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July-August 2015

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Bridge to peace

Leaders meet in Cairo to promote health diplomacy

Iraq's healthcare on brink of catastrophe

Humanitarian response
plan launched by WHO

Medicine for kids

Prescribing antimicrobials for
children has special requirements

In the News:

- World Health Assembly: The resolutions
- AIDS: Starting antiretroviral treatment early improves outcomes
- Millennium Development Goals end this year. How have we fared with the health-related goals?



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Prognosis

Refugee crisis

Lebanon's healthcare system is taking tremendous strain under the weight of a massive influx of refugees from Syria. According to the UNHCR, registered Syrian refugees number more than 1.3 million, more than 20% of the population. The UNHCR says "an effective display of international solidarity and support is vital for Lebanon". In an effort to assist, the European Union has mobilised its Instrument for Stability to provide humanitarian assistance through the WHO in Lebanon. Read the report on page 52.

In our section on paediatrics we look at the special requirements for treating kids with antimicrobials. Guest writer Thomas Omogi outlines the requirements for prescribing various antimicrobials in the face of very few studies producing pharmacokinetic data for antimicrobial agents in children and adolescents. Also in this section we publish a number of reports and case studies from specialist paediatric hospitals. See page 34.

The WHO recently issued an appeal for funds to assist healthcare in Iraq. The public health system in the country is on the brink of collapse. If this happens, more than 3 million refugees, internally displaced persons and host communities will stop receiving health care, the WHO says. Health facilities are overloaded and medicines and supplies are running short, even at large referral hospitals, Dr Margaret Chan, WHO Director-General, pointed out during the appeal. Read the report and Dr Chan's statement on page 26.

Also in this issue we look at an initiative by the WHO in Syria to establish a network of non-specialist health workers who can help the estimated 600,000 people in the war-torn country who are suffering from severe mental health disorders and another 4 million from mild to moderate mental disorders. Read the report on page 29.

As in each issue, you will find a wealth of healthcare news from the region and the world as well as an update of select medical research taking place at some of the world's leading academic institutions.

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middle east monitor

Update from around the region



VPS Healthcare's Dr Shamsheer Vayalil honoured with Global Humanitarian Award at UN

Dr Shamsheer Vayalil, Founder and Managing Director of VPS Healthcare, received the Global Humanitarian Award at a special reception held at the United Nations headquarters in New York on 5 May 2015. Dr Shamsheer was recognized for his life-long philanthropic efforts and commitment to serving the less fortunate across the developing world. At the reception, Dr Shamsheer donated 100 free heart surgeries to the United Nations for the underprivileged across the globe.

The award was conferred by H.E. José Manuel Ramos-Horta, former President, Timor-Leste and Special Representative and Head, United Nations Integrated Peacebuilding Office in Guinea-Bissau; H.E. Lana Nusseibeh, Ambassador and Permanent Representative of the United Arab Emirates to the UN, in the presence of many senior UN officials, members of the diplomatic community and leaders from civil society including H.E. Jean-François Régis Zinsou, Permanent Representative of the Republic of Benin; H.E. Tête Antonio, Ambassador, Permanent Observer of the African Union to the UN; Amir Dossal, Chairman, Global Partnerships Forum; Lucie Brigham, Chief of Office, United Nations Office for Partnerships; Kelly Abramson, Director, Penn Global Medicine; Dr Prakash Masand, Chairman and CEO, Global Medical Education; and Dr Aziza Shad, Director, Pediatric Hematology Oncology and BMT, Georgetown University Hospital.

Commenting on this honourable occasion, Dr Shamsheer said: "It's with deep grat-

itude that I accept this honour on behalf of the VPS Healthcare family. I feel extremely humbled to receive such recognition on a platform so honourable, amongst such respectable peers."

"It is the need of the hour for private organizations to come together and support the Sustainable Development Goals (SDGs) of the United Nations, which are to be adopted later this year. As our commitment to support the noble cause of the UN, I pledge to donate 100 free heart surgeries to the United Nations for the less privileged across the world," Dr Shamsheer added.

Speaking on the occasion, Nusseibeh, said: "The power of the private sector is still a force that needs to be harnessed by multilateral organizations and the public sector alike – and we need to look no farther than Dr Shamsheer and VPS Healthcare for an example. Given the potential for opportunity for a company as diverse as VPS Healthcare in the African market, such a philanthropic effort will not only allow VPS Healthcare to get a better sense of future customers but also uncover ways to align their efforts to support the SDGs."

"As a permanent representative of the UAE, I am proud to be here today as we honour this Abu Dhabi-based company, and as a global citizen, I am grateful for your contribution, Dr Shamsheer, to the well-being of the underprivileged in our society and beyond."

Dr Shamsheer said: "This is just a beginning to what we want to achieve in terms of helping people in need. Our contributions don't stop here, we have a long and endless

path to look for ways that help poverty, rebuild communities post war or natural disasters; our aim is for people in need to attain a better life for themselves and their families. This award reinforces our intrinsic need to continue to strive and help the underprivileged regardless of geographic boundaries."

Al Jalila Foundation offers Emiratis scholarships for post grad studies

Al Jalila Foundation, a global philanthropic organisation dedicated to transforming lives through medical education and research, welcomes Emirati medical students to apply for postgraduate medical scholarships. AED 4 million has been allocated for the 2015/16 scholarships programme, which is open to all Emirati students who wish to pursue postgraduate studies in medical and health sciences in the United Arab Emirates.

The application deadline for Al Jalila Foundation postgraduate medical scholarships for the 2015/2016 academic year is 31 July 2015, and successful applicants will be announced in September 2015.

● For more information, visit: www.aljalilafoundation.ae

Boehringer Ingelheim sets up stroke academy

Pharmaceutical company Boehringer Ingelheim has launched the Boehringer Ingelheim Stroke Academy in the Middle East North Africa region. The academy aims to bring together leading international experts, cardiologists and neurologists to highlight the unmet treatment challenges and identify effective solutions, which will enable these experts to support patients, families and health authorities in the MENA region.

Globally, stroke has been identified as one of the leading causes of death. Prevention of stroke measures would involve identification of risk factors which can lead to stroke like atrial fibrillation, irregular blood circulation, tendency for blood clotting which requires effective treatment to minimize the chances of stroke occurrence. The Stroke Academy will introduce the participating experts to the latest scientific advances in prevention treatment and symptom management protocol. At the same time, it will to establish

treatment protocols for emergency care.

Boehringer Ingelheim recently introduced the 'MENA Stroke Initiative' which encourages establishment of stroke units in hospitals across the Middle East which will offer a dedicated stroke program to bring quicker, lifesaving treatment to stroke patients with effective outcomes. It is a part of the company's corporate social responsibility approach towards 'Making every second count, toward stroke recovery', and an effort towards developing the overall stroke management approach in the region, focusing not only on providing effective medicines but also developing the infrastructure required to provide optimal care to patients.

Dr Suhail Abdulla Al-Rukn, Neurology Consultant and Stroke Specialist, Neurology Department at Rashid Hospital-Dubai Health Authority; and Leader of the MENA Stroke Initiative who established the first certified stroke unit in the MENA region, said: "We launched the first stroke unit in the region in Dubai last year and since then we have witnessed great success in management of stroke, helping us to significantly bring down the associated mortality rates. Three more units are expected to be set-up in the UAE and we aim to set-up more units in Saudi Arabia, Egypt, Lebanon, Algeria, Kuwait, Qatar and Bahrain. The MENA Stroke Initiative aims to: decrease door to needle times- which is the interval between patient's arrival to the hospital and starting the treatment; establish dedicated stroke units; enable healthcare practitioners with the technical know-how of stroke unit protocol; sustain quality care and facilities through unit certifications and introduction of the latest scientific materials."

Yemen's healthcare struggles amid conflict

The health and lives of millions of people are at risk in Yemen as healthcare facilities struggle to cope with the demand for healthcare amid the ongoing conflict, according to a statement by the WHO in early June.

"As always in conflict, it is innocent civilians that pay the highest price," said Dr Margaret Chan, WHO Director-General. "Almost 2,000 people have been killed and

8,000 injured so far, including hundreds of women and children."

The shelters housing internally displaced persons are full of stories of loss and survival. For example, 6-year-old Malak lost her mother and saw others around her die as her family fled the fighting and 65-year-old Fathiya lost 13 members of her family and is now the sole guardian of 3 grandchildren who survived.

Almost 8.6 million people are in urgent need of medical help. WHO was able to dispatch almost 48 tonnes of medicines into the country during the 5-day ceasefire in May, serving some 400,000 people. This is vastly insufficient and people continue to suffer not only from war-related injuries, but from inability to get basic treatment for the most common health conditions, or get obstetric care during childbirth.

As the conflict continues, more lives are lost every day, not just due to the violence, but as a health system that has been seriously damaged barely copes with the extraordinary needs posed by the unrelenting violent conflict and can no longer provide them with the health services they need to stay alive.

Hospitals around the country are closing down their emergency operations rooms and intensive care units due to shortages in staff and fuel for generators. Medicines for diabetes, hypertension and cancer are no longer available. The National Tuberculosis Programme has shut down in some areas, and infectious diseases such as malaria and dengue fever are spreading. Outbreaks of polio and measles are also serious risks.

Throughout the conflict, there have been widespread violations of international humanitarian law and Geneva Conventions for the protection of health facilities, staff and patients. Health infrastructure continues to be hit, with attacks reported on hospitals and ambulances, a medical warehouse, an oxygen factory, and a blood transfusion centre. Some health care workers were killed trying to save lives and more injured.

"This unnecessary loss of innocent lives cannot go on. The health system must be allowed to function unimpeded by the insecurity. All parties must respect their obligations under international humanitarian law to protect civilians, health facilities and

health staff during conflict and to permit the supply of vital humanitarian aid, such as medicines, vaccines and medical equipment to areas where it is needed most, and ensure the right to urgently-needed lifesaving health care," Dr Chan said.

Emirates survey finds patients satisfied with healthcare services, but not cost

An insightful new survey, the first of its kind, giving patients' perspective of the quality of the UAE's healthcare provision has revealed the majority of users are satisfied with services in Abu Dhabi, Dubai and Sharjah but not happy with the cost.

The survey, 'Quality of Service: Patients Perspective UAE' commissioned by Ethos Integrated Solutions, the region's leading provider in delivering excellence for customer experience, was compiled from face-to-face interviews with over 1,000 residents aged between 18 and 56 of Abu Dhabi, Dubai and Sharjah, across genders and nationalities.

Satisfaction levels of eight specific healthcare provision attributes were tested, including perceived levels of staff skill/competency, doctor-patient information exchange, overall quality of treatment and healthcare cost.

"The findings make for compelling reading for all involved in healthcare delivery," said Robert Keay, founder and CEO of Ethos. "Patient experience is playing an increasingly important role in healthcare reforms and healthcare delivery generally. Added to the importance of patient satisfaction, figures from the World Health Organisation reveal that the per capita spend on healthcare in the UAE reached US\$1,569 in 2013 ranking the country within the Top 50 countries globally.

"Given plans by Dubai in particular to move into the realm of medical tourism, it is important to understand how customer experience, in this case patient experience, is playing out across multiple healthcare platforms.

"In the UAE there is no universally adopted measure of national patient satisfaction for healthcare. Given this lack of information and the importance of healthcare economically, we commissioned the survey to assess the level of patient experi-



ence in terms of overall healthcare provision and, more specifically, doctors' quality of service and consistency in advice."

Overall healthcare provision attained a satisfaction score of 72.7% though the cost of healthcare in the UAE attracted the lowest level of satisfaction at 62.9%. "There was, however, considerable disparity in the rankings given by residents of the three surveyed emirates, with Abu Dhabi ranking the highest," explained Key. "And interestingly, UAE nationals appear to be more satisfied with the service and cost than expatriates, particularly those using government facilities."

Overall doctor quality of service rated 69.5% though 44% admitted seeking second opinions and again disparity of ranking between emirates was evident. Doctors in Sharjah were the most likely to be recommended to friends and family, particularly by nationals.

Almost a quarter of those surveyed, both nationals and expatriates, said they preferred to seek treatment outside of the UAE. Western expatriates are the most likely to seek treatment abroad closely followed by Asian expatriates.

"Seven key healthcare destinations were named as the preferred source of treatment, depending on nationality, with better doctors, service, lower cost, specialised diagnosis facilities, stricter government standards and ability to communicate cited as some of the reasons for going abroad," said Key.

The survey also drew a wide-range of patient suggestions for improving the UAE health system. "These are not only focussed on cost reduction but improvements to medical insurance, facilities, patient care, quality of doctors, healthcare management and education," added Key.

● For details on the survey findings, visit: www.ethosplc.com

SKMC's pathology labs receive CAP reaccreditation

Sheikh Khalifa Medical City (SKMC) in Abu Dhabi announced its Pathology and Laboratory Medicine Institute has been reaccredited by the College of American Pathologists (CAP) after an on-site inspection, reaffirming the Institute's commitment to delivering service excellence at all times.

SKMC is managed by the Cleveland Clinic

and is a SEHA Health System Facility.

The Pathology and Laboratory Medicine Institute provides diagnostic laboratory services for SKMC patients, operating 24 hours a day, seven days a week. The Institute was the first diagnostic laboratory in Abu Dhabi to be accredited by the College of American Pathologists in 2011 for all services that it provides, and it was also reaccredited in 2012.

The CAP accreditation program is designed to maintain accuracy of test results and ensure accurate patient diagnosis, helping healthcare providers to deliver the highest standards of care for patients. Onsite inspections take place every two years using CAP accreditation checklists to ensure organizations are complying with the program's requirements.

Private investment helps raise UAE healthcare quality

Private investment is helping drive the United Arab Emirates towards its goal of implementing international best-practice in healthcare by 2021, but the sector needs to work harder to attract and retain skilled staff, according to an Economist Intelligence Unit report commissioned by Abu Dhabi-based investment company Waha Capital.

In the report, called "Investing in quality", senior executives in healthcare policy making, operational management and insurance provision in the UAE said growing private sector involvement and greater international accreditation are helping to lift quality standards markedly.

This should persuade more people to seek healthcare services in the UAE, rather than travelling abroad, which can result in much higher expenses for families – often a cost borne by government budgets. A Gallup survey in 2012 showed that two in five Emiratis had a preference for treatment abroad.

"The UAE authorities have rightly pinpointed healthcare as a priority area for private investment, and the policy is clearly working to raise standards. It is very encouraging that global accreditation bodies such as the Joint Commission International are now highly active in the country," said Salem Al Noaimi, Chief Executive Officer and Managing Director of Waha Capital. "The

nature of competition means that credibility and reputation are key, especially in highly sensitive areas such as personal health."

He added: "As international best practice becomes common practice in the UAE, there will be no need to look overseas for care. This will not only alleviate pressure on government budgets, it will also enable patients to receive medical care and recuperate on their home turf amongst their families."

Waha Capital is investing in the healthcare sector through its wholly owned subsidiary, Anglo-Arabian Healthcare Group, one of the fastest growing healthcare companies in the country in terms of assets.

While praising the improved climate for private investment in healthcare, the executives interviewed for the report pointed out two major challenges for the sector: human resources and varying regulations across the nation's seven emirates.

The growth of private healthcare provision has increased the number of doctors and nurses in the country – with those in the private sector jumping by over 40% in 2012 alone, when seven new hospitals opened.

But with the number of healthcare workers needing to rise by 50% over the next six years to meet government targets, staff turnover remains high, the report found. This is partly because many developing country practitioners use the UAE as a path to a career in Western Europe and North America.

The report found that private healthcare companies looking to expand across the UAE also find regulatory differences between emirates a challenge, particularly when it comes to licensing healthcare practitioners.

"The UAE provides an excellent environment for private healthcare providers, and experienced management teams have the opportunity to build scale and raise operating and clinical standards," said Mark Adams, Chief Executive Officer of Anglo Arabian Healthcare Group.

"It's clear that staffing is an issue for the sector, and it is up to operators to provide the right incentives to attract and retain skilled employees. However, I see this as a virtual cycle. As quality of healthcare provision rises, the UAE will be recognised by doctors and nurses as one of the most desirable places to work in the world, not a stepping stone." MEH



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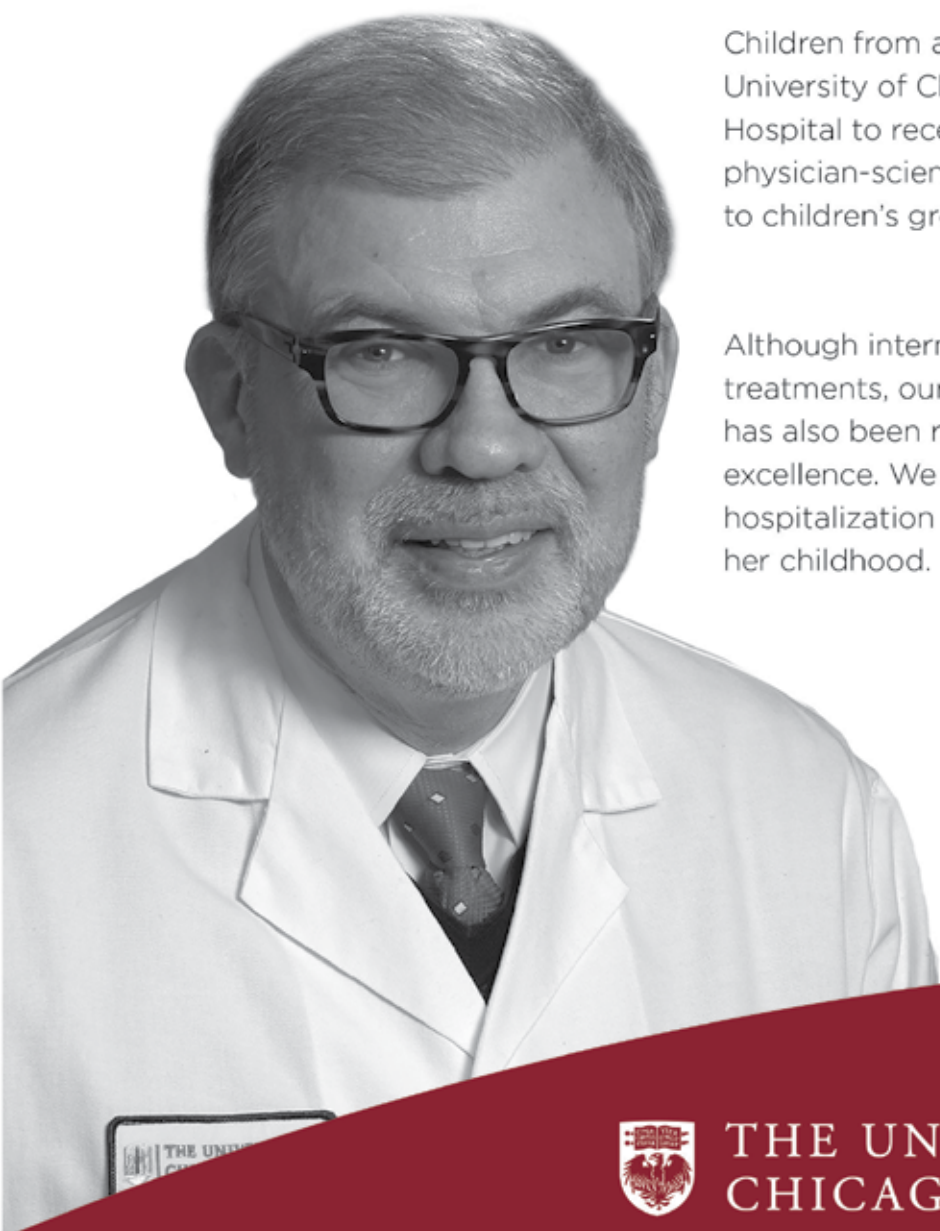
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Update from around the globe



Lunghammer - TU Graz

of Knowledge Discovery at Graz University of Technology, an internationally recognised BCI expert who coordinated the development of the research road map, explains: “In specific terms the BCI road map serves as an orientation guide for research-funding authorities but also presents the research world with a qualified view about the state of affairs and BCI trends.” BCIs have not only come a long way in research, they meanwhile have an enormous market potential – and not only in the field of medicine. “We have identified some 150 companies worldwide concerned with BCI, from technology firms and the marketing sector to the

aviation industry. Commercial applications in the entertainment industry are moving increasingly into the spotlight. Without them, BCIs would become unaffordable in the foreseeable future. Our Horizon 2020 road map sketches a path to the actual, affordable and user-friendly application of BCIs,” says Müller-Putz.

BCI now and in the future

The international team behind the BCI road map illustrated its findings with fictive case studies. BCIs of the future can replace, restore, improve and extend bodily functions. “This begins with the ability to communicate, takes place by means of the stimulation of muscles and nerves and extends to enhanced attention capacity,” summarises Müller-Putz. In the year 2025, there will be a broad range of brain-controlled applications which, according to the BCI road map, will be standard in medical treatment and therapy and also in monitoring personal health. Apart from brain signals, there will also be other bio-signals, like heartbeat or the electrical

conductivity of the skin, which will play a role in the seamless and intuitive connection between man and machine.

Current focus on neuroprosthetic grippers at Graz

Gernot Müller-Putz, with his team at Graz University of Technology, is currently coordinating a three-year EU research project called “MoreGrasp” with the aim of developing an extremely adaptable neuroprosthetic gripper. If you can no longer grip an object, for example in paraplegia, many everyday tasks from cooking to cleaning your teeth are impossible. Suddenly you are continually reliant on help. Personalised neuroprosthetic grippers can be an enormous help and can give you back sizeable quality of life. The development is based on the fact that brainwave patterns change when you think of certain movements. The brain-computer interface measures these patterns and the neuroprosthetic device stimulates particular muscles in the arms and hands in a targeted way until they move.



Roadmap BNCI Horizon 2020

http://bnci-horizon-2020.eu/images/bncih2020/Roadmap_BNCI_Horizon_2020.pdf

WHO issues best practices for naming new human infectious diseases

The World Health Organization (WHO) has called on scientists, national authorities and the media to follow best practices in naming new human infectious diseases to minimize unnecessary negative effects on nations, economies and people.

“In recent years, several new human infectious diseases have emerged. The use of names such as ‘swine flu’ and ‘Middle East Respiratory Syndrome’ has had unintended negative impacts by stigmatizing certain communities or economic sectors,” says Dr Keiji Fukuda, Assistant Director-General for Health Security, WHO. “This may seem like a trivial issue to some, but disease names really do matter to the people who are directly affected. We’ve seen certain disease names provoke a backlash against members of particular religious or ethnic

Research road map for Brain-Computer Interfaces

Research and science fiction has been fascinated by brain-machine or brain-computer interfaces – BCI for short – since the early 1970s. Quite apart from cyborgs and the game industry, the most important application potentials lie in thought-controlled communication and movement support of physically disabled persons. Today BCIs stand on the threshold between laboratory prototypes and user-friendly real applications. Under the auspices of Graz University of Technology, a BCI road map has been developed for BCI research in the coming ten years for the Horizon 2020 EU funding programme. The road map gives a global perspective on BCI research, demonstrates potentials and challenges, and articulates the present gaps between current and future applications.

Market potential between man and machine

As Gernot Müller-Putz from the Institute

communities, create unjustified barriers to travel, commerce and trade, and trigger needless slaughtering of food animals. This can have serious consequences for peoples' lives and livelihoods."

Diseases are often given common names by people outside of the scientific community. Once disease names are established in common usage through the Internet and social media, they are difficult to change, even if an inappropriate name is being used. Therefore, it is important that whoever first reports on a newly identified human disease uses an appropriate name that is scientifically sound and socially acceptable.

The best practices apply to new infections, syndromes, and diseases that have never been recognized or reported before in humans, that have potential public health impact, and for which there is no disease name in common usage. They do not apply to disease names that are already established.

The best practices state that a disease name should consist of generic descriptive terms, based on the symptoms that the disease causes (e.g. respiratory disease, neurologic syndrome, watery diarrhoea) and more specific descriptive terms when robust information is available on how the disease manifests, who it affects, its severity or seasonality (e.g. progressive, juvenile, severe, winter). If the pathogen that causes the disease is known, it should be part of the disease name (e.g. coronavirus, influenza virus, salmonella).

Terms that should be avoided in disease names include geographic locations (e.g. Middle East Respiratory Syndrome, Spanish Flu, Rift Valley fever), people's names (e.g. Creutzfeldt-Jakob disease, Chagas disease), species of animal or food (e.g. swine flu, bird flu, monkey pox), cultural, population, industry or occupational references (e.g. legionnaires), and terms that incite undue fear (e.g. unknown, fatal, epidemic).

The final name of any new human disease is assigned by the International Classification of Diseases (ICD), which is managed by WHO. ICD is used by doctors, nurses, researchers, health information managers and coders, policymakers,

insurers and patient organizations around the world to classify diseases and other health problems and record them in a standardized way on health records and death certificates. This enables the storage and retrieval of diagnostic information for clinical, epidemiological and quality purposes. These records are also used by WHO Member States to compile national mortality and morbidity statistics. Finally, ICD is used for reimbursement and resource allocation decision-making by countries.



International Classification of Diseases

www.who.int/classifications/icd

Essential Medicines List updated

The World Health Organization (WHO) has published the new edition of its Model List of Essential Medicines, which includes ground-breaking new treatments for hepatitis C, a variety of cancers (including breast cancer and leukaemia) and multi-drug resistant tuberculosis (TB), among others. The move opens the way to improve access to innovative medicines that show clear clinical benefits and could have enormous public health impact globally.

"When new effective medicines emerge to safely treat serious and widespread diseases, it is vital to ensure that everyone who needs them can obtain them," said WHO Director General, Dr Margaret Chan. "Placing them on the WHO Essential Medicines List is a first step in that direction."

Increasingly, governments and institutions around the world are using the WHO list to guide the development of their own essential medicines lists, because they know that every medicine listed has been vetted for efficacy, safety and quality, and that there has been a comparative cost-effectiveness evaluation with other alternatives in the same class of medicines.

The list is updated every two years by an Expert Committee, made up of recognized specialists from academia, research and the medical and pharmaceutical professions. This year, the Committee underscored the urgent need to take action to promote eq-

uitable access and use of several new highly effective medicines, some of which are currently too costly even for high-income countries.

These included new medicines to treat Hepatitis C, which affects about 150 million people globally, killing approximately half a million people each year, when chronic infection develops into liver cirrhosis or liver cancer.

Until recently, treatment for the disease presented minimal therapeutic benefits and serious side effects. Five new medicines – direct acting oral antivirals – have recently come on the market transforming chronic hepatitis C from a barely manageable to a curable condition, the new medicines have few side effects and high tolerance in patients. All five products, including sofosbuvir and daclatasvir, were included in the List. But high prices currently make them unaffordable and thus inaccessible to most people who need them.

"While some efforts have been made to reduce their price for low-income countries, without uniform strategies to make these medicines more affordable globally the potential for public health gains will be reduced considerably," said Dr Marie-Paule Kieny, WHO Assistant Director General for Health Systems and Innovation.

Cancers figure among the leading causes of illness and death worldwide, with approximately 14 million new cases and 8.2 million cancer-related deaths in 2012. The number of new cases is expected to rise by about 70% over the next two decades. New breakthroughs have been made in cancer treatment in the last years, which prompted WHO to revise the full cancer segment of the Essential Medicines List this year: 52 products were reviewed and 30 treatments confirmed, with 16 new medicines included in the List.

"Some of these medicines produce relevant survival benefits for cancers with high incidence, such as trastuzumab for breast cancer," explained Dr Kees De Jongheere, WHO Director of Essential Medicines. "Other treatment regimens for rare cancers such as leukemia and lymphoma, which



can cure up to 90% of patients, were added to set a global standard.”

TB remains one of the world’s most deadly infectious diseases. In 2013, 9 million people fell ill with TB and 1.5 million died from the disease. Over 95% of TB deaths occur in low- and middle-income countries. After about 45 years of scarce innovation for TB medicines, 5 new products were included in the EML. Four of these, including bedaquiline and delamanid, target multi-drug-resistant TB.

The Committee also recommended supporting off-label uses in cases where there is clear evidence of major health benefits, though no licensed indication, such as for many medicines for children.

“It is important to understand that the Essential Medicines List is the starting block and not the finishing line,” concluded Dr Kieny. “Its purpose is to provide guidance for the prioritization of medicines from a clinical and public health perspective. The hard work begins with efforts to ensure that those medicines are actually available to patients.”



Essential Medicines List

www.who.int/medicines/publications/essentialmedicines/EML2015_8-May-15.pdf

Essential Medicines List Children

www.who.int/medicines/publications/essentialmedicines/EMLc2015_8-May-15.pdf

Device created for faster skin biopsies without anaesthesia

Universidad Carlos III de Madrid (UC3M) and the Institute for Health Research of the Hospital “Ramón y Cajal” (IRYCIS) have patented a new device for performing skin biopsies. With this new tool a skin biopsy can be performed with fewer instruments and the length of the procedure is shortened from thirty minutes to less than five. Neither local anaesthesia nor specialized personnel are required. As a result, faster diagnosis of pathologies such as skin cancer is possible.

Currently a skin biopsy involves cutting the base layer of the skin manually, removing it with forceps and sewing up the

incision with one or two stitches. Thanks to the new automatic device, a simple click will be enough to obtain a sample, explains Jesús Meneses, one of the inventors from the MAQLAB Research Group at the UC3M Department of Mechanical Engineering.

This invention is an ergonomic tool which is “compact and easy to use”, explains Meneses, and makes it possible to obtain a skin sample using only one single instrument. The new device is able to make the incision and remove the tissue sample automatically, and complies with all of the sanitation standards established by the Institute for Health Research “Ramón y Cajal” (IRYCIS), with whom UC3M has jointly applied for the patent.

Earlier detection of skin cancer

This invention will aid in earlier detection of pathologies such as skin cancer and will also allow doctors to see a greater number of patients, which is of the utmost importance in fields such as dermatology which are overwhelmed by high patient demand, assures Emiliano Grillo, a dermatologist at Ramón y Cajal Hospital and a clinical research associate at the IRYCIS. In his own practice, Grillo identified the potential benefits of such an invention “in a doctor’s office overwhelmed by patient demand, such as a dermatology clinic”. The invention would “make it possible for the patient to leave the doctor’s office with the diagnostic tests already done, and to begin earlier treatment if necessary”.

The prototype of this device is ready to perform demonstrations and is protected by a patent application, indicates Cristina Castejón, a researcher at the MAQLAB Research Group. In addition, Juan Carlos García Prada, the head of the MAQLAB Research Group and professor of the Mechanical Engineering Department at UC3M, indicates that the next step is to seek ways to achieve greater social impact, a mission for which the relationship with the UC3M Science Park and the Innovation Unit at IRYCIS is “fundamental” as “they take care of the

patent application process and the future technological transfer. In this case, it was the UC3M Science Park who informed us about the needs of doctors at the IRYCIS so that we could consider collaborating on a joint project, and we are proud of the result,” he concludes.

Currently, manufacturers of medical equipment are being sought to develop the product in accordance with licensing agreements

WHO moves to improve global health data

On 6 May the World Health Organization (WHO) and the Institute of Health Metrics and Evaluation (IHME) signed a Memorandum of Understanding defining areas where they will work together to improve the quality and use of global health estimates to measure the world’s health challenges.

The agreement aims to increase transparency, accessibility and consistency of health estimates to help policymakers make informed decisions about what public health programmes should be prioritized and the research that is needed.

“Accurate health statistics are the foundation of a good health system,” says Dr Marie-Paule Kieny, Assistant Director-General for Health Systems and Innovation at WHO. “When we know what makes people ill and why they die, we know where to put resources.”

Currently, complete health data is rarely available for every population and year. Even when it is available, the data may not be directly comparable year-on-year because they come from different sources such as research projects, household surveys and hospital records, and the findings may vary significantly.

Where gaps in, or no, data exist, statistical models are used to make estimates, often leading to very different results. In this regard, collaboration among WHO, other United Nations agencies and academic institutions such as IHME is essential to improve global health estimates.

By committing to increasing transparency regarding data sources and the methods

used to calculate global health estimates, WHO and IHME aim to improve the accuracy and utility of health information to help countries to direct resources where they are most needed.

As part of this collaborative work, WHO and IHME are also working with academics, journal editors, and other partners to develop guidelines for good practice in reporting global health estimates.

The guidelines aim to ensure that published health estimates serve the needs of their two primary audiences – policy-makers and researchers. They underscore the importance of ensuring that studies of health estimates include information about data sources used, clear explanations of analytical methods, how the new estimates compare to previously published studies, and why they differ.

These guidelines are in the final stage of development and will be published online in the coming months.

Sheikh Zayed Institute for Pediatric Surgical Innovation first in US to rid bone tumours with incisionless surgery

Doctors from the Sheikh Zayed Institute for Pediatric Surgical Innovation at Children's National Medical Center in Washington, DC, are the first in the United States to treat osteoid osteoma, a benign but painful bone tumour that commonly occurs in children and young adults, using an experimental magnetic resonance-guided high-intensity focused ultrasound (MR-HIFU) method.

Two patients, 16-year-old Alfredo Coreas and 10-year-old Niyati Shah, have been treated successfully in a research study aimed at testing the safety and feasibility of this noninvasive and precise treatment option.

"Our team set out to provide a noninvasive treatment option for children with osteoid osteoma and we're very pleased with the success of the first two treatments," said Karun Sharma, MD, PhD, Director of Interventional Radiology at Children's National and Principal Investigator for the osteoid osteoma trial at the Sheikh Zayed Institute. "Both children we treated



Niyati Shah, 10 and Alfredo Coreas, 16 have been treated successfully for osteoid osteoma in a research study aimed at testing the safety and feasibility of noninvasive magnetic resonance-guided high-intensity focused ultrasound.

were very active prior to the onset of their tumour, one a soccer player and the other a swimmer, but because of the pain from the tumour, they have been unable to enjoy their favourite activities, until now."

Osteoid osteoma was previously treated with orthopaedic surgery that involved scraping the tumour from the bone or removing the affected part of the bone. The most commonly used treatment today is CT-guided radiofrequency ablation (RFA). While this is a less invasive method, it still requires drilling through muscle and soft tissue into bone. RFA also exposes the patient and operator to ionizing radiation.

High-intensity focused ultrasound therapy uses focused sound wave energy to heat and destroy the targeted tumour under MRI guidance. This precise and controlled method does not require a scalpel or needle, greatly reducing the risk of complications like infections and bone fractures. It is also a faster treatment option, with expected total procedure time of an hour or less. In the US, MR-HIFU is used to treat uterine fibroids and painful bone metastases from several types of cancer in adults, but it has not been used in children.

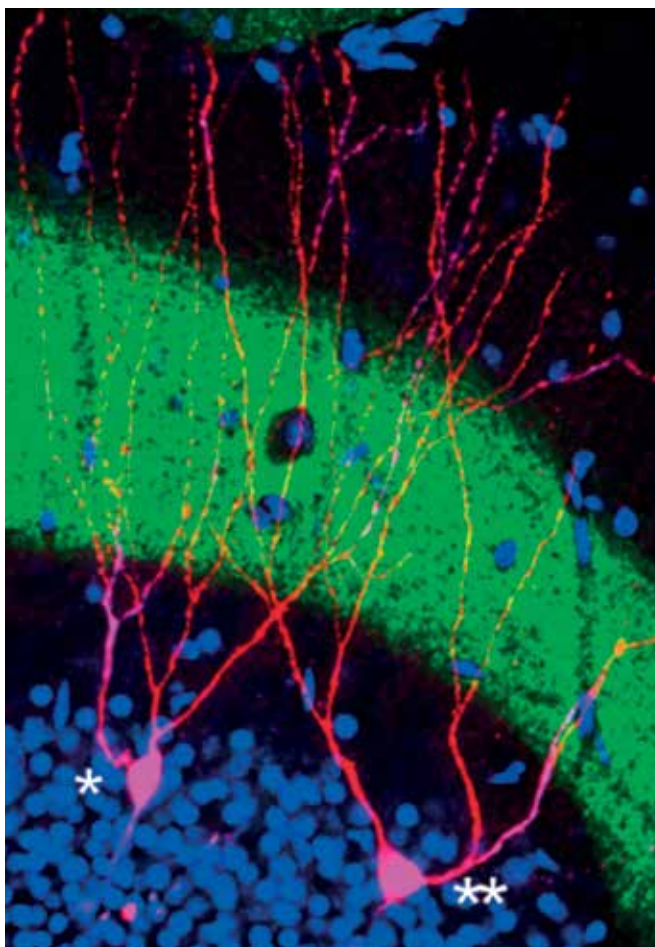
This breakthrough is the latest from the Image-Guided Non-Invasive Thera-

peutic Energy (IGNITE) program, a collaboration of the Sheikh Zayed Institute and the division of Radiology, Oncology, Surgery, and Anesthesiology at Children's National. The goal of the IGNITE program is to improve the quality of life and outcomes for paediatric patients through the development and clinical introduction of novel minimally invasive and noninvasive surgery technologies and combination therapy approaches. The team is led by Peter Kim, MD, CM, PhD, Vice President of the Sheikh Zayed Institute.

"The use of MR-HIFU ablation of osteoid osteoma is a perfect example of our mission in the Sheikh Zayed Institute to make paediatric surgery more precise, less invasive and pain-free," said Dr. Kim. "Our leading team of experts are also exploring the use of MR-HIFU as a noninvasive technique of ablating growth plates and paediatric solid tumours. We also have another clinical trial open for children and young adults with refractory soft tissue tumours, which is being performed in collaboration with Dr Bradford Wood's team at the National Institutes of Health, and if successful, it would be the first in the world." MEH

the laboratory

Medical research news from around the world



Two cells in the mouse hippocampus; one was involved in the memory engram (**) and one was not involved (*).

Researchers retrieve “lost” memories

Retrograde amnesia is the inability to recall established memories. In humans, amnesia is associated with traumatic brain injury, Alzheimer’s disease, and other neurological conditions. Whether memories lost to amnesia are completely erased or merely unable to be recalled remains an open question. Now, in a finding that casts new light on the nature of memory, published in *Science*, researchers from the RIKEN-MIT Center for Neural Circuit Genetics demonstrated in mice that traces of old memories do remain in the amnesic brain, and that the cellular pathways underlying them can be reactivated, allowing lost memories to be found.

The research team, led by Susumu Tonegawa, Director of the RIKEN Brain

Science Institute in Saitama, Japan, was interested in how stable memories are formed in the brain and whether memories whose storage was disrupted by chemically inducing retrograde amnesia, could still be recalled. “Brain researchers have been divided for decades on whether amnesia is caused by an impairment in the storage of a memory, or in its recall,” said Tonegawa.

To make mice amnesic, they were first trained to associate a mild foot shock with a specific environment, chamber A, eliciting a typical “freezing” behavior. Eventually, trained mice would freeze in chamber A even without the shock. Neurons activated during memory formation were genetically

labeled to allow their visualization and reactivation. Then, some mice were given a chemical, anisomycin, which inhibits new protein synthesis and prevents increases in synaptic strength important for memory encoding, thus inducing retrograde amnesia. Other mice received saline as a control. As expected, amnesic mice returned to chamber A did not freeze, indicating that they could not recall the memory for the specific association of the chamber and the mild foot shock.

Next, to investigate whether the stored memory from the foot shock training in chamber A was absent from the amnesic mice or remained present but was not retrievable, the researchers used optogenetic technology to selectively activate neurons that were genetically labelled

during their training in chamber A with a blue light-sensitive protein, channel rhodopsin, but this time while the mice were in a novel, neutral environment, chamber B. Surprisingly, during activation of the cells involved in the foot shock memory, collectively called a “memory engram”, with blue light pulses, the amnesic mice froze just as much as the control mice, indicating that they remembered that they had acquired the memory, even though they could not recall it when placed in chamber A.

To explain how the “lost” memory was recalled during light stimulation of the memory engram, despite the induction of retrograde amnesia, the authors suggest that different processes may control memory encoding and recall. For example, during the training period, brain connections between unique memory engrams in neighbouring brain structures may be strengthened and once this has occurred, may not require an increase in synaptic strength in order to store, but not recall, the contextual fear memory and would be preserved in the amnesic state. Indeed, they observed that connectivity was enhanced between memory engram cells in the fear memory-holding amygdala and context memory-holding hippocampus of amnesic mice, even though synaptic changes remained stable.

“Our conclusion,” says Tonegawa, “is that in retrograde amnesia, past memories may not be erased, but could simply be lost and inaccessible for recall. These findings provide striking insight into the fleeting nature of memories, and will stimulate future research on the biology of memory and its clinical restoration.”

● doi: 10.1126/science.aaa5542

Nanorobotic agents open blood-brain barrier, offering hope for new brain treatments

Magnetic nanoparticles can open the blood-brain barrier and deliver molecules directly to the brain, say researchers from the University of Montreal, Polytechnique Montréal, and CHU Sainte-Justine. This barrier runs inside almost all vessels

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in the brain and protects it from elements circulating in the blood that may be toxic to the brain. The research is important as currently 98% of therapeutic molecules are also unable to cross the blood-brain barrier.

“The barrier is temporary opened at a desired location for approximately 2 hours by a small elevation of the temperature generated by the nanoparticles when exposed to a radio-frequency field,” explained first author and co-inventor Seyed Nasrollah Tabatabaei.

“Our tests revealed that this technique is not associated with any inflammation of the brain. This new result could lead to a breakthrough in the way nanoparticles are used in the treatment and diagnosis of brain diseases,” explained the co-investigator, H el ene Girouard.

“At the present time, surgery is the only way to treat patients with brain disorders. Moreover, while surgeons are able to operate to remove certain kinds of tumours, some disorders are located in the brain stem, amongst nerves, making surgery impossible,” added collaborator and senior author Anne-Sophie Carret.

Although the technology was developed using murine models and has not yet been tested in humans, the researchers are confident that future research will enable its use in people.

“Building on earlier findings and drawing on the global effort of an interdisciplinary team of researchers, this technology proposes a modern version of the vision described almost 40 years ago in the movie *Fantastic Voyage*, where a miniature submarine navigated in the vascular network to reach a specific region of the brain,” said principal investigator Sylvain Martel.

In earlier research, Martel and his team had managed to manipulate the movement of nanoparticles through the body using the magnetic forces generated by magnetic resonance imaging (MRI) machines.

To open the blood-brain barrier, the magnetic nanoparticles are sent to the surface of the blood-brain barrier at a desired location in the brain. Although it was not the technique used in this study, the placement could be achieved by us-

ing the MRI technology described above. Then, the researchers generated a radio-frequency field. The nanoparticles reacted to the radio-frequency field by dissipating heat thereby creating a mechanical stress on the barrier. This allows a temporary and localized opening of the barrier for diffusion of therapeutics into the brain.

The technique is unique in many ways. “The result is quite significant since we showed in previous experiments that the same nanoparticles can also be used to navigate therapeutic agents in the vascular network using a clinical MRI scanner,” Martel remarked. “Linking the navigation capability with these new results would allow therapeutics to be delivered directly to a specific site of the brain, potentially improving significantly the efficacy of the treatment while avoiding systemic circulation of toxic agents that affect healthy tissues and organs,” Carret added. “While other techniques have been developed for delivering drugs to the blood-brain barrier, they either open it too wide, exposing the brain to great risks, or they are not precise enough, leading to scattering of the drugs and possible unwanted side effect,” Martel said.

Although there are many hurdles to overcome before the technology can be used to treat humans, the research team is optimistic. “Although our current results are only proof of concept, we are on the way to achieving our goal of developing a local drug delivery mechanism that will be able to treat oncologic, psychiatric, neurological and neurodegenerative disorders, amongst others,” Carret concluded.

● doi: 10.1016/j.jconrel.2015.02.027

Re-inflating balloon after carotid stenting doubles risk of stroke and death

After reviewing outcomes from thousands of cases, researchers at Johns Hopkins report that patients with blocked neck arteries who undergo carotid stenting to prop open the narrowed blood vessels fare decidedly worse if their surgeons re-inflate a tiny balloon in the vessel after the mesh stent is in place.

Although the overall risk of stroke and death is low in patients who undergo ca-

rotid stenting, the common practice of “ballooning” the vessel after the wire mesh is inserted can double the risk of death and stroke during or shortly after the procedure, according to findings published online May 30 in the *Journal of Vascular Surgery*.

“Ballooning after placing the stent appears to cause the very complication it’s intended to prevent,” says study senior author Mahmoud Malas, M.D., M.H.S., an associate professor of surgery at the Johns Hopkins University School of Medicine. “Surgeons should avoid doing it. Period.”

The carotid arteries, which run on both sides of the neck and ferry oxygen-rich blood from the heart to the brain, can become narrowed and stiff from build-up of fat and calcium deposits over time. The condition, known as carotid stenosis, is responsible for half of the nearly 800,000 strokes that occur in the United States each year, according to the Centers for Disease Control and Prevention.

Patients with severe blockages typically undergo surgery to scrape off the fatty deposits from the walls of the vessel, the preferred approach that carries notably lower stroke risk but is not recommended for people too sick to withstand traditional surgery. Such patients are often offered minimally invasive stent placement to flatten and stabilize the built up debris inside the clogged vessels.

To place the stent, surgeons thread a catheter through the groin and up into the neck artery. Once inside, surgeons typically insert a tiny surgical balloon and inflate it to compress the fatty deposits, open up the vessel, and make room for the stent.

Once the stent is in place, however, it is common practice to re-inflate the balloon to expand the wire mesh and firm up its position against the artery walls. But the new Johns Hopkins study shows re-inflating the balloon once the stent is in place fuels stroke risk.

A previous study led by Malas showed post-stent ballooning could cause another serious complication marked by a precipitous drop in blood pressure and breathing problems.

For the new study, the team analyzed



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stroke and death risk in more than 3,700 patients, ages 19 to 89, who had carotid stenting between 2005 and 2014 in hospitals across the United States and whose outcomes were reported in the *Vascular Quality Initiative*, a national repository of vascular surgery outcomes. One group of patients had pre-stent ballooning only, another was treated with post-stent ballooning only, and a third had the combination technique involving balloon use both before and after stent placement.

While the overall risk of stroke and death was relatively low – 2.4% of patients had a stroke within 30 days of treatment and less than 1% died – those treated with combination pre and post-stent ballooning were twice as likely to suffer a stroke or die. Those who had post-stent ballooning alone also had an elevated risk but in the final analysis, the difference did not reach statistical significance.

The researchers believe that repeat ballooning after stent placement causes stroke by driving the stent deeper into the fragile vessel walls and disturbing the fatty plaque that is built up atop the walls. This, they say, can cause splinters of plaque to chip off and make their way to the brain.

“The main goal of carotid stenting is not so much to restore blood flow as to contain and stabilize preexisting plaque,” Malas says. “Our message is clear: Once inside the artery, leave the stent alone.”

Unlike the more common heart stenting where the main goal is to open the heart’s arteries and restore blood flow to the cardiac muscle, stenting the carotid arteries is done with the brain in mind.

“Carotid stenting is unique,” says study author Tammam Obeid, M.B.B.S., a surgery fellow at the Johns Hopkins University School of Medicine. “It is the only stenting procedure where the end target is not muscle but the far more delicate tissue of the brain.”

Other investigators involved in the study were Dean Arnaoutakis, Isibor Arhuidese, Umair Qazi, Christopher Abularrage, James Black and Bruce Perler, all of Johns Hopkins.

● doi: 10.1016/j.jvs.2015.03.069

Chinese herbal remedy shown to reduce fatigue in cancer patients

Cancer patients suffering from moderate to severe fatigue reported significantly less fatigue within 2-3 weeks of treatment with the traditional Chinese medicine herbal mixture Ren Shen Yangrong Tang (RSYRT), a soup containing 12 herbs. The safety and efficacy of RSYRT in a Phase I/II trial are presented in an article in *The Journal of Alternative and Complementary Medicine*. The article is available online – doi:10.1089/acm.2014.0211.

Yichen Xu, MD, Yanzhi Chen, MD, and Pingping Li, MD, Peking University School of Oncology (Beijing, China) and Xin Shelley Wang, MD, MPH, The University of Texas MD Anderson Cancer Center (Houston) assessed the level of fatigue in cancer patients before and after RSYRT therapy. Patients took RSYRT twice a day for 6 weeks. Fatigue is one of the major challenges in oncology care. According to traditional Chinese medicine, fatigue is characterized by a deficiency in Qi, a physical life force related to the energy flow of the body. RSYRT is intended to improve Qi deficiency.

In the article “Ren Shen Yangrong Tang for Fatigue in Cancer Survivors: A Phase I/II Open-Label Study, the authors report that RSYRT was safe, with no evidence of toxicity in any of the patients treated.

Mutated gene leads to insensitivity to pain with drastic consequences

A rare congenital genetic mutation means that those affected do not feel pain. However, what seems, at first sight, to be a blessing, can have serious consequences. It means that injuries or diseases can go undetected for a long time. The affected gene was identified by an international research team from MedUni Vienna, the University of Munich and the University of Cambridge.

The starting point for this discovery was two unrelated children with a very rare and unusual disease: they had not been able to feel any pain since birth. But what sounds like a blessing can have serious consequences. “The affected

children usually come to our attention when their baby teeth start to erupt because they start to bite their own tongue, lips and fingers and, in some cases, even bite bits of them off. They are also susceptible to bone fractures, which can go unnoticed for a long time because they cannot feel pain,” explains Michaela Auer-Grumbach of the University Department of Orthopaedics at the Medical University of Vienna, lead author of the study together with Ya-Chun Chen of the University of Cambridge. Because they cannot perceive pain, over the course of their lives, sufferers can sustain injuries, burns and bone fractures, which, because there is no pain warning, are often discovered late and do not heal well. Without appropriate medical care these complications can even prove fatal.

The scientists analyzed the whole exome of the patients, that is to say all sections of the genetic material, which encode proteins. In both cases they identified mutations in gene PRDM12. “Identification of mutations in the same gene in two people from different families but with a very similar clinical picture was a strong indication that we had discovered the gene responsible,” says Jan Senderek of the Friedrich Baur Institute at the University of Munich. Definitive proof was then provided by the results of the working group led by Geoffrey Woods at the University of Cambridge: they also identified PRDM12 mutations in patients with congenital analgesia. Together with colleagues at home and abroad, the scientists went on to examine more patients with congenital pain perception disorders and came across further mutations. The results of the study are published in *Nature Genetics*.

“By discovering the cause of the disorder, we are able to provide appropriate genetic diagnosis and counselling for affected patients and their families,” says Michaela Auer-Grumbach in summary. Even though no treatment is currently available, we can reduce the risk of serious injury and complications by means of supportive measures, information and training for sufferers and their families.



The study authors hope that the publication will make doctors and geneticists more aware of this very rare and little known clinical picture.

In order to understand the mechanism of the disorder, the scientists worked with the developmental biologists Tatsuo Michiue and Shinya Matsukawa from the University of Tokyo to investigate the function of PRDM12 in tadpoles. In these tadpoles the loss of PRDM12 resulted in the defective development of nerve cells or neurons, which are important for pain perception. The PRDM12 gene contains the information for a factor that establishes the activity of other genes and hence the development of cells and tissue. This suggests that the absence of PRDM12 results in a malfunction of as yet unknown target genes, which are necessary for the development of the nervous system and effective pain perception.

The association between the congenital inability to feel pain and the defective development and function of the nervous system had already been demonstrated in earlier studies. These studies showed that mutations affected special sodium channels of pain receptors and signalling pathways for nerve growth factors. The discovery that disruptions to factors, which – like PRDM12 – control the genetic material, can result in insensitivity to pain, is new and provides insights into the development of the nervous system and the functional principle of pain perception. “Further investigations will show what significance the findings regarding PRDM12 have for pain research and the development of new pain medication,” says Michaela Auer-Grumbach.

● doi: 10.1038/ng.3308.

Researchers develop surgical clip that dissolves

Kobe University, Japan, has developed a safe surgical clip that dissolves and is absorbed by the body over time. Clinical use of this clip is expected because it can reduce the rate of post-operative complications and minimize problems associated with diagnostic imaging.

The clip was developed as a collaboration between the Division of Mechanics and Physics of Materials at the Kobe University Graduate School of Engineering and the Division of Hepato-Biliary-Pancreatic Surgery at the Kobe University Graduate School of Medicine.

Most surgical clips are currently made of titanium, and as many as 30 to 40 clips may be used during a single surgical procedure. They remain inside the patient’s body after the wounds are healed. Retained clips lead to diminished quality of CT and MRI images around the wound and may cause complications. The newly developed clip is 5mm in size and made of a magnesium alloy. The alloy also contains calcium and zinc to improve its microstructure, ensuring fastening ability and formability, qualities required of materials to make clips.

The safety and functionality of the clip were evaluated in vivo studies. To evaluate the safety, an implantation study was conducted in a subcutaneous mouse model. Very little gas was produced as the clip dissolved and there was no inflammation of the surrounding tissues after 1 to 12 weeks. These results suggest that the clip is associated with very few adverse effects. Blood testing revealed that levels of magnesium and other substances in the blood were in the normal range after 12 weeks. The volume of the implanted clip was reduced by almost half after 12 weeks. Therefore, the clip is likely to dissolve and exit the body within 1 year.

To evaluate its functionality, it was tested in a rat model in which the biliary duct, portal vein, hepatic artery, and hepatic vein were occluded with the clip and a partial liver was removed. The rat had no problems during a monitoring period of 8 weeks, suggesting that the clip functioned properly. Micro CT scanning of the mouse and rat revealed that the quality of images was not degraded and organs can be observed. MEH

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Delegates at the second technical briefing on the "Ebola Outbreak" at the World Health Assembly.

Guiding the health of the world's people

The Sixty-eighth session of the World Health Assembly (WHA) took place in Geneva 18-26 May 2015. The supreme decision-making body of WHO attended by delegations from all WHO Member States reviewed and approved a number of policies for the organisation. In her closing remarks, Dr Margaret Chan, WHO Director-General, said several "landmark resolutions and decisions" had been passed. *Middle East Health* looks at some of the key resolutions.

International Health Regulations

Delegates endorsed the International Health Regulations Review Committee recommendation to extend the deadline to 2016 to all countries that need more time to implement the Regulations. The recommendation also emphasizes a dynamic, ongoing process of evaluation and improvement, and the value of independent assessment.

The recent Ebola outbreak has highlighted the importance of all countries having strong capacities to rapidly detect, respond to and prevent global public health threats such as disease outbreaks. The International Health Regulations (2005), oblige all Member States to have these capacities in place. Only one-third of all countries (64), however, reported that they had met the minimum requirements in 2014.

Speakers recognized the important role

WHO plays in providing expertise and guidance to help countries enhance surveillance systems and laboratory services, build early warning and alert systems, and train health workers so that they can deal with major public health threats. They expressed strong support for pairing well-resourced countries with other countries to help them to meet the IHR requirements.

Working with non-State actors

The Health Assembly welcomed the fact that delegates had reached consensus on many parts of the draft framework of engagement with non-State actors (non-governmental organizations, private sector entities, philanthropic foundations and academic institutions), noting that it wishes to finalize the framework by the next Health Assembly. Delegates requested the Director-General to convene an intergovernmental meeting as soon as pos-



Dr Margaret Chan, WHO Director-General addresses delegates at the World Health Assembly

sible and to submit the finalized draft for adoption at the Sixty-ninth World Health Assembly. They asked the Secretariat to develop a register of non-State actors for next year's Health Assembly. Delegates acknowledged the importance of WHO engaging with non-State actors and of ensuring that risks of such engagement are managed robustly at global, regional and country level.

Counterfeit medical products

Substandard, spurious, falsely labelled, falsified and counterfeit medical products continue to threaten health, not only because they do not provide the benefits they advertise, but because they also pose a serious health risk, and undermine the credibility of health systems. The World Health Assembly had set up a mechanism to raise awareness, gather evidence, implement policies and evaluate effectiveness of ef-

forts to address this issue, and had planned to review the impact of that mechanism in 2016. Delegates agreed to postpone this to 2017 – both to allow more time for the review itself and for implementation of new policies to tackle the problem.

Surgical care

Delegates of the World Health Assembly agreed a resolution on strengthening emergency and essential surgical care and anaesthesia.

A wide range of conditions – from cancer and diabetes to obstructed labour and road traffic injuries – can be successfully treated by surgery. In many parts of the world, access to emergency and essential services is extremely limited, with low and middle income countries concentrating available surgical care in urban centres. As a result, maternal mortality rates remain high, minor surgical issues become lethal and treatable injuries can lead to death or disability.

This resolution will help countries

adopt and implement policies which will integrate safe, quality and cost effective surgical care into the health system as a whole. It highlights the importance of both expanding access and improving the quality and safety of services; strengthening the surgical workforce; improving data collection, monitoring and evaluation; ensuring access to safe anaesthetics such as Ketamine; and fostering global collaboration and partnerships. The resolution also underscores the need to raise awareness of the issue and build political commitment.

Polio

Delegates at the World Health Assembly agreed on a resolution in which Member States recommit to stopping polio and to preparing for the phased withdrawal of oral polio vaccines.

The meeting noted that polio eradication can only be achieved through global solidarity. Reviewing the latest global epidemiology and the impact of on-going ef-



Every year the World Health Assembly takes place in the Palais de Nations in Geneva. This photo is of the outside of the plenary hall of the Palais.

forts, delegates highlighted progress across Africa (which has not seen a case due to wild poliovirus since August 2014), and success in halting three large multi-country outbreaks in the Middle East, Horn of Africa and Central Africa. They also noted continuing efforts in Pakistan, and the strong progress being made, in close coordination with Gavi, the Vaccine Alliance, towards introduction of inactivated polio vaccine (IPV) and preparations for the phased withdrawal of oral polio vaccines.

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Air Pollution

Delegates at the World Health Assembly adopted a resolution to address the health impacts of air pollution – the world’s largest single environmental health risk. Every year 4.3 million deaths occur from exposure to indoor air pollution and 3.7 million deaths are attributable to outdoor air pollution. This was the first time the Health Assembly had debated the topic.

The resolution highlights the key role national health authorities need to play in raising awareness about the potential to save lives and reduce health costs, if air pollution is addressed effectively. It also stresses the need for strong cooperation between different sectors and integration of health concerns into all national, regional and local air pollution-related policies. It urges Member States to develop air quality monitoring systems and health registries to improve surveillance for all illnesses related to air pollution; promote clean cooking, heating and lighting technologies and fuels; and strengthen international transfer of expertise, technologies and scientific data in the field of air pollution.

The resolution asks the WHO Secretariat to strengthen its technical capacities to support Member States in taking action on air pollution. This includes further building capacity to: implement the *WHO air quality guidelines* and *WHO indoor air quality guidelines*; conduct



There were 6 technical briefings on key public health issues at this year’s World Health Assembly. This technical briefing was on “Health in the post-2015 sustainable development goals”.

cost-benefit assessment of mitigation measures; and advance research into air pollution’s health effects and effectiveness. At the Sixty-ninth World Health Assembly, WHO will propose a road map for an enhanced global response by the health sector that reduces the adverse health effects of air pollution.

Yellow fever

In 2013, WHO’s expert advisory group on immunization (SAGE) recommended that a single dose of yellow fever vaccine provides life-long immunity to the disease, making boosters unnecessary. Under the International Health Regulations (2005), vaccination may be required of any traveller leaving an area at risk of yellow fever transmission. The Regulations currently specify that travellers should renew immunization every ten years. Changes to the Regulations recognizing the adequacy of a single dose of the vaccine will come into force in June 2016.

Strengthening care for epilepsy

Delegates endorsed a resolution urging Member States to strengthen their ongoing efforts in providing care for people with epilepsy. Although affordable treatment for epilepsy exists, up to 90% of people with the condition may not be properly diagnosed or treated in resource-poor settings. The resolution highlights the need for governments to formulate, strengthen and implement national policies and legislation to promote and protect the rights of people with epilepsy. It also stresses the need to reinforce health information and surveillance systems to get a clearer picture of the burden of disease and to measure progress in improving access to care.

Delegates emphasized the importance of training of non-specialist health-care providers as key to reducing the epilepsy treatment gap. In low- and middle-income settings, strategies to improve access and affordability of antiepileptic medicines should be a priority. Countries are encouraged to undertake public awareness activities to reduce misconceptions about epilepsy and encourage more people to seek treatment. The research capacity of low- and middle-income countries should be built through expanded academic collaboration and establishment of centres of excellence.

The resolution calls on the WHO Secretariat to continue to lead and coordinate support to Member States in addressing the global burden of epilepsy so that people with epilepsy can receive timely treatment and can benefit from educational and occupational opportunities, free from stigma and discrimination. **MEH**

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Mixed results in progress on health-related goals

2015 is the final year for the United Nations Millennium Development Goals (MDGs) – goals set by governments in 2000 to guide global efforts to end poverty. This year's World Health Statistics – published 13 May by the World Health Organization (WHO) – assesses progress towards the health-related goals in each of the 194 countries for which data are available. The results are mixed.

By the end of this year if current trends continue, the world will have met global targets for turning around the epidemics of HIV, malaria and tuberculosis and increasing access to safe drinking water. It will also have made substantial progress in reducing child undernutrition, maternal and child deaths, and increasing access to basic sanitation.

“The MDGs have been good for public health. They have focused political attention and generated badly needed funds for many important public health challenges,” says Dr Margaret Chan, Director-General of WHO. “While progress has been very encouraging, there are still wide gaps between and within countries. Today's report underscores the need to sustain efforts to ensure the world's most vulnerable people have access to health services.”

Child deaths halved, but won't reach target

Progress in child survival worldwide is one of the greatest success stories of international development. Since 1990, child deaths have almost halved – falling from an estimated 90 deaths per 1000 live births to 46 deaths per 1000 live births in 2013.

Despite great advances, this is not enough to reach the goal of reducing the death rate by two-thirds. Less than one third of all countries have achieved or are on track to meet this target by the end of this year. The top killers of children aged less than 5 years are now: pre-term birth complications, pneumonia, birth asphyxia and diarrhoea.

Saving more mothers

The number of women who died due to complications during pregnancy and childbirth has almost halved between 1990 and 2013. This rate of decrease won't be enough to achieve the targeted reduc-

tion of 75% by the end of this year.

The maternal mortality ratio has fallen in every region. However, 13 countries with some of the world's highest rates have made little progress in reducing these largely preventable deaths.

In the WHO African Region, 1 in 4 women who wants to prevent or delay childbearing does not have access to contraceptives, and only 1 in 2 women gives birth with the support of a skilled birth attendant. Less than two-thirds (64%) of women worldwide receive the recommended minimum of 4 antenatal care visits during pregnancy.

Reversing the spread of HIV

The world has begun to reverse the spread of HIV, with new infections reported in 2013 of 2.1 million people, down from 3.4 million in 2001.

The revised target of achieving universal access to treatment for HIV will be more challenging as WHO's recommendations have resulted in much higher numbers of people needing treatment. At current trends, the world will exceed the target of placing 15 million people in low- and middle-income countries on antiretroviral therapy (ARTs) in 2015. By the end of 2013, almost 13 million people received ARTs globally. Of these, 11.7 million lived in low- and middle-income countries, representing 37% of people living with HIV in those countries.

Increasing access to safe drinking water and sanitation

While the global target for increasing access to safe drinking water was met in 2010, the WHO African and Eastern Mediterranean Regions fall far short, particularly for poor people and those living in rural areas.

The world is unlikely to meet the MDG target on access to basic sanitation. Around 1 billion people have no access to basic sanitation and are forced to defecate in open spaces such as fields and near water sources. Lack of sanitation facilities puts these people at high risk of diarrhoeal diseases (including cholera), trachoma and hepatitis.

Beyond 2015

In September, countries will decide on

Key facts from *World Health Statistics 2015*

- Life expectancy at birth has increased 6 years for both men and women since 1990.
- Two-thirds of deaths worldwide are due to noncommunicable diseases.
- In some countries, more than one-third of births are delivered by caesarean section.
- In low- and middle-income countries, only two-thirds of pregnant women with HIV receive antiretrovirals to prevent transmission to their baby.
- Over one-third of adult men smoke tobacco.
- Only 1 in 3 African children with suspected pneumonia receives antibiotics.
- 15% of women worldwide are obese.
- The median age of people living in low-income countries is 20 years, while it is 40 years in high-income countries.
- One quarter of men have raised blood pressure.
- In some countries, less than 5% of total government expenditure is on health.

new and ambitious global goals for 2030 at the United Nations General Assembly in New York. In addition to finishing the MDG agenda, the post-2015 agenda needs to tackle emerging challenges including the growing impact of noncommunicable diseases, like diabetes and heart disease, and the changing social and environmental determinants that affect health.

The draft post-2015 agenda proposes 17 goals, including an overarching health goal to “ensure healthy lives and promote well-being for all at all ages”.



World Health Statistics 2015
www.who.int/gho/publications/world_health_statistics/2015

Urgent funding required to keep healthcare centres open

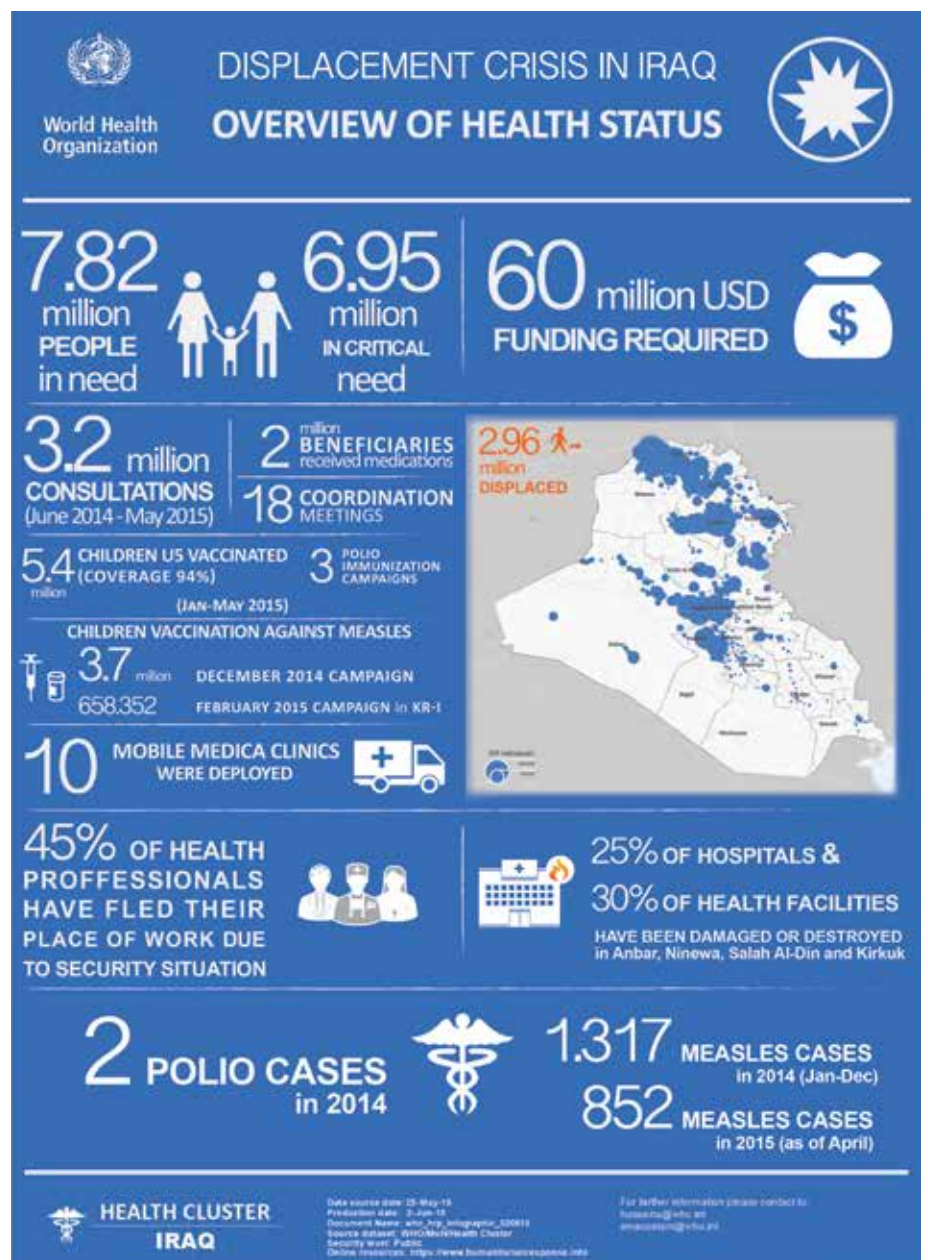
The WHO Eastern Mediterranean Regional Office (WHO EMRO) issued a statement late May calling for urgent funding by the end of June to prevent the closure of around 84% of local and international healthcare providers (77 healthcare projects including direct service provision). If this happens, more than 3 million refugees, internally displaced persons (IDPs) and host communities will stop receiving health care.

The closure of these centres and public health measures means the suspension of critical services, such as: trauma care, nutrition supplementation, primary health care, outbreak detection and management, immunization for children and reproductive health care in 10 out of 18 governorates in Iraqi. These governorates include: Missan, Basrah, Sulaymania, Ninwan, Najaf, Kirkuk, Karbala, Erbil, Diala, Dohuk, Baghdad and Anbar.

Alarming health situation

The recent escalation of violence in Ramadi has magnified the suffering of civilians, in particular, the sick, older people, children and pregnant women. Since 15 May this year according to the United Nations, an estimated 55,980 people have been displaced and dispersed to over 65 locations inside Anbar, and to different northern, central, and southern parts of the country, bringing the number of people displaced to nearly 190,000. This population is in dire need of urgent humanitarian support, including access to health services.

A recent health assessment, conducted by WHO in Ramadi where large numbers of displaced people remain, revealed inadequate supplies of medicines, shortages of doctors and other health professionals, lack of safe drinking-water, insufficient food and lack of electricity. Currently, health services are delivered through pri-



mary healthcare centres and mobile clinics providing outpatient services, immunization, dressings and referral services, however, the acute shortage of fuel for ambulances is challenging the referral process.

With the poor hygienic living conditions, compromised nutrition and mental health trauma, internally displaced people are at a higher risk of communicable diseases, such as measles, acute diarrhoea

and leishmaniasis. Patients with non-communicable diseases (heart diseases, diabetes, cancer and respiratory infections) are also in acute need of services and medicines.

The growing number of displaced persons has increased the need for essential health services. WHO, the Ministry of Health and other health partners, have been delivering essential medicines, medical health kits and other medical supplies to health facilities in Ramadi, Khalidiya, Al Baghdadi, Haditha, Amiriyat Al Falluja, Al Habaniya Tourist City, and many other areas inside Anbar governorate.

Since 10 April this year, 66 different types of kits (4 trauma kits, 50 basic and 2 supplementary interagency emergency health kits, 1 surgical kit and 9 units of diarrhoeal disease kits), in addition to other essential medicines were provided to the directorates of health in Anbar and the United Iraqi Medical Society (UIMS), a nongovernmental organization, to treat people displaced as a result of the conflict. The kits provided will allow provision of treatment to 71,623 people for 3 months.

To secure greater health service delivery for the displaced population at Bzebiz Bridge (the crossing point between Anbar and Baghdad), WHO has provided 3 mobile medical clinics to the Anbar and Baghdad departments of health. These clinics will respond to the health needs of people on both sides of the crossing. In addition, WHO has deployed 6 ambulances, health workers and delivered essential medicines to treat internally displaced people in transit on both the Anbar and Baghdad sides of the bridge.

"WHO has established 2 static primary health care clinics in Amiriyat Al Falluja and Nukhaib districts, run by UIMS since 10 April. A total of 4,974 consultations have been conducted in these 2 clinics alone," says Dr Jaffar Hussain, the WHO Country Representative and Head of Mission in Iraq. He added that WHO had established a delivery room next to the clinic.

WHO is coordinating the response of health cluster partners to optimize the use of available resources. Funding gaps and access to support delivery of essential medical supplies to large parts of Ramadi remain challenging as the situation is extremely volatile. **MCH**

On the brink of catastrophe

Dr Margaret Chan, Director-General WHO, gave the following key note speech at a high-level event on 4 June in Brussels, Belgium to launch the new humanitarian response plan for Iraq.

You have heard today a litany of horrific statistics that portray the despair of the Iraqi people. The situation is bad and rapidly getting worse.

Sectarian tensions and armed conflict are shutting off opportunities for displaced populations to find safe refuge.

Access to essential health services is an immediate need for nearly 7 million people. The population directly served through the current 77 health centres and projects is conservatively estimated at nearly 2.7 million people.

Health facilities are overloaded and medicines and supplies are running short, even at large referral hospitals.

In four of the most severely affected areas, 14 hospitals and more than 160 health facilities have been damaged or destroyed. In some areas, more than 45% of all health professionals have fled for their lives.

Let me stress. International humanitarian law that calls for the protection of health care workers, hospitals, and ambulances must be respected by all parties to the conflict.

Public services, for health, water, and sanitation, are collapsing. Crowded, unsanitary conditions bring a high risk of infectious diseases, especially for the millions who have been internally displaced.

Extreme summer heat adds to the risk as well as the scale of human misery.

Cases of measles are now being reported from all 18 governorates. Cholera is endemic. Leishmaniasis is on the rise.

Two cases of polio confirmed last year ended Iraq's 14-year status as free from this disease.

As we know from past experience,

the poliovirus is adept at exploiting opportunities opened by conflict.

People with chronic conditions, like heart disease, diabetes, and cancer, need regular supplies of medicine. For most, treatments have been interrupted.

The national supply chain for essential medicines has broken down. Humanitarian agencies attempting to fill the gap are impaired by insecurity, inaccessibility to roads, shortages of fuel, and erratic electricity which disrupts the cold chain.

Despite these challenges, WHO and its partners in the health cluster have, so far, done much to keep essential health services running.

Millions have been reached with essential medicines and services, even in areas where conflict is raging. Children are being vaccinated.

But without funds, 84% of all current health projects and health centres will close before the end of June.

Think about what this means for the people of Iraq. A pregnant woman trying to give birth safely. A child with pneumonia or diarrhoea, diseases that become deadly if not treated in time.

A person with high blood pressure who needs medicine to prevent stroke or a heart attack. Plus all those injured and in need of trauma care, or pain relief at the least.

And think about what this means for health security in the region and beyond. Outbreaks do not respect borders.

As I conclude, let me again stress: the people of Iraq need help, desperately.

Caring for the health needs of these people is a humanitarian imperative, but also a prerequisite for the country's long-term recovery and stability.

Because so much can be done with simple and inexpensive interventions, funding for health makes an out-sized contribution to the relief of misery and despair for so many millions.

WHO Syria initiates mental healthcare programme

Hania Arafa*, school teacher, wife and mother of two, suffered great loss in 2012. Her Aleppo home was destroyed, forcing the family to flee to Lattakia, a city nearly 200 kilometres away. During that long journey, two of her sisters died.

Since then, Hania has not worked. She's been living in a shelter, with support from a local nongovernmental organization. Five months ago she told the doctor at the shelter that she was losing weight and eating less than she used to. She felt tired, had lost interest in all activities and was having difficulty falling asleep at night. She was no longer motivated to look for a new job to support her family.

Hania felt her life was no longer worth living.

Thankfully, the doctor at the shelter knew enough about mental health to diagnose Hania with depression and provide her with appropriate treatment. He had recently received training from the WHO Office in the Syrian Arab Republic on how to assess and manage common mental health conditions during emergencies.

Ambitious programme trains non-specialist health workers

In 2013, WHO Syrian Arab Republic initiated an ambitious programme to respond to the increasing needs for mental health care and psychosocial support in the country. It was evident that there were not enough mental health-care specialists to address the emerging needs. WHO estimates that approximately 600,000 people in the Syrian Arab Republic are suffering

from severe mental health disorders and another 4 million from mild to moderate mental disorders.

Using WHO's *mhGAP Intervention Guide* for treating people with mental, neurological and substance use disorders in non-specialised health settings, more than 500 non-specialist healthcare professionals have since been trained in Syria to provide support for mental disorders.

During emergencies, grief and acute distress affect most people, both children and adults. For some, however, extreme adversity triggers more serious conditions such as depression. These conditions make it difficult for people to carry out everyday tasks. "In emergencies, whether they be a result of conflict or natural disaster, the needs for mental health care increase with every day that goes by," says Dr Mark van Ommeren, Public Mental Health Adviser at WHO. "Yet in these situations, access to care for treating mental disorders is usually extremely limited."

New guide for humanitarian emergencies

WHO, and the UN Refugee Agency, UNHCR, is releasing the *mhGAP Humanitarian Intervention Guide*. Adapted from the original version, this guide is specifically targeted at generalist health professionals working in humanitarian emergencies.


"This simple, practical tool will help scale-up the support that we can provide to people suffering from mental distress in the Syrian Arab Republic. It is eagerly awaited," says Elizabeth Hoff, the WHO

WHO estimates that approximately 600,000 people in the Syrian Arab Republic are suffering from severe mental health disorders and another 4 million from mild to moderate mental disorders.

Representative to the Syrian Arab Republic.

Worldwide, close to 80 million people are currently impacted by humanitarian emergencies arising from natural disasters and armed conflicts. WHO estimates that 5-10% of these people suffer from a mental health condition such as depression as a result of the emergency.

* Some of the personal details of the patient in this story have been changed to protect her identity. MEH

 www.who.int/mental_health/publications/mhgap_hig/en/ *mhGAP Humanitarian Intervention Guide*

Government leaders meet in Cairo to promote health diplomacy

“Health is everybody’s business, not only the health sector. Countries need to address health challenges that can undermine sustainable development, and compromise stability and national and global security, such as pandemics and climate change.” These were the words of Dr Ala Alwan, WHO Regional Director for the Eastern Mediterranean, at the fourth seminar on health diplomacy in Cairo in early May.

More than 90, senior officials from ministries of health and foreign affairs, ministers and permanent missions at the United Nations in Geneva, ambassadors, heads of parliamentary health committees and regional public health institutes attended. Participants discussed how to integrate the concepts and approaches of health diplomacy within foreign policy and other executive and legislative government platforms in order to address the critical health challenges that require engagement of other sectors and those that cross domestic and regional boundaries and are global in nature.

Global health diplomacy refers to the negotiation processes that shape and manage the national and global policy environment for health. It focuses on health issues that cross national boundaries and those that require political solutions and multisectoral engagement. The current high-level seminar is the fourth that WHO has organized since 2012 in order to facilitate the discussion, the information exchange and the analysis regarding the linkages between health and foreign policy, globally and in the WHO Eastern Mediterranean Region.

Health as a bridge to peace

“Health diplomacy opens corridors for humanitarian assistance and transforms health into a bridge for peace,” said Dr Alwan. “We aim at strengthening the capacity of representatives of Member States to understand, act upon and positively influence diplomatic and policy outreach to health issues of highest priority and relevance to our region.”

While health diplomacy is instrumental in influencing policy decision-making and

negotiation dynamics, forging the health–foreign policy link is very challenging in view of the rapid changes that constantly take place in global health and foreign policy. Participants from foreign policy, health and parliament looked at ways of building capacity and strengthening coordination and joint work at the national level, while reinforcing their role in global health discussions at international forums. They also discussed priority health issues of relevance to the region, including the post-2015 development agenda and the sustainable development goals, noncommunicable diseases, health security and emergencies.

“It is becoming clear, in many areas, that issues which were once confined to national policy are now issues of global concern, with implications that extend beyond national boundaries. As countries become more informed on health diplomacy, they become more equipped to play a bigger role in influencing global health decisions, Dr Alwan said.

“The WHO Eastern Mediterranean Region is undergoing conflicts and crises affecting approximately 16 of its 22 Member countries. Health diplomacy can play a major role in cessation of hostilities to allow humanitarian assistance to take place, as well as contribute to creating a positive environment for political dialogue. Health diplomacy can also contribute to the rebuilding of devastated health systems, by emphasizing the importance of universal health coverage for sustainable and equitable development.


“I have become increasingly convinced that the need to address this issue has become more pressing, especially for us in this region, which is witnessing great changes, and experiencing major crises: political, social, economic and also natural disasters, all with a major impact on health, all with an increasingly important role for foreign policy,” Dr Alwan said.

“The Member States in our region agreed in 2012 to endorse five priority areas for collaboration with WHO. These areas are health system strengthening towards uni-



Dr Ala Alwan, WHO Regional Director for the Eastern Mediterranean

versal health coverage, health security and the unfinished agenda of communicable diseases, the epidemic of noncommunicable diseases, maternal and child health, and preparedness and response to emergencies and crises. These five areas indeed represent the main challenges to health development in the Region. But we are convinced that our region cannot achieve a comprehensive strategy to address them without strengthening capacity in health diplomacy.

“Engaging the non-health sectors in managing health priorities needs to receive strategic priority in our work. Our negotiation skills need strengthening. Of great importance is shared understanding, the achievement of common positions, coordination and the conduct of effective joint work between foreign policy and health. Likewise, legislation, policy development and the observation of executive function are the responsibility of parliaments, and the role of parliamentarians is key to supporting and monitoring health development. But interaction, coordination and joint work between health and foreign policy is weak in many countries of the Region. I, myself, see that health is often absent or weak in some ministries of foreign affairs in the Region and an outcome of last year’s seminar was a call for all ministries of foreign affairs to have focal points or units on global health in their structures,” said Dr Alwan. 

Starting antiretroviral treatment early improves outcomes for HIV-infected individuals

Trial results expected to impact global treatment guidelines

A major international randomised clinical trial has found that HIV-infected individuals have a considerably lower risk of developing AIDS or other serious illnesses if they start taking antiretroviral drugs sooner, when their CD4+ T-cell count – a key measure of immune system health – is higher, instead of waiting until the CD4+ cell count drops to lower levels. Together with data from previous studies showing that antiretroviral treatment reduced the risk of HIV transmission to uninfected sexual partners, these findings support offering treatment to everyone with HIV.

The new finding is from the Strategic Timing of AntiRetroviral Treatment (START) study, the first large-scale randomised clinical trial to establish that earlier antiretroviral treatment benefits all HIV-infected individuals. The US-based National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health, provided primary funding for the START trial. Though the study was expected to conclude at the end of 2016, an interim review of the study data by an independent data and safety monitoring board (DSMB) recommended that results be released early.

“We now have clear-cut proof that it is of significantly greater health benefit to an HIV-infected person to start antiretroviral therapy sooner rather than later,” said NIAID Director Anthony S. Fauci, M.D. “Moreover, early therapy conveys a double benefit, not only improving the health of individuals but at the same time, by lowering their viral load, reducing the risk they will transmit HIV to others. These findings have global implications for the treatment of HIV.”

“This is an important milestone in HIV research,” said Jens Lundgren, M.D., of the University of Copenhagen and one of the co-chairs of the START study. “We now have strong evidence that early treatment

is beneficial to the HIV-positive person. These results support treating everyone irrespective of CD4+ T-cell count.”

The START study, which opened widely in March 2011, was conducted by the International Network for Strategic Initiatives in Global HIV Trials (INSIGHT) at 215 sites in 35 countries. The trial enrolled 4,685 HIV-infected men and women ages 18 and older, with a median age of 36. Participants had never taken antiretroviral therapy and were enrolled with CD4+ cell counts in the normal range – above 500 cells per cubic millimetre (cells/mm³). Approximately half of the study participants were randomised to initiate antiretroviral treatment immediately (early treatment), and the other half were randomised to defer treatment until their CD4+ cell count declined to 350 cells/mm³. On average, participants in the study were followed for three years.

The study measured a combination of outcomes that included serious AIDS events (such as AIDS-related cancer), serious non-AIDS events (major cardiovascular, renal and liver disease and cancer), and death. Based on data from March 2015, the DSMB found 41 instances of AIDS, serious non-AIDS events or death among those enrolled in the study’s early treatment group compared to 86 events in the deferred treatment group. The DSMB’s interim analysis found risk of developing serious illness or death was reduced by 53% among those in the early treatment group, compared to those in the deferred group.

Rates of serious AIDS-related events and serious non-AIDS-related events were both lower in the early treatment group than the deferred treatment group. The risk reduction was more pronounced for the AIDS-related events. Findings were consistent across geographic regions, and the benefits of early treatment were similar for participants from


Interim analysis found risk of developing serious illness or death was reduced by 53% among those in the early treatment group, compared to those in the deferred group.

low- and middle-income countries and participants from high-income countries.

“The study was rigorous and the results are clear,” said INSIGHT principal investigator James D. Neaton, Ph.D., a professor of biostatistics at the University of Minnesota, Minneapolis. “The definitive findings from a randomized trial like START are likely to influence how care is delivered to millions of HIV-positive individuals around the world.”

Prior to the START trial, there was no randomized controlled trial evidence to guide initiating treatment for individuals with higher CD4+ cell counts. Previous evidence to support early treatment among HIV-positive people with CD4+ cell counts above 350 was limited to data from non-randomized trials or observational cohort studies, and on expert opinion.

START is the first large-scale randomized clinical trial to offer concrete scientific evidence to support the current *US HIV treatment guidelines*, which recommend that all asymptomatic HIV-infected individuals take antiretrovirals, regardless of CD4+ cell count. Current World Health Organization HIV treatment guidelines recommend that HIV-infected individuals begin antiretroviral therapy when CD4+ cell counts fall to 500 cells/mm³ or less.

The HIV medicines used in the trial are approved medications donated by AbbVie, Inc., Bristol-Myers Squibb, Gilead Sciences, GlaxoSmithKline/ViiV Healthcare, Janssen Scientific Affairs, LLC, and Merck Sharp & Dohme Corp. 



UN moves to end AIDS epidemic by 2030

United Nations Member States welcomed and reflected on the latest HIV report of *United Nations Secretary-General Ban Ki-moon, entitled Future of the AIDS response: building on past achievements and accelerating progress to end the AIDS epidemic by 2030*, at the sixty-ninth session of the General Assembly on 8 June in New York.

The Secretary-General's report highlights important gains and historic breakthroughs in the global AIDS response since 2000. It also provides overview of some of the persisting challenges, including low paediatric and adolescent treatment coverage, lack of stable AIDS funding, gender inequalities, violence against women and vulnerable populations being left behind. United Nations Member States collectively echoed their support for the UNAIDS Fast-Track approach to end the AIDS epidemic as a public health threat by 2030. They also made several recommendations for leadership, resource mobilization, human rights, community engagement and civil society involvement to strengthen global efforts on health and development beyond 2015.


Attending the session, UNAIDS Deputy Executive Director Luiz Loures held discussions with Member State representatives. He stressed the need to maintain the momentum for the AIDS response during the transition to the sustainable development goals to ensure that no one is left behind.

Ban Ki-moon, United Nations Secretary-General, said: "A strong focus on AIDS should continue into the post-2015 era, to preserve and build on current gains and realize the opportunity of ending the AIDS epidemic by 2030."

Sam Kutesa, President of the sixty-ninth session of the General Assembly, said: "Increased resources and investment, global solidarity, shared responsibility and an inclusive, people-centred, human rights-

based and gender-sensitive approach will be needed to achieve the UNAIDS Fast-Track Targets."

Mesbah Ansari Dogaheh, Counsellor, Permanent Mission of the Islamic Republic of Iran to the United Nations, said: "Fifteen years ago, when the red ribbon was placed at the heart of Millennium

Development Goal 6, a glimmer of hope captured the hearts of people across the globe that were diagnosed with HIV. The international community has come a long way through coordinated efforts with the aim and hope of halting and beginning to reverse the spread of HIV by the target year 2015." 

From the report...


There is a global consensus that the tools now exist for making an end to the AIDS epidemic by 2030 a distinct possibility. UNAIDS modelling indicates that the next five years provide a vital window of opportunity for achieving this goal, through accelerated action and investment. However, uneven progress, continued stigmatization and discrimination, gender inequality, punitive laws, insufficient and unstable funding, and lack of adequately targeted HIV prevention, treatment and care for key populations mean that many are being left behind. If the global community fails to tailor its response so as to address need where it is most acute, by accelerating efforts with the required energy, the danger exists that the epidemic will re-emerge stronger than ever.

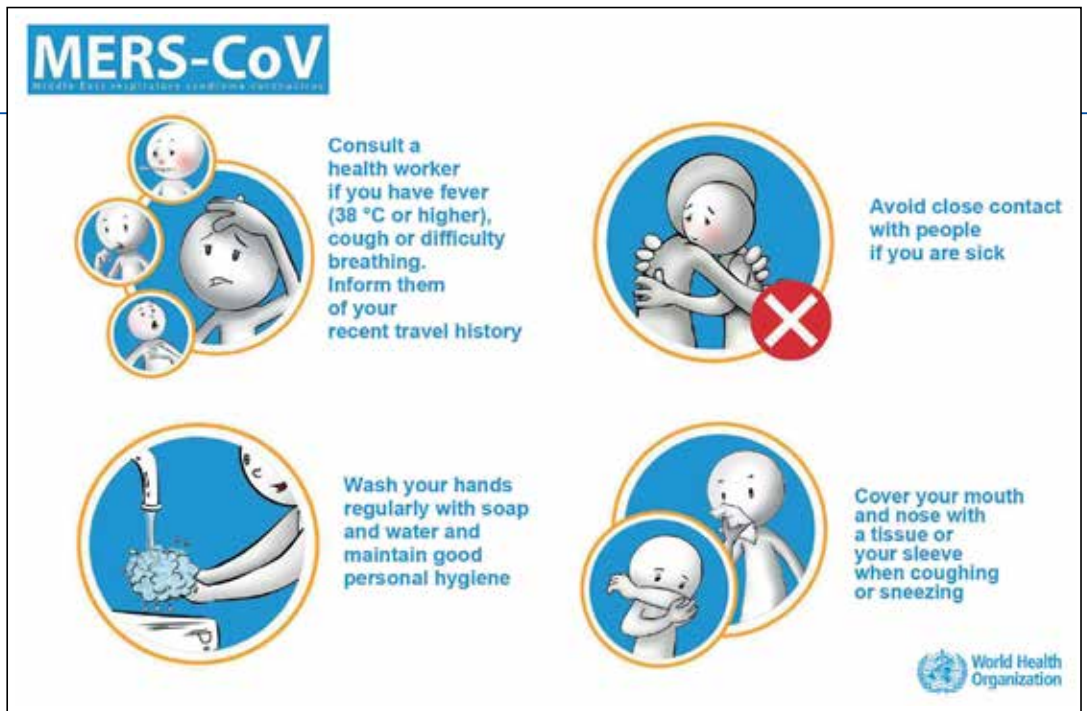
Experience has shown that ambitious targets drive progress, enhance accountability and unite stakeholders. To that end, the Joint United Nations Programme on HIV/AIDS, in addition to working with countries on developing and implementing the 90-90-90 treatment target, is developing complementary prevention and non-discrimination targets for 2020. If met, these ambitious yet achievable targets will effectively end the AIDS epidemic as a public-health threat by 2030, averting 18 million new

HIV infections and 11.2 million deaths.

To generate the momentum needed to make ending the public-health threat represented by the AIDS epidemic a reality, front-loaded investment and rapidly accelerated prevention programming which target key locations and populations are urgently required over the next five years. This programming should include the promotion of correct and consistent condom use, voluntary medical male circumcision programmes, cash-transfer programming and outreach programming with sex workers, men who have sex with men, transgender people and people who inject drugs. In addition, sex workers, men who have sex with men, sero-discordant couples in high-prevalence settings and young women in extremely high prevalence settings should be assured access to pre-exposure prophylaxis.

In order for need to be addressed, in low-income countries, an estimated sum of US\$9.7 billion in annual investment is required by 2020, while in middle-income countries investment must reach \$8.7 billion.

 Future of the AIDS response – Report by the UN Secretary General for the UN General Assembly, 8 June 2015 <http://tinyurl.com/prl8gq3>



Disease spreads to Korea

At the time of going to press, WHO notes that there has been a significant outbreak of MERS-CoV in South Korea. And following reported cases in China and Thailand, urged countries to step up vigil and review preparedness to respond to the disease.

In Thailand the disease was in a traveller from the Middle East region.

“Strong health systems using strict infection control measures are the key to prevent the spread of the virus and protect health-care workers and others,” Dr Poonam Khetrpal Singh, Regional Director, WHO South-East Asia Region, said.

Globally, WHO has been notified of 1,350 laboratory-confirmed cases of infection with MERS-CoV, including at least 480 related deaths – as of 26 June.

South Korea

In South Korea – as of 26 June – a total of 180 MERS-CoV cases, including 31 deaths, have been reported.

The median age of the cases is 55 years old (ranging from 16 to 87 years old). The majority of cases are men (61%). Twenty-five cases (14%) are health care professionals. To date, all cases (excluding the index case) have been linked to a single chain of transmission and are associated with health care facilities.

An early concern was whether the MERS-CoV virus changed and whether the transmission patterns in Korea were different compared with past outbreaks


occurring in the Middle East. Scientists in the Republic of Korea and China have completed full genome sequencing of coronaviruses from the current outbreak. Findings were analysed by a group of virologists convened by WHO. Preliminary analysis of these findings suggest that the MERS CoV viruses isolated in Korea are similar to those isolated in the Middle East. Furthermore, the joint mission found that the transmission patterns are similar to that seen previously in the Middle East.

MERS CoV is difficult to diagnose, particularly in the early part of an outbreak when awareness is relatively low. The initial, or “index” case, did not report his recent travel history to the Middle East when he first sought treatment. MERS was not suspected, and the initial case exposed others for more than a week before he was isolated. Additionally early symptoms of MERS resemble other influenza-like illnesses making it difficult to recognize or suspect MERS.

Saudi Arabia

Between 13 and 17 June 2015, 5 new cases of MERS-CoV were reported in Saudi Arabia, bringing the total number of cases to 1,039 with 460 deaths.

United Arab Emirates

On 21 June the National IHR Focal Point of the United Arab Emirates notified WHO of 2 additional cases, raising the total number of cases in the UAE to 76. 

Emergency Committee

On 16 June 2015 the Emergency Committee held its ninth meeting to review the situation related to MERS-CoV. The Committee concluded that the conditions to declare this a public health emergency of international concern have not been met.

The Emergency Committee stressed that although the outbreak in South Korea is very significant and that a robust response is needed to control it, it is not a public health emergency of international concern for two main reasons.

Sustained community transmission is not being observed. Sustained human-to-human transmission is seen for example in influenza outbreaks where the virus passes easily from one person to another, without direct contact.

The committee stated: In hospital-based outbreaks of MERS-Cov such as the one in Korea, it is not surprising to see some cases in the community. However, we are not seeing sustained human-to-human transmission in the community; to date, each case can be traced to contact through a single chain of transmission.

Furthermore, there is no evidence so far that the virus has changed.

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Dr. Diaa Salah



Antimicrobial treatment for children

Paediatric antimicrobial therapy can make the difference between cure and long-term disability and, in some cases, even death. Prescribing antimicrobial therapy to the paediatric patient is significantly different from treating the adult population. **Thomas Omogi R.N.** looks at the issue.

There are very few studies producing pharmacokinetic data for antimicrobial agents in children and adolescents. Paediatric patients require special nursing and intravenous infusion skills and may present an increased risk for complications.

The most important considerations of paediatric antimicrobial therapy include:

- Obtaining an accurate diagnosis of infection
- Understanding the difference between empiric and definitive therapy
- Identifying opportunities to switch to narrow-spectrum antibiotics
- Selecting the most cost-effective oral agents to be given for the shortest amount of time
- Understanding the characteristics specific to antimicrobial agents
- Accounting for host characteristics that influence antimicrobial activity
- Recognizing potential adverse effects of antimicrobial agents on the paediatric patient

Antimicrobial therapy treats viral, bacterial and fungal infections. Invasive fungal infections have increased in frequency and severity in adult and paediatric populations in the past few decades¹.

Antimicrobial therapy is the primary treatment for presumed bacterial infection in the paediatric patient. Drug selection for paediatric patients is similar to that in adults because infecting organisms

and their sensitivities are not age-specific. Several factors, however, affect dose and frequency. Age and weight are primary considerations when selecting drugs for antimicrobial therapy.

Lower Respiratory Tract Infections

Lower Respiratory Tract Infections (LRTI) cause disease in alveolar sacs resulting in pneumonia. The incidence and mortality rates for LRTI are higher in the United States than for any other infectious disease². Nearly 30% of total deaths worldwide occur in children under the age of 5 years.

Bronchiolitis and pneumonia are the most common LRTIs in children³. LRTIs most frequently present coughs and increased respiratory rate. Lower chest wall indrawing may occur with more severe disease. Bronchiolitis and pneumonia present similar signs and symptoms, so differentiating the two may be problematic.

Bronchiolitis primarily occurs in children less than one year old but appears less frequently in the second and third years of life. Signs include fever, rapid respirations, wheezing and lower chest wall indrawing.

Viruses and respiratory syncytial virus (RSV) are the most common causes of LRTIs. Pneumonia may have viral or bacterial causes. *Streptococcus pneumoniae* (pneumococcus) or *Haemophilus influenzae*, especial-

ly type b (Hib) are common causes of bacterial pneumonia, which is rarely the result of infection by *Staphylococcus aureus* or other *streptococci*. Upper respiratory tract colonization and aspiration of contaminated excretions often leads to bacterial pneumonia in young children.

A 2013 study published in *Paediatrics* compared narrow and broad-spectrum antimicrobial therapies for paediatric patients hospitalized with pneumonia⁴. Researchers in that study performed a retrospective cohort study using information gathered from 43 children's hospitals. The scientists wanted to compare outcomes and resource utilization among children hospitalized with community-acquired pneumonia (CAP) between 2005 and 2011 and who received either narrow-spectrum antimicrobial therapy in the form of parenteral ampicillin/penicillin or broad-spectrum ceftriaxone/cefotaxime.

In that study, 13,954 children received broad-spectrum therapy (89.7%) and 1,610 received narrow-spectrum therapy (10.3%). The median length of stay was three days in both groups. Nearly the same percentage of paediatric patients was admitted to intensive care and readmission rates were similar at 2.3% and 2.4% for those receiving broad-spectrum therapy and narrow-spectrum therapies respectively. Median costs for hospitalization were nearly the same too, at US\$3,992 for



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those undergoing broad-spectrum therapy and US\$4,375 for those receiving narrow-spectrum therapies.

The researchers concluded that there were no differences in clinical outcomes or costs for children hospitalized with CAP between treatment using narrow-spectrum therapy and those using broad-spectrum therapies.

Eye Infections

Eye infections in very young paediatric patients can present some special concerns. Selecting the best treatment depends on the type of eye infection. Distinguishing between the various types of eye infections can be challenging, however, because symptoms can be nonspecific or indeterminate.

Conjunctivitis is the most common eye infection to affect children⁵. There are several types of eye infections, including:

- *Staphylococcal* blepharitis – often caused by *S aureus* or *Staphylococcus epidermidis*
- Acute bacterial conjunctivitis – often caused by *Streptococcus pneumoniae*, *Haemophilus influenzae*, or *Moraxella catarrhalis*
- Neonatal bacterial conjunctivitis – often caused by *Chlamydia trachomatis* or *Neisseria gonorrhoeae*
- Viral conjunctivitis – adenovirus is the most common cause but may be caused by herpes simplex virus or varicella zoster virus

Skin and soft tissue infections

The incidence of skin and soft tissue infections has increased in the past decade, largely due to the emergence of community acquired methicillin-resistant *Staphylococcus aureus* (AC-MRSA).

One study shows that invasive MRSA infection in children disproportionately

affects young infants. In that study of 876 paediatric cases of invasive MRSA, 39% were among infants⁶. Infants under the age of 90 days were at special risk when compared with older children, at 43.9 vs. 2.0 per 100,000. The researchers also noted that the incidence of invasive CA-MRSA is declining among adults but that it was rising in children; infection per 100,000 children increased from 1.1 in 2005 to 1.7 in 2010.

Selection of the appropriate antimicrobial therapy depends on determining the most likely causative organism. Practitioners should prescribe the most narrow-spectrum antibiotic that still covers the likely organisms. Additionally, prescribers should consider the cost, product taste and dosing schedule to ensure compliance among paediatric patients and their parents. It is also essential to ensure the patient has no allergies or sensitivities to the prescribed class of antibiotics.

Central Nervous System infections

Central nervous system (CNS) infections are life threatening, especially to children. Many agents can cause infection within the central nervous system, often with involvement of the meninges, brain or spinal cord, or present as a space-occupying lesion. Diagnosis relies on epidemiological considerations, cerebrospinal fluid analysis, and appreciation of any presenting clinical syndromes, such as acute bacterial meningitis, acute aseptic meningitis, chronic meningitis or space-occupying lesions. Modern imaging techniques can help define the infected anatomic region, help evaluate treatment efficacy, and pinpoint causes outside of the central nervous system, such as mastoiditis or sinusitis.

The effect of an invasive fungal infection can be particularly devastating, especially among immunosuppressed neonates and children. Paediatric patients with primary and secondary immunodeficiencies are at special risk. The most commonly isolated organisms in the paediatric population are candida and *Aspergillus*. Timely diagnosis and initiation of appropriate antimicrobial therapy is essential for positive treatment outcomes.

Choosing among antifungal agents polyenes, azoles, and echinocandins

Proper antibiotic prescribing is an important

medical practice, especially in paediatrics. Antibiotic therapy may be initiated as empiric therapy in the absence of a culture and sensitivity, specific therapy based on C&S, and prophylaxis to prevent illness.

There are several ways to classify antibiotics, including bacterial spectrum, type of activity, and chemical structure. Antibiotics within a class generally have similar patterns of effectiveness, toxicity and allergic potential.

There are three classes of antifungals currently available for treating systemic fungal infections – polyenes, azoles, and echinocandins. The newest agents offer potentially improved efficacy and less toxicity in difficult infections. Extended-spectrum azoles demonstrate excellent *in vitro* activity against *Aspergillus* and improve clinical outcomes. Echinocandins offer a broad spectrum of activity for *Candida*. Amphotericin is currently the treatment option of choice for zycomycosis, but posaconazole shows tremendous promise as a treatment option^{7,8}.

Polyene antifungal drugs

Polyene antifungal drugs, such as Amphotericin, nystatin and pimaricin, interact with sterols in the cell membrane. This interaction forms channels through which small molecules leak from the inside the fungal cell to the exterior of the cell.

Polyene antifungal drugs are not absorbed when taken orally, so these drugs effectively treat fungal infections affecting the gastrointestinal tract, including oral thrush. To treat systemic fungal infections, polyene must be administered intravenously⁹.

Azole antifungal drugs

Azole antifungal drugs, such as fluconazole, ketoconazole, and itraconazole inhibit cytochrome P450-dependent enzymes. These enzymes, particularly C14 demethylase, are involved in ergosterol biosynthesis that is critical to fungal cell membrane structure and its function.

Azole drugs are broad-spectrum drugs that effectively treat fungal infections of the skin or mouth.

Echinocandins antifungal drugs

Echinocandins target the fungal cell wall. Echinocandins are lipopeptide molecules, which noncompetitively inhibit beta-D-glucan synthase enzyme that forms glucan. Because glucan is a major component of

Recommendations

The US Centers for Disease Control (CDC) and American Academy of Pediatrics (AAP) provide specific recommendations to promote appropriate use of antibiotics in paediatric cases in ways that reduce antibiotic resistance.



Careful Antibiotic Use – CDC / AAP

<http://tinyurl.com/p29kqft>



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fungal cell walls, inhibiting its synthesis damages the fungal cell wall.

Echinocandin injection treats systemic infection, especially those types of infections frequently affecting immunocompromised patients. Due to their large molecular size and poor bioavailability, echinocandins are available for intravenous administration.

Safety and efficacy of many echinocandins, including caspofungin, micafungin, and anidulafungin, has not been established in paediatric patients¹⁰.

Antimicrobial therapy for newborns

Improved obstetrical management approaches and use of intrapartum antimicrobial therapy is reducing the incidence of early-onset neonatal sepsis but this condition remains one of the most common causes of neonatal morbidity and mortality in preterm babies. Identification of neonates at risk relies largely on perinatal risk factors that are not specific or sensitive.

The American Academy of Pediatrics says that broad-spectrum antimicrobial agents, such as ampicillin and an aminoglycoside, are the optimal treatment for infants with suspected early-onset sepsis¹¹. Treatment should begin with diagnostic testing; the clinician should narrow the antimicrobial therapy upon identification of the pathogen. Prolonged empirical treatment (≥ 5 days) with broad-spectrum antibiotics may increase the risk for late onset sepsis, necrotizing enterocolitis, and mortality. Discontinuation of antimicrobial therapy after 49 hours reduces these risks in clinical situations where the paediatric patient has a low probability of sepsis.

Aminoglycosides, penicillins, fluoroquinolones, cephalosporins, macrolides, and tetracyclines are the most commonly used. Each drug within a class has its own unique properties.

Penicillin is an important antibiotic for paediatric patients, but it is the most common drug allergy trigger, according to the Asthma and Allergy Foundation of America¹². Up to 10% of all people report an allergy to penicillin. Many children who are allergic to penicillin may also be allergic to cephalosporin, according to a study published in *Pediatric Allergy Immunology*, which showed that 31.5% of the penicillin allergic children in the study cross-reacted to some cephalosporin¹³.

Hypersensitivity to penicillin is also an issue for newborns, in that it may cause nausea, vomiting, pruritis, urticaria, wheezing, laryngeal edema and, ultimately, cardiovascular collapse in these very young patients¹⁴.

Antimicrobial dosages for neonates

Prescribing for neonates is different than for adults. Extracellular fluid constitutes

up to 45% of total body weight in neonates, so these young patients require relatively larger doses of certain antibiotics, especially aminoglycosides, as compared with adult patients. Premature infants may present lower serum albumin concentration, which may reduce antibiotic protein binding. Sulfonamides, ceftriaxone and other drugs that displace

■ Antimicrobials and dosages for neonates

Fluconazole

Treats invasive and superficial candidiasis, and cryptococcal meningitis. Therapeutic dosage is 12 mg/kg, daily, with doses administered every 72 hours for the first 14 days of life or less.

Liposomal amphotericin B

Appropriate for documented cases of severe systemic or deep fungal infections. May be used as empirical treatment in cases of suspected mycoses in febrile neutropenic patients. Therapeutic dosage for paediatric patients aged one month or older is 3 – 5 mg/kg daily.

Amphotericin B

Treats severe systemic or deep fungal infections. Therapeutic dose is 1 mg/kg, daily.

Voriconazole

Appropriate for invasive aspergillosis, candidiasis, scedosporiosis and fusariosis in children aged 2 years and older. Therapeutic dose is 7 mg/kg intravenously every 12 hours or 200 mg twice a day by mouth.

Caspofungin

Treats invasive candidiasis and is appropriate as empirical treatment in children from 12 months of age with neutropenic fever and suspected fungal infection. Therapeutic dose is 70 mg/m² on the first day of treatment then 50 mg/m², daily.

Micafungin

This antimicrobial is appropriate for the treatment of invasive candidiasis

and prophylaxis of *Candida* infections in children and neonates with allogeneous blood stem cell transplantation or neutropenia only if other antifungals are not appropriate. In patients weighing less than 40 kg, use 2 mg/kg daily for treatment and 1 mg/kg for prophylaxis. In paediatric patients weighing more than 40 kg, use 100 mg/day for treatment and 50 mg/kg for prophylaxis.

■ Antimicrobial therapy according to clinical syndromes

Otitis Media

Classify otitis media as either acute otitis media (AOM) or otitis media with effusion (OME). Clinicians should only treat certain AOM cases, specifically those with a history of acute onset of signs and symptoms, presence of middle ear effusion, and signs or symptoms of middle-ear inflammation.

Severe cases are classified by moderate to severe otalgia or fever greater than 39C. Non-severe cases present mild otalgia and fever lower than 39C in the previous 24 hours.

CDC/AAP recommends clinicians prescribe antibacterial therapy to treat all patients under the age of 6 months with a certain or uncertain AOM diagnosis. Antibacterial therapy is only appropriate for patients aged six months to 2 years if there is a certain AOM diagnosis or if the patient presents severe illness. In paediatric patients over the age of two years, CDC/AAP recommends antibacterial treatment only in cases of severe illness – observation is otherwise recommended. CDC/AAP recommends amoxicillin to treat acute otitis media in most children.

Rhinitis and sinusitis

Antibiotics are not appropriate for viral rhinosinusitis, nor are they right for treating

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bilirubin from albumin can increase the risk for kernicterus.

Neonates may present an absence or deficiency of certain enzymes, which can prolong the half-life of chloramphenicol and other antibiotics. Changes in renal tubular secretion and glomerular filtration rate during the first month of life require changes in dosing for penicillins, aminoglycosides, vancomycin, or other antimicrobial drugs.

Antimicrobial stewardship in paediatric care

Antimicrobial therapy is one of the most widely used therapeutic approaches to paediatric care available today. Unfortunately, the use and misuse of antimicrobials – especially antibiotics – has fuelled an expansion of antibiotic-resistant microbes. This resistance to antimicrobials is making these “miracle drugs” less effective. Paediatric patients now face increasing uncertainty as to whether tomorrow’s microbial infections may become resistant to today’s antimicrobial therapies. To avert this disaster, it is incumbent upon practitioners to limit antimicrobial therapy to only those paediatric cases that warrant it.

Many paediatricians and other clinicians face a great deal of pressure from patients and parents to prescribe antibiotics. It is often helpful for a practitioner to provide educational materials and explain how the risks of antibiotics sometimes outweigh the benefits. Practitioners should include parents in the development of a treatment plan, which may include analgesics or decongestants where appropriate, and provide a realistic time course for resolution.

It is also essential to understand the importance of antimicrobial stewardship, to know when to consult an infectious disease specialist for guidance in a case, and to be able to identify cases where the patient does not need antimicrobial therapy. General guidelines help clinicians provide antimicrobial therapy to paediatric patients in a responsible manner that benefits the child and the community.

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cases of mucopurulent rhinitis unless the condition persists without improvement for more than 10 to 14 days.

Clinicians should use a narrow definition for sinusitis when considering antimicrobial treatment for paediatric patients. To be considered for antimicrobial therapy, the patient should present prolonged nonspecific upper respiratory signs and symptoms, especially rhinorrhea and cough that does not improve in 10 to 14 days, or more severe symptoms such as fever, facial pain and facial swelling.

The clinician should start with the most narrow-spectrum agent active against the likely pathogens.

Pharyngitis

Only children diagnosed with group A streptococcal pharyngitis, verified with a laboratory test in conjunction with clinical and epidemiological findings, should receive antibiotics. CDC/AAP recommends penicillin for treating group A streptococcal pharyngitis.

Cough and bronchitis

Cough and bronchitis rarely warrants antimicrobial therapy in paediatric patients. Antibiotic treatment may be necessary in cases of prolonged cough lasting more than ten days, especially in cases of pertussis, mycoplasma pneumonia, and underlying pulmonary disease other than asthma.

Neonatal sepsis

There are several antibiotics commonly used to treat neonatal sepsis, such as ampicillin, erythromycin, gentamicin, vancomycin, metronidazole, cefotaxime, and piperacillin. The choice of antibiotic agents should be based on the specific organisms associated with sepsis, the sensitivities of the bacterial pathogen, and the prevailing nosocomial infection trends in the nursery. Viral infections, such as herpes

and fungal infections, can masquerade as bacterial infections.

In the treatment of neonatal sepsis, clinicians commonly use ampicillin, gentamicin, cefotaxime, vancomycin, metronidazole, erythromycin, and piperacillin. Choice of antibiotics should reflect the specific organism associated with sepsis, the bacterial pathogen’s sensitivities, and the current nosocomial infection trends in the hospital nursery. Herpes, fungal infections and other viral infections can often masquerade as bacterial infections, so culture and sensitivity testing is always essential.

Penicillin is useful in cases of pneumococcus, strep, enterococcus, N. meningitidis, syphilis, listeria, leptospirosis and the oral anaerobes, peptostreptococcus and prevotella. Amoxicillin covers the same pathogens as penicillin plus provides expanded activity against gram negatives, including E.coli, Proteus, H. influenza, H. pylori, N. meningitidis, shigella, klebsiella, along with most spirochetes including lyme disease. Oxacillin/Nafcillin/Dicloxacillin is effective for staphylococcal spp except MRSA, pneumococcus and other streptococci. Piperacillin covers pneumococcus, streptococcal spp including enterococcus, and pseudomonas but does not cover MRSA.

Aminoglycosides, penicillins, fluoroquinolones, cephalosporins, macrolides, and tetracyclines are the most commonly used. Each drug within a class has its own unique properties.

Cephalosporin is useful in cases of staph, non-enterococcal strep and as a prophylactic in clean surgeries, cellulitis, and folliculitis but has limited efficacy for respiratory tract infections, animal bites or some types of surgery.

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Paediatric gastroenterology is the largest unit in the UAE providing diagnostic and therapeutic endoscopies, such as removal of foreign bodies in addition to a wide spectrum of paediatric GI disorders and post liver-transplant care.

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ment of patients with serious infections and multi-drug resistant infections in addition to a RSV prophylaxis program.

SKMC provides highly specialised care in the field of **paediatric neurology**, including paediatric epilepsy and neuromuscular disorders.

The paediatric cardiology service at SKMC provides a comprehensive paediatric cardiac surgical program, with specialised care for patients with congenital heart disease.

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The paediatric surgery service at SKMC covers a wide spectrum of treatment of congenital and acquired diseases including general paediatric surgery, paediatric urology and thoracic surgery pro-

cedures. Laparoscopy and thoracoscopy are regularly used in the field of paediatric surgery. Common procedures such as fundoplication anti-reflux, splenectomy and appendectomies are routinely performed by laparoscopy.

The pediatric nephrology division runs the largest paediatric ESRD program in UAE.

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In 2015, SKMC launched a new child-friendly dialysis unit on par with the highest international standards.

“SKMC is committed to excellence in training, education and research. SKMC runs very successful and well-structured paediatric residency program with ACGMEI accreditation. Our physicians publish several articles every year and present lectures and papers at many international conferences,” said Dr Abdulmajeed Al Zubaidi, the hospital's Chief Medical Officer.

“Bringing best practice and the most cutting-edge healthcare to attain a healthier future for our children is the mission of SKMC. Our philosophy is to put patients first, and the best way to do this is to ensure that their quality of care is at the highest levels, that they have the best available treatment options, with the best patient experience,” added Dr Al Zubaidi. MEH



A promise to children and families around the world.



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Children deserve the best care possible no matter where they live. That's why doctors and families around the world turn to Nemours. As an internationally recognized children's health organization, we provide highly specialized pediatric care with compassion and respect for each child and their family's unique health, cultural and financial needs. Our Nemours/Alfred I. duPont Hospital for Children is consistently rated among the best children's hospitals in the nation by *U.S. News & World Report*. And while this level of pediatric care is not always available around the globe, it is the Nemours promise to help every child, everywhere, have a healthier and happier future.

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A fourth opinion saves Mahra's arm from amputation

Mahra Saeed is at Dana-Farber/Boston Children's Cancer and Blood Disorders Center for her last checkup before heading home to the United Arab Emirates (UAE). The spunky 8-year-old sports a new dress and cowboy boots, and carries a large stack of thank you cards. She hands them out to oncologist Dr Carlos Rodriguez-Galindo, nurse practitioner Annette Werger and other staff members, who try to contain their emotion as they read, "Thanks for helping me to fight cancer".

Back up 10 months ago to August 2014, when Mahra fell at the park in her hometown of Al Ain and fractured her right arm. An x-ray and biopsy revealed that right below the fracture, Mahra also had a tumour, which the family was told was benign. Mahra's mother Nour got a second opinion in the UAE that confirmed the diagnosis.

A month later, Mahra underwent surgery to remove the tumour and insert metal rods in the bone to help with growth. Nour was told that her daughter would need a second surgery the following month to remove any remaining tumour.

Days before the surgery, Mahra had a pre-operative scan that revealed that the tumour had grown. Nour became very upset. "It was a shock. I asked the doctor, how could it grow if it's benign? He took another biopsy and told me simply that it was cancer and needed to start chemotherapy as soon as possible."

To the US for another opinion

Nour called the UAE embassy in Washington, DC, and explained that the first diagnosis was a benign tumour and the second diagnosis a month later was a malignant tumour. The family got approval to travel to a US hospital, where they received a third opinion that Mahra indeed had a malignant tumour or osteosarcoma in her upper right arm bone. They recom-



mended that Mahra's arm be amputated.

Far from home and already three opinions into their journey, Nour didn't stop. "They told me the best option was to amputate her arm because they were afraid the metal rods could spread the cancer. How could I accept that they were going to amputate her arm? She's a child. I hung up the phone, and I prayed a lot and kept thinking, 'What should I do?' I had a feeling that there was another solution. I had a feeling that I should change hospitals."

Nour told the embassy that she wanted another opinion and was given a list of four US hospitals. She sent an email with her daughter's scans to Dana-Farber/Boston Children's asking for a second – or more accurately, a fourth – opinion. She received word back from Dr Megan Anderson, an orthopaedic surgeon, that she could treat Mahra's osteosarcoma with a combination of limb salvage surgery and chemotherapy.

A different approach for international care


Dana-Farber/Boston Children's International Patient Services helped the family prepare for their move to Boston, and soon after arriving, Nour and Mahra met with Dr Anderson. Nour remembers: "It was not like at other hospitals, where the doctors were always saying, "Maybe,

maybe." Dr Anderson was very sharp. She said, 'I can do this'. Her confidence in herself gave me confidence."

Mahra underwent surgery in January to remove the tumour as well as the metal rods, and replace the top part of her bone with a bone transplant or allograft. After months of chemotherapy and physical therapy, Mahra's latest scan in May revealed that she is cancer free and ready to go home to Al Ain. She will return to Boston for a checkup in August.

Before goodbye hugs and high-fives, Rodriguez-Galindo asks Mahra to lift up her arm one last time to show everyone how far she has come in physical therapy. Mahra wrinkles up her face and lifts up her arm. As her arm starts to shake, Mahra pushes further to the applause and cheers of staff.

Seated in the corner, Nour quietly snaps photos of her daughter's victory and watches her revel in the attention. "I never imagined something like this would happen. My daughters are the only things for me in this life. They give me strength. Thank God it worked out."

Nour wants to share her family's story to encourage other parents to ask questions and seek out the best solution possible. "After what happened to me, I can now say that nothing is impossible. Nothing. Even if the doctor says it's impossible, it's not." 

Advancing pediatric medicine with innovation and family-centered care

Throughout its 120-year history, Children's Hospital of Pittsburgh of UPMC has helped define excellence in pediatric medical care and research. Children's Hospital ranks ninth on *U.S. News & World Report's* 2014-15 Honor Roll of America's Best Children's Hospitals. Also, Children's is one of only 13 pediatric hospitals in the U.S. named to The Leapfrog Group's 2013 class of Top Hospitals, based on the results of a survey that measures hospitals' performance in patient safety and quality.

Located in Pittsburgh, Pennsylvania, Children's opened its new, innovative campus in 2009. The 296 bed hospital was designed with children and families in mind with private patient rooms and many homelike amenities. Additionally, it's one of the most technologically advanced facilities in the U.S. for pediatric medicine. Clinical services that set Children's apart include innovations in the neurosciences, cardiac care, transplantation, rare disease therapy, and ophthalmology.

Brain Care Institute

At the Brain Care Institute (BCI), innovative medical and surgical treatment options are available to help patients afflicted with neurological disorders. The BCI brings together a number of pediatric specialties, including: neurology, neurosurgery, neuro-critical care, and neuro-oncology – a unique combination of international specialists all dedicated to the care of children with injuries or conditions related to the brain and spinal cord.

Heart Institute

The Heart Institute is one of the most active and innovative centers for the care of children who are born with or who acquire heart problems.

Achievements include:

- The lowest overall four-year surgical mortality rate among all medium- and high-volume pediatric cardiovascular surgery programs with a rate of 1.1%, according to the latest data compiled by the So-



ciety of Thoracic Surgeons (2008-2012).

- One of the most experienced centers in the use of the Ventricular Assist Device (VAD), a mechanical heart pump that offers lifesaving support to keep patients alive until heart transplantation or recovery occurs

First in pediatric transplantation

Children's Hospital established the world's first and largest pediatric transplantation center in 1981 under renowned transplant pioneer Thomas E. Starzl, MD, PhD. The Hillman Center for Pediatric Transplantation has:

- Performed more transplants in children than any other facility
- Patient survival rates that are among the world's best
- Transplant specialties include liver, intestine, kidney, heart, lung, and blood and bone marrow
- Recognized as a leader in transplant-related research

Rare disease therapy

The Center for Rare Disease Therapy consists of international experts who are focused on treating children with rare diseases, defined by leading standards of care, pioneering protocols, and individualized services.

World-class ophthalmology care

Children's Division of Pediatric Ophthalmology, Strabismus, and Adult Motility is led by one of the world's foremost pediatric eye specialists, Ken K. Nischal, MD, FRCOphth. As part of the UPMC Eye Center, it combines best practices and interdisciplinary collaboration to deliver exceptional care for visually impaired patients – from infants to adults.

Groundbreaking research

Children's Hospital's has a rich heritage in pediatric research and today is recognized as one of the fastest growing National Institutes of Health (NIH)-funded pediatric research programs in the U.S.

Experts in telemedicine

Children's Hospital is a leading center for the use of telemedicine services to bring pediatric specialists to hospitals worldwide through state-of-the-art technology. Children's offers remote physician-to physician consultation of critical care units to hospitals around the world in need of pediatric intensivists. Children's provides telemedicine consultative services with pediatric cardiac critical care units in various cities in Colombia and post-operative management of pediatric liver transplant patients in Palermo, Italy.

International services

Children's International Services team is available to assist physicians, parents, health ministries, and embassies around the world who are seeking leading-edge clinical services, consultation, education and training, and more. International liaisons are fluent in multiple languages including Arabic, to ensure proficient communication. Its Passport Care program helps patients and families feel at home until they return home, providing a wide range of concierge services such as assistance with housing, transportation, administration, translation, financial counselling and religious and cultural matters.

- To learn more about Children's Hospital of Pittsburgh of UPMC, visit: www.chp.edu or contact our International Services team at: +1-412-692-3000 or by email: international@chp.edu



Nemours, Delaware State University receive \$10.2 million grant for sickle cell research

The Nemours Center for Cancer and Blood Disorders in collaboration with Delaware State University (DSU) has received a US\$10.2 million, five-year grant from the US National Institutes of Health (NIH) to study the genetic mutation that causes sickle cell disease and to improve care and outcomes for affected children. The project, designated a NIH Center of Biomedical Research Excellence (COBRE) award, establishes the Delaware Comprehensive Sickle Cell Research Center. The principal investigator is Marie Stuart, MD, director of Hematology Research at Nemours.

A genetic disorder of the red blood cells, sickle cell disease is a chronic and potentially debilitating disease of childhood which, in its severe form, can affect multiple organ systems and ultimately shorten the life span. Many patients face barriers that may impact quality of care and health outcomes. The grant is focused on prevention of symptoms associated with sickle cell disease, strong psychosocial support for families, studying the quality of care provided, and identifying genetic approaches to treatment and cure. The DSU share of the grant is \$1.8 million; Nemours' share is \$8.4 million.

As a children's health network, Nemours is poised to become a national leader in sickle cell research. This, the second COBRE grant awarded to Nemours, aims to train the next generation of sickle cell



researchers. Target investigators include Robin Miller, MD and Steven Reader, PhD from Nemours/Alfred I. duPont Hospital for Children, and Dula Man, PhD from Delaware State University. Dr Miller's project, under the mentorship of Dr Stuart, involves a clinical trial on the use of n-3 omega fatty acids for relief of pain and inflammation associated with sickle cell disease. Dr Reader's project with Nemours mentor Anne Kazak, PhD, will modify the psychosocial assessment tool developed by Dr Kazak to screen for risk in the pediatric population with sickle cell disease.

The grant also includes a three-year pilot study by Divya Moodalbail, MD, of Nemours, whose research will try to identify children most at risk for developing sickle cell-related chronic kidney disease,

an initial step in preventing or slowing the progression of long-term kidney damage.

And, in the important realm of data management, E. Anders Kolb, MD, director, Nemours Center for Cancer and Blood Disorders, and co-investigator, David West, MD will work to link advances in health informatics and electronic data recording with clinical research to improve patient outcomes.

"This federal support will ensure an outstanding program to meet the ongoing needs of Delaware's children and young adults with sickle cell disease and their families. It is a tribute to the excellence of the team in what is an extremely competitive funding environment," said Vicky Funanage, PhD, operational vice president, Nemours Biomedical Research. MCH

Children's Mercy Kansas City offers innovative asthma care

Children's Mercy Kansas City serves half a million patients each year not only from the United States, but from across the globe. In fact, the hospital's International Services Department has collaborated with medical professionals to care for children from more than 36 countries.

As an independent, 354-bed health system, Children's Mercy again has been named as one of America's best pediatric hospitals, ranking among the nation's leaders in pediatric care in all 10 medical specialties. The hospital also has received Magnet recognition three consecutive times for excellence in nursing care.

In affiliation with the University of Missouri-Kansas City, the faculty of nearly 700 pediatric subspecialists and researchers is actively involved in clinical care, pediatric research, and educating the next generation of pediatric subspecialists. In addition, Children's Mercy leadership in pediatric genomic medicine and individualized pediatric therapeutics is driving research and innovation in asthma/allergy, neonatology, nephrology, endocrinology, gastroenterology, neurodevelopmental, heart, cancer and other subspecialties to transform outcomes for children around the world

Asthma challenges throughout the world

Chronic inflammatory asthma is increasing around the world as more cultures adopt "western" lifestyles. According to an article published in the *Annals of Thoracic Medicine*, asthma is one of the most common chronic illnesses in Saudi Arabia and local reports suggest that the prevalence of asthma is increasing. A recent asthma control survey showed that only 5% of cases were controlled, 31% were partially controlled, and 64% were uncontrolled.¹

The Division of Allergy, Asthma and Immunology

The Division of Allergy, Asthma and Immunology at Children's Mercy is a well-recognized resource in the United States for asthma and allergy care. Its mission is to provide high-quality care to children

while offering an excellent education to residents and fellows, and advancing the understanding of allergic and immunologic disorders through research.

Jay Portnoy, MD, serves as the Division Chief of Allergy, Asthma and Immunology, leading a team of physician subspecialists, advanced nurse practitioners, clinical researchers, nursing staff, social workers and environmental health specialists, all focused on the specialized needs of pediatric asthma patients. He is a past president of the American Academy of Asthma and Allergy and serves on the Food and Drug Administration advisory panel (CDER), Respiratory and Allergy Drugs. The Division's faculty is widely published in peer-reviewed journals, and frequent presenters at national and international conferences.

Asthma management and control through reduction of exposures

The Center for Pediatric Environmental Health, working through the Division of Allergy, Asthma and Immunology at Children's Mercy, has a track record of examining the impact of home environmental conditions on asthma allergic disease. The Center provides Healthy Homes training to produce sustainable quality indoor air and asthma reduction. This system of education is designed to address public health problems that stem from improperly maintained housing. Creating healthier housing promotes healthy growth and development in children and has the potential to save billions in health care costs. This education provides an excellent model for sustainable asthma intervention.

Center for Environmental Health is nationally recognized

The Center for Environmental Health also is widely recognized in the United States for providing environmental health consulting, patient case management, research, education, training and analytical services.

Notable accomplishments include:

- Winner of 2005 Environmental Protection Agency National Environmental



Dr. Jay Portnoy, Asthma/Allergy specialist, examining a child.

Leadership for Asthma Management

- The Center for Environmental Health staff made dozens of presentations at national, regional, state and local conferences, summits and professional meetings

- 2500-plus families have received services and more than 750 home environmental assessments have been completed

- Leading Healthy Home Training Center in the United States with more than 1,300 students completing courses.


The Center's teams help improve and advocate for the health of individuals with environmentally triggered illnesses. The Healthy Home Program helps families identify and reduce environmental exposures that may cause respiratory health problems in children.

Telemedicine services extend care

Children's Mercy also is active in using telemedicine technology, which provides opportunities for children who live long distances from the hospital to receive care, for the hospital's physicians to consult on cases, and for professionals to provide long-distance education. The hospital has experience using this technology, both nationally and internationally, providing patients with more efficient care while reducing travel and eliminating distance as a barrier to treatment.

• For more information

For more information about the Division of Allergy, Asthma and Immunology at Children's Mercy or international services, call +1 (816) 701-4524, or visit www.childrensmercy.org

¹ Al-Moamary MS, Al-Hajjaj MS, Idrees MM, et al. The Saudi Initiative for Asthma. *Annals of Thoracic Medicine*. 2009;4(4):216-232. doi:10.4103/1817-1737.56001. 



Stem cell transplant puts sickle cell pain in the past

When 13-year-old Ali Al-Mammari arrived at the University of Chicago Medicine Comer Children's Hospital last summer, he could barely walk due to his severe sickle cell anemia. He ambled down the hallway with a cane, his hips and shoulders locked, with a look of excruciating pain on his young face, despite the medication he was taking.

"At home, he would lie on his bed crying in pain," said his father, Mohammad Al-Mammari. "He was sad he couldn't do things, and we were in the emergency department constantly trying to get him some relief."

Three months after receiving a bone marrow transplant (also referred to as stem cell transplant) at the University of Chicago Medicine Comer Children's Ali

returned home to the United Arab Emirates no longer experiencing debilitating pain, but rather was running, riding a bicycle and playing soccer.

"He was so much more mobile when he left than when he arrived," said Kelly Kramer, advanced practice nurse for the pediatric stem cell transplant program. "And he no longer had any pain. Although he spoke very little English, I could tell he was progressing just by looking at his face."

Today, the cheerful 14-year-old is back to being a young teen, ready to enter seventh grade, loves math and dreams of being a fighter pilot.

"He is doing all the things his friends can do," said his physician John M. Cun-

ningham, MD, director of hematopoietic stem cell transplantation and chief of pediatric hematology/oncology. "I visited him in January and Ali is doing well."

Ali's sickle cell anemia was challenging in that he had two problems: constant and severe pain, and blocked hips, said Cunningham. This uncommon, inherited disorder can cause problems ranging from moderate discomfort to profound, lasting pain, widespread tissue damage, stroke and death. Ali had the most severe form of the disease; it had taken over his life.

In collaboration with his physicians in Abu Dhabi, plans began to bring Ali to Chicago for treatment that would improve his quality of life. When the family arrived, Cunningham's team determined

He no longer had any pain. I could tell he was progressing just by looking at his face.

that Ali was indeed a good candidate for a bone marrow transplant. And there was even more good news: “He was lucky that Omar, his 12-year-old brother, was an ideal donor,” said Cunningham.


“Omar was very cooperative and wanted to help his brother,” said Al-Mammari. “Having a match with his own brother made it special. We were very happy.”

Center for International Patients

The Center for International Patients assisted the family with all their needs, arranging translation services, transportation and accommodations while in Chicago. “The Center’s staff also gave us moral support and helped build trust and understanding with the medical staff,” said Al-Mammari.

After the transplant and two months in the hospital, Ali needed to regain his strength and coordination. He received that help at the Rehabilitation Institute of Chicago (RIC), where his treatment included daily exercises, therapy sessions and age-appropriate function goals, such as dribbling a ball so he could play soccer again.

“Although it is rare for patients with sickle cell disease to need a transplant, our team has performed more than 40,” said Cunningham. “Few programs worldwide have as much experience. Besides sickle cell disease, we care for children and young adults with high-risk leukemia, lymphoma and other genetic diseases. We have a highly experienced and sophisticated team to handle these tough cases.”

The Al-Mammari family has high praise for the staff at University of Chicago Medicine Comer Children’s and especially their physician, Dr Cunningham. “He is one-of-a-kind and very much like part of our family,” said Al-Mammari. “Not only is he a great doctor, but he’s a wonderful human being, and really like another father to my son Ali.” 



GOSH - an International Centre of Excellence

Great Ormond Street Hospital is an international centre of excellence and is recognised as one of the few world-class specialist hospitals for children. With more than 50 paediatric specialties under one roof Great Ormond Street Hospital is uniquely able to diagnose and pioneer treatments for children, especially those with highly complex, rare or multiple conditions. For example, the hospital has the largest paediatric cardiac programme in the UK and one of the largest centres for paediatric heart transplantation in the world. Along with University College London Hospitals, Great Ormond Street Hospital is the third largest centre for children with cancer in the western world and the largest in Europe. Great Ormond Street Hospital, and the hospital's dedicated research partner the UCL Institute of Child Health, has been rated by the Children's Hospitals International Executive Forum, a group of world leading children's hospitals, as one of the four leading paediatric research hospitals in the world. The hospital is also the UK's only specialist Biomedical Research Centre in paediatrics and is the lead for the University College London Partners Genomic Medicine Centre, which is only one of 11 such designated centres in the UK. Great Ormond Street Hospital is currently in the process of expanding and improving existing facilities including building a new research centre for rare diseases in children.

Treatment in London

The hospital's mission is to deliver world-class, high quality clinical care for children from the UK and from overseas. Most patients require expert help from at least two specialist teams; many patients need help from five specialist teams or more. Specialist doctors and nurses are uniquely qualified and trained to treat unusual and severe disorders that sometimes require pioneering treatment not available in other hospitals for example bone marrow transplants,




cardiothoracic and respiratory disease, renal transplant, craniofacial surgery, orthopaedic and spinal surgery, urology and neurology services.

The International and Private Patient Unit at Great Ormond Street Hospital is a state-of-the-art unit where world-class facilities embrace the latest technologies to make a real and long-lasting impact on the health of children across the globe. Cutting-edge equipment enables quicker and more accurate diagnoses, meaning treatments can start earlier with a quicker recovery time. Great Ormond Street Hospital has a longstanding relationship with the Middle East providing high quality and safe care for our patients in a family centred environment. The Hospital has a dedicated Gulf Office in order to make the experience for children and families being referred to the hospital as satisfactory as possible as well as providing a local point of contact for any enquiries.

Education, training and consultancy

Great Ormond Street Hospital is committed to sharing expertise through the education and training of children's healthcare professionals so that more children benefit from its work and so the hospital can reciprocally gain from the paediatric

breakthroughs achieved by other institutions. The hospital has a successful record of delivering education and training programmes internationally in countries such as the UAE and Kuwait. The hospital offers a wide range of expertise including clinical consultancy services, paediatric service review and planning, visiting experts and bespoke training modules delivered by a team of Great Ormond Street professionals, for both clinical and non-clinical staff. Each programme is tailored to the exact specifications of the institute in question to produce the best results for the staff and children. 

Contact

For more information or to refer a patient to Great Ormond Street Hospital, please contact our Gulf Office:

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Case Study

Gynecology collaboration for complex patients

This case study describes work at Cincinnati Children's Hospital Medical Center demonstrating the interdisciplinary, collaborative model of care provided for all pediatric patients, especially those with complex congenital anomalies.

Clinical history

A 3-year old girl was born with multiple congenital anomalies including a complex anorectal malformation (ARM) called a cloaca, reproductive system concerns, a repaired tracheoesophageal fistula, multicystic kidney disease of the right kidney, and sickle cell trait. She also had multiple cardiac concerns including double outlet right ventricle with malposed great vessels, bilateral superior vena cava (SVC) with left SVC to coronary sinus pulmonary and subpulmonary stenosis, hypoplastic mitral valve, right aortic arch and a previous Blalock-Taussig (BT) shunt. Prior to coming to Cincinnati, she underwent cardiac catheterization for worsening cyanosis, with stent replacement.

The family elected to travel to Cincinnati Children's in Cincinnati, Ohio for care of their daughter's multiple anomalies, including the cloacal anomaly, reproductive concerns and cardiac issues.

Our approach

Our interdisciplinary teams reviewed her case prior to her arrival. Detailed evaluation of her case allowed us to plan for proper evaluation to ensure we developed the appropriate plan of care before the child arrived.

Due to her complex cardiac history, Cincinnati Children's Heart Institute team also reviewed her case. They requested additional evaluation with a cardiologist, an EKG, echo, and possibly MRI. Before evaluation, it was unclear if the patient needed cardiac surgery prior to surgical reconstruction of her other anomalies. Eventually, it was determined she definitely needed further surgical repair of her cardiac defect since the recent stenting would only provide temporary improvement.

The pelvic reconstructive surgery team and pediatric specialists from our colorectal, urology and gynecology teams reviewed

her case and made recommendations for additional testing and a combined exam to better understand her anatomy and make the best comprehensive surgical plan.

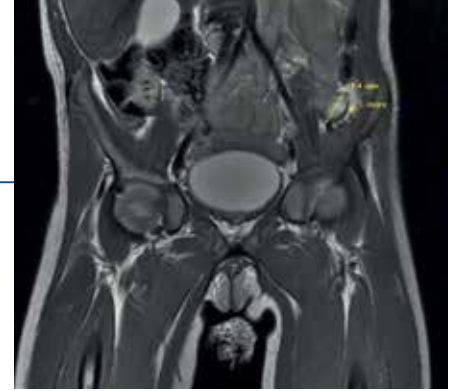
Diagnosis of anomalies

A combined surgical evaluation was performed confirming a complex ARM, a cloaca with a single perineal opening. A definite vagina could not be visualized, confirming the need for expert pediatric and gynecological surgeons in the operating room for her definitive reconstructive procedure. The reproductive anatomy could not be definitely identified from a pelvic MRI, which was also part of her evaluation; however, it was suspected she did not have a well formed uterus or vagina and would need vaginal reconstruction in combination with her cloacal repair. The urology team would need to be available during the procedure to protect the solitary functioning kidney during the complex reconstruction.

The family was counseled regarding pre-operative findings, future inability of the child to carry her own pregnancy, and the need for neovaginal reconstruction. The urology and colorectal teams also reviewed the future for bladder/bowel control. Since reproductive structures are stimulated at the time of puberty, it would be critical to delineate her anatomy during surgery to protect the patient from pain and discomfort at the time of future menstruation, in case she had a poorly developed uterus. A review about future childbearing possibilities was important to help her family understand the possibility for surgery now with her combined procedure and her future options.

Surgical course

Due to the severity of the cardiac concerns, we proceeded with cardiac surgery prior to cloacal reconstruction. Initially managed as a single ventricle palliation, after assessment here, we determined we could make a two-ventricle repair so she would not be cyanotic. This would minimize her planned re-operations in the future and allow her to better tolerate her hometown climate. David Morales, MD, director of pediatric



Pelvic MRI demonstrated normal ovaries, with the left one seen on this image; however, the image did not show a normally developed uterus.


cardiothoracic surgery, performed her double outlet right ventricle (DORV) repair, transannular patch (RVOT reconstruction with CorMatrix), right ventricular overhaul, repair of tricuspid valve, repair of sinus venosus ASD and secundum ASD, repair of cardiac TAPVR, VSD enlargement, and division of left BTS. She tolerated conversion to a two-ventricle repair well.

Eight months after cardiac surgery, she underwent a combined procedure which allowed a follow up to her tracheoesophageal fistula repair with Michael Rutter, MD, plus a posteriorsagittal anorectovaginourethroplasty for cloacal malformation with laparotomy, colostomy/mucous fistula takedown, bilateral removal of poorly formed uterine remnants, vaginal replacement with descending colon, and colostomy recreation performed by Andrea Bischoff, MD and Lesley Breech, MD. Brian Vander Brink, MD evaluated kidney and bladder anatomy.

The child was recently discharged from the hospital and is doing well. She will return for colostomy closure and assessment of vaginal healing after two months.

Summary

This case demonstrates the benefit of interdisciplinary management all patients receive at Cincinnati Children's. We collaborate to address current issues of concern, like cardiac reconstruction, and future concerns, like reproductive anomalies that potentially cause pain and need for future surgery. We understand the importance of future reproduction and childbearing for patients. By addressing these concerns, we enable families to ask questions, understand reproductive potential, and form appropriate expectations and goals for a healthy future.

The patient described had a unique set of conditions that were addressed efficiently at one center with one comprehensive, interdisciplinary management plan including cardiology, cardiothoracic surgery, pediatric surgery, urology and gynecology. Thorough pre-surgical evaluation and treatment planning helps minimize anesthesia, improve family understanding and expectations, and may result in better outcomes. 

Syrian refugees put strain on health care

A report issued by the World Health Organisation last year outlines the ongoing pressure on the healthcare system caused by an influx of refugees fleeing the Syrian civil war. *Middle East Health* reports.

Lebanon has experienced an unprecedented influx of refugees due to the conflict in neighbouring Syria. This is putting a severe strain on the host communities and authorities. The Government of Lebanon estimates that 1.2 million Lebanese nationals are directly or indirectly affected by the crisis.

The UNHCR estimated late last year that at the beginning of 2015, there would be 1.3 million registered Syrian refugees in Lebanon – around 20% of the total population inside the country.

The UNHCR says “an effective display of international solidarity and support is vital for Lebanon, which has received the highest number of Syrian refugees in the world. Failing this, the country’s capacity to respond and withstand the Syria crisis will be severely tested”.

Syrian refugees are, for the most part, sheltered among the poorest communities of Lebanon, sharing scarce resources with many Lebanese who live below the poverty line (85% of registered refugees are living



An elderly Syrian refugee in the Beka'a Valley, Lebanon. Aid agencies say the elderly are among the most vulnerable refugees but are often neglected by the humanitarian community

in 182 locations in which 67% of the host population is living below the poverty line according to preliminary UNICEF data). This situation is causing increasing tensions.

The availability of cheap Syrian refugee

labour is, for example, reducing wages and opportunities for many Lebanese workers, while many of the social services on offer cannot cope with the ever increasing demand. This is particularly true in the health sector where tensions arise due to an overburdening of services resulting in less access to basic care for vulnerable Lebanese. A perception that Syrian refugees get preferential treatment, perhaps due to humanitarian assistance directly targeting them, is adding to the friction. Host communities also fear infectious disease outbreaks due to increasing numbers of refugees living in unsanitary informal settlements, as well as to regular rumours of disease outbreaks. This contributes to a vicious cycle of increasing prejudices and stigmatization.

The UNHCR notes that there are tens of thousands of stateless people in Lebanon. Syrian refugees born in Lebanon are particularly at risk. A 2014 survey of 5,779 Syrian

Iranian Red Crescent Society opens hospital in Baalbek

The Iranian Red Crescent Society in June opened a new healthcare centre in Baalbek, in eastern Lebanon.

The three-story Baalbek Healthcare Center houses a physiotherapy hall, a pharmacy, a blood bank, an operating room, a recovery ward and paediatric rooms among other medical service facilities.

The opening ceremony of the Iranian healthcare centre was attended by Susan Oweis, the Head of the Lebanese Red Crescent Society, members of the Norwe-

gian Red Cross Society, representatives of the Lebanese Hezbollah and Amal movements and local social and religious authorities.

Amir Hossein Zia'ie, head of Iranian Red Crescent Society, noted his appreciation of the International Red Cross Society's contributions to the completion of the humanitarian project.

Oweis thanked the Iranian Red Crescent Society for initiating the idea and pursuing it until its completion.



If practice
makes perfect,
imagine what
113 years of it
can do.

Since 1902, the American University of Beirut Medical Center (AUBMC) has been providing the highest standards of care to patients across Lebanon and the region. AUBMC is the only medical institution in the Middle East to have earned the four international accreditations of JCI, Magnet, CAP and ACGME-I, attesting to its superior standards in patient-centered care, nursing, pathology/laboratory services and education. Committed to its role as regional leader, AUBMC's impact on the medical sector and on improving people's lives is without equal in the Arab world.

www.aubmc.org



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المركز الطبي في الجامعة الأميركية في بيروت

Our lives are dedicated to yours

newborns found that 72% do not possess an official birth certificate, raising concerns over the recognition of their nationality by the Syrian authorities.

The scale of the refugee influx is unprecedented. Government, UN agencies, communities and nongovernmental organizations are struggling to respond adequately.

Instrument for Stability

In an effort to provide some relief, the European Union responded by mobilizing its Instrument for Stability (IfS) to provide humanitarian assistance through WHO Lebanon.

IfS is specifically suited to promoting conflict reduction in crisis or pre-crisis situations. IfS actions are used to reassure the host population with visible support and thus reduce tension while bridging humanitarian aid with development cooperation by strengthening existing governmental primary health infrastructure and systems. It serves to reassure the Lebanese population while re-enforcing government public service institutions, such as helping improve delivery of basic services to the citizens, in this case providing for the health needs of its most vulnerable population.

It does so by:

- Reinforcing the capacity of the Ministry of Public Health in terms of communicable diseases monitoring, early warning and response.
- Reinforcing the capacity of the Ministry to deliver quality primary health care and

maternal and child health care.

- Reinforcing the capacity of the Ministry in sustaining the provision of chronic medications.

The theory of change which underpins this project is that by increasing the availability and quality of health services, particularly in areas which have traditionally not enjoyed a high level of state-provided services and are currently experiencing the impact of the Syrian refugee crisis, competition between host and refugee communities will be reduced. M&H

Lebanese Minister of Public Health in talks with Saudi counterpart

In early June, Wael Abu Faour, the Lebanese Minister of Public Health held talks with his Saudi Arabian counterpart Khalid Bin Abdulaziz Al Faleh. According to a brief report by the Lebanese Ministry of Information, they discussed a means to exchange expertise through a health-related agreement due to be signed between the two countries. One of the outcomes of the talks was the agreement for the continued support of the health sector in Lebanon, mainly by providing assistance to Rafic Hariri government hospital.

Health system background

Lebanon has significant geographic discrepancies in health care, but the recent health sector reform has focused on trying to balance access to healthcare across the country. Total health expenditure is 8.3 percent of GDP. Lebanon tries to provide universal health care services through the use of public funds. The MoPH health system covers those who are uninsured, slightly over 50% of the population. Despite their efforts, 44% of health care is paid for out-of-pocket.

There are 168 hospitals in Lebanon, providing almost 13,000 beds. Most of the hospitals are private, and are run by charities, religious organizations, or private physicians' families. At the

moment there are only 10 operational public hospitals. The MoPH is the only accrediting body for hospitals in Lebanon. It also contracts with hospitals (public and private), creating annual budget with a fixed financial ceiling. The contract is based on quality and accreditation, therefore placing incentive on performance and sound investment practices. Despite the MoPH maintaining financial control, public hospitals have some degree of autonomy via autonomous administration boards. As public hospitals are updated, they are seeing increased use by the public.

– Center for Refugees of Lebanon –
Healthcare System Review

Reforms implemented to make hospitals more accountable

The Lebanese Ministry of Public Health has implemented a series of reforms to ensure hospitals are more accountable for the treatments they offer patients. *Middle East Health* reports.

The Lebanese Ministry of Public Health (MoPH) late last year implemented a number of reforms to the country healthcare system. Essentially these include a set of new standards that will be applied to hospitals to determine the extent to which they will be subsidised by the MoPH.

The new criteria for categorising hospitals includes a series of new elements not previously used to determine the standard of healthcare provided by healthcare facilities.

The *Daily Star* quoted the Wael Abu Faour, Minister of Health, as saying: “The currently adopted classification system is totally technical, and is solely centred on the quality of the hospital’s service. This new decision is dynamic, and will reconsider the principles of classification.”

A focus on patient satisfaction is one of the key changes to the system and this will be gauged by a series of on-going patient feedback surveys.

Poor patient satisfaction will result in a low classification, Abu Faour said.

Another criterion includes the examination of hospital bills by the MoPH. By using an automated e-system the MoPH will be able to examine 100% of the bills rather than only 10% as had been done manually in the past. This will highlight discrepancies between the bill submitted to the ministry and the services offered by the hospital.

Through this system the MoPH will also be able to determine the ‘case mix’ or the variety of cases that the hospital is able to treat. Hospitals that have a higher case mix will receive a higher classification. Hospitals that perform a higher number of surgeries will receive higher ranking.



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AUB Faculty of Medicine ranks first in the Arab world

The American University of Beirut (AUB) has ranked among the world's elite 300 universities and as the highest-ranking university in the Arab region in the field of medicine according to the 2015 Quacquarelli Symonds (QS) World University Rankings by Subject. When looking beyond the Arab World, the AUB Faculty of Medicine (AUB FM) ranked fifth overall in a broader area spanning the MENA, GCC, East Europe, North/Central and East Asia, outranking countries such as Russia, India and Turkey to name a few.

"This is a tremendous achievement," commented Dr Mohamed H. Sayegh, VP of Medical Affairs and the Raja N. Khuri, Dean of the Faculty of Medicine. "We are so proud of the Faculty of Medicine's accomplishment. It marks another milestone in our journey of maintaining our leading position in the healthcare industry across patient care, education and research," he added.

The QS Ranking is one of the most prestigious annual university rankings that includes universities from more than 140 nations. The rankings are aimed at prospective students seeking to identify the world's leading schools in their chosen field

of study. The 2015 QS Rankings by Subject rank the world's top universities in 36 individual subject areas.

The QS World University Ranking rates universities on various topics: academic reputation, faculty/student ratio, citations per faculty, employer reputation and the proportion of international faculty and students. The annual subject rankings are based on surveyed opinions of 85,062 academics and 41,910 employers, alongside analysis of 17.3 million research papers and over 100 million citations.

"It is so great to see that AUB FM is recognized internationally for offering the best medical education, training and research in the Arab world. We would not have been able to accomplish this without the hard work and dedication of our faculty, nurses, staff and students," said Dr Sayegh.

The American University of Beirut Medical Center (AUBMC) became the first Medical Center in Lebanon and the fourth in the world to receive institutional accreditation from the Accreditation Council for Graduate Medical Education – International (ACGME-I) in 2014.

AUBMC is the first and only medical in-

stitution in the Middle East to have earned the four international accreditations of JCI, Magnet (twice), CAP and ACGME-I attesting to its superior standards in patient-centred care, nursing, and pathology/laboratory services. **MEH**

About AUBMC

Since 1902, AUBMC has been providing the highest standards of care to patients across Lebanon and the region. It is also the teaching hospital for the Faculty of Medicine at AUB (established in 1867), which has trained generations of medical students and physicians, and whose graduates can be found at leading institutions around the world.

The Faculty of Medicine has graduated over 4,000 medical students and physicians; the Rafic Hariri School of Nursing provides excellent education for the nursing staff, and the Medical Center meets the healthcare needs of over 360,000 patient visits annually.

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Clemenceau Medical Center (CMC) wins Best Healing Environment and Best Facilities Management Service Strategy Awards at Building Healthcare Middle East Exhibition & Congress 2015

Clemenceau Medical Center awarded for Best Healing Environment

Clemenceau Medical Center (CMC) affiliated with Johns Hopkins International has won the Best Healing Environment Award and the Best Facilities Management Service Strategy Award at the Building Healthcare Exhibition, which was held from 8-10 June in Dubai. CMC was also highly commended for three other awards: Best Physical Environment Award, Best Laboratory Design Award and Best Technology Initiative Award.

CMC is a state-of-the-art medical center in the heart of Beirut. CMC has received three consecutive JCI accreditations and multiple awards and recognitions since its inception in 2006, and is capable of delivering high-quality healthcare services in a timely, cost-efficient and pleasant environment to patients from Lebanon and the Middle East.

Its mission being “Caring, Safety, Excellence”, CMC has established centers in several specialties, houses all specialty branches, and is fully equipped with the most advanced medical technology. Clemenceau Medical Center (CMC) is currently expanding to reach a total of 158 beds. The extension is expected to increase the Medical Center’s size and current capacity and will include a Cancer Center, Hemodialysis Unit, and Psychiatry Ward. In addition, the management will introduce a new clinics building that will house 35 new outpatient clinics.



These awards confirm CMC’s leading role as an ultra-modern medical institution fully equipped with the most advanced technology in the regional healthcare industry and honoring its mission to offer avant-garde treatments and technologies to patients from Lebanon and the MENA region. One of CMC’s main missions is to create a stress-free healing environment within its premises so as to ensure the highest caliber of patient care and satisfaction. Moreover, CMC employs the most efficient management strategies in order to offer the best services and medical care possible to its patients.

Commenting on the award, Dr Mounes Kalaawi, CEO of Clemenceau Medical Center, said: “A double win this year; it is always an honor to be recognized by regional and international leaders in the healthcare sector.”

The advancement and spread of the Clemenceau Medicine’s mission of patient care is the main duty of Clemenceau Medicine International (CMI). CMI is focused on improving quality of medical care and healthcare communities internationally by providing technical assistance services and total solutions, and applying the world’s best practices in the Middle East. **MEH**



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Researchers develop free online system to automatically, precisely analyse MR images of the brain

Researchers of the Universitat Politècnica de València (UPV) and the National Centre for Scientific Research in France (CNRS, in French) have developed VolBrain, a new free, online platform able to automatically, quickly and precisely analyse the images from a magnetic resonance of the brain.

Thus, VolBrain enables worldwide scientists to obtain key cerebral information in order to advance in the research on neural pathologies. In the first three months of its operation, it has processed more than 1,500 cases from universities, research centres, clinics and hospitals from the five continents. As of early June, more than 30 cases per day were being processed, though the system has the capacity to process up to 500 per day.

VolBrain provides information about the tissue volumes in the intracranial cavity (ICC) (that is, CSF, GM and WM), as well as some macroscopic areas such as the cerebral hemispheres, the cerebellum and the brain stem. It also provides the segmentation of subcortical structures, which is of major importance in neurology. Thus, it incorporates a set of IT tools,

developed by researchers of the UPV and the CNRS, able to exhaustively and precisely analyse the cerebral volumetry.

“VolBrain can measure structures such as the hippocampus or the tonsils, very important in the development of diseases such as Alzheimer’s. A symptom of this pathology lies in a lower than average hippocampus volume. Therefore, since VolBrain provides very important information in order to measure cerebral atrophies, it could help in the diagnosis of diseases such as Alzheimer’s,” says José Vicente Manjón, researcher at the ITACA Institute of the Universitat Politècnica de València.

The benefits of VolBrain include easy use and a quick analysis capacity, unlike other similar systems existing on the market. “The user must always send a compressed file from the web. The information reaches our cluster -which incorporates seven powerful computers- and, within 10 minutes, the system e-mails a detailed report with the results of the segmentation and the volumes processed. Similar systems that currently exist take 24 hours to give this information,” explains Manjón.

In addition, every case analysed is compared with a database that includes the volumetry of 50 brains that the researchers of the Universitat Politècnica de València and the National Centre for Scientific Research of France manually labelled.

“We use resemblances to label and measure the volumes of a new case. In addition, if users include the patient’s age and sex, the system allows them to visualize whether the analysed case is within the common parameters related to these variables or not,” explains Manjón. VolBrain sends a screenshot of the measurement process with the report to allow users to visualize the segmentation of the cerebral structures.

The researchers of the UPV and the CNRS will present VolBrain in the international conference Human Brain Mapping, the most important neuroimaging meeting in the world, to be held in July in Honolulu. In addition, they have been published in the journal *Magnetic Resonance Imaging* – doi: 10.1016/j.mri.2015.02.005, 2015



Volbrain

<http://volbrain.upv.es/>

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19:45	BRUSSELS	EK4319	MUMBAI
19:50	CASABLANCA	RZ1408	MUMBAI
19:55	NEW YORK	KV3323	MUMBAI
20:05	HONG KONG	LX3100	MUMBAI
20:15	TEL AVIV	FB5610	MUMBAI
20:20	LONDON	LN3211	MUMBAI
20:25	DETROIT	N67792	MUMBAI
20:35	MADRID	EN4267	MUMBAI
20:40	TOKYO	GT4638	MUMBAI
20:50	FRANKFUR	B09032	MUMBAI
20:55	LOS ANGELES	KF3280	MUMBAI
21:05	LISBON	TK3946	MUMBAI
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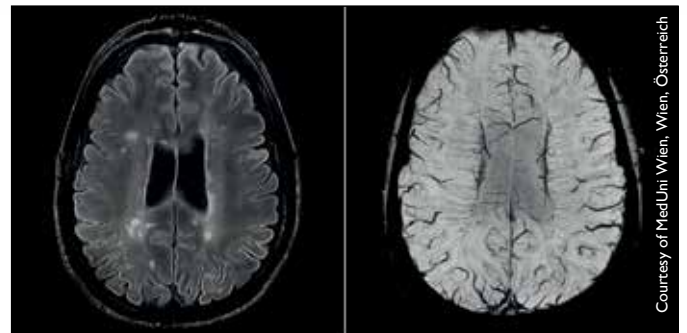
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Siemens introduces 7 Tesla MRI research scanner for future clinical use



Tesla images TSE (left) and 3D SWI (right) exhibiting Multiple Sclerosis lesions in the white matter but also in the cortex.

Siemens has released a 7 Tesla MRI for clinical use. These ultra-high field scanners have for some years been used exclusively for medical research. Siemens now plans to seek CE and FDA approval to market the 7T MRI for selected clinical neurological and musculoskeletal applications.

Commenting on the introduction of the new scanner, Dr Bernd Ohnesorge, CEO Magnetic Resonance at Siemens Healthcare, said: “Our new 7 Tesla scanner, Magnetom Terra, is the first 7 Tesla MRI scanner fully designed and manufactured by Siemens, with a completely new 7 Tesla magnet in its core.”

The system’s Dual Mode functionality allows users to switch from research modes to specific clinical protocols in less than 10 minutes. The system is based on the latest software platform syngo MR E11, identical to Siemens’ latest flagship 3T MRI systems, to enable consistent usability and protocol exchange.

Magnetom Terra’s actively shielded magnet is the lightest 7 Tesla whole body magnet currently available – 50% lighter than previous actively shielded 7 Tesla magnet generations. This is the result of a multi-year engineering project at Sie-

mens Magnet Technologies in Oxford, using the experience of the team in the design and manufacturing of 3T magnets for clinical use. As a result, siting of the Magnetom Terra is easier and its location in a clinical environment becomes feasible. Combined with the Zero Helium boil-off technology, Magnetom Terra improves the lifecycle costs of ultra-high field MRI.

Magnetom Terra increases the potential for translating cutting-edge research capabilities into future clinical application – for anatomical, functional or metabolic MR imaging. This specially designed 7 Tesla technology makes this possible by offering:


- Up to eight channel parallel transmit technology for selective excitation and higher homogeneity in challenging body regions such as cardiac and abdominal.
- Up to 64 receive channels for higher coil density in the field of view to achieve higher acceleration factors, higher signal-to-noise ratio and higher spatial resolution, and a better coverage of the body regions of interest.
- High gradient strength of up to 80 millitesla per metre (mT/m) and a fast

gradient switching rate of up to 200 Tesla per metre per second (T/m/s) for advanced studies with diffusion and functional MR imaging.

- The latest Siemens software platform syngo MR E11 identical to Siemens’ latest flagship 3 Tesla MRI systems such as Magnetom Skyra and Magnetom Prisma.

For specific clinical areas, Magnetom Terra is prepared for future clinical use with planned CE and FDA authorisation to market of the system and the corresponding local coils:

- Getting better insights into the musculoskeletal system through unprecedented high isotropic spatial resolution of 0.2 mm
- Imaging brain tumours and irregularities in the brain’s metabolic processes
- Visualizing neurodegenerative diseases such as Alzheimer’s disease, epilepsy, schizophrenia and multiple sclerosis

“Based on our long-standing experience and the largest innovation network in human ultra-high field MRI, Siemens is committed to further grow the footprint of 7 Tesla MRI in research and clinical application,” explained Dr Ohnesorge. “I am confident that our Magnetom Terra will help explore new territories in MRI research.” 

90% of all breast cancers detected with MRI

Around 90% of all breast cancers can be definitively diagnosed using magnetic resonance imaging (MRI). This compares to the combined methods of mammography and ultrasound which yielded a detection rate of just 37.5%. This is the key finding of a study published in the highly respected "Journal of Clinical Oncology". The study was carried out at the University Department of Radiology and Nuclear Medicine at the MedUni Vienna in cooperation with the University Department of Gynaecology and Obstetrics and the Clinical Institute of Pathology.

"In cases where there is even the slightest doubt, and especially in women at increased risk, the obvious choice is MRI. Our study clearly shows the superiority of magnetic resonance imaging over mammography and breast ultrasound examina-

tions," says Thomas Helbich, who led the study with Christopher Riedl. "The superiority of MRI is also completely independent of the patient's age, gene mutation status and breast density."

In 559 women at increased risk, a total of 1,365 screening examinations were carried out. There was one clear "winner": 90% of all breast cancers can be clearly detected by MRI. The combination of MRI and mammography increased the detection rate by just 5%. None of the cancers were detected by ultrasound alone. The results were similar for non-invasive cancers and for benign breast lesions.

"An MRI scan carried out once a year is therefore the only alternative for high-risk patients who have a strong family history of breast cancer to the surgical removal of the breast and ova-

ries," says Helbich. "This is by no means 'over-diagnosis', but rather a necessity. Around 13,000 women in Austria are still at increased risk of breast cancer."

Call to increase MRI in screening

The results of the study, says the MedUni Vienna expert, should encourage the increased use of MRI for breast screening too. Helbich says: "In light of these results, it is our duty to make women more aware of the fact that the use of mammography and ultrasound cannot detect all types of cancer. MRI really is the method to be recommended."

- An online tool has been developed at the MedUni Vienna for the early detection of breast cancer risk. The link can be found here: www.brustgenberatung.at
- doi/10.1200/JCO.2014.56.8626

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Enhance point-of-care testing in emergency settings with Roche's connectivity solutions

Seamless workflow and rapid diagnoses of cardiovascular diseases

Globally, cardiovascular diseases continue to be a leading cause of death, from myocardial infarctions and strokes to heart failure and venous thromboembolisms¹, and yet, their diagnosis remains a challenge in critical care settings and emergency departments, where fast intervention and early treatment is key to a patient's survival. Time is an invaluable puzzle piece to the cardiac healthcare cycle. When every second counts in the life of a patient, solutions that enable early diagnosis are essential, and healthcare professionals need to be able to take immediate action once results are produced.

Time is muscle

Roche Diagnostics Point of Care testing for cardiovascular events eases fast decision-making processes and improves workflow efficiencies for healthcare professionals. Whether used by a general practitioner, nurse or doctor in an emergency department, point-of-care testing (near patient testing) facilitates targeted individual diagnosis and prognosis of detected heart conditions in the patient. As a market leader for cardiac biomarker testing, Roche's point-of-care portfolio in the cardiac events monitoring segment includes the cobas h 232 system. Management of patients and their hospitalization for cardiovascular cases such as atrial fibrillation, myocardial infarction or heart failure, can be improved with instrument's accurate and precise results. The portable and easy to use point-of-care instruments can provide physicians with results in as fast as 15 minutes without any additional preparation for the sample or device.

The strength of the system's quantitative results is evident in cases of acute myocardial infarctions, which can be STEMI or NSTEMI-STEMI (St-Elevated Myocardial Infarction). The ratio between STEMI and NSTEMI is approximately 40/60, where NSTEMI patients have a higher mortal-



ity rate². The diagnosis of NSTEMI relies on observation of the symptoms, ECG and cardiac markers such as Troponins.

NSTEMI patients with positive Troponin T should immediately be sent to the Cardiac Care Unit for further evaluation. More than 30% of the NSTEMI patients (Troponin T >100ng/L) have positive Troponin T in the Ambulance, and 47% of the NSTEMI patients (Troponin T >100ng/L) in the Hospital. If the in-hospital Troponin T test is used with the cut-off level 50ng/L, 82% of the NSTEMI patients would be identified. With the cobas h 232 and its cut-off at level at 50ng/L there is a potential to identify even more than 30% NSTEMI patients already in the Ambulance and around 82% in the hospital.³


When active treatment is initiated for AMI patients within one hour, mortality rate decreases by 50%. In addition to Troponin T, Roche's cobas h 232, point-of-care device can test for a broad menu of biomarkers: NT-proBNP, D-Dimer, CK-MB and Myoglobin; this enables healthcare professionals to make rapid decisions about a patient's condition and level of risk.

Complete management of POC testing

Connectivity capabilities in a system, such

as that offered with Roche's cobas point of care IT solution, contribute to the improvement of laboratory cost and quality, resulting in a beneficial improvement of testing efficiency and patient care. The unique benefit of Roche's cobas point-of-care (POC) IT solution is the seamless connection of devices with LIS/HIS connectivity, consolidating patient results throughout the hospital's laboratories and databases. Healthcare professionals can rely on a system that matches test results to each patient and provides useful analytical reports of results, while maintaining documentation and quality control.

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Raising awareness of autism spectrum disorder



By **Leslie Morgan**, OBE DL
CEO, Durbin PLC

Leslie Morgan is a Fellow of the Royal
Pharmaceutical Society of Great Britain

Perusing the pages of the *Financial Times* on my computer tablet recently, I read with interest that Saudi Arabia has replaced its health minister amid concerns about the spread of the coronavirus, Middle East Respiratory Syndrome (MERS CoV), throughout and beyond the Gulf.

First detected in Saudi Arabia in September 2012, MERS can cause symptoms such as fever, breathing problems, pneumonia and kidney failure, and is from the same family as the SARS virus which killed around 800 people worldwide. Whilst it has not spread as fast as SARS it has been more deadly, and at the time of writing 92 of the 238 people confirmed to have been infected with MERS have died. Concerns that it is being passed between humans has reportedly seen some medical staff express fears about their own increased chances of catching the disease if they treat victims. This in turn has prompted the Saudi government to warn staff that they will be suspended if they refuse to carry out their duties. Figures nonetheless show that over 20 healthcare workers have already been


infected in Saudi Arabia and the UAE in recent weeks, and furthermore King Fahd Hospital in Jeddah was forced to close its emergency department recently prior to a thorough clean after an infected healthcare worker died.

Whilst initially it was thought there was no scientific evidence to justify ordering preventative measures such as travel restrictions, virus experts have warned that they are now becoming increasingly concerned about the pace at which the disease is spreading and that it may be becoming difficult to contain. Cases have already been reported in the UK, USA, Germany, Italy, France and Tunisia, and with the death of a Malaysian man who returned home from a pilgrimage to Saudi Arabia and another passenger who travelled on a flight from Abu Dhabi to Manila being diagnosed, the disease has now also reached Asia.

The jump in Saudi cases is of course of particular concern because of the expected influx of pilgrims from around the world during Ramadan in July, followed by the arrival of millions more to perform the annual Haj in Mecca and Medina in early October.

So what can be done to contain the outbreak? Firstly we must consider the source of the problem. Research has linked the virus to a camel infection, although it is not yet known exactly how the infection transfers between camels and humans. Screening camels for infection and then quarantining them is certainly one option, and avoiding their noses and mouths is of particular importance as studies have shown that the greatest amount of the virus is contained in these areas. The World Health Organisation is also warning against close contact with camels when visiting farms or barn areas where the virus is known to be circulating. Medical staff of course need to be particularly vigilant in looking out for possible MERS cases and to follow containment

procedures rigorously when it is identified. Saudi butcher shops and restaurants have also reported a decline in the sale of camel meat and milk after the acting health minister advised against consumption as a further preventative measure. Other tips include wearing masks to Haj, washing hands regularly, particularly after coughing or sneezing, and heating unpasteurised milk to 70°C before drinking.

As there is as yet no known cure for MERS, the Saudi Health Ministry has said that a major international pharmaceutical company would soon be visiting the kingdom to explore the possibility of manufacturing a vaccine for the virus. It's certainly a comfort to know that the medical scientists whose work saves lives daily may in time be able to come up with something that helps contain the disease, but until then everyone has a part to play in being as hygienic as possible so as to help keep the spread of this deadly virus in check. 

Durbin PLC is a British company based in South Harrow, London. Established for over 50 years, Durbin is a global specialist distributor operating in niche areas of pharmaceutical and medical distribution. Comprising of eight specialist divisions, Durbin prides itself on being a trusted global partner to healthcare manufacturers. The company is fully licensed by the UK MHRA, USA Pharmacy Authorities and DEA. Durbin has offices in the UK and in the USA so can provide US, UK and European products directly from source.

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KIMES 2015 showcases innovation, boosts exports from South Korea

The 31st Korea International Medical & Hospital Equipment Show (KIMES 2015) took place from 5-8 March at COEX in Seoul. The annual event continues to contribute to national healthcare improvement, medical technology development and the expansion of export from the country.

KIMES 2015 is organized by KOREA E&EX INC., KMDICA (Korea Medi-

cal Devices Industrial Cooperative), KMDIA (Korea Medical Devices Industry Association), and sponsored by MOTIE, Ministry of Health & Welfare, MFDS, Seoul Metropolitan Government, KOTRA, Korea Health Industry Development Institute, Korea Medical Association, Korean Hospital Association, Korean Medical Women's Association, Korean Nurses Association,

KOMEDIA and digital BOSA.

At the opening session Choong-Han Kim thanked the 1,145 companies from 34 countries for participating in KIMES 2015. He said he hoped that KIMES was the right platform to widen their business relationship with Korea and other international buyers who visited KIMES 2015.

Middle East Health visited the event and spoke to several companies.

Alpinion

Korean ultrasound manufacturer, Alpinion Medical Systems unveiled its latest innovations at this year's KIMES. With its focus on core imaging technology and acoustic engineering expertise, its technological innovation spans everything from early diagnosis to non-invasive treatment while enhancing the patient experience and driving down healthcare costs.

The latest additions to its E-CUBE series include HCU for Point of Care applications and a smart, compact ultrasound, E-CUBE 5.

Alpinion's E-CUBE 15 is a high-resolution, full-featured, high-end ultrasound system. It 15 provides progressive and versatile diagnostic solutions for vascular, cardiac, abdominal, pediatric, musculoskeletal, urology, prostate, and OB/GYN practices. The new elastography tool in the E-CUBE 15 offers an advanced level of diagnostic information to help evaluate tissue stiffness. It also features Extreme High Density transducers providing 2D and 3D/4D images with increased penetration.

E-CUBE 7 and E-CUBE 5 deliver compact and powerful image performance for

multiple applications. The E-CUBE 7 is the only system in its class that provides single crystal convex and phased array transducers.

The E-CUBE 5, with its simplified platform, allows faster response times at every diagnostic step and provides a silent diagnosis environment by decreasing its fan noise to 30% of the level of competitors.

Alpinion also highlighted the ALPIUS 900, ultrasound-guided HIFU (High Intensity Focused Ultrasound) technology first shown at ISUOG 2014 (International Society of Ultrasound in Obstetrics and Gynecology).

HIFU concentrates ultrasound energy precisely on a target in the body to thermally destroy tissue – just as a magnifying glass burns with the sun's rays. The ALPIUS 900 is coupled with diagnostic ultrasound guidance to identify, target and track treatment in real time.

"The treatment produces heat to remove uterine fibroids and the ALPIUS 900 will significantly broaden the range of treatment options for patients suffering from uterine fibroids. In contrast to surgery, it requires only a short period of hospitaliza-

tion and has a low complication rate. The ALPIUS 900 is the right solution to drive clinical performance, enhance the patient experience and deliver economic value for your institution," said Kookjin Kang, Product Development Senior Manager of HIFU Solutions at Alpinion.

In December 2014, the ALPIUS 900 received approval for treatment of uterine fibroids from the Korea Food and Drug Administration (KFDA). Alpinion expects to receive the CE mark for the system at the end of this year.

● For more information, visit:

www.alpinion.com

Samsung

Samsung Medison launched a premium ultrasound imaging system 'RS80A with Prestige' with an enhanced diagnostic package designed for radiology departments. The RS80A with Prestige strengthened research ability to the existing RS80A over a broad spectrum of diseases related to abdominal, breast, cardiovascular, and musculoskeletal ailments, to provide higher clinical value.

RS80A with Prestige is equipped with S-



Fusion, which is a function that can compare the body parts intended for diagnosis through ultrasound imaging with CT or MRI imaging simultaneously for analysis. Users can determine the location of lesions more precisely than the existing ultrasound imaging couldn't locate with high resolution of CT and MRI imaging. In particular, S-Fusion allows auto-registration that aligns imaging of CT or MRI within 30 seconds to enable a quick diagnosis.

S-Shearwave, which helps analyze the characteristics of body tissue without biopsy, provides numerical measurements of stiffness using the shear wave produced around the region of interest. The function supports accurate diagnosis by providing Reliable Measurement Index (RMI) and statistics for repeated measurements including the median and standard deviation.

RS80A with Prestige provides Samsung's new advanced 3D technology, Natural Vue. The feature strengthens morphological expressions than the existing Realistic Vue that creates realistic expression of internal body images. With the application of the 3D/4D reflection mode, Natural Vue can show even a minute protrusion that basic imaging is unable to display. The system also features Arterial Analysis, which supports earlier detection of cardiovascular diseases by executing both morphological and functional analysis of the vessel.

RS80A with Prestige will be first launched in Korea and European countries, followed by other regions around the world, including the US and Middle East in due course, targeting research and general hospitals.

InBody

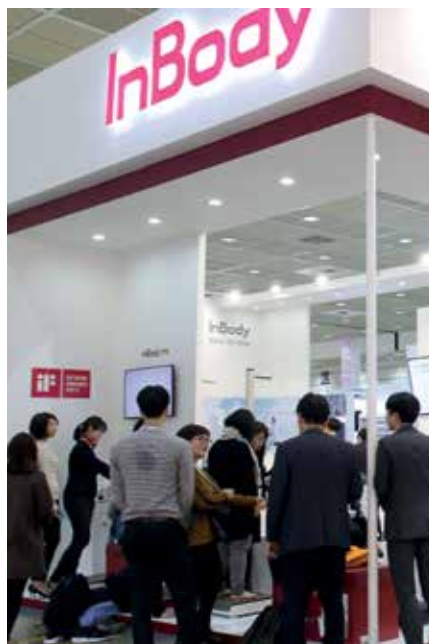
InBody uses technology to provide a comprehensive view of body composition balance. The information from the InBody test allows for personalized exercise and diet programs to maintain healthy lifestyles. InBody is widely used in various research and professional fields.

Body water, proteins, minerals, and body fat, which are the components of the human body closely relate to the status of our health. Using the method of quantitative analysis, these elements of body composition and body composition analysis provide basic information required for assessing the status of the body.

By using bioelectrical impedance analysis InBody accurately analyses the total body composition by separately measuring impedance of the body trunk (aka torso), which accounts for as much as 50% of total body weight and has different cross-sectional areas than the arms or legs. InBody's multi-frequency measurement method accurately measures Intracellular water and extracellular body water by using multiple broadband frequencies in the range of 1kHz-1000kHz.

The ability of the current to pass through cell membranes varies according to its frequency. Accuracy of the earlier BIA method were not reliable, as it only used a single frequency at 50kHz to distinguish between intracellular and extracellular body water.

The InBody overcame the limitations



of the early BIA, which relied only on a constant proportional formula for deriving total body water. With introduction of a water balance category, InBody is widely used in fields of nephrology and rehabilitation therapy.

By detecting sensitive changes in body composition primarily through impedance measurement the InBody has proven an unusually high level of precision, showing a correlation coefficient of 0.98 with DEXA, a gold standard in body measurements. InBody is widely used clinically and in research where monitoring changes in body composition is important.

InBody has revolutionized the field of body composition analysers and continues to help people around the world see what they're made of.

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

Insung Medical

Insung Medical is a leading manufacturer of silicone medical products ranging from anaesthesia to pulmonary care.

It has established many exclusive distributorship agreements with USA, Europe, Japan and China.

The company is seeking to expand its global market and welcomes cooperation with agents and distributors.

Some of Insung Medical's main products include:

Human Port: Used for patients under repetitive chemo therapy for pain relief; patients who need antimicrobial, antiviral medication and parenteral nutrition.

Human Cath: This is a periperal venous catheter which is designed for the premature (below 1Kg) and Neonate in long term drug administration.

Human Broncho: used for elective pulmonary resection, right-sided; video-assisted thoracoscopic surgery; Lobectomy; left pneumonectomy; pulmonary haemorrhage; large central bronchopleural fistula/urgent situation; independent lung ventilation.

ID-VAC: used for wound-drainage. Advantages include: excellent tensile force of drain catheter; sharp trocar for easy insertion; stable connector part to avoid disconnection.

● For more information, visit: www.insungmedical.co.kr

Linearity Materials for Roche Clinical Chemistry Analyzers

Audit MicroControls has announced four new instrument specific linearity products that are intended to simulate human patient serum samples for the purpose of determining linearity, calibration verification and verification of reportable range using quantitative assays on Roche clinical chemistry analysers.

The Linearity FD General Chemistry for Roche Systems, item# K880M-5, consists of five levels that demonstrate a linear relationship to each other when assayed for: Albumin, Alkaline Phosphatase, ALT, Amylase, AST, BUN, Calcium, Chloride, CO₂, Creatine Kinase, Creatinine, Gamma-GT, Glucose, Iron, Lactate, LDH, Lipase, Magnesium, Phosphorus, Potassium, Sodium, Total Bilirubin, Total Protein, and Uric Acid. This product has an open vial stability of 7 days when stored at 2-8°C.

The Linearity LQ Ammonia/Ethanol for Roche Systems, item# K881M-5, consists of five levels that demonstrate



a linear relationship to each other when assayed for Ammonia and Ethanol. This product has an open vial stability of 2 days when stored at 2-8°C.

The Linearity FD Lipids for Roche Systems, item# K882M-5, consists of five levels that demonstrate a linear relationship to each other when assayed for Apo A, Apo B, Cholesterol, HDL Cholesterol, LDL Cholesterol and Triglycerides. This product has an open vial stability of

5 days when stored at 2-8°C.

The Linearity FD Bilirubin for Roche Systems, item# K886M-5, consists of five levels that demonstrate a linear relationship to each other when assayed for Direct Bilirubin and Total Bilirubin. This product has an open vial stability of 2 days when stored at 2-8°C.

● For more information, visit: www.auditmicro.com or email: sales@auditmicro.com

The CLX is the next big thing in sport and orthopaedic rehab

TheraBand is breaking ground with the new latex free, patent-pending CLX Consecutive Loops, delivering versatility and ease of use that may increase exercise compliance to improve patient outcomes. Never before has resistance training been so versatile, so simple and so inspiring.

It will be available in September.

CLX replaces so many other exercise devices ... It's an all-in-one exercise tool.

● **ALL-IN-ONE PRODUCT:** Does the work of four products (band, loops, tubing with handles, anchor).

● **SIMPLICITY MAY INCREASE COMPLIANCE AND USE:** Intuitive design and versatility make home exercise less complicated.

● **CONSECUTIVE LOOPS ALLOW HANDS-FREE:** Patent-pending built-in consecutive loops work for open hand exercises, holding objects with resistance, never before possible exercises,



and hands-free exercises.

● **LATEX FREE CONSTRUCTION:** Exclusive latex free material and proprietary construction method yield winning results.

● **RESISTANCE INCREASES IN 25% INTERVALS:** With TheraBand trusted colour progression, resistance increases 25% from Yellow through Black.

● **INTEGRATED APP ENGAGES USERS (PATIENTS AND PRACTI-**

TIONERS): Video exercise library and exercise support features enhance the user experience.

● For more information, contact Health Mart:

Tel: +97143388316,

Fax: +97143388317

or email: info@healthmart.ae.

● Download the free App: clxapp.com (Available on Google Play and Apple App Store)



Timesco introduces Optima Neo wall-mounted diagnostic sets

The Timesco Optima Neo wall-mounted diagnostic set has been designed to offer the clinician a perfect diagnostic tool for ophthalmology and aural examination with the convenience of always being ready for use. Powered from mains the Optima Neo wall-mounted diagnostic set is available with superb fiber optics and precision lenses in both the ophthalmoscope and otoscope for unrivaled visual examination.

The Optima Neo sets are available in EU and USA models with voltages for each. The units are supplied complete ready to use from the box, simply connect to the wall / rail, plug in and use. The EU and USA models are supplied with relevant speculums for each market.

The Optima Neo wall mounted sets are supplied with 2 handles coupled with Optima Neo Ophthalmoscope and Neo Otoscope instruments heads. The handles are connected to the base unit with 3m coiled cables. Illumination is provided with Xenon 3.5v high light intensity bulbs which are surge protected to allow extended bulb life. The non slip handles come on automatically once removed from the cradle and off once returned. Rotating rheostats on the handles allow the variation of the intensity of the light.

A selection of set options, accessories and spare parts are available.

Timesco Neo wall-mounted sets conform to international standards of manufacture and safety.

- For more information, visit: www.timesco.com
email: export@timesco.com
or contact Misbah Jabbar at the regional Dubai office: misbah.jabbar@timesco.com



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Soft robotic glove puts control in the grasp of hand-impaired patients

Having achieved promising results in proof-of-concept prototyping and experimental testing, a soft robotic glove under development by soft wearable robotics expert Conor Walsh, Ph.D., and a team of engineers at the Wyss Institute for Biologically Inspired Engineering and Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS) could someday help people suffering from loss of hand motor control to regain some of their daily independence.

Most patients with partial or total loss of their hand motor abilities experience greatly reduced quality of life due to their inability to perform many normal activities of daily living. Tasks often taken for granted by the able-bodied, such as buttoning a shirt, picking up a telephone, or using cooking and eating utensils, become frustrating and nearly impossible feats due to reduced gripping strength and motor control in the hand.

The stage is now set for that to change, thanks to soft, wearable robotic systems and the Wyss Institute's "from bench to bedside" translational approach that has enabled the glove's potential end users to be involved in every step of testing and development. The holistic approach ensures that technology development goes beyond achieving functionality to also incorporate social and psychological elements of design that promote translation and seamless adoption by its intended end users.

"From the start of this project, we've focused on understanding the real-world challenges facing these patients by visiting them in their homes to perform research," said Walsh, who is a Wyss Institute Core Faculty member, Founder of the Harvard Biodesign Lab, and Assistant Professor of Mechanical and Biomedical Engineering at SEAS.

Wyss Technology Development Fellow Panagiotis Polygerinos, Ph.D., and Wyss Mechanical Engineer Kevin Galloway, Ph.D. incorporated the patients' feedback at every stage of development of the glove in an effort to maximize its potential for translation.

"Ultimately, patients have to be comfortable with wearing the glove," said Galloway. "In addition to glove function, we found that people cared about its appearance, which could have a big impact on whether or not the glove would be a welcome part of their daily routine."


Walsh's team adapted the mechanics of the glove to make it more comfortable and natural feeling to wearers. Over several iterations of design, the actuators powering the movements of the glove were made smaller and were modified to distribute forces more evenly over the wearer's fingers and thumb. The resulting soft, multi-segment actuators, which are composite tubular constructions of Kevlar fibres and silicone elastomer, support the range of motions performed by biological fingers. The glove's control system is portable and lightweight and can be worn using a waist belt or can be attached to a wheelchair.

Now, the team is working to improve on their glove control strategies that will allow the system to detect the intent of the wearer. One potential solution is to leverage surface electromyography using small electrical sensors in a cuff worn around the patient's forearm. The electromyography sensors – which could be used to directly control the glove – work by detecting the residual muscle signals fired by motor neurons when the patient attempts to perform a grasping motion.

"We are continuing to test the design of the soft robotic glove on patients, in relation to making it customizable for the specific pathologies of each individual

and understanding what control strategies work best – but we're already seeing a lot of exciting proof-of-concept experimental results," said Walsh. "The current goal is to refine the overall system sufficiently so we can begin a feasibility trial with multiple patients later this year."

The design of the glove has been published in *Robotics and Autonomous Systems* journal and the team also recently presented it at the International Conference on Robotics and Automation. This August, the team's electromyography control work will be presented at the International Conference on Robotics Research, which is being held in Singapore.

• doi: 10.1016/j.robot.2014.08.014 

Soft, multi-segment actuators used in the soft robotic glove enable an assistive range of motions alike those performed by the biological fingers and thumb. The actuators are customizable to accommodate each patient's specific hand size and pathology.



Wyss Institute at Harvard University

Agenda

Selected schedule of regional medical meetings, conferences and exhibitions

Event	Date / City	Contact
■ August 2015		
Oncology 2015 - World Congress on Cancer and Prevention Methods	27 – 29 August, 2015 Dubai, UAE	http://scientificfuture.com/oncology-2015/index.html
■ September 2015		
2nd Istanbul Medical, Health, Geriatrics, Thermal, Spa & Wellness Tourism Fair & Congress	3 – 5 September, 2015 Istanbul, Turkey	www.imtfair.com
Epilepsy Congress Istanbul 2015	5 – 9 September, 2015 Harbiye, Turkey	www.epilepsyistanbul2015.org/
The 5th Oman Health Exhibition & Conference	7 – 9 September, 2015 Muscat, Oman	http://www.omanhealthexpo.com/
3rd International Oncology Conference	10 – 11 September, 2015 Abu Dhabi, UAE	www.menaconf.com
The 8th Pan Arab Radiology Conference (ARC 8) The 10th Jordanian Radiology Society Conference	10 – 13 September, 2015 Amman, Jordan	www.radiologysociety-jo.com
Middle East Global Summit and Expo on Vaccines & Vaccination	28 – 30 September, 2015 Dubai, UAE	http://vaccines.global-summit.com/middleeast/
Medicare Iraq – Baghdad	28 – 30 September, 2015	www.iraqmedicare.com
■ October 2015		
SKMC Multispecialty Conference 2015	3 - 17 Oct 2015 Abu Dhabi, UAE	http://www.smc2015.ae
Patient Safety Middle East 2015	4 – 6 October, 2015 Dubai, UAE	www.patientsafety-me.com
4th International Conference on Surgery	5 – 7 October, 2015 Dubai, UAE	http://surgery.conferenceseries.com
7th Global Summit on Cancer Therapy	5 – 7 October, 2015 Dubai, UAE	http://cancer.global-summit.com/middleeast/
GCC Pharmaceutical Congress 2015	5 – 8 October, 2015 Dubai, UAE	www.gccpharmacongress.com
IMTEC 2015	7 – 8 October, 2015 Dubai, UAE	www.medicaltravelexhibition.com
5th Annual Case Based Approach to Controversies In Cardiovascular Disease	8 – 10 October, 2015 Dubai, UAE	Cardiovascular@InfoPlusEvents.com http://www.cvuae.com/
Mental Health Congress (WFMH 2015)	16 – 19 October, 2015 Cairo, Egypt	http://www.wfmh2015.com/



Agenda

Selected schedule of regional medical meetings, conferences and exhibitions

Event	Date / City	Contact
Rheumatology and Medical Rehabilitation 2015	28 – 30 October, 2015 Kurdistan, Iraq.	toc@theorganizers-iraq.com www.rheumatology/rehabilitation.com
MENA Orthopaedics Congress 2015	29 – 31 October, 2015 Dubai, UAE	info@menaorthopaedicscongress.com www.menaorthopaedicscongress.com/
2015 UAE Cancer Congress	29 – 31 October, 2015 Dubai, UAE	uaecancercongress@mci-group.com www.uaecancercongress.ae/register.php
■ November 2015		
6th Global Diabetes Summit and Medicare Expo	2 – 4 November, 2015 Dubai, UAE	http://diabetesexpo.com/middleeast/
Pharma Middle East	2 – 4 November, 2015 Dubai, UAE	http://middleeast.pharmaceuticalconferences.com/dubai/
Healthcare Investment MENA	2 – 4 November, 2015 Dubai, UAE	www.healthcareinvestmentmena.com/
MENA Women's Health Congress	5 – 7 November, 2015 Dubai, UAE	info@maarefah-management.org http://www.cvent.com/events
Global Summit & Expo on Dubai Healthcare	9 – 11 November, 2015 Dubai, UAE	www.healthcare.global-summit.com
International Paediatric Medical Congress	12 – 14 November, 2015 Dubai, UAE	info@internationalpaediatriccongress.com www.internationalpaediatriccongress.com/
Abu Dhabi International Conference in Dermatology & Aesthetics	19 – 20 November, 2015 Abu Dhabi, UAE	jerico@menacnf.com www.menacnf.com
XXI. World World Congress of Echocardiography and Cardiology	20-22 November, 2015 Istanbul, Turkey	http://www.worldchoiistanbul.org/
The First Annual Heart Failure	26 November, 2015 Abu Dhabi, UAE	http://atnd.it/29163-0 zandra@menacnf.com



List your conference:

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

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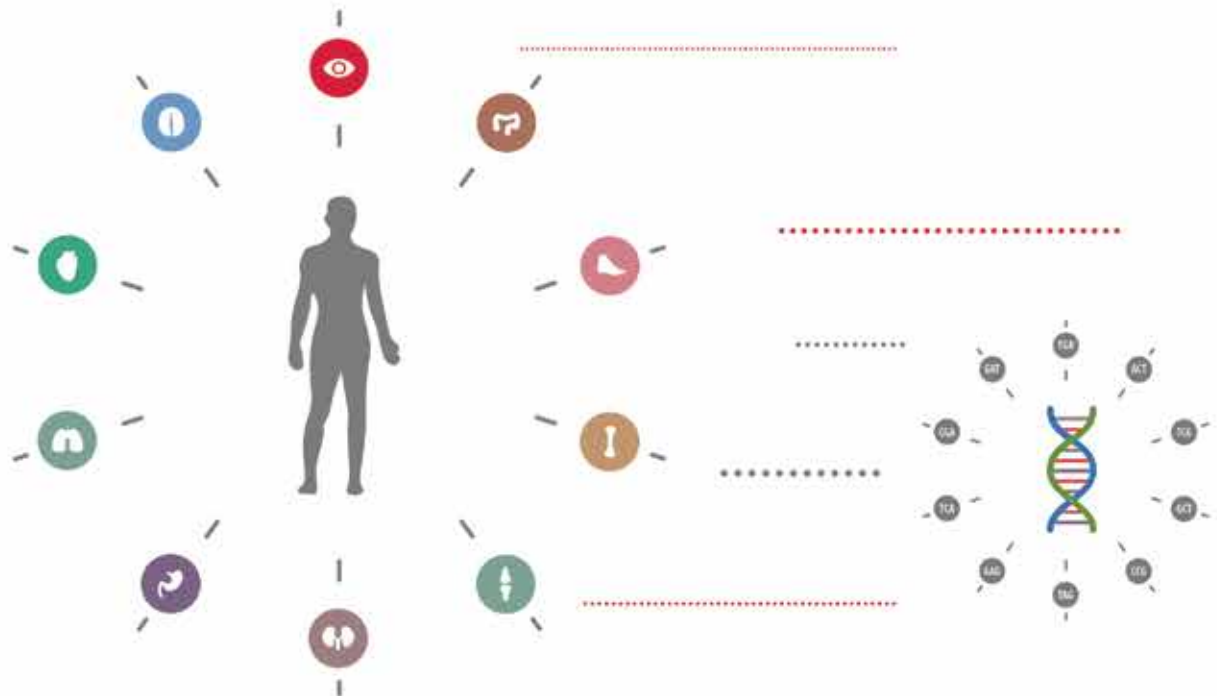
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