Iraq.

Health system finance

In a panel discussion on health system finance, Dr Finn Goldner, ex-director of Health Finance System for Abu Dhabi Health Authority and Jamal Asfour, CEO of Asia Insurance, covered the pros and cons of introducing mandatory health insurance in Iraq, with a population increasingly claiming their right to health from the state.

Dr Saif AlJaibeji, chairman of the Conference and CEO of the Cambridge Academy for Higher Education, expressed his satisfaction with the event. "We are more than happy with the high-level discussions we have had here in Erbil. I very much look forward to a continuous constructive dialogue with the conference participants over the next 12 months until we reconvene in Erbil to assess the progress being achieved by the Iraqi Government and private sector with regards to healthcare provision for Iraqi citizens."

Alongside local partners IFP Iraq, organizers of the annual Iraq Medicare Exhibition, the Cambridge Academy for Higher Education functioned as academic partner to the conference organizers Sesam Business Consultants and zenith Magazine.

For Boris Ritter, General Manager of Sesam Business Consultants, this year's conference was just the first step. "This year we laid the foundation for what is to become the largest annual health conference in Iraq. Now we will process the findings of the discussions in a comprehensive report to make them available to the wider academic and business community."

The date for the next edition of the Iraq Healthcare Conference is: May 27-28, 2014.

- For more information visit: *www.iraqhealthcareconference.com*

Qatar University College of Pharmacy Faculty Complete OSCEology Continuous Professional Development Workshop

Qatar University (QU) College of Pharmacy (CPH) Clinical Pharmacy and Practice faculty completed a two-day workshop (May 13 & 14, 2013) led by Dr Zubin Austin and Maria Bystrin of the University of Toronto Leslie Dan School of Pharmacy. CPH invited clinical pharmacist participants from Hamad Medical Corporation as well as a faculty delegate from Beirut Arab University (BAU) in Lebanon.

"The focus on the workshop was on implementing sustainable performance-based teaching, learning and assessments into the curriculum. This is achieved by creating a simulated environment that emulates a real clinical scenario that students will encounter in the workplace upon graduation. Our college has had considerable success with Structured Multi-Skills Assessments (SMSA) which is part of CPH curriculum that provides a platform to train our students on the necessary clinical skills needed to meet the needs of patients in Qatar. The objective structured clinical examination (OSCE) is another version that will allow more clinical training through patient cases designed to mimic real life," said Maguy Al Hajj, CPH Assistant Professor, Chair of the Clinical Pharmacy Practice Group.

College of Pharmacy Professor and Acting Dean Sherief Khalifa commented: "The OSCE training session allows us to further align with the Canadian pharmacy education model as well as to offer more enhanced training in clinical settings for our students for the benefit of Qatar. Our college is the first and only fully Canadian accredited pharmacy program outside of Canada and as such we are committed to continuously raising the bar on the level of care and professional competencies developed by our students. Qatar can expect higher levels of patient care with CPH graduates which is an important goal of the national health strategy and we are pleased to play an major role in this regard."

Dr Zubin Austin is a world authority on OSCE and travels around the globe to provide training in his specialty area. He presented a webinar last May about the OSCE training to QU CPH faculty which led to this training workshop session in Qatar.

Dr Austin and Bystrin joined Acting Dean Dr Khalifa in a meeting with Dr Jamal Al-Khanji, Director, Healthcare Quality Management Department and Dr Samar AboulSoud, Accreditation Director at the Supreme Council of Health.

> The OSCE training session allows us to further align with the Canadian pharmacy education model as well as to offer more enhanced training in clinical settings for our students.

The discussion focused on introducing an OSCE component to the pharmacy license exam in Qatar to ensure that pharmacists practicing in Qatar possess the required clinical skills to provide optimal care for the patients of Qatar.

Dr Jamal commented: "The Supreme Council of Health supports a culture of continuous quality improvements and we are pleased to see Qatar University College of Pharmacy faculty complete this advanced clinical assessment training. This training will benefit pharmacy practice and ultimately the patients of Qatar which is our primary concern." MEH

Providing vaccines to charities and NGOs

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

Judging by the glowing reports from the international press, the recent Global Vaccine Summit held in Abu Dhabi was a great success. Co-hosting the summit with Sheikh Mohammed bin Zayed, Crown Prince of Abu Dhabi, billionaire and philanthropist Bill Gates (co-chair of the Bill & Melinda Gates Foundation), began by praising the impact the Middle East can play in helping to eradicate diseases and improve the lives of the poor.

The importance of the Middle East's relationships with leaders in countries such as Pakistan and Afghanistan was highlighted because international healthcare workers need permission to access remote and war-torn areas so that they can vaccinate against diseases. The operational challenges of immunising children in densely populated cities, hard-to-reach areas and areas of insecurity were addressed. In some parts of Pakistan, for example, nurses and immunisation workers have been killed by extremists who oppose the provision of these life-saving vaccines.

Gaining access to remote and war-torn regions for medical aid is something that I spoke of in my last article. Durbin's Sales to NGOs & Charities division specialises in supplying to charities and NGOs who are working in developing countries, and we know that having local knowledge or close contacts with the relevant authorities in those countries is of paramount importance.

Speaking at the summit, Gates said "the leaders and citizens here can reach out as partners to countries where they have special access and special kinship – areas where the rest of the world doesn't have the standing to intervene in the way that leaders here can do".

Indeed, Sheikh Mohammed and the Bill & Melinda Gates Foundation have already contributed greatly to the fight to give children around the world the vaccines they need. In 2011, they made a combined donation of US$100m to buy and deliver the vaccines to children in Afghanistan and Pakistan.

The importance of immunisation is clear for us all to see. Before the development of an effective vaccine, polio paralysed and killed up to half a million people every year. Thanks to the power of vaccines, we are now very close to declaring the world polio-free. It has been stamped out in India and the number of cases around the world has dropped dramatically.

Sadly this debilitating disease is still endemic in Nigeria, Afghanistan and Pakistan, so Gates has signed an agreement with Jeddah-based Islamic Development Bank (IDB) to gain Middle East support for his fight to ensure that the most vulnerable children living in hard to reach places also benefit from these life-saving vaccines in the hope or eradicating polio completely.

The Global Alliance for Vaccines and Immunisation (GAVI) has also signed an agreement with the IDB to vaccinate more than 400 million children in at least 29 countries. GAVI secures funding for vaccination programmes in the world's 73 poorest countries, and has started campaigns to vaccinate against illnesses such as rubella, HPV in girls, and pneumonia in countries like Afghanistan, Somalia and Yemen.

Somalia, in particular, has benefited from a new five-in-one vaccine against several potentially fatal childhood diseases including diphtheria, tetanus and whooping cough. It has one of the highest child mortality rates in the world, with one in five dying before their fifth birthday. This heartbreaking statistic is not surprising given that Somalia also has one of the lowest immunisation rates in the world.

Unsurprisingly, calls for donations towards these vaccines were prevalent at the summit. Médecins Sans Frontières was one charity which addressed the alarming rise in the price of vaccines, something which threatens future vaccination programmes. However, with generous donations coming through from world leaders, charities, businesses and philanthropists, the dramatic reduction in diseases such as polio looks set to continue.

I have been fortunate enough to be in a position to help with the shipping costs of some of these vaccines to charities worldwide. Durbin is regularly offered in-date free stock for donation to charities and we pay the cost to ship these items overseas.

Durbin gets involved with so many different projects and they're all important to the company. But helping out in this kind of situation where people are so dependent on us is extremely rewarding. The admirable goals of charities in this sector deserve our unequivocal support. We all have the opportunity to provide it. 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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Syrian refugees in Za'atari camp, Jordan

Struggling to cope with influx of Syrian refugees

Nearly half a million Syrians are now refugees in Jordan, making up a third of the 1.5 million people who have fled the conflict in Syria to neighbouring countries. More than 100,000 of them live in Zaatari camp, situated in the North of the country, less than 20 km from the Syrian border. Up until April, one thousand refugees continued to arrive daily at the camp, which has become the largest camp for Syrian refugees in the region.

"Thus far, the Jordanian government has made significant efforts to host refugees," explained Antoine Foucher, Head of Mission for MSF in Jordan.

"But the pressure caused by the massive influx of refugees has resulted in an increasingly difficult situation." Tensions are a constant factor inside the camp, which has far exceeded its full capacity. They also affect the Jordanian community, which has become strained by the influx of refugees, particularly in the Northern Province, where the population has doubled in just a few months. "There is no existing sustainable solution for hosting refugees, mainly due to a lack of long-term financial support."

In the Zaatari camp, the plight of the refugees remains extremely precarious. In late March, MSF opened a pediatric hospital, the only hospital facility open to children aged 1 month to 10 years. The team also increased its staff and expanded its activities to deal with the constant pressure of new arrivals; an outpatient clinic for children just opened in late April. During the first five weeks of its activity, MSF medical staff carried out around 2000 consultations, 60 of which were emergency cases.

More than 270 children have been hospitalized and treated since the opening of the hospital.

"Our staff is witnessing more and more cases of diarrhoea and respiratory infection, which reflects the precarious living conditions of the refugees in this overcrowded camp, and we expect to see an increase in dehydration cases over the summer," said Claudia Truppa, MSF medical doctor in Zaatari.

Water availability is clearly a crucial issue in the region. Healthcare facilities are also insufficient for the size of the camp's population.

More broadly, the entire healthcare system remains fragile. Like other health actors present in Zaatari, MSF refers the most severe cases to Jordanian public hospitals outside the camp, which are already nearing full capacity. However, the underfunding of aid has also threatened the ability of the Jordanian healthcare system to properly treat Syrian refugees.

"Without political will and financial commitment from states, the Jordanian government risks resorting to drastic measures: permanently blocking refugee access to the country or restricting access to care in public facilities, undermining the already precarious living conditions of hundreds of thousands of Syrians," says Antoine Foucher. "Jordan urgently needs greater international support if they are to sustain a real open-door policy." MEH

One stop shop for pelvic disorder diagnosis and treatment

The Center for Restorative Pelvic Medicine at the Methodist Hospital combines expert physicians from the field of gynaecology, neurology, urology, colorectal surgery and plastic surgery to provide a single-centre location for the diagnosis and treatment of complex pelvic floor disorder, which is unique and only available at The Methodist Hospital, Texas.

At the Methodist Center for Restorative Pelvic Medicine, the goal is to provide answers, services and care under a multidisciplinary approach to pelvic restoration and reconstruction for our patients. We specialize in treating women with pelvic organ prolapse, urinary incontinence and fecal incontinence and men with problems following surgery or radiation therapy for prostate cancer.

The Center for Restorative Pelvic Medicine is unique in combining expert physicians in the fields of gynaecology, urology, colorectal and plastic surgery to create an individualized yet comprehensive treatment plan for each patient.

Why is The Center for Restorative pelvic medicine at The Methodist Hospital a unique one?

- **Coordinated Care:** In addition to quality physicians, the patient care coordinator at the CRPM adds another level expertise to our patients. Once the patient has either contacted the Center directly referred by the doctor, the coordinator organizes appointments so that the patient can see one or more doctors on the same day.
- **Robotic Advancements in Pelvic Reconstruction:** Advancements in robotic surgery have improved many procedures for pelvic reconstruction making the surgery more effective and easier for both the patient and the surgeon. At Methodist Hospital we do it robotically and it takes about an hour with minimal pain and blood loss and the patient can go home the next day thereby reducing the hospital stay.
- **Promoting overall Pelvic health:** While many physicians focus on their own specialty, at the Methodist CPRM center we understand that even a small ordinary symptom may have an underlying connection to other conditions. Our team of physicians educate the patient about pelvic health which will help to prompt patients to reveal additional symptoms that may point to other problems the patient may be having.

What's new with The Methodist Hospital?

- **A collaborative laboratory environment:** The Methodist Hospital and the Baylor College of Medicine are collaborating to create the NeuroGeneration and Bladder sensory Laboratory – a unique research facility for studying complications of the lower urinary tract and bladder issues brought on by spinal injuries, diabetes, and multiple sclerosis, among other conditions.
- **Innovation option for Enlarged Prostate:** The Methodist Hospital is participating in a US-wide study of an innovative treatment option for men suffering from an enlarged prostate. Physicians use ultrasound to visualize the prostate and then deliver a transrectal dose of the study medication directly into the prostate. Participants are closely monitored on regular intervals over the course of one year. MEH

The Center for Restorative Pelvic Medicine is unique in combining expert physicians in the fields of gynaecology, urology, colorectal and plastic surgery to create an individualized yet comprehensive treatment plan for each patient.

To know more on the Center for Restorative Pelvic Medicine, contact:

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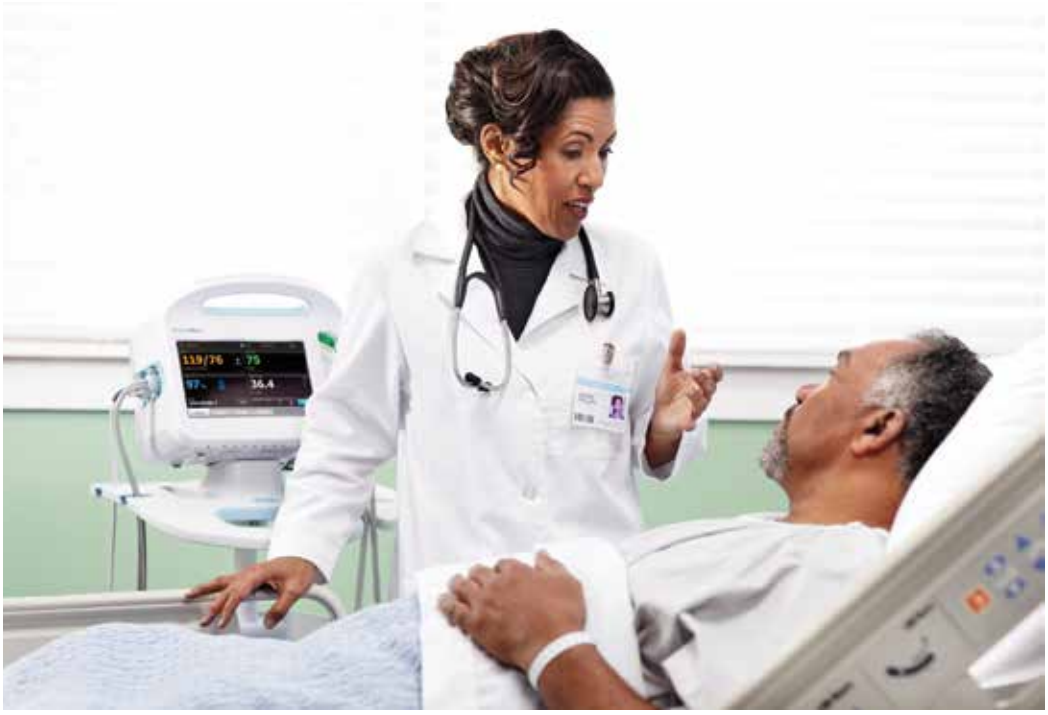

Specialized Medical Center Hospital chooses Welch Allyn's Connex EVD System

The Specialized Medical Center Hospital (SMCH) in Riyadh has chosen to install Welch Allyn's connected device solution – the Connex EVD System – throughout its healthcare system.

Welch Allyn is a leading medical diagnostic device company that specializes in helping clinicians improve patient outcomes.

The Specialized Medical Center Hospital is a 450-bed, 140-clinic healthcare system which with its three towers has become one of the modern landmarks in the Kingdom of Saudi Arabia.

SMCH recently announced it had entered into an agreement with Welch Allyn to implement the company's Connex Electronic Vitals Documentation (EVD) System in the hospital's new emergency, paediatric and OB/GYN wards. Medical equipment planners from SMCH chose the Welch Allyn solution to optimize data management, nursing workflows, and ensure accurate vital signs readings.

"We are always searching for the latest technologies that help clinicians work more efficiently and deliver more effective patient care," said Dr Khaled Al Sebaiay, Chief Executive Officer of SMCH. "That's why we are so excited to implement the first Welch Allyn Connex EVD System in the entire Middle East region. The system will not only help us better manage patient vital signs, but also puts us one step closer to being a completely 'paper-free' hospital, a model we are implementing to become a reference for environmentally-friendly healthcare delivery in the entire region."

Clinicians at SMCH will use the Welch Allyn Connex EVD System to capture, document and transmit patient vital signs immediately to the hospital's electronic medical record (EMR) as they are measured. This solution enables improvements in patient safety and clinical decision making by helping to reduce the risk for routine data transcription errors, which can occur in more than 40% of cases where clinicians capture and document patient data, according to recent Welch Allyn-sponsored studies at two European hospitals. In addition to data accuracy, the same study revealed that large hospital systems like SMCH can save upwards of 30 hours of nursing time each day when they use the Connex EVD System from Welch Allyn.

"Clinicians are busy people, and routine tasks like capturing and documenting vital signs impact just about every patient, consume a significant amount of time and lend themselves to errors," said Pascal Gand, Welch Allyn vice president of EME sales southeast region. "The Connex EVD System helps healthcare providers save time on each patient encounter while ensuring more accurate vital signs readings and documentation. We are delighted Specialized Medical Center Hospital chose the Welch Allyn solution at its facility as it strives to set the standard for the best in medical care in the region."

Included in the Connex EVD System is the Welch Allyn Connex Vital Signs Monitor (VSM), a full-colour, touch-screen device that provides comprehensive patient vitals documentation on a single display. This documentation includes automatic measurements such as heart rate, blood pressure, temperature and pulse oximetry and can also capture manual parameters such as respiration, height, weight and pain level and modifiers such as body position, O2 therapy details and others.

"As our facility expands, we will continue to do whatever we can to deliver the best healthcare for our patients," said Dr Khaled Al Sebaiay. "The Welch Allyn Connex EVD System is just the latest example of our dedication to our mission of being the symbol of trust in healthcare in the region." 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 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.

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

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

Roche Diagnostics produces new technology to help monitor patients on anticoagulation therapy

Roche Diagnostics is committed to following the latest technologies to ensure easy and handy solutions that serve patients' needs. The ability to move testing closer to the patient, so-called point-of-care testing (PoCT), has been possible with continuous advances in technology that have produced steadily more sophisticated devices measuring an increasing range of analytes.

The focus of Ambulatory Care within the PoCT is to bring clinical decision making closer to the patient, improve workflow efficiencies for the health care professional and improve clinical outcomes for the patient. With the increasing incidence and prevalence of cardiovascular disease, the need to screen and monitor patients effectively, assess risk and manage long term conditions, has also increased. Roche Diagnostics' portfolio of products provides a solution to support this growing need.

Home testing is a key solution that is delivered to move testing closer to patients. The CoaguChek XS system is a great example that resembles practical home based testing. CoaguChek XS is a convenient, portable and user-friendly instrument for monitoring oral anticoagulation therapy. It determines the value PT/INR (blood clotting time) testing from a drop of capillary whole blood – simple, precise and reliable. The CoaguChek XS system is ready for use anywhere at any time. Patients can use it for self-monitoring at home or on vacation.

Long-term oral anticoagulant treatment (blood-thinning drugs) is a strain for many patients, for instance when it comes to the frequent checks of therapeutic levels. Coagulation and monitoring are an area where Roche can offer impressive medical value: CoaguChek systems offer rapid, accurate and almost painless, minimally invasive measurement of the International Normalized Ratio (INR) clotting time as it is particularly important for patients taking blood-thinning drugs like warfarin as it helps doctors determine if the prescribed dose is working properly, therefore improving the management of oral anticoagulation therapy, for indications such as Atrial Fibrillation, Mechanical Heart Valves and Thrombophilia.

The meters measure the thromboplastin time (prothrombin time, INR, % Quick value) using capillary blood from the fingertip or non-anticoagulated venous whole blood. IT connectivity to the PC or data management system is provided either with the CoaguChek XS Connect device at the patient's home computer or by using the handheld base unit (HBU) in the professional setting. The latter presentation describes the CoaguChek XS Plus/Pro system's IT connectivity data communication, pre-requisites and support, which is suitable for the Hospitals and key health centers that requires connectivity to laboratory systems rather than the Home Testing simple connectivity.

The U.S. Food and Drug Administration (FDA) has granted CLIA-waived status to the CoaguChek XS Plus system. The Clinical Laboratory Improvement Amendments (CLIA) are regulatory standards that apply to all clinical laboratories testing performed on humans in the U.S., except clinical trials and basic research. The waiver means that the monitoring technology may now be used in a broader range of clinical settings, such as labs that do not meet the requirements to do moderate- or high-complexity testing as defined by CLIA.

The CoaguChek XS Plus system provides results in about a minute and has a 97% correlation to lab analyzer results. In addition, recent enhancements to the system include the ability to hold up to 1,000 patient results and the reduction of the sample size requirement to eight microliters. The CoaguChek XS Plus system offers state-of-the art connectivity, particularly to the cobas IT 1000 application outside the United States.

In the US, the system works with the RALS-Plus software, a commercial information management system, which provides reporting and device management capabilities. It helps hospital staff streamline the regulatory compliance process, capture reimbursable costs, and improve their organizational efficiency.

The CoaguChek XS Plus system uses two-level, built-in quality controls to help ensure the accuracy of PT/INR test results, but also offers optional liquid quality controls for facilities with policies requiring the use of external quality control measures. Today, in the U.S., more CoaguChek test strips are sold for point-of-care anticoagulation testing than all other brands combined. MEH

Carestream wins "Best in KLAS" for DRX-Evolution System

For the second time in one month, Carestream Health has again earned a top rating from medical professionals using a Carestream digital X-ray system as reported by KLAS, an independent research organization that monitors healthcare vendor performance.

The recent "2013 Best in KLAS Awards: Medical Equipment & Infrastructure" report cites the Carestream DRX-Evolution as receiving the highest overall score against seven competitors in the digital X-ray category, with 100% of users stating they would buy Carestream's system again. The report is compiled from the feedback of thousands of healthcare providers at physician offices, clinics, hospitals and IDNs throughout the United States and Canada.

KLAS has a longstanding reputation for accurately and impartially measuring vendor performance, and offers ratings on more than 250 healthcare technology vendors and over 900 products and services. Headquartered in Orem, Utah, KLAS processes have been independently audited to ensure that KLAS provides a transparent window into what users actually think of products.

"Healthcare providers using our digital X-ray systems have again expressed their high level of satisfaction with the many benefits our products deliver, including exceptional image quality and rapid access to images and information," said Diana L. Nole, President, Digital Medical Solutions, Carestream. "Our people are passionate about delivering the best X-ray and IT solutions to the market, and we have many new products in our pipeline that will benefit patients, physicians and medical staff for many years to come."

Earlier, the company's Carestream DRX-Evolution system scored highest for overall performance in another KLAS survey of more than 200 radiology professionals. One user stated: "I would compare the DRX-Evolution to Apple's products. It is very intuitive and it tells users in layman's terms how to get procedures done."

- For more information, visit *www.carestream.com*

Timesco single-use laryngoscopes provide 100% infection control

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

Today Timesco manufactures the best single use laryngoscopes systems available, with the traditional bulb in the blade, 'Europa' and fiber optic, 'Callisto' systems, enabling millions of intubations to be performed by medical professionals worldwide.

Both the Europa and Callisto systems feature unique low profile, "non touch" blades and are complemented with the single use Callisto and Europa handles.

Specialist blades for difficult intubation e.g. Eclipse tilting tip are also available in Callisto designs.

Timesco single use laryngoscopes are supplied clinically clean in individual packaging and conform to ISO international standards of fittings and manufacture.

Timesco is a progressive and innovative company; we have recently introduced new Energy Efficient Systems for extended battery life, kinetic energy power systems and new rechargeable systems to power our laryngoscopes and diagnostic systems. New LED handles and LED single use laryngoscopes blades have also been added to the ranges.

Timesco will be at: Fime, Miami, USA, 7-9 August 2013.

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

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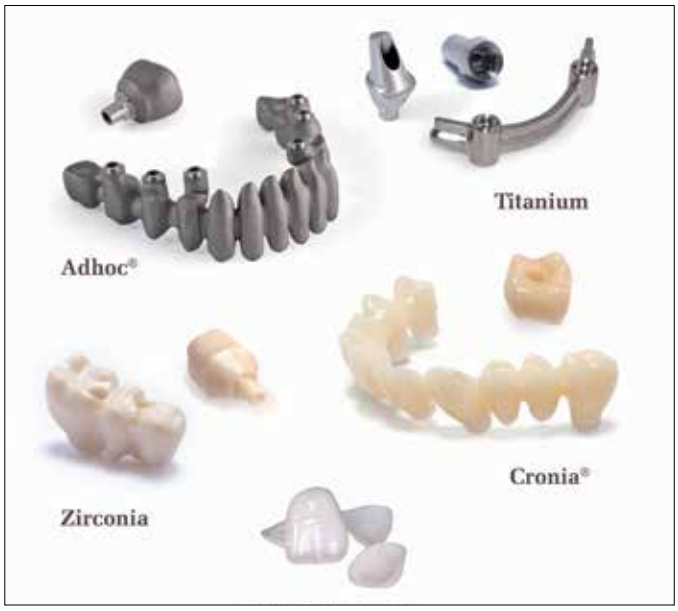


Phibo expands global presence with Middle East subsidiary

Phibo, with 20 years of experience in dental products and services, offers solutions from bone regeneration to the final prosthesis itself, without neglecting implant systems, and always taking patients' health, comfort and aesthetics into consideration. Phibo offers predictability in the results, optimisation of treatment times, reduction of the possibility of error, in short we ensure better quality for the patient.

For Phibo what is really important is offering reliable and flexible integral solutions that improve the work of our clients, making difficult work easy.

Phibo is present in the international market strongly than ever. This year Phibo is expanding its global presence in to Middle East, Colombia, France, Germany and Benelux, including its nowadays operations in Italy, Portugal and Spain.

The international dental company manufactures implant systems and CAD-CAM prostheses as well as other digital solutions.

Phibo CAD-CAM prostheses are 100% customized solutions which satisfy all patients' needs with the most attractive results. Moreover, Phibo provides all their CAD-CAM restorations on any implant system thanks to the Phibo Library, the most complete list of implant systems of the market.

The most revolutionary product on the prosthetics market is Adhoc, screw-mounted Cobalt Chrome by Phibo, for all screw-mounted metal-ceramic restorations. This product combines the best of different technologies to provide the best results where needed: best ceramic grip and best fit for the connection area. This product is available for all types of structures: from single parts to anatomic structures with any number of parts, and complicated hybrid structures to the simplest of bars.

In addition to Adhoc, Phibo introduces Cronia, the temporary aesthetic prosthetic that provides the most similar result as possible to natural teeth, while patients are waiting for the definitive restoration. This product is made of Polymethyl methacrylate (PMMA) 100% biocompatible and non-allergenic. Cronia helps to care for, model and maintain the soft tissues.

Phibo offers the most comprehensive CAD-CAM solutions: from cemented structures to restorations on implants, from hybrid structures to removable bars in all materials -Cobalt Chrome, Zirconia, PMMA, Titanium as well as cemented restorations in IPS e.max CAD.

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

Siemens' Symbia Intevo, the world's first xSPECT system, integrates SPECT and CT

At the 2013 annual meeting of the Society of Nuclear Medicine and Molecular Imaging (SNMMI), in June, in Vancouver, Canada, Siemens Healthcare introduced two new platforms with the potential to change how molecular imaging is performed.

Symbia Intevo – the world's first xSPECT system – combines the high sensitivity of single-photon emission computed tomography (SPECT) with the high specificity of CT, completely integrating the data from the two modalities, to generate high resolution and, for the first time, quantitative images.

In traditional SPECT/CT imaging, the SPECT image has always been reconstructed at a low resolution matrix – much lower than the CT portion of the exam. As a result, the CT resolution must be downgraded dramatically to the level of SPECT to enable mechanical fusion of the two modalities. Siemens' new Symbia Intevo xSPECT system reconstructs both the SPECT and CT portions of the image into a much higher frame of reference than previous systems for precise, accurate alignment facilitating the extraction and deep integration of medically relevant information. This ability is also the basis for differentiating between tissue boundaries in bone imaging. With xSPECT Bone, physicians can potentially provide additional support for detection and distinguishing between cancerous lesions and degenerative disorders.

Symbia Intevo's precise alignment of SPECT and CT provides physicians with essential volumetric information from the CT scan, enabling accurate and consistent quantitative assessment – a numerical indication of a tumour's level of metabolic activity. With accurate quantitative assessment, the physician can apply quantitative information to assess whether a patient's course of treatment has regressed, stabilized or grown – something that is difficult to do with a purely visual assessment of the tumour.

While Symbia Intevo uses more CT data than ever before, Siemens is still able to limit patient dose by offering Combined Applications to Reduce Exposure (CARE). These applications, which are unique to Siemens, include the CARE Dose4D technique, which can reduce patient CT radiation dose by up to 68%.

● For more information, visit: *www.medical.siemens.com*

GE Healthcare unveils 2 new 1.5T MR systems

Two new 1.5T MR scanners from GE Healthcare, the Optima MR360 Advance and Brivo MR355 Inspire, have recently received US FDA 510(k) clearance. Redesigned with new enclosures symbolizing GE's Humanizing MR strategy, both systems are engineered to address the demand for increased performance, and reduced total cost of ownership for the facility while providing a comfortable experience for the patient.

"Overall, I was pleasantly surprised with the image quality, especially the quality of abdomen and pelvis images, which are excellent when compared to 3T," said Tamotsu Nomura, Chief Technologist at Ishikawa Hospital in Osaka, Japan who owns the first Optima MR360 Advance in the country.

Dr Gloger of Verbundklinikum Landkreis Ansbach Klinik, Rothenburg, who owns the first system in Germany said: "After a smooth and fast installation, my radiographers learned very quickly how to scan, including those with minimal MR experience."

The Optima MR360 Advance is designed to deliver a comfortable patient experience and advanced performance. This system offers a newly-designed Express suite of coils with 16 channel head and neck array, anterior array, and flex coils that enable faster workflow. Additionally, the Optima MR360 Advance is available with a portfolio of 18 new clinical applications including the Needle Free suite of applications that strives to improve patient experience by reducing the need for biopsy, contrast, and sedation. The Optima MR360 Advance also features the acclaimed OpTix RF, which offers analog to digital signal inside the scan room to minimize noise and signal degradation resulting in high-quality clinical images, but away from the patient to enhance patient safety.

The Brivo MR355 Inspire is designed to be an easy-to-use 1.5T MR system. This system also features OpTix RF as well as READY Interface, which streamlines workflow by offering simplified control of the scan parameters that may allow for greater consistency from technologist to technologist and ultimately from patient to patient. The Brivo MR355 Inspire system is engineered to combine the diagnostic benefits of high-performance MR technology with a low total cost of ownership.

Both the Optima MR360 and the Brivo MR355 are 'ecomagination' certified and are engineered to drive low operating costs by using eco-friendly technologies like efficient gradients, water-cooling systems, super capacitors, and power distribution units. MEH

Transforming electric powered wheelchairs into communication hubs

With modern communication aids, users of electric powered wheelchairs can operate a PC and cellphone without human assistance. Writing text messages and e-mails, surfing the web, making phone calls – all these things can be a real challenge for people with disabilities. And that applies all the more to wheelchair users with impaired motor skills in their hands and to severely disabled people, who are dependent on communication aids to be able to operate electronic devices without difficulty. And a new communication aid is just what researchers from the Advanced System Technology (AST) branch of the Fraunhofer Institute for Optronics, System Technologies and Image Exploitation IOSB have developed at the request of its longstanding industrial partner, the medical technology manufacturer Otto Bock Mobility Solutions.

The new aid is an add-on module that expands the functionality of electric powered wheelchairs by connecting up the existing wheelchair control system (e.g. joystick, chin control) to a cellphone, PC, TV, games console, etc. via Bluetooth. The interface for data transmission is the wheelchair's CAN bus, where all wheelchair data converges. "The module allows users to carry out all mouse functions – on their notebook or smartphone, say – and thereby check their e-mails, surf the web, and send an SOS in the event of an emergency. All USB-enabled devices are supported," says Prof. Dr. Andreas Wenzel, group manager for embedded systems at the AST branch in Ilmenau.

Smartphone app calculates wheelchair range

The module is compatible with many electric powered wheelchairs from the Otto Bock range. Box-shaped and compact, its dimensions of 85 x 65 x 32 millimetres mean that it can be discreetly attached to the wheelchair. The box comprises both the hardware in the form of a printed circuit board and the software, and it has two Bluetooth interfaces. Wenzel describes the advantage of the second Bluetooth interface as follows: "The system not only enables interaction with electronic devices, it can also be used to transfer wheelchair data – such as battery capacity, motor currents, and errors in the drive system, for example – to a smartphone." A specially developed smartphone app reads and processes the data.

"When users of electric powered wheelchairs are considering going on an excursion, they are often uncertain about how long the battery will last, because the energy consumed by the wheelchair depends on the temperatures outside and the hilliness of the terrain. A wheelchair uses up more power on steep hills than on flat roads. This uncertainty often means wheelchair users choose to stay in rather than venture out," explains Wenzel. The Android app carries out a precise range projection. The app determines the current location, compares it against the battery capacity, and calculates if there is enough energy left to bring the wheelchair back to the home point. It obtains the requisite data from the Internet. Wheelchair users are informed how much further they can safely travel via their cellphones. When the capacity begins to run low, a warning appears on the smartphone display telling them that there is only enough power left for another ten kilometres.

"This gives users certainty and peace of mind," says Andreas Biederstädt, head of development for e-mobility and drive technology at Otto Bock. "The cellphone can be easily fitted to the wheelchair. Moreover, this enables us to do away with expensive industrial displays."

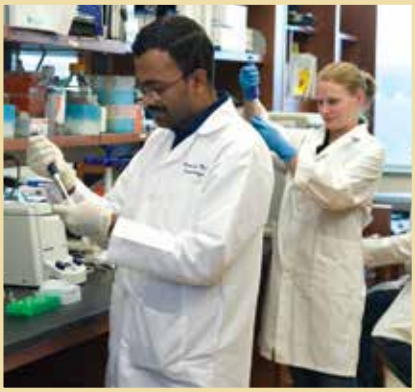
A further advantage of the app is that the navigation functions allow users to call up wheelchair-accessible routes, for example, or disabled toilets. This means users of all-terrain wheelchairs can go off road and receive a selection of suitable routes on their display. "The add-on module offers users of electric powered wheelchairs greater autonomy, safety, and convenience," sums up Biederstädt. "Not just the disabled but elderly people with restricted mobility stand to benefit from these sorts of mobility concepts with the Bluetooth module."

Initial tests have been successfully completed, and wheelchair prototypes equipped with the innovative communication aid have already been presented. Otto Bock is currently planning to produce a pilot run, and the finished product should be on sale from the third quarter of this year. Researchers at Fraunhofer IOSB's AST branch also want to drive the development of this technology. "The next step will see us linking our Bluetooth module up with home automation systems. This would enable disabled people to perform tasks such as setting the air conditioning, opening and closing blinds, and switching on and off lights without leaving their wheelchair," says Wenzel. MEH

Agenda

Selected schedule of regional medical meetings, conferences and exhibitions

Event	Date / City	Contact
■ AUGUST 2013		
FDI Istanbul 2013	28 – 31 August, 2013 Istanbul, Turkey	*Congress@fdi2013istanbul.org* *www.fdi2013istanbul.org*
■ SEPTEMBER2013		
Emergency Medicine & Hyperbaric Medicine Conf. & workshop	1 – 4 Sept, 2013 Jeddah, KSA	*jcme@kfshrc.edu.sa*
Royan International Twin Congress on Reproductive Biomedicine & Stem Cells Biology & Technology	4 – 6 Sept, 2013 Tehran, Iran	*info@royancongress.com* *http://www.royancongress.com/*
Advanced Technologies	5 – 9 Sept, 2013 Amman, Jordan	*www.estro-education.org*
Libya Healthcare Exhibition	10 – 12 Sept, 2013 Tripoli, Libya	*www.maf.ly*
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		
The 2nd Pediatric Orthopaedic Surgery Conference (POSC)	3 – 5 October, 2013 Dubai, UAE	*conference@uae.messefrankfurt.com* *www.posc-me.com*
UAE Cancer Congress 2013	3 – 5 October, 2013 Dubai, UAE	*uaecancercongress@mci-group.com* *http://www.uaecancercongress.ae/*
Iraq Health Expo 2013	3 – 6 October, 2013 Basra, Iraq	*info@pyrmidsfair.com* *www.iraqhealthexpo.com*
8TH World Congress of of Immunopathology, Respiratory Allergy & Asthma	12 – 15 October, 2013 Dubai, UAE	*info@wipocis.org* *www.wipocis.org*



Agenda

Selected schedule of regional medical meetings, conferences and exhibitions

Event	Date / City	Contact
Thalessemia International Federation World Congress TIF2013	20 – 23 October, 2013 Abu Dhabi, UAE	*pco@tif2013.org* *www.tif2013.org*
Hospital Build & Infrastructure Turkey	24 – 26 October, 2013 Istanbul, Turkey	*www.hospitalbuild-meturkey.com*
Abu Dhabi Medical Congress & Exhibition	27 – 29 October, 2013 Abu Dhabi, UAE	*www.abudhabimed.com*
8th Interdisciplinary World Congress on low back & Pelvic pain	27 – 31 October, 2013 Dubai, UAE	*info@worldcongresslbp.com* *http://www.worldcongresslbp.com/*
■ NOVEMBER 2013		
4th Emirates Cardiac Society Congress/1st Pediatric Cardiology Meeting	7 – 9 November, 2013 Dubai, UAE	*ecsc@mci-group.com* *http://www.ecsc.ae/*
4th International Diabetic Foot Conference	14 – 15 November, 2013 Dubai, UAE	*Idfc@mci-group.com* *http://www.idfc.ae/*
Int'l Congress of the Lebanese Society of Obstetrics/Gyn.	14 – 16 November, 2013 Beirut, Lebanon	*lsog1958@gmail.com* *http://www.lsog.org.lb/*
5th Pan Arab Human Genetics Conference	17 – 19 November, 2013 Dubai, UAE	*pco@pahgc.org* *www.pahgc.org*
6th Medication Safety Congress	22 – 24 November 2013 Abu Dhabi, UAE	*info@synovetics.com* *www.medicationsafety conference.com/*
■ DECEMBER 2013		
International Congress in Aesthetic, Anti Aging Medicine and Medical Spa	6 – 7 December, 2013 Dubai, UAE	*www.antiagingme.com*
Excellence in Paediatrics 2013	4 – 7 December, 2013 Doha, Qatar	*eip@2013.com* *www.2013.excellence.in.paediatrics.org*
GULFPCR-GIM 2013	12 – 13 December, 2013 Dubai, UAE	*www.gulfpcr.com*

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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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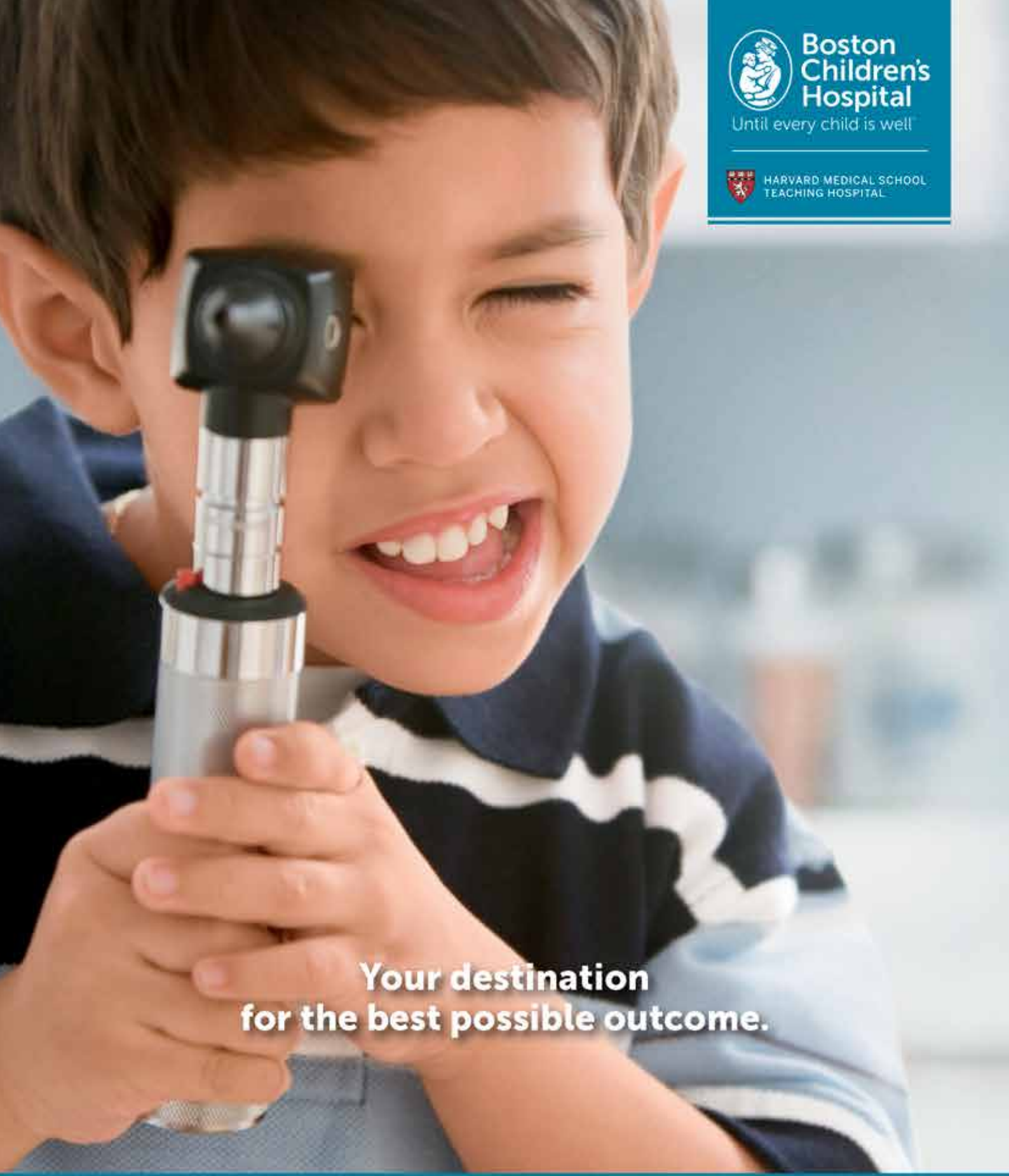

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