



Vol. 01 Issue 05, September-October 2017

# MEDIWORLD

Middle East



## Creating the ideal healthcare infrastructure

Faizal E. Kottikollon; Founder, Chairman & CEO, KEF Holdings Limited

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in ultrasonography  
in emergency medicine

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retains top position for  
heart care

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Middle East, Africa and Asia & Beyond

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## Editor's Note

*MediWorld Middle East* has entered into a new phase after receiving strong support and positive feedback from healthcare industry leaders, researchers, professionals and readers. The magazine is committed to cover the latest developments in healthcare projects and facilities, innovative designs, medical technology, pharmaceutical and other relevant industries. Our reports and features are driven through research into major trends and interview with industry leaders, experts, stakeholders and decision makers.

Our magazine available in both print and online is a perfect platform for advertisers who use Middle East Health as a key vehicle to show their products and services and increase brand awareness in the region. Healthcare leaders face constant and ever-growing demands across an increasingly multi-faceted healthcare system. Leaders need to be equipped with the knowledge and skills to respond to these challenges.

Healthcare projects worth \$55.2 billion are currently in the pipeline in the Mena region. A total of 37 mega hospital projects worth about \$28.2 billion are already underway in the Gulf region, and these are expected to add 22,500 hospital beds to existing capacity, says Alpen Capital Healthcare Report.

The UAE gives top priority to its healthcare facilities and infrastructure. The healthcare market in the country is reportedly expected to be valued at \$19.5 billion by 2020, achieving an annual average growth of 12 per cent, which is the strongest growth in the GCC region.

Faizal E. Kottikollon, Founder, Chairman and Chief Executive Officer, KEF Holdings Limited, suggested an ideal method for building hospital infrastructure during an interview with *MediWorld Middle East*. This method is based on turnkey, design and build solutions.

A breakthrough to fight deadly infectious disease is a good news. Aethlon Medical has created Hemopurifier, an innovative medical device, to eliminate life-threatening diseases such as Ebola and HIV. Read the article in our magazine and learn more about the capabilities of the device and how it battles Ebola and HIV.

An article on exponential growth in ultrasonography in emergency medicine will shed some light on the importance of the diagnostic imaging techniques in healthcare culture. Now women can put their hands on the remote control button of mammography device to choose the compression rate. The device known as 'Senographe Pristina Dueta' is introduced by GE Healthcare and approved by FDA

According to Siemens Healthcare, breast cancer is growing throughout the world and breast cancer screening is expected to reach 250 million next year.

Read our news update section and your feedback will be highly appreciated. We will focus more on building new healthcare infrastructure and innovative designs in our next edition.

Sincerely,

**Editor, *MediWorld ME***

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Creating the ideal healthcare infrastructure



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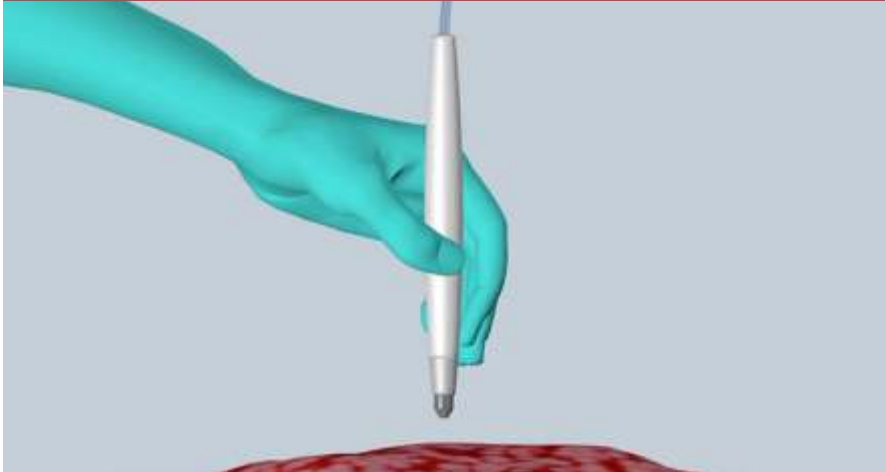
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# Creating the ideal healthcare infrastructure

**With the UAE boasting the strongest growth rate in healthcare sector, billions of dollars are being poured into new projects in MENA to build top facilities for patients both from within and outside the region**

**T**o ensure that the healthcare infrastructure is well in place and according to the guidelines, the infrastructure should convey a positive message to its patients, visitors, volunteers and staffs about what the facility and medical care is being provided there. An ideal message should be welcoming, caring, comforting with compassion and commitment to patient well-being and safety, healthcare experts highlight.

The UAE healthcare market is reportedly expected to be valued at \$19.5 billion by 2020, achieving an annual average growth of 12.7 per cent, which is the strongest growth rate in the GCC region, industry statistics

highlight. Just some of the measures being taken to drive growth in the sector by the government include encouraging private sector participation to build hospitals and clinics and introducing mandatory health insurance for everyone. The PPP model will grow increasingly popular in the years to come as private sector investment will be encouraged.

MediWorld ME recently met with Faizal E. Kottikollon, Founder, Chairman and Chief Executive Officer, KEF Holdings Limited to discuss what an ideal healthcare structure looks like in the UAE and beyond.



King Faisal Medical City, Saudi Arabia





### Ideal healthcare infrastructure

Over the years, healthcare projects have been designed and built primarily on immediate and at the best near future needs. According to National Institute of Building Sciences, an ideal healthcare infrastructure has a life span of 50 – 100 years or more. The forces that influence the need for flexibility are numerous and ever-evolving.

“Investors are always looking to reduce costs and shorten construction schedules without compromising high-quality design and finishes. The move toward more standardized environments and systematic approaches to care delivery makes offsite manufacturing, where 90 per cent of the hospital is manufactured in a controlled factory environment and assembled onsite, the ideal method for building hospital infrastructure. This reduces construction time by up to 50 percent which allows for significant return on investment for the project.

In the UAE, this approach has not been adopted so far in totality in the healthcare industry. At KEF, we see a huge opportunity in this respect, which is why our focus is set on bringing turnkey, design and build, infrastructure solutions to the Emirates,” Mr Kottikollon explained.

### Physical environment

Many construction experts have identified that physical environment has a significant impact on safety and human performance, the tools used, and the environment in which they live and work is basic to any study of the design a healthcare facility and its effect on the performance of the nurses and other caregivers who interface with the facility and its fixed (e.g., oxygen and suctioning ports on the wall of a patient room) and moveable (e.g., a patient bed) equipment and technology.

The design of a facility with its fixed and moveable components can have a significant impact on human performance, especially on the health and safety of employees, patients and families. In a review of more than 600 articles, researchers found that there was a link between the physical environment (i.e., single-bed or multiple-bed patient rooms) and patient (e.g., fewer adverse events and better health care quality) and staff outcomes (e.g., reduced stress and fatigue and increased effectiveness in delivering care).

Efforts to improve patient and staff outcomes can target latent conditions for clinicians by using evidence-based

The design of a facility with its fixed and moveable components can have a significant impact on human performance, especially on the health and safety of employees, patients and families. Researchers found that there was a link between the physical environment and patient and staff outcomes. - Faizal E. Kottikollon, Founder, Chairman and Chief Executive Officer, KEF Holdings Limited

designs to decrease distractions, standardize locations of equipment and supplies, and ensure adequate space for documentation and work areas. The research done by



‘Reason and Leape’ describes the value of practices based on principles designed to compensate for human cognitive failings.

### Operation and management

Growing evidence advocates the fact that physical environment impacts patient stress, patient and staff safety, staff effectiveness, patient satisfaction and quality of care provided in hospitals. Based on such research findings, KEF takes informed design decisions on the built environment of any healthcare facility, through its infrastructure arm, KEF Infra.

“On the other hand, our Healthcare division, KEF Health, advocates evidence-based clinical care to reduce variability, and consistently improve efficiencies of outcomes at a lower cost through designing optimal, evidence-based care paths. In developed markets, offsite and modular construction is fast replacing one-off design & conventional healthcare construction methodologies. Recent years have seen the emergence of large-scale manufacturing, installation and assembly of high quality, affordable hospital units off-site. With modular healthcare construction, KEF expects to

turnaround the economies in the healthcare sector, enabling a system of rapid delivery of affordable healthcare facilities," the CEO noted.

KEF Health's philosophy extend far beyond in terms of efficient and effective operation, maintenance and evaluation of the healthcare system.

#### **Efficiency and sustainability**

In an ideal situation, the sustainability process should start right from the design stage, and continue through each step of development of the hospital.

Mr. Kottikollon continued, "In the case of offsite

identified as critical in ensuring patient safety and quality care, based on the six quality aims of the Institute of Medicine's report, Crossing the Quality Chasm: A New Health System for the 21st Century includes patient centeredness, safety, effectiveness, efficiency & equity.

There have been five other significant reviews of the literature relating to the physical environment and patient outcomes. Nelson and Colleagues identified the need to reduce noise pollution and enhance factors that can shorten a patient's length of stay (e.g., natural lighting, care in new/remodeled units and access to music and views of nature); according to their study,



manufacturing of hospitals, the time savings delivered in developing a healthcare facility results in significantly higher ROI for the investor. Moreover, the manufacturing processes, covering each element from the façade to furniture within the hospital, are undertaken in a controlled environment, where the margin of error and wastage is almost negligible.

Once the facility is handed over, the infrastructure which

The design of a hospital can significantly improve patient safety by decreasing health care associated infections and medical errors. The facility design can also have a direct impact on patient and staff satisfaction, a patient's stress experience and organization performance metrics, studies found.

builds on advanced BIM technology, can be monitored and managed – allowing even the slightest anomalies to be detected and any consequent errors to be avoided. In the long-run, healthcare facilities that have a foundation rooted in technology will go a long way in bringing about greater efficiencies in the patient experience."

#### **Considering other factors**

With human factors in mind, there are several other aspects of the building environment that should be considered. In a review of the literature by Henriksen and Colleagues, the following design elements were

patients can benefit from the skilful utilization of music and artwork.

Ulrich and Colleagues found research that demonstrated that the design of a hospital can significantly improve patient safety by decreasing health care associated infections and medical errors. They also found that facility design can have a direct impact on patient and staff satisfaction, a patient's stress experience, and organization performance metrics. Three other reviews found that hospital design, particularly when single-bed rooms are employed, can enhance patient safety and create environments that are healthier for patients, families and staff by preventing injury from falls, infections and medical errors; minimizing environmental stressors associated with noise and inefficient room and unit layout; and using nature, colour, light and sound to control potential stressors.

#### **Billions in investments**

On a related note, healthcare projects worth \$55.2 billion are currently in the pipeline in the Middle East and North Africa (MENA) region, according to latest industry estimates. A total of 37 mega hospital projects worth about \$28.2 billion are already underway in the Gulf region, and these are expected to add 22,500 hospital beds to existing capacity according to Alpen Capital Healthcare Report. The rest of the year is expected to be even more robust for the healthcare projects market, with major projects being undertaken throughout the region, the report said.

Healthcare spending in MENA is expected to grow to \$150 billion in 2020. In the GCC countries, it will account for about \$70 billion of this spending with a compounded annual growth rate of over 12 per cent, one of the highest for any part of the world, according to global property consultant JLL.



The world spending on healthcare is expected to increase from \$8 trillion in 2013 to \$18 trillion in 2040, according to industry estimates. On a positive note, the demand for quality healthcare facilities in the MENA region has been growing dramatically.



Burjeel Medical City, Abu Dhabi-UAE

The world spending on healthcare is expected to increase from \$8 trillion in 2013 to \$18 trillion in 2040, according to industry estimates. The demand for quality healthcare facilities in the MENA region has been growing dramatically.

Population growth is the key driving force that boost the demand for healthcare. The population of the region has increased by 1.9 per cent per annum, to reach approximately 470 million, which is well above the global average of 1.1 per cent. An ageing population acts as a further contributor.

Other factors include a need to increase healthcare spend as a percentage of GDP. The increasing prevalence of lifestyle diseases are expected to continue to drive the demand for healthcare services across the region. The development of the Health Insurance Sector, including governments making health insurance mandatory across the GCC by 2020 will act as a significant driver of further private sector investment.

#### Regional initiatives

Regional governments recognizing the need for this in the long term development of their countries have supported and invested in healthcare. Dubai in particular has been ahead of chart when it comes to setting up healthcare infrastructure. For e.g. Dubai Healthcare City the healthcare free zone was launched 15 years ago. There has also been a significant investment by the private sector in healthcare, recognizing the long term opportunity of this real estate asset class.

Another area that needs to be addressed as the healthcare industry grows a lot further is the need to have world class medical universities which would provide the human capital needed for regional growth to be sustained. The UAE is ranked 27 in world health systems as per the World Health Organization (WHO).

The UAE healthcare sector has displayed extraordinary growth and significant progress. The

Health Authority Abu Dhabi (HAAD), Abu Dhabi Health Services Company (SEHA) and Dubai Health Authority (DHA) have developed a highly efficient health service system that includes sophisticated physical infrastructure and cutting edge IT service.

According to Alpen, the healthcare market in the UAE is projected at \$19.5 billion in 2020, indicating an annual average growth of 12.7 per cent from 2015. The outpatient and inpatient markets are projected to reach \$12.1 billion and \$7.5 billion, respectively, in 2020. The country is likely to see a nearly 3 per cent annual increase in the number of hospital beds required, presenting a demand of more than 13,800 beds by 2020.

In the UAE, some of the high-profile projects coming up include Al Ain Hospital in Al Ain, Burjeel Medical City in Abu Dhabi, Gulf Medical University Hospital in Ajman, Mediclinic Parview Hospital and King's College Hospital (KCH) in Dubai.

#### Projects in Saudi Arabia

The Saudi Arabian healthcare market is forecasted to reach \$27.4 billion in 2020, registering a CAGR of 11 per cent from 2015. The outpatient and inpatient markets are expected at \$15.2 billion and \$12.2 billion respectively in 2020. From less than 70,000 in 2015, the number of beds required in the kingdom is likely to cross 76,500 in 2020.

Some of the latest hospital building projects in Saudi Arabia are King Abdullah Bin Abdulaziz, Project for Development of Security Forces Medical Complexes; King Khaled Medical City in Dammam; King Faisal Medical Cit in Asir; Mouwasat Hospital in Al Khobar and Amal Mental Health Hospital in Taif.

Saudi government is keen on developing and modernizing the healthcare industry on priority basis. It is encouraging the involvement of more private sector to improve the quality of healthcare. The Saudi health ministry has commissioned few projects to bridge the gap in healthcare infrastructure. The Kingdom offers

Healthcare projects worth \$55.2 billion are currently in the pipeline in the MENA region. A total of 37 mega hospital projects worth about \$28.2 billion are already underway in the Gulf region, and these are expected to add 22,500 hospital beds to existing capacity, says Alpen Capital Healthcare Report.

attractive opportunities to foreigners to invest in the country's healthcare facilities.

"The healthcare sector offers the ability for real estate investors to participate in a growing market backed by the government, where long-term leases can be structured to major regional and international healthcare providers," said Craig Plumb, head of research, MENA - JLL.

The MENA region has undoubtedly made significant strides in a relatively short period of time in the healthcare sector and with the continued focus in addressing the challenges by regional governments, the outlook for this sector continues to look upward.

# Combat against deadly diseases

## Hemopurifier by Aethlon Medical aims to eliminate diseases such as Ebola and HIV

Infectious diseases are disorders caused by organisms such as bacteria, virus, fungi or parasites. Many organisms live in or on our bodies. They can be harmful or harmless, but under certain conditions, some organisms may cause diseases.





At present, no country is prepared to address the breadth of viral pathogens that could emerge naturally through mother-nature or be released as an agent of bioterrorism by man. Infectious disease experts believe that a viral outbreak is the most likely single event that could kill 10 million or more people.

**James A. Joyce, Chairman and CEO Aethlon Medical**

**S**ome infectious diseases can be passed person to person; some are transmitted from insects or animals. And other are acquired by ingesting contaminated food or water or by being exposed to organisms in the environment. Signs and symptoms vary depending on the organism causing the infection, but often include fever and fatigue. Mild infections may respond to rest and home remedies while some life-threatening infections may require severe hospitalization.

Aethlon Medical recently created an innovative medical device called Hemopurifier to combat against life-threatening diseases such as Ebola and HIV. James A. Joyce the Chairman and CEO of Aethlon Medical explains to MediWorld ME the broad-spectrum capabilities of Hemopurifier and how it battles Ebola and HIV.

#### **Single-use, disposable Hemopurifier**

Emerging pathogens pose a significant threat to mankind. Of the hundreds of viral pathogens known to be infectious to man, only a few are addressed with proven antiviral drug or vaccine therapies. Beyond the looming threat of bioterrorism, a proliferation of international travel, urban crowding and global warming is expected to accelerate the emergence of future pandemics.

James A. Joyce notes, "At present, no country is prepared to address the breadth of viral pathogens that could emerge naturally through mother-nature or be released as an agent of bioterrorism by man. In fact, only a small fraction of viruses that are already known are addressed with an antiviral drug. Infectious disease experts believe that a viral outbreak is the most likely single event that could kill 10 million or more people."

The Hemopurifier is a single-use disposable cartridge that Aethlon designed for use within the established infrastructure of dialysis machines and other blood circulatory instruments already located in hospitals and clinical worldwide.

"The Aethlon Hemopurifier® is a first-in-class medical device designed to rapidly eliminate infectious viruses from the entire circulatory system. The Hemopurifier is being advanced through the FDA in the United States and has been proven to capture a broad-spectrum of life-threatening viruses that are not addressed with antiviral drug therapies, including



naturally occurring pandemic threats and agents of bioterrorism. Hemopurifier is the first and only line of defense and life-threatening viruses that are not addressed with antiviral drug or vaccine therapies".

#### **Combating viruses**

The Hemopurifier addresses a wide range of viruses as it captures infectious viruses by a common structure that they cloak themselves with to evade the surveillance of the immune system.

"As a result, we have an opportunity to address different strains, species and families of viruses. In addition to having success in treating ebola during the recent outbreak, we have validated the capture of 16 high-threat viruses, of which most are not addressed with a traditional drug therapy."

To date, Hemopurifier therapy has been administered to virally infected individuals for periods of four to six and one-half hours. Unless patient is extremely ill, they are able to read, listen or watch TV during which treatment is being administered and do so in a relaxed environment.

#### **Broad-spectrum capabilities**

According to experts, there is no cure for HIV, but there are medications that can dramatically slow the progression of the disease. But HIV continues to



decimate population in Africa, Haiti and parts of Asia. HIV continues to be a major global public health issue, having claimed more than 35 million lives so far. In 2016, 1 million people died from HIV-related causes globally, according to WHO.

"Our research team has created a method that allows us to quantify the number of viruses that are captured in the Hemopurifier during treatment and no longer circulating in the patient. This works for all RNA viruses. In some cases, we have captured billions of viruses within our device during single 4-6 hour treatments.

Ebola is another rare but deadly virus that causes fever, body aches and diarrhoea and sometimes

The Hemopurifier is a single-use disposable cartridge that Aethlon designed for use within the established infrastructure of dialysis machines and other blood circulatory instruments already located in hospitals and clinical worldwide

bleeding inside and outside the body. As the virus spreads, it damages the immune system and organs, ultimately causing levels of blood-clotting cells to drop. This leads to severe uncontrollable bleeding. It spreads through contact with skin or bodily fluids of an infected animal like monkey, chimp or fruit bat. However, according to experts again, there is no cure for Ebola up until now. WHO states that the average Ebola case fatality rate is around 50% case fatality rates have varied from 25 per cent to 90 per cent in past outbreaks. People diagnosed with Ebola receive supportive care and treatment for complications.

"During the Ebola outbreak, we captured 253 Ebola viruses during the treatment of a comatose doctor with multiple organ failure. While treating, the patient's viral load reduced from approximately 400,000 copies/ml to approximately 1000 copies/ml. The patient made a full recovery and was able to return home to his wife and children".

#### Validating viruses

In health compromised individuals, latent viruses that normally don't pose a threat, can become reactivated

and overwhelm the immune system.

"We have validated three of the most common latent viruses, which include Cytomegalovirus, Epstein-Barr and Herpes Simplex Virus. Most of the viruses validated by Aethlon Medical are not curable with traditional drug or vaccine therapies.

"We measure the capture of such viruses during treatment as a means to verify that our device achieved the goal of its label indication, which is the single-use removal of viral pathogens from blood. Instead of claiming to cure, we deploy our



Hemopurifier to augment the patient's immune system or to improve the benefit or other therapies should they exist."

#### Future goals

At this point, Aethlon's main focus will be directed toward establishing large-scale production capabilities of Hemopurifier.

"As a company, we are also interested in the possibility of eliminating tumor-derived exosomes from the circulatory system of cancer patients. This would represent a significant unmet need in healthcare as tumor-derived suppress the immune system of cancer patients and play a role in the spread of metastasis, which contributes to upwards of 90 per cent of cancer deaths.

"I can conclude that we are interested providing our Hemopurifier to countries that wish to protect their citizens from emerging bio-terror and pandemic threats that are not treatable with traditional drug therapies," concludes James.

#### Aethlon Medical

Aethlon Medical combats infectious disease and cancer with Immunotherapeutic Technologies. To augment the body's natural immune defenses, the Aethlon Hemopurifier® eliminates life-threatening disease targets that are often shielded from the immune system and not well addressed by traditional drug therapies. The technology captures circulating viruses, bacterial toxins and cancer promoting exosomes through affinity attachment to a unique structure that cloaks these targets from immune detection. At present, the Hemopurifier® is being advanced under an FDA approved clinical study.





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# Exponential growth in **Ultrasonography** in emergency medicine

Described as a diagnostic imaging technique primarily used to visualize viscera & other internal structures in the body, ultrasonography utilizes the properties of sound



**U**ltrasonography (US) is an integral modality in healthcare in general but even more so in emergency care. This technology has become a pivotal part of the care that is administered to patients who are admitted for emergency care. Over the past few decades there has been an exponential increase in the use of ultrasonography which has become the standard of care for an emergency patient. Unfortunately, the awareness of this modality is not as pronounced in healthcare culture as it should be and therefore this

article will seek to shed some light on the importance of ultrasound in acute medicine.

Ultrasonography is a diagnostic imaging technique that is primarily used to visualize viscera and other internal structures in the body. It works based on the principles of physics by utilizing the properties of sound. Sound waves with frequencies greater than those audible to the human ear, appropriately named ultrasonic waves, are sent as pulses through a transducer into the body which are then reflected back as echoes of varying



degrees depending on the physical properties of the tissue they reflect off of.

These echoes are then recorded and displayed as an image which is used by the operator to further his clinical impression or strategy. The primary advantages that make ultrasound superior to other imaging modalities is its ability to provide the healthcare professional images in real-time without the use of

Sound waves with frequencies greater than those audible to the human ear, appropriately named ultrasonic waves, are sent as pulses through a transducer into the body which are then reflected back as echoes of varying degrees depending on the physical properties of the tissue they reflect off of

ionising radiation which is a considerable disadvantage encountered with other imaging modalities.

#### Invaluable utility in healthcare

Ultrasound applications offer advanced diagnostic and therapeutic tools to facilitate patient care with minimal requirements in capital, space, energy or training hence making it an invaluable utility in acute medical care. It is also the most cost effective imaging modality available for recurrent use. Ultrasonography is a science that is taught at every standard of medical education in one form or another displaying the importance of understanding the dynamics of ultrasonography and the value it adds to a healthcare professional upon acquiring the skill of operating the probe and interpreting the sonograms.

Ultrasound imaging and information systems are increasing in integration and sophistication providing more versatility and mobility in use of the modality. The hardware and equipment required to use ultrasound is diminishing in size as we progress into the future with instruments now available the size of the smartphone with the added benefit of wireless connectivity which integrates the device to the Electronic Medical Records (EMR) and Picture Archive Communications System (PACS). The practice of using ultrasound in medical practice is growing and has found its place in the world of emergency medicine.

Emergency Ultrasound (EUS) is used to evaluate acute and critical medical conditions and it is utilized for numerous medical reasons like diagnosis, resuscitation of the acutely ill or injured patients, guidance of medical interventional procedures, monitoring of specific pathological conditions and as an adjunct to therapy. EUS examinations are performed and interpreted by emergency physicians in both, in-hospital and out-hospital settings. EUS is interchangeably also used instead of terms like point of care or focused ultrasound. EUS is a distinct entity from physical examination that provides the physician with anatomical & physiological data that is otherwise not acquired through methods used in a physical examination like inspection, palpation



or auscultation.

#### EUS is classified into the following functional clinical categories:

- Resuscitative
- Diagnostic
- Sign and symptom based
- Procedural guidance
- Therapeutic and monitoring

#### There are 12 functional US applications where it is applicable to use the modality efficiently:

- Trauma
- Pregnancy
- Cardiac and Hemodynamic assessment
- Abdominal aorta
- Airway
- Biliary
- Urinary tract
- Deep venous thrombosis
- Soft tissue and musculoskeletal
- Ocular
- Bowel
- Procedural

ER physicians are therefore trained and educated in basic ultrasound physics, instrumentation, procedural guidance and Focused Assessment with Sonography in Trauma (FAST). This leads to ultrasound guided procedures which provide safety in performing a wide variety of procedures involving drainage, US guided

Ultrasound imaging and information systems are increasing in integration and sophistication providing more versatility and mobility in use of the modality. The hardware and equipment required to use ultrasound is also diminishing in size.



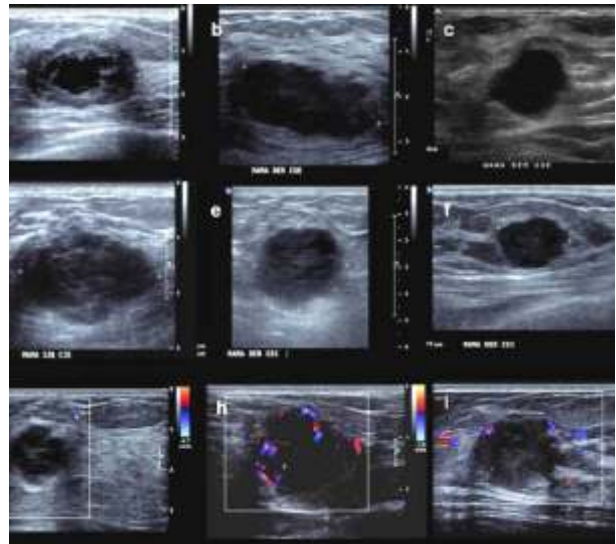
nerve block and vascular access which without the existence of US would expose the patient to great risk. Overall these methods not only increase the standards in patient safety but also allow the treatment of pain in patients without the side effects encountered with systemic opiate use.

The existence of EUS in our healthcare system is greatly advantageous but it also serves as an invaluable tool in other subsets of the population for different reasons. The paediatric population of patients benefits greatly from this as they are at a greater risk when it comes to ionising radiation exposure hence US serves as the most appropriate imaging modality. Furthermore, US is used widely in critical care, prehospital settings and in rural and remote areas where access to technology is limited. Its use is also of paramount importance in disaster medicine and when addressing global public health issues.

#### **Evolving spectrum**

Training is provided to healthcare professionals and is based on a wide array of principles which are in line with the evolving spectrum of training in clinical ultrasonography. They are introduced to the skills required in operating the device and applications are taught along with core concepts that are reinforced. In

In line with the evolution of both medical education and the advancement of the technology embedded in US devices innovative educational strategies are implemented to provide environments for learning that prepare the practitioner for using the skills acquired in a clinical setting



line with the evolution of both medical education and the advancement of the technology embedded in US devices innovative educational strategies are implemented to provide environments for learning that prepare the practitioner for using the skills acquired in a clinical setting. This is done through problem based scenarios and simulated cases upon which the practitioners practice before implementing their learned skills in the clinical settings whether they be in-hospital or out-of-hospital.

As previously mentioned, the advantages of this imaging modality are immense and improving. Patient safety is the headline, however it also decreases medical mistakes during procedures leading to more patient satisfaction. There is an improved utilization of the departmental resources, eliminating invasive procedures which are not cost friendly. Overall, utilization of the US modality leads to improved clinical decision making and therefore a better outcome in patient care.

The future of EUS has already been given birth to as wireless transducers and handheld systems are readily available at many healthcare institutions. This will not only allow an expanded availability of US to clinical settings at affordable rates. Telesonography is another innovation that allows for graphical data to be transmitted from remote locations to centers that can offer consultations and treatment strategies over a distance. An increased number of multi-centre studies will allow the emergence of higher levels of evidence which would lead to the development of more guidelines that can better direct acute medical care whilst simultaneously promoting the use of US in medicine.



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# New Mammography device puts pressure control in patient's hands

**GE Healthcare recently received FDA clearance for 'Senographe Pristina Dueta' that allows women undergoing an exam to control the rate of compression**



The first-ever remote control device for a mammogram that allows women to adjust their own breast compression

**G**E Healthcare won FDA clearance for the first mammography system, the Senographe Pristina Dueta, that lets women undergoing an exam to control how much the device compresses the breasts. As the woman is prepared for the exam, she is handed a small remote control that has a plus and minus buttons on it. The breast is then positioned by the technologist between the compression plates and from then on the patient has control in terms of how much compression she's willing to take, Medgadget reported recently.

While compression is still necessary to achieve proper imaging, patients that have undergone examination using the Senographe Pristina Dueta report a more comfortable experience and the clinicians noted considerably more relaxed patients. Reduced stress in the examination room can help lead to better images, as the patient cooperates better and moves less. This can

therefore lead to earlier detection of cancer, earlier treatment, and improved final outcomes.

GE Healthcare hopes that by improving the experience more women will be interested in regular mammography screenings, improving the overall rate of treatment and lowering the burden of breast cancer.

"This is a new age in breast imaging," said Dr. Kathy Schilling, Medical Director of Christine E. Lynn Women's Health & Wellness Center at the Boca Raton Regional Hospital.

"Patients who used the remote control said the exam was more comfortable and they were visibly more relaxed. Any breast radiologist knows that when patients are relaxed, we are able to get better images and better images lead to a more confident diagnosis," the radiologist who conducted a clinical review of the new device said.



In a patient satisfaction study conducted with 160 patients in two sites in Europe, when a patient experienced a Senographe Pristina exam coupled with Pristina Dueta, 79 per cent of the patients who used the patient-assisted compression device found it improved the comfort of their exam, and 54 per cent found it led to less anxiety.

"My hope is that increasing comfort during the exam and giving patients the option of working with the technologist to set their own compression will increase compliance, enable early detection and improve outcomes," he added.

The best chance of early detection of breast cancer is a mammogram. Evidence shows that finding breast cancer early reduces a woman's risk of dying from the disease by 25 to 30 per cent or more. But for many women, the number one reason they don't schedule a mammogram is because of the fear and anxiety from the potential result and exam discomfort. That's why a team of female engineers and designers in Paris came together to design the new mammography technology.

Inside GE Healthcare's imaging technology center in the town of Buc, located just outside of Paris, Industrial Designer Aurelie Boudier brought a team of women together to bring their unique insights as patients to answer one question: how do we design a more comfortable mammogram? Their vision would eventually turn into a new mammography system unlike any others, one designed specifically with comfort in mind.

"My challenge was how to totally change the perception of mammography, especially for the patient, and increase compliance," Boudier says.

The result is a completely redesigned mammography system, Senographe Pristina, that now features an option to use a first-in-industry patient-assisted compression remote control to enable the patient, with the help of a technologist, to set the compression that feels right for her.

The handheld wireless remote control, called Pristina Dueta, allows patients to adjust the compression force after breast positioning. The technologist then guides the patient while she operates the remote control to adjust compression until she reaches an adequate compression level.

"The design strives to minimize women's perceived pain and discomfort by giving them an active role in the application of compression," Boudier says.

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patient-assisted compression device found it improved the comfort of their exam, and 54 per cent found it led to less anxiety.

#### Design for Comfort

The system features other design enhancements to make the exam more comfortable.

"We know that compression can be painful," Boudier says. "Senographe Pristina is more comfortable and the design helps improve patient comfort during screening. Because the imaging detector is thinner with rounded corners, patients say that it's more comfortable because there's less coming in contact with their bare skin."



“We really considered not only clinicians, but every user – the technologist and the patient,” she says. “I know that our team did our job if more women are going for their annual mammograms and aren't scared to walk into the room and do the exam. It's such an important part of maintaining a healthy life and I want it to be a less painful experience for women around the world.”

The system's design also changes the way a patient is positioned. Instead of women projecting their stress on handles by grabbing them too firmly, which tenses pectoral muscles and has an impact on image quality, they can lean comfortably on the armrests, relaxing the muscles to simplify positioning, compression and image acquisition.

When the patient is more relaxed, technologists can focus on precise positioning, potentially making the exam easier and faster. This reconsidered philosophy of patient positioning is a totally different approach, according to Boudier. These new compression techniques and positioning options are a powerful combination in terms of patient perception and patient comfort.

#### **Feedback**

With empathy at the center of this product, part of the design process was working closely with patients, technologists and radiologists from Gustave Roussy Cancer Center in Paris, one of the largest cancer treatment centers in Europe. These key stakeholders gave GE Healthcare critical input to ensure the system addressed clinicians' and patients' concerns.

Senographe Pristina also incorporates calming colors and smooth shapes again to help reduce patient anxiety and make the mammogram a more positive experience. Boudier says users are optimistic that the system will help inspire women to come back for screening every two years. “We've gotten very good feedback,” she says. “Physicians say patients are pleased with the machine.”

#### **More than mammography**

Senographe Pristina is part of GE Healthcare's commitment to the SensorySuite, which simultaneously stimulates at least three of a woman's senses – scent, sight and sound – and improves the experience globally in an immersive strategy to help reduce the perceived discomfort, pain and anxiety of a mammogram.

Boudier says this “innovative design approach” was a deliberate design choice. “We really considered not only clinicians, but every user – the technologist and the patient,” she says. “I know that our team did our job if more women are going for their annual mammograms and aren't scared to walk into the room and do the exam. It's such an important part of maintaining a healthy life and I want it to be a less painful experience for women around the world.”



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"It is a great pleasure to see where we started and where we are now. The organization is a lot more professional. We need to continue to listen to our members concerns as well as act as a strong unified voice for our industry. It would be great if we could look towards holding more conferences on the cool chain, including airport communities in our efforts going forward. We would like to continue to grow our membership base with people who are willing to make a change within the cool air cargo supply chain.

Our goal is to have more transparency and ultimately more collaboration".

*Stavros Evangelakakis*  
CHAIRMAN, COOLCHAIN ASSOCIATION

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# Consumer-driven healthcare system

**Zürich and Geneva have each been ranked top cities in the world in terms of quality of life, with the former ranked second globally, according to Mercer.**

Switzerland is a landlocked country geographically divided between the Alps, the Swiss Plateau and the Jura, spanning an area of 41,285 km<sup>2</sup>. While the Alps occupy the greater part of the territory, the Swiss population of approximately eight million people is concentrated mostly on the plateau, where the largest cities are to be found: among them are the two global cities and economic centres Zürich and Geneva.

“Switzerland is a very small country with a small population, and it actually has very few natural resources,” Saadia Zahidi, Senior Director of the World Economic Forum.

“The biggest resource it does have is people, and that’s what it’s been investing in for quite some time. It’s led to an economy that is competitive, highly innovative, and has adopted technology fast.”

Switzerland is one of the most developed countries in the world, with the highest nominal wealth per adult and the eighth-highest per capita gross domestic product according to the IMF. Switzerland ranks at or near the top globally in several metrics of national

performance, including government transparency, civil liberties, quality of life, economic competitiveness, and human development. Zürich and Geneva have each been ranked among the top cities in the world in terms of quality of life, with the former ranked second globally, according to Mercer.

“Countries that invest in human capital end up getting returns in terms of economic growth,” says Zahidi. “And then countries that have that economic growth are able to reinvest further in human capital. So you have this virtuous cycle that’s established.”

Human capital is a function of four pillars: health and wellness, education, work and employment, and what WEF calls an “enabling environment,” which includes factors like legal framework and infrastructure that allow for returns on human capital. Switzerland topped the index by generating high scores across the four pillars, coming in first in the health and wellness and workforce and employment categories, second for enabling environment and fourth in education — which goes a long way in explaining the success of the Swiss economy.



### Top healthcare system

When it comes to health and wellness — taking into account longevity, infant mortality, and the general state of physical and mental health of the population, and quality of healthcare — the Index places the Swiss in the number-one spot. The Swiss have the lowest government spending on health care in the developed

“The Swiss have universal coverage, the healthiest population in the Western Hemisphere, and a government that spends a mere 2.7 percent of GDP on health care: about a third of what ours spends,” writes Forbes's Avik Roy. “The Swiss system isn't perfectly transposable onto the United States, but it is vastly superior. And the Swiss do it with a top federal income tax rate of only 11.5 percent, compared to 35 percent in the US of A.”

world — and some of the healthiest citizens.

Swiss healthcare combines public, subsidized private and totally private healthcare systems to create an extensive network of highly qualified doctors (many of them from elsewhere in the EU) and Swiss hospitals, the

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### Healthcare funding

Switzerland's healthcare system derives a significant portion of funding from mandatory Swiss health insurance premiums (averaging around EUR 450 per month) and out-of-pocket payments, meaning there is no free healthcare in Switzerland. In line with the high cost of living in Switzerland, Swiss health insurance equals around 10 percent of the average Swiss salary.

### Basic healthcare facts

- 1 - Switzerland spends the highest percentage of GDP on healthcare (around 11.4 percent) compared to all EU countries.
- 2 - Basic health insurance is compulsory in Switzerland, although you are free to choose your own Swiss health insurance company.
- 3 - In the EU's latest statistics, Switzerland was the only country compared to the EU to total more than EUR 4,500 per inhabitant on healthcare expenditure.
- 4 - The OECD reports that Switzerland's healthcare expenditure is the second highest among all OECD countries (along with the Netherlands), with the US in



best-equipped medical facilities and no waiting lists — but it all comes at a price.

It is the only developed country with a long-standing consumer-driven health care system, providing broad evidence and important lessons about its efficacy.

Unlike most of its European neighbors, it is a haven of quiet in a roiling sea. Its consumer-driven health care system mirrors the country's traditional independence, as citizens may freely choose plans, and its solidarity, as it requires everyone to purchase health insurance and subsidizes the needy. But it more closely mirrors its neighbors' centrally controlled health care systems in the constraints placed on insurers and providers.

first place, totaling almost double the OECD average spent per inhabitant.

5 - Out-of-pocket spending, however, accounted for just over a quarter of all health spending, which is relatively high compared to the OECD average of 19.5 percent and neighboring countries such as Austria (17 percent), Germany (13 percent) and France (7 percent).

6 - Healthcare is largely organized by Switzerland's individual communes. The health ministers from all cantons form the Swiss Conference of the Cantonal Ministers of Public Health (GDK), which aims to promote cooperation & implement common policies between cantons.



#### MoU signing

The Ministry of Health and Prevention (MOHAP) has announced that it recently signed a Memorandum of Understanding (MoU) with Swiss multinational pharmaceutical firm Hoffman-La Roche with specialties in treating tumors, among others. The agreement aims to address the growing number of cancer cases in the UAE and reduce death rates by 25 per cent by the end of 2021 as part of the Ministry's efforts to find innovative cancer treatments and ensure that health services are on par with international best practices.

Dr. Youssif Al Serkal, Assistant Undersecretary for the Hospitals Sector at MOHAP, and Abed Al Rahman Sabra, Country Manager of Hoffman-La Roche, signed the MoU at the MOHAP headquarters in the presence of Dr. Muna Al Kuwari, Director of Specialized Healthcare at the Ministry, and a delegate from the pharmaceutical firm.

Dr. Al Serkal said that cancer incidences in the UAE are spreading at a rate lower than those of Western countries, noting that the Ministry of Health continues to expand its partnerships with various organizations to bring in quality healthcare for cancer patients as part of its strategy to improve health facilities as well as its systems and ensure easy access in accordance with international standards. These efforts are in line with the UAE's goal to become one of the best countries in the world in providing quality healthcare with key targets embodied in the National Agenda under the UAE Vision 2021.

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He further stated that he is positive about the key directions of the strategic partnership with Hoffman-La Roche, which will focus on formulating a national index for cancer deaths per 100,000 of the population. The Ministry will also work on the creation of a national committee in cooperation with other health authorities to develop a plan to control the growth of cancer & reduce deaths by 25 percent by 2021, based on the 2013 baseline.

Hoffman-La Roche's Sabra commented: "We are confident that this strategic partnership with the Ministry of Health and Prevention in the UAE will support the effective implementation of this noble initiative. We will build on our role in this partnership to provide the necessary expertise to assess the current situation and support the development of a national program for the fight against cancer. We thank the Ministry for this partnership and we are committed to meet our key targets."

Under the MoU, Hoffman-La Roche will provide tools and statistics for strategic analysis and expertise in the fight against cancer and prepare a road map to achieve the target index. It will also conduct a situational analysis, track diagnosis and forms of therapy and support research studies on how to control cancer. The firm will support workshops and educational activities, training and awareness campaigns, as well as other MOHAP innovative activities related to the initiative as well.



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## Cleveland Clinic retains top position for heart care



For the second year in a row, Cleveland Clinic is ranked the No. 2 hospital in the United States by US News & World Report, retaining its position as the No. 1 hospital for cardiology and heart surgery for the 23rd successive year, a statement released by its branch in Abu Dhabi said recently.

"I am incredibly proud of this organization and everyone who works here," said Toby Cosgrove, MD, Cleveland Clinic president and CEO. "These rankings are a reflection of our caregivers' unwavering commitment to providing the very best care to the patients we are privileged to serve."

Cleveland Clinic Abu Dhabi, which opened in 2015, is a unique and unparalleled extension of US-based Cleveland Clinic's model of care, designed to address a range of complex and critical care requirements in support of the region's specific healthcare needs. The hospital provides patients direct access to the world's best healthcare providers with more than 30 medical and surgical specialties represented through 13 institutes.

Cleveland Clinic Abu Dhabi's Heart and Vascular Institute was the first in the Middle East to introduce transcatheter aortic valve replacement as an alternative to traditional open-heart valve replacement surgery. It offers a wide spectrum of services, from diagnostic to cutting-edge treatments, such as hybrid coronary revascularization, and minimally invasive and robotic cardiac surgery.

Tomislav Mihaljevic, CEO of Cleveland Clinic in Abu Dhabi said: "We are proud to play a significant role in the expanding international story of Cleveland Clinic. Every day, our dedicated physicians and nurses deliver Cleveland Clinic's commitment to excellence in complex and critical heart care to the people of the Middle East."

In compiling its rankings, US News studied objective data, such as risk-adjusted survival, readmission rates, volume, patient experience, patient safety, quality of nursing care and other care-related indicators.

### Rare disease diagnosed

Meanwhile, physicians at Cleveland Clinic in Abu Dhabi have successfully diagnosed and begun treatment on a patient with a rare immunodeficiency disorder, Wam reported.

The patient, a 27-year-old UAE national, had been suffering from Hereditary Angioedema (HAE), a

potentially life-threatening, inherited blood disorder.

Suffering from chronic severe abdominal pain and swelling in his hands and feet over a five-year period, the patient, Ibrahim Yaqoub Ibrahim Alali, sought help from a number of hospitals before being referred to Cleveland Clinic Abu Dhabi's Medical Subspecialties Institute.

Dr. Mohamed Abuzakouk said: "This patient is the first UAE national to be diagnosed with this rare immunodeficiency at this hospital. The patient had previously visited several hospitals and undergone a multitude of complicated and sometimes invasive medical tests that had not helped determine his condition. He was brought to Cleveland Clinic Abu Dhabi's emergency department during one of his episodes of abdominal pain and subsequently underwent extensive immunological assessment and was successfully diagnosed before commencing the appropriate treatment."



**Dr. Mohamed Abuzakouk**

There are two types of HAE, with type one is more common affecting between 80 per cent and 85 per cent of patients. Type two only occurs in the remaining 20 per cent.

"Our patient had type two HAE, the rare form of this condition. Symptoms of the rare disorder include swelling in the face, larynx and elsewhere alongside severe, colicky abdominal pain. However, when properly treated patients can generally live long, symptom-free lives, the doctor treating the patient said.

The case highlights the value of Cleveland Clinic Abu Dhabi's multidisciplinary approach, which brings together experts from across a range of fields to tackle complex cases. The hospital's Medical Subspecialties Institute covers nine specialties and deploys advanced laboratory testing facilities to cover a broad spectrum of medical needs including rare immunological disorders.

## Sharjah launches health awareness campaign

The Health Education Department of the Supreme Council for Family Affairs in the Emirate of Sharjah launched its fourth annual health and tourism campaign and the world's first online health and tourism campaign after three successful years of achievement in enhancing active lifestyle as well as promoting touristic areas in the city. The campaign will run until September 16 and is supported by several health organizations in the emirate, including the Friends for Diabetes, Friends of Arthritis Patients, Friends of Kidney Patients, Friends of Cancer Patients, Breastfeeding Friends and the Health Education Department.

Details about the campaign were announced during a press conference attended by Iman Rashid Saif, Director of Health Education, Department of the Supreme Council for Family Affairs, Sharjah Government Media Bureau, Sharjah Commerce and Tourism Development Authority and its sponsors.

Saif said the health and tourism campaign is one of the most important educational and awareness campaigns, which was launched to raise health awareness among citizens and residents as well as highlighting the touristic areas in the emirate. Seven tourist sites including Heart of Sharjah, Central Market, Al Majaz, Al Qasba, Al Majaz Theater and Flag Island have been chosen as the best locations for lovers of walking.

Saif also emphasized the importance of community participation in the campaign's fourth year programs



and activities, which aims to highlight the role of walking in improving health, preventing disease and encouraging the public to take a positive outlook. The campaign offers free medical check-ups and tests.

This year's campaign will be held under the theme 'Lets walk' to enhance the culture of walking as the lack of activity increases the risk of serious and chronic illnesses by 30 per cent meanwhile walking regularly helps to decrease death rate by 50 per cent. The 'Lets Walk' initiative is part of a wider health and tourism awareness campaign launched this year by Sharjah's local government in cooperation with the Sharjah Commerce and Tourism Development Authority and a number of local hospitals and organizations.

## Treating insomnia can ease depression and paranoia

Treating young people who suffer from insomnia by using online cognitive behavioural therapy (CBT) could reduce debilitating mental health problems such as anxiety and depression, researchers said according to Reuters report released in London.

In a large trial published in The Lancet Psychiatry journal, researchers at Oxford University's Sleep and Circadian Neuroscience Institute also found that successfully treating sleep disruption eased psychotic symptoms such as hallucinations and paranoia.

"Sleep problems are very common in people with mental health disorders, but for too long insomnia has been trivialised as merely a symptom, rather than a cause, of psychological difficulties," said Daniel Freeman, a professor of clinical psychology who led the work.

"This study turns that old idea on its head, showing that insomnia may actually be a contributory cause of mental health problems," he said.

The research involved 3,755 university students from across Britain who were randomised into two groups. One group had six sessions of online CBT, each lasting about 20 minutes, and delivered via a digital programme called Sleepio. The others had access to standard treatments but no CBT.

Freeman's team monitored participants' mental health with a series of online questionnaires at zero, three, 10 and 22 weeks from the start of treatment. The researchers found that those who had the CBT sleep treatment



reduced their insomnia significantly as well as showing small but sustained reductions in paranoia and hallucinatory experiences. The CBT also led to improvements in depression, anxiety, nightmares, psychological well-being & daytime work & home functioning.

Andrew Welchman, head of neuroscience and mental health at the Wellcome Trust health charity which helped fund the research, said the results suggested improving sleep may provide a promising route into early treatment to improve mental health.

Freeman added: "A good night's sleep really can make a difference to people's psychological health. Helping people get better sleep could be an important first step in tackling many psychological and emotional problems."



## NMC to manage Emirates Healthcare assets



NMC Health, an integrated private healthcare provider in the GCC region, has signed a new operations and management contract with Emirates Healthcare, owned by an investment group based in Abu Dhabi. According to contract NMC Health will manage the healthcare assets of the investment group, comprising three brands.

\* Emirates Hospitals and Clinics provide General medical services across six emirates in the UAE

\* CosmeSurge provides cosmetic medical services in the UAE and the United Kingdom

\* Emirates Rehab and Homecare Services provides home nursing, rehabilitation, therapeutic care and home-based care and operates in the UAE, Slovakia and Oman

Emirates Healthcare is a subsidiary of KBBO group. "The reputation of NMC has prompted us to sign the contract for managing our healthcare assets. We look forward to the future of these assets with great anticipation," said Yazen Abu Gulal, Chairman of Emirates healthcare.

"The reputation of NMC Health informed our decision to sign over the management of Emirates Hospitals and Clinics, CosmeSurge and Emirates Rehab & Homecare Services. With this signing, we look forward to the future of these assets with great anticipation," added Yazen Abu Gulal, CEO of KBBO Group and Emirates Hospital Chairman.

NMC Health is now managing multiple private and public sector health care facilities across varied geographies, with total annual revenues from operations and management verticals set to reach \$19 million

(Dh69.7 million), the company said in a statement.

The company's contract to manage the 205-bed Sheikh Khalifa General Hospital in Umm Al Quwain was extended for a further five-years. The original contract was the first ever awarded by a government department to a local UAE business to manage a large government healthcare facility. It demonstrated the confidence in NMC's significant healthcare experience and capabilities, the company said.

### Revenues rise

Meanwhile, NMC Health has reported a revenue increase of 34 per cent to \$775.2 million during the first half of 2017, compared to first half of 2016 which amounted to \$578.3 million.

NMC Health produced strong performance in H1, 2017 with good progress seen across all parts of the group. Its newly opened facilities continue to ramp-up well and the group's acquired businesses are benefitting from both improved performance and the commencement of planned integration projects, the company said.

"Our long-term growth strategy, predicated on capacity and then capability focussed growth, continues to accelerate our expansion into more complex medical, and thus higher value added, specialty healthcare segments. The subsequent establishment of new strategic multi-brand verticals is enabling us to unlock synergies within the enlarged group, delivering significantly improved growth for the NMC group despite the continuing more moderate macro environment in our primary market of the UAE," it said.

## UAE's Julphar names Laurent de Chazeaux as acting CFO

Julphar Gulf Pharmaceutical Industries announced the appointment of the company's Associate Director of Finance, Laurent de Chazeaux, as Acting Chief Financial Officer, effective immediately. Laurent replaces Jerome Carle, who has been appointed GM of Julphar.

Julphar's Chairman, Sheikh Faisal Bin Saqr Al Qasimi, said, "Laurent is an established financial executive with extensive background overseeing finance organisations. With him leading the finance team, I am confident that we will be well-positioned to enter the next phase of our strategy execution."

"I am much honoured to have been appointed to this role," said Laurent de Chazeaux. "I will work closely with the executive team and focus on driving performance to help the company achieve its next stages of growth." As

Acting CFO of Julphar, de Chazeaux will be responsible for leading Julphar's finance department and keeping accurate financial records. He will be in charge of the administrative and risk management operations and will develop financial strategies in line with the company's objectives. He will report to the company's recently appointed General Manager, Jerome Carle.

Over the last 20 years, de Chazeaux has worked in a number of senior finance roles in the pharmaceutical industry & investment banking. He spent several years working for Cowen, where he was in charge of analysing performances of midsize European pharmaceutical companies & before joining Julphar as Associate Director Finance in June 2017, he worked at Sanofi & as Finance Director at AstraZeneca.

## Fast food chain cut global antibiotic use in chickens



McDonald's Corp said that it would begin curbing the use of the high value human antibiotics in its global chicken supply in 2018, as the fast-food giant joins a broad effort to battle dangerous superbugs. McDonald's, in a policy statement, said it is working on antibiotic plans for other meats, dairy cows and laying hens.

McDonald's is requiring suppliers of chicken meat to begin phasing out the use of antibiotics defined by the World Health Organization as "highest priority critically important antimicrobials" (HPCIA) to human medicine.

Public health and consumer groups applauded the move, which is not as strict as the company's policy for the United States, where already for a year suppliers have provided the chain with chickens raised without antibiotics deemed important to human health.

In January 2018, HPCIA's will be gone from McDonald's chickens in Brazil, Canada, Japan, South Korea, the United States and Europe. Only in Europe the company will make an exception for Colistin, a last resort antibiotic. By the end of 2019, suppliers in Australia and Russia will stop using HPCIA's and European suppliers plan to remove Colistin. Suppliers in all other markets will comply by January 2027.

"Our goal is to have this policy implemented before this date," McDonald's said in its posted antibiotic policy update. McDonald's told a group of consumer and environmental organizations on Aug. 17 that 74 percent of its global chicken sales will conform to this policy as of January 2018, Consumers Union, the policy division of Consumer Reports, said in a statement. Consumers Union also said the company told the group that it hopes to have a timeline soon for reducing medically important antibiotics from its beef supply. McDonald's declined comment on sales figures and its plans for beef.

More than 70 percent of medically important antibiotics in the United States are sold for livestock use. Scientists have warned routine use of antibiotics to promote growth and prevent illness in healthy farm animals contributes to the rise of dangerous antibiotic-resistant superbug infections, which kill at least 23,000 Americans each year and pose a significant threat to global health.

"If fully implemented, (the plans) could be a total game changer that could transform the marketplace given the company's massive buying power," Jean Halloran, Consumers Union's director of food policy initiatives, said in a statement.

## Safe transportation and disposal of hazardous and medical wastes urged

Dubai Municipality, DM, has urged companies working in the field of production and transportation of hazardous and medical waste to take extra care in the safe disposal of the waste.

Abdulmajeed Sifai, Director of the Waste Management Department, said that DM endeavours to achieve environmental sustainability and support all environmental policy focuses included in the UAE Vision 2021, launched by Vice President, Prime Minister and Ruler of Dubai, His Highness Sheikh Mohammed bin Rashid Al Maktoum, aimed at raising the quality of life in the country by building a diversified economy that preserves the environment and achieves sustainable development.

He was speaking at a customer forum of the companies working in the field of transportation and production of hazardous and medical waste. The forum, aimed at creating excellent environmental partnerships with the private sector and providing quality services that satisfy the aspirations of all customers, was attended by more than 100 representatives of these companies.

Sifai said that the forum was a real platform and a direct window to broaden the horizons of serious dialogue and

face-to-face interaction with customers to hear their constructive comments and identify their needs closely in order to reach the highest levels of public satisfaction by providing the best services in accordance with internationally recognised standards.

The forum included presentations by the hazardous waste treatment engineers on the requirements for the transfer of medical and hazardous waste and the best way to apply for disposal services.

There were also presentations on the development projects of the hazardous and medical waste treatment complex in Jebel Ali, and the requirements of applying the highest standards of occupational health and safety.



## "Work-related accidents and injuries cost almost EUR2.7 billion a year"



Worldwide work-related injury and illness result in the loss of 3.9 percent of GDP, at an annual cost of roughly EUR2,680 billion, according to new global estimates presented by the European Agency for Safety and Health at Work, EU-OSHA, together with the International Labour Organisation, ILO, at the XXI World Congress on Safety and Health at Work, being held in Singapore on 3-6 September.

The estimates are findings from a major project on the costs and benefits of occupational safety and health, OSH. The project was carried out by the ILO, the Finnish Ministry of Social Affairs and Health, the Finnish Institute of Occupational Health, FIOH, the WSH Institute in Singapore, the International Commission on Occupational Health, ICOH, and EU-OSHA.

The Director of EU-OSHA, Dr. Christa Sedlatschek, said, "Safe and healthy work is a fundamental human right but these new estimates of the costs of poor or non-existent OSH measures show that the economic case for OSH has never been stronger. Work-related ill-health and injury cost the European Union 3.3 per cent of its GDP. That's EUR476 billion every year, which could be saved with the right occupational safety and health strategies, policies and practices."

Good practice in OSH can help make businesses productive, competitive and sustainable, as well as reduce healthcare costs and other societal burdens. However, the costs of poor OSH are high for individuals, businesses and society. Through the costs and benefits project, EU-OSHA has taken steps to identify and evaluate the data that is available in the EU and worldwide to develop accurate and up-to-date estimates of the costs of work-related diseases and injuries.

According to further findings, work-related illnesses account for 86 per cent of all deaths related to work worldwide, and 98 percent of those in the EU. An estimated 123.3 million DALY (disability-adjusted life years) are lost globally, with 7.1 million in the EU alone, as a result of work-related injury and illness. Of these, 67.8 million (3.4 million in the EU) are accounted for by fatalities and 55.5 million (3.7 million in the EU) by disability.

In most European countries, work-related cancer accounts for the majority of costs (EUR119.5 billion or 0.81 percent of the EU's GDP), with musculoskeletal disorders being the second largest contributor.

## Conference in Radionuclide Therapy to focus on latest trends

The Dubai Health Authority, DHA, is organizing the 2nd Emirates International Conference in Radionuclide Therapy and Theranostics, from 15-18 September. The three-day medical event is managed by the Department of Nuclear Medicine and Molecular Imaging at the Dubai Hospital, part of the DHA.

The conference, the first of its kind in the Middle East, will discuss the treatment and diagnosis of cancer using radioactive nuclides. Its participants will include Gulf Cooperation Council, GCC, countries, as well as 10 other countries, including India, Pakistan, Sweden, Iran, Jordan, Iraq, Egypt, Nigeria, and Japan.

Batool Al Baloushi, Conference Chair, stated that the conference will discuss the latest trends and methods in the field of radionuclide therapy and molecular imaging,

as well as the latest relevant research and protocols.

"The conference is unique because of the variety and the number of world-class lectures presented by experts in this field, to obtain the maximum benefits and exchange opinions and experiences," she added.

Fifteen international lecturers will participate in the conference and hold interactive sessions on radionuclide therapy for certain types of cancer, such as breast, thyroid and prostate cancers. The lecturers are all nuclear medicine professors from the UAE, Japan, the USA, Germany, Jordan, Kuwait, the Philippines & India.

During the conference, Prof. Jun Hatazawa, President of the Asian Federation of Nuclear Medicine, is to present the latest therapy using boron neutron therapy for cancer & highlight all nuclear medicine events in the region.



## Bahrain hospital gets Riva IV compounding system

ARxIUM, developer of pharmacy automation and workflow solutions, said it has successfully delivered its new Riva IV Compounding System to Bahrain-based King Hamad University Hospital (KHUH), a company statement released from Winnipeg in Canada said.

As the only fully automated IV compounding system on the market today, Riva prepares syringes and IV bags in an aseptic ISO Class 5 environment and significantly increases safety and pharmacy workflow.

KHUH selected Riva because it has safely and accurately produced nearly seven million IV doses worldwide. It is being deployed in the KHUH hospital pharmacy. The hospital also chose the system due to its comprehensive record-keeping and reporting capabilities and seamless integration into existing digital networks, it stated.

Riva's proven cost effectiveness was another deciding factor, as it lowers the cost-per-dose of medications by allowing the hospital pharmacy to insource the production of IV medications and process batch doses.

Dr Niels Erik Hansen, president and CEO of ARxIUM, said: "Our new partnership with King Hamad University Hospital is an exciting opportunity to showcase Riva's unmatched IV compounding capabilities in a facility that is a recognized leader in Bahrain."

"The system's safeguards will serve as a substantial differentiator from competing hospitals in the region. In addition, Riva will generate considerable cost-savings



for the hospital by eliminating the need for medication outsourcing and decreasing pharmacy waste," Dr Hansen added.

Dr Elias Fadel, the director of the KHUH Oncology Center, said: "The safety of our patients and staff is paramount, and selecting Riva helps ensure we achieve that goal."

KHUH has more than 300 beds and nearly 2,000 employees. The hospital offers comprehensive medical, surgical and diagnostic services in line with updated international standards. It is also constructing a national oncology center to provide first-class cancer care and research facilities to the citizens of Bahrain.

"The system's advanced technologies will protect our staff from exposure to hazardous chemotherapy drugs. Additionally, it will allow for more doses to be prepared simultaneously while pharmacists and technicians are performing other activities, which could improve patient care," Dr Fadel added.

## IAG Cargo launches constant climate critical product for pharma shipments

IAG Cargo has announced Constant Climate shipments are now able to fly under its Critical product, enabling emergency medical shipments to benefit from IAG Cargo's highest priority service. The new enhancement means that shippers sending urgent pharmaceuticals now have access to the non-off loadable status and performance guarantees offered under Critical.

Less than a year since its launch, Critical has already carried over 2000 emergency shipments for businesses across the world. While the range of goods moved has been diverse – from pre-launch consumer electronic devices to formula one tyres to factory down machine parts – all have required the "must fly" status guaranteed by Critical.

Following successful trials of Constant Climate Critical across India, the UK and Europe, IAG Cargo is rolling out this new offering across all 109 Constant Climate enabled stations on its network.

Alan Dorling, Global Head, Pharmaceuticals and Life Sciences commented: "We are proud of the significant investment that we continue to make into our Constant Climate product and the infrastructure that supports it. We were one of the first carriers to offer a dedicated pharmaceutical shipment product and today our teams across the world deliver the highest level of care and expertise when transporting high-value, temperature-sensitive goods.

"The development of Constant Climate Critical means that we are now able to build on our offering by providing vital vaccines and emergency lifesaving medicines with a non-off loadable status. In addition to our highest priority grading, the product continues to safeguard temperature-specific shipment requirements, maintaining the purity, potency and stability of the lifesaving medicines that we carry."

David Shepherd, Commercial Director at IAG Cargo commented: "Critical has been a real success; demand has come from right across our network and week on week we see both new requests and repeat business. We know that there is a real demand for guaranteed capacity and a must-fly service for urgent pharmaceutical products and it is crucial that we continue to innovate to ensure that we meet our customers' needs."

It is anticipated that Constant Climate Critical will be popular across key pharmaceutical trade lanes, from manufacturing hubs in India and Europe and into burgeoning pharmaceutical markets such as Latin America. The service offers guaranteed capacity up to the maximum aircraft operating limit, and a dedicated monitoring service through hubs at London Heathrow, Madrid and Dublin. Customers shipping through the carrier's Heathrow and Madrid hubs will also benefit from a dedicated Critical check-in desk, significantly speeding up drop off and collection times.

# Schiphol Cargo focuses on pharma and e-commerce as volumes grow



Cargo volumes at Amsterdam Airport Schiphol grew 8.7 per cent to 866,713 tonnes between January and June 2017, up from 797,069 tonnes during the same period in 2016. Europe's third busiest hub welcomed an additional 153 full freighter flights in the first half of the year, making a total number of 8,954 freight ATMs, and handled a record 148,765 tonnes in June, up 9.8 per cent on June 2016 figures of 135,528 tonnes.

Volumes to the Far East grew to 27,706 tonnes in June 2017, up 15 per cent on June 2016 figures of 24,091 tonnes, with inbound Far East volumes reaching 26,511 tonnes in the same month, up 14.1 per cent on June 2016 figures of 23,230 tonnes. Half-year figures for the Far East were 154,866 tonnes for outbound, up 12.2 per cent on the same period in 2016, with inbound figures at 149,836 tonnes, up 8.3 per cent on the same period in 2016.

"The Schiphol Cargo Community has worked on a series of new initiatives this year, which demonstrate our commitment to delivering safe and efficient cargo products, and our excellent first half-year performance is the result of this collaboration," said Jonas van Stekelenburg, Head of Cargo, Amsterdam Airport Schiphol.

"We are pleased that our continued focus on developing innovative solutions, such as our Compliance Checker and the Milkrun, for our growing base of e-Commerce and pharma customers has helped to deliver strong growth in the first half of the year.

"Our commitment to quality initiatives, such as the Pharma Gateway Amsterdam programme, has ensured that Schiphol remains one of the fastest growing cargo hubs in Europe."

Schiphol's new Compliance Checker, launched in May, speeds up cargo flows by detecting data errors and Customs compliance errors in air waybills will help boost e-Commerce flows through the hub.

The Community has also recently secured a one million EUR grant to start developing a Pharma Incursion Alerter, an early warning system for shippers, and a pilot phase for the scheme is currently being planned.

In addition, Air Cargo Netherlands' Milkrun initiative, launched in May 2015, became fully operational last month, without the need of a project manager after a

successful pilot phase. Milkrun partners have established a programme of sharing transportation: single deliveries from handling agents are delivered to multiple forwarder facilities, reducing CO2 emissions and cutting truck queues.

Pieter-Bas Braam, Chairman of the Milkrun Working Group, said; "I am proud that the Milkrun project has become a fully operational scheme, which is already benefitting the Cargo Community at Schiphol."

Schiphol's biggest market is Europe, with June 2017 inbound volumes at 11,217 tonnes, up 25 per cent on 2016, and June 2017 outbound figures at 11,450 tonnes, up 41.8 per cent on June 2016 figures. This strong growth is the result of Asian cargo, which transits Baku, Azerbaijan, and Moscow, Russia, to and from the Far East and Amsterdam.

A strong flower trade led to inbound Latin America volumes for January to June 2017 of 59,817 tonnes, up 31.4 per cent on the same period in 2016. Exports for January



to June 2017 were 35,275 tonnes, a 6.3 per cent decrease on January to June 2016.

Inbound Middle East figures for January to June 2017 were 43,557 tonnes, down 4.4 per cent on 2016 figures for the same period, with outbound figures to the region for the first half of the year at 61,973 tonnes, up seven per cent on the same period in 2016, when 57,899 tonnes were recorded.



## Canon BioMedical launches Novallele™ HRM Analyzer



Scientists that genotype using a thermocycler typically rely on the software accompanying the instrument to analyze their data.

Data from one thermocycler cannot be uploaded to the software of a different thermocycler, which prevents the comparison of data attained on different thermocyclers. Canon BioMedical has solved this problem by providing free, web-based software capable of analyzing data from different thermocyclers and well plate formats.

The Novallele HRM Analyzer provides an intuitive and easy-to-use graphical interface with comprehensive algorithms capable of analyzing high-resolution melting (HRM) data from different thermocyclers.

PCR followed by HRM is a fast, reliable, and cost-effective method for DNA genotyping. The Novallele HRM Analyzer complements the Novallele genotyping assays, in conjunction with the Novallele Controls Sets, to seamlessly analyze HRM data. The software does not require download or installation.

"Scientists often have many different types of thermocyclers in their labs," states Akiko Tanaka, CEO of Canon BioMedical. "We developed the Novallele HRM Analyzer so researchers could analyze their HRM data using one tool. The software adds to our goal of offering a complete genotyping solution."

The free Novallele HRM Analyzer is available at [www.canon-biomedical.com](http://www.canon-biomedical.com). Canon BioMedical, a wholly owned subsidiary of Canon U.S.A., Inc., is focused on empowering the biomedical research and healthcare communities by developing, manufacturing, and marketing innovative technologies and solutions. The technologies and solutions developed will help enable clinicians and scientists to improve our health and advance science.

## Dedicated Cryo-DualBeam System automates preparation of frozen, biological samples

The new Thermo Scientific Aquilos is the first commercial Cryo-DualBeam (focused ion beam/scanning electron microscope) system dedicated to the preparation of frozen, thin lamella samples from biological specimens for high-resolution tomographic imaging in a cryo-transmission electron microscope (cryo-TEM).

"The Aquilos completes our cryo-electron tomography workflow, allowing customers to reliably create the samples with precisely-controlled thickness with minimal investment in time and effort," said Peter

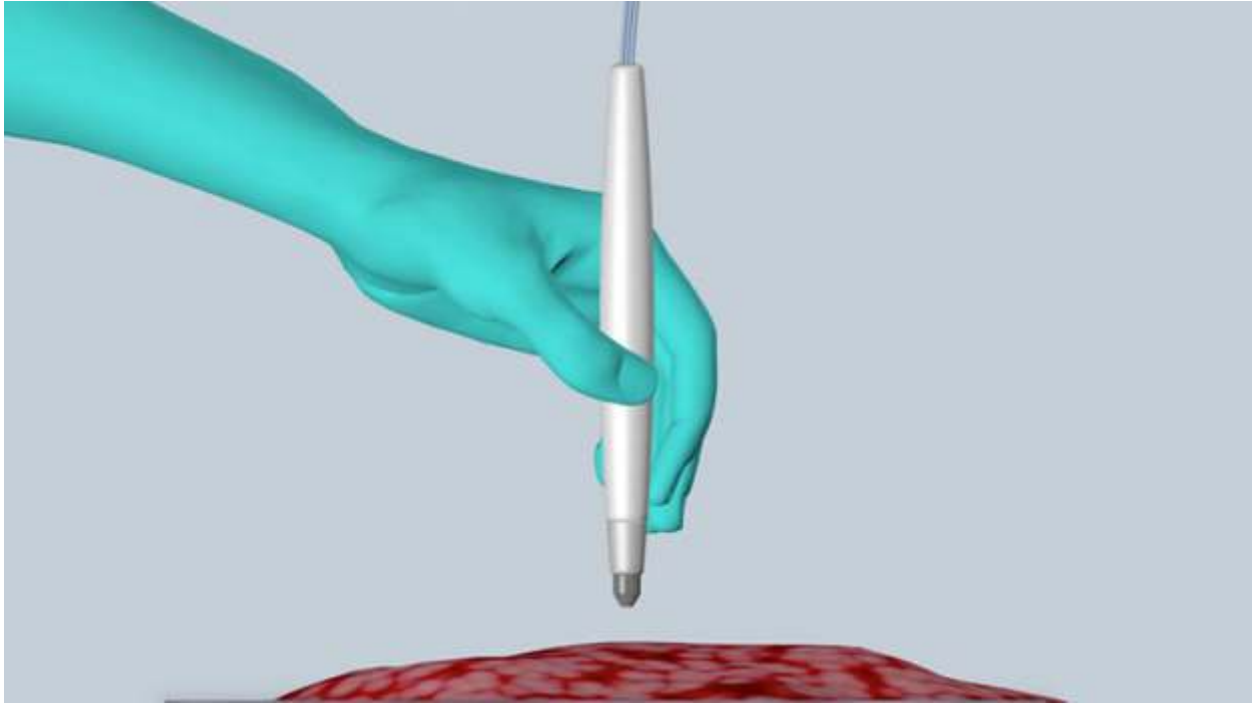


Fruhstorfer, vice president and general manager, life sciences, Thermo Fisher Scientific.

Elizabeth Villa, assistant professor of Biophysics, University of California San Diego, has been using the Aquilos cryo-DualBeam in her work on macromolecular complexes, "Cryo-electron tomography's ability to visualize structures in their native context allows researchers to observe functional relationships and interactions with other components in the cellular environment," said Dr. Villa. "This technique promises to become an important tool for scientists seeking a better understanding of living systems at the molecular level."

Electron tomography computes a three-dimensional (3D) model of a single molecular structure in its native, fully functional context by combining multiple images from different perspectives, much like a medical X-ray CT (computed tomography) scan. It is a powerful complement to single particle analysis (SPA), which can provide near-atomic scale resolution but requires a large collection of isolated identical particles. Together, these techniques can provide biologists with a more complete picture of a protein's structure and function.

## Surgical pen can detect cancer in seconds



Researchers at the University of Texas at Austin have developed a hand-held surgical “pen” that can analyze tissue samples and tell a surgeon if they are cancerous in just a few seconds, a report from Medgadget said.

During surgery to remove a tumor, surgeons need to know if they have removed the entire tumor margins, as leaving just a small piece of neoplasm could mean that it grows back. Often the tumor looks very similar to healthy tissue, making it difficult to distinguish, and a surgeon will sometimes remove large areas of healthy tissue to make sure that they remove all the cancerous cells. This can cause unnecessary pain and prolonged recovery for cancer patients after surgery.

One solution is to take biopsies from areas at the tumour border during surgery and check if they are cancerous in the lab. This can take 30 minutes or longer, and meanwhile, the patient risks infection and an increased chance of adverse effects from anaesthetics while they wait on the operating table. In many cases the results are provided only after surgery, often necessitating another procedure.

The new MasSpec Pen works using mass spectrometry to analyze and identify molecules produced during metabolism within cells. These metabolites can act as hallmarks for different types of cancer.

“Cancer cells have dysregulated metabolism as they’re growing out of control,” says Livia Schiavinato Eberlin, a scientist involved in the research. “Because the metabolites in cancer and normal cells are so different, we extract and analyze them with the MasSpec Pen to

obtain a molecular fingerprint of the tissue. What is incredible is that through this simple and gentle chemical process, the MasSpec Pen rapidly provides diagnostic molecular information without causing tissue damage.”

The surgeon can simply point the device at a suspect piece of tissue and can get an indication as to whether the tissue is cancerous or healthy within 10 seconds, and in tests the device was 96 per cent accurate. The technology is similar to another surgical probe that featured previously on Medgadget, which instead used Raman and fluorescence spectroscopy to analyze tissues during surgery, and one that is already cleared by the FDA that relies on measuring how an electric current passes through tissues. In any case, it is encouraging that multiple research groups are developing this type of technology, which should significantly help improve surgical treatments for cancer.







**Bio/Pharma Product Launch Summit**  
**Boston, USA**  
 11-12 September  
<http://www.cbnet.com/conference/pc17225>

**14th World Pediatrics Conference**  
**Los Angeles, USA**  
 11-12 September  
<http://pediatrics.cmesociety.com>

**World Drug Safety Congress Europe**  
**Berlin, Germany**  
 12-13 September  
[terrapinn.com/conference](http://terrapinn.com/conference)

**8th Arab Diabetes Forum**  
 20-22 September  
 Cairo, Egypt  
[arabicdiabeticforum.com](http://arabicdiabeticforum.com)

**Building Healthcare Exhibition and Conference**  
 11-13 September  
 Dubai, UAE  
[buildinghealthcare-exhibition.com](http://buildinghealthcare-exhibition.com)

**17th Dermatology Congress**  
 25-26 September  
 Dubai, UAE  
[eventbrite.com](http://eventbrite.com)

**12th Pharma Middle East Congress**  
 25-26 September  
 Dubai, UAE  
<http://middleeast.pharmaceuticalconferences.com>

**International Conference on Fungal Diseases & Control**  
 25-27 September  
 Dubai, UAE  
[fungalinfections.conferenceseries.com](http://fungalinfections.conferenceseries.com)

**11th Global Ophthalmologists Annual Meeting**  
 25-27 September  
 Dubai, UAE  
<http://annualmeeting.conferenceseries.com/ophthalmologists>

**10th World Paediatric Congress**  
 28-29 September  
 Dubai, UAE  
<http://pediatriccongress.conferenceseries.com/>

**23rd World Nurse Practitioner Conference**  
 28-29 September  
 Dubai, UAE  
<http://nursepractitioner.nursingconference.com/middleeast>

**Moscow MedShow**  
 29-30 September  
 Moscow, Russia  
[medshow.ru](http://medshow.ru)

**7th International Conference on Traditional & Alternative Medicine**  
 3-6 October  
 Dubai, UAE  
[traditionalmedicine.conferenceseries.com](http://traditionalmedicine.conferenceseries.com)

**International Conference on Healthcare and Life Science Research**  
 13-14 October  
 Dubai, UAE  
<https://iaphlsr.org>

**4th International Conference on Rhinology and Otolaryngology**  
 18-20 October  
 Dubai, UAE  
[otolaryngology.conferenceseries.com](http://otolaryngology.conferenceseries.com)

**14th Global Obesity Meeting**  
 23-24 October  
 Dubai, UAE  
[obesitymeeting.conferenceseries.com](http://obesitymeeting.conferenceseries.com)

**10th International Conference on Neuropharmacology and Neuropharmaceuticals**  
 23-24 October  
 Dubai, UAE  
[neuro.pharmaceuticalconferences.com/middleeast/](http://neuro.pharmaceuticalconferences.com/middleeast/)

**Patient Safety**  
 24-26 October  
 Dubai, UAE  
[patientsafety-me.com](http://patientsafety-me.com)

**International Society of Addiction Medicine Conference**  
 26-20 October  
 Abi Dhabi, UAE  
[www.isam2017abudhabi.ae](http://www.isam2017abudhabi.ae)

**Annual Radiology Meeting**  
 5-7 November  
 Dubai, UAE  
<http://radiologyuae.com>

**8th Global Obesity Conference**  
 14-15 November  
 Dubai, UAE  
[obesitymeeting.conferenceseries.com](http://obesitymeeting.conferenceseries.com)

**8th World Congress on Healthcare and Medical Tourism**  
 17-18 November  
 Dubai, UAE  
[healthcare.global-summit.com/middleeast/](http://healthcare.global-summit.com/middleeast/)

**5th International Conference on Physiotherapy**  
 27-28 November  
 Dubai, UAE  
[physiotherapy.conferenceseries.com](http://physiotherapy.conferenceseries.com)

**International Conference on Cancer Diagnostics**  
 27-28 November  
 Dubai, UAE  
[cancerdiagnostics.conferenceseries.com/middleeast](http://cancerdiagnostics.conferenceseries.com/middleeast)

**22nd Global Vaccines & Vaccination Summit**  
 30 Nov-1 Dec  
 Dubai, UAE  
[vaccines.global-summit.com/middleeast](http://vaccines.global-summit.com/middleeast)

**Global Cancer Meet and Expo**  
 4-6 December  
 Dubai, UAE  
<https://globalcancermeet.com>

**29th World Psychiatrist Meet**  
 7-9 December  
 Dubai, UAE  
<http://psychiatrist.conferenceseries.com>

**25th Global Diabetes Summit and Medicare Expo**  
 11-12 December  
 Dubai, UAE  
[diabetesexpo.com/middleeast](http://diabetesexpo.com/middleeast)

**10th International Conference on Gastroenterology**  
 14-15 December  
 Dubai, UAE  
[gastroenterology.conferenceseries.com/asiapacific](http://gastroenterology.conferenceseries.com/asiapacific)

**7th International Society of Nephrology**  
 13-16 December  
 Dubai, UAE  
[nephrology.emanuae.com](http://nephrology.emanuae.com)



# Quick References

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Tel: +974 5584 7803

**Rumailah Hospital**Tel: +974 4439 3333  
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www.ahlihospital.com**Al-Emadi Hospital**Tel: +974 4466 6009  
www.alemadihospital.com.qa**UAE****PUBLIC HOSPITALS****Rashid Hospital Dubai**

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**Dubai Hospital, Dubai**Tel: +971- 4-2195000; 04-2714444  
dhweb@dohms.gov.ae**Latifa Hospital, Dubai**

Tel: 04-2193000

**Al Maktoum Hospital**

Tel: 04-222 1211

**Al Amal Hospital, Dubai**

Tel: 04-344 4010

**Hatta Hospital**

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**Police Post-Shaikh Khalif Hospital, Ajman**Call: 06 7050231  
www.ajmanpolice.gov.ae**PRIVATE HOSPITALS****Al Amanah Medical Center**Sharjah  
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www.alamanahmedicalcenter.com**American Hospital Dubai**Tel: +971 4 336 7777 – Oud Metha  
+971 4 336 7777 – Dubai Media City**Salama Hospital, Abu Dhabi**

Tel: 02 6966777

**Dibba Fujairah Hospital**Tel: 09 2446666  
Near Dibba Police Station, 10  
Dibba, Fujairah**Al Sharq International Hospital**

Tel: 09 2249999

**Burjeel Hospital**Tel: 04 4070100  
joseph.karama@amberclinics.com**Mediclinic Welcare Hospital**

Tel: - 04-282 7788

**Lifeline hospital (Jebel Ali Hospital)**Tel: 800 4677 4825 (toll free),  
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**Belhoul Speciality Hospital**Tel: +9714-2140399, +9714-2733333,  
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+9714-8818816**Neuro Spinal Hospital**Tel: +971 4 3420000  
+971 4 3157777**Zulekha Hospital**

Tel: - 6005 24442; +9714-2678866

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**Royal Hospital**

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**Central Private Hospital**

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**Fujairah Police**

Tel: 09-222 4411

**Ras Al Khaimah Police**

Tel: 07-235 6666

**Umm Al Quwain Police**

Tel: 06-765 6677

**Directory Enquiry Services**

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