



Vol. 01 Issue 01 Jan-Feb 2017

MEDIWORLD

Middle East



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Motion free image of human heart in just one beat

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Published Bi-Monthly: Vol 01 | Issue 1 | No. 01
Middle East, Africa and Asia & Beyond

MediWorld ME aims to create the ultimate platform to share the latest news, updates & developments from the healthcare & medical technology industry within & beyond the GCC countries

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PO Box: 9604, SAIF Zone, Sharjah - UAE
Tel: +971 6 557 9579, Fax: +971 6 579569,
info@7dimensionsmedia.com
www.7dimensionsmedia.com

Chief Editor

Rustu Soydan
rustu@mediworldme.com

Contributors

Nirmala Rao
Ayesha Rashid
ayesha@aircargoupdate.com

Sales & Marketing

Israr Ahmad
israr@7dimensionsmedia.com
Tousif Ahmad
tousif@7dimensionsmedia.com

Head Operations

Jamal Ahmad
jamal@7dimensionsmedia.com

Photographer/s

Jamal / Wasim

Creative Head

Mohammed Imran

WORLDWIDE MEDIA REPRESENTATIVES

France, Belgium, Monaco, Spain:
Aidmedia, Gerard Lecoeur; Tel: +33 (0) 466 326 106; Fax: +33 (0) 466 327 073
India:
RMA media, Fareedoon Kuka;
Tel: +91 22 5570 3081; Fax: +91 22 5570 3082
Taiwan:
Advance Media Services Ltd, Keith Lee;
Tel: (886) 2 2523 8268; Fax: (886) 2 2521 4456
Thailand:
Trade and Logistics Siam Ltd, Dwight A Chiavetta;
Tel: +66 (0) 2650 8690; Fax: +66 (0) 2650 8696
UK, Ireland, Germany, Switzerland,
Austria: Horseshoe Media, Peter Patterson; Tel: +44 208 6874 160

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Editor's Note

'Healthy outlook' for the region's healthcare industry

Proving the 'healthy' status of the industry, a recent industrial report highlighted that the healthcare expenditure in the GCC countries is expected to cross \$80 billion mark with public health expenditure amounting to 64 per cent of the aggregate. Thus, the health infrastructure in the region will continue to receive more investment by both the public and private sectors.

In line with the ongoing and planned infrastructure projects and positive outlook of the healthcare sector, MediWorld ME Magazine aims to provide the ultimate platform to share the latest news and updates from the medical technology industry and beyond. Keeping healthcare providers such as hospitals and clinics as well as technology manufacturers, providers and suppliers connected via this platform, the private companies are given the chance to directly reach their target clientele through our publication, both in print and online.

The UAE leads the race

The United Arab Emirates government has set several major health-related goals in the National Agenda and the UAE Vision 2021 and all public and private hospitals in the UAE are in a race to obtain accreditation by fulfilling all national and international standards, ensuring good quality services and an adequate number of medical personnel. Keeping with the directives of the Vice President, Prime Minister and Ruler of Dubai, His Highness Sheikh Mohammed bin Rashid Al Maktoum, the National Agenda aims to promote preventive measures, reduce instances of chronic diseases, and work towards increasing longevity. It is aimed at putting the UAE in the list of the world's best countries in terms of the quality of healthcare.

Providing an overview of the quality healthcare services in the UAE in one of the feature stories this edition, we also take a look at the investments in healthcare infrastructure in the GCC. The medical technology article highlights that global medical device and technology growth is to go up by 5 per cent or more annually until 2022, reaching around \$530 million. Furthermore, the white paper by Berlinger & Co AG argues that cold chain logistics is a \$10 billion component of the \$1 trillion global pharma industry and around 80 per cent of drugs require temperature controlled transportation and the trend is distinctly upwards.

As we move on, we will be discussing more of the complex issues in medical technology and equipment and offering the latest news and developments in the industry. Thus, we request you to join us in our journey in creating the ultimate platform for the industry. Please feel free to get in touch with us for any further queries. Sincerely,

Editor, MediWorld ME

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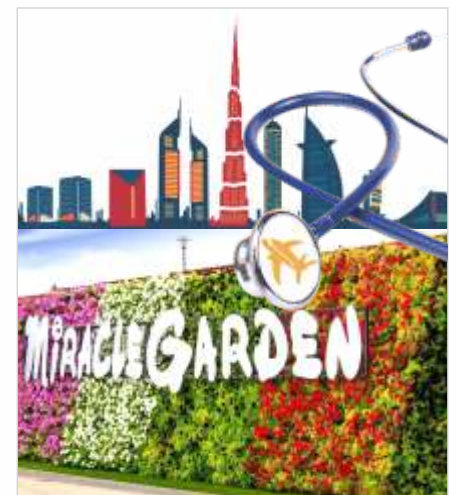
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'All in one' CT system

Computed Tomography (CT) systems' market is set to rise from \$3.6 billion in 2016 to around \$12.1 billion by 2023 and one such device revolutionizing the imaging industry is GE Healthcare's Revolution CT scanner, which captures a motion free image of the human heart in just one beat

Medical imaging technology has revolutionized healthcare over the past three decades, allowing doctors diagnosis to speed up. It is now the essential diagnostic tool for many illnesses and has a significant role in predicting, monitoring and improving patient outcomes. It includes many imaging modalities, having different physical principles of varying complexity. The detail and sensitivity of these techniques is of utmost importance, and the use of imagery for ultrastructural diagnostics, nanotechnology, functional and quantitative diagnostics and molecular medicine is steadily increasing.

Computed tomography (CT) systems' market is set to rise from \$3.6 billion in 2016 to around \$12.1 billion by 2023, representing a compound annual growth rate of 18.2 per cent, according to research and consulting firm GlobalData.

GlobalData's latest report depicts this rapid growth, occurring across 39 major markets, will primarily be driven by an increased interest in high-slice CT systems due to wider applications and improved patient throughput, heightened usage of CT, particularly in countries with emerging economies, and strong anticipated growth in the number of annual CT



Maher Abouzeid, President and CEO of GE Healthcare

scans due to increasing disease burdens and aging populations.

Sarah Janer, GlobalData's Analyst covering Medical Devices, notes, "The improving capabilities offered by high-slice systems will lead to hospitals upgrading from low-slice scanners as automated workflow, and enhanced image quality remain important driving factors of the market.

"Although in the past researchers have warned of the over-utilization of CT due to radiation concerns, the number of CT examinations has remained steadily high in recent years. New technology offers ever-improving capabilities such as lowered radiation dose, high resolution images and spectral imaging."

REVOLUTION CT

One such device revolutionizing the imaging industry is GE Healthcare's Revolution CT scanner introduced at Arab Health 2014, a first-of-its-kind computed tomography (CT) system capturing a motion free image of the human heart in just one beat, combining broad coverage, high spatial resolution and high temporal resolution technology into an 'all in one' CT system. This innovative technology enables clinicians to non-invasively visualize the human heart more clearly than ever before, and diagnose more patients with irregular or high heart beats.

The scanning device is also designed from the ground up, providing uncompromised image quality and clinical capabilities across all clinical areas through the convergence of whole organ coverage, speed and image quality, all in one CT system.

According to published literature (the British Journal of Radiology), more than 60 per cent of patients referred to

"It is estimated that the cost of non-communicable diseases across the GCC region will reach over US\$36 billion, and the financial burden to diagnose and treat them is expected to increase to US\$68 billion by 2022, if timely measures are not taken. Cardiovascular diseases account for nearly 28 per cent of the direct costs and 25 per cent of the indirect costs."

cardiac CT today were found to have heart rates higher than 60 beats per minute, and some are turned away from being scanned. With Revolution CT, clinicians can clearly see specific areas of the heart that were previously compromised either by a patient's movement, high heart rate, or a child's inability to hold his or her breath.

Maher Abouzeid, President and CEO of GE Healthcare for the eastern growth markets, said, "It is estimated that the cost of non-communicable diseases across the GCC region will reach over US\$36 billion, and the financial burden to diagnose and treat them is expected to increase to US\$68 billion by 2022, if timely measures are not taken. Cardiovascular diseases account for nearly 28 per cent of the direct costs and 25 per cent of the indirect costs."

IMAGE ACCURACY

The broad coverage of Revolution CT allows healthcare providers to scan entire organs such as the brain, heart,



The Revolution CT is engineered with technological advances including the 16 cm Gemstone* Clarity detector for whole organ coverage, best-in-class spatial resolution at 230 microns for visualizing small anatomy, and a 0.28 second gantry designed and tested for up to 0.2 sec rotation speed.

liver and pancreas. With the Gemstone Clarity detector, Revolution CT can achieve 0.23 mm spatial resolution across the full 50 cm FOV. Also, the speed of this new technology allows providers to gather information about function as well as anatomy, enabling a comprehensive stroke assessment of the brain in a single exam.

LOW RADIATION EMISSION

The Revolution CT is engineered with technological advances including the 16 cm Gemstone* Clarity detector for whole organ coverage, best-in-class spatial resolution at 230 microns for visualizing small anatomy, and a 0.28 second gantry designed and tested for up to 0.2 sec rotation speed.

Combined with SnapShot* Freeze motion correction technology, the system delivers 24 msec effective temporal resolution for high heart rate imaging without restrictions.

Revolution CT is the convergence of four things: whole organ coverage, speed, image quality and spectral imaging. Revolution CT features a unique image chain hardware with Volume HD reconstruction and next generation ASiR-V technology to enable excellent image quality across the entire 160 mm coverage while reducing dose up to 82 per cent.

In clinical practice, the use of ASiR-V may reduce CT patient dose depending on the clinical task, patient size, anatomical location and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task.

Patient anxiety is also reduced with 50 per cent quieter

scanning, soft ambient lighting, personalized gantry displays, and a relaxing visual pattern inside the bore. The bore is 80 cm wide, comfortably accommodating large patients.

"The Revolution CT continues GE's commitment to even lower CT doses, with innovations such as the new Gemstone Clarity detector, a dedicated 70kVp scan mode for paediatric use, and ASiR-V*, GE's next generation of iterative reconstruction technology. For the patient, the system provides a wider, more comfortable 80cm bore and a quiet scanning experience with the new Whisper Drive system. Ultra-fast scanning with streamlined workflow makes it a perfect scanner for emergency rooms," affirms Mr Maher.

CLINICAL CAPABILITIES

Revolution CT helps physician's diagnosis across all applications:

- 1 Cardiac exams in a single heart beat
- 2 Whole brain imaging in less than a second
- 3 Low dose, complete organ diagnosis and follow-up for oncology patients
- 4 Detailed bone imaging, even for patients with metal implants
- 5 Sedation-free and low dose scans for paediatric patients.
- 6 Material characterization and artefact reduction.





"In a cost-constrained healthcare environment, clinicians need one definitive test that gives them the diagnostic confidence to make the right treatment decision for their patients. GE Healthcare's Revolution CT makes this possible through the convergence of spatial resolution, temporal resolution, coverage, and low dose all-in-one, providing uncompromised image quality and clinical capabilities.

"The convergence achieved by Revolution CT enables comprehensive cardiac exams with anatomic and functional information in just one heartbeat, even with challenging patients and higher heart rates; rapid, whole-brain stroke assessment at low dose and dynamic liver, kidney, or pancreas oncology workup personalized with perfusion and vascular flow analysis," says Mr. Maher.

PRODUCTIVITY AND EFFICIENCY

Revolution CT enables clinicians to deliver exceptional image quality for some of the most challenging clinical applications. This opens doors to more examinations, including high heart-rate cardiac, stroke, trauma and paediatric patients.

When used in the emergency department for evaluating patients presenting with chest pain, coronary CT imaging has been shown to reduce the length of stay, speed discharge and reduce costs.

Revolution CT may also reduce the need for additional imaging tests by acquiring functional and anatomical information from a single exam.

ANSWERING HEALTHCARE CHALLENGES

Cardiac disease, diabetes, obesity are major concerns in the GCC region. Revolution CT, with its unique features, like one beat cardiac, large size bore and 16 cm coverage is the optimal system to answer these healthcare challenges.

Cardiac disease, diabetes, obesity are major concerns in the GCC region. Revolution CT, with its unique features, like one beat cardiac, large size bore and 16 cm coverage is the optimal system to answer these healthcare challenges.

Both public and private healthcare sectors within UAE specifically and the Middle East have Revolution CT installed, and according to the company, the feedback so far is more than excellent, users are very happy with image quality, low dose and the ease of the use and unique capabilities of the Revolution CT especially when scanning challenging patients.

OTHER IMAGING DEVICES

GE just introduced Revolution CT with Gemstone™ Spectral Imaging (GSI)* Xstream Revolution CT. Like its forerunner, it provides very high image quality and clinical capabilities across all clinical areas through the convergence of whole organ coverage, speed, image quality and spectral imaging all in one CT system. Revolution CT with GSI Xstream features Smart Technologies and comprehensive stroke and trauma capabilities focused on the main clinical outcomes. GSI Xstream optimizes contrast volumes and reduces beam hardening from solid objects such as metal and perform material characterization. The GSI Xstream on Revolution CT is not CE marked and is not available for sale in all regions.

Providing transformational medical technologies and services to meet the demand for increased access, GE Healthcare enhances quality and more affordable healthcare around the world. From medical imaging, software & IT, patient monitoring and diagnostics to drug discovery, biopharmaceutical manufacturing technologies and performance improvement solutions, GE Healthcare helps medical professionals deliver great healthcare to their patients.





UAE among best countries in terms of good quality healthcare

The National Agenda aims to promote preventive measures, reduce instances of chronic diseases such as diabetes, cardiac diseases and cancer and is aimed at putting the UAE in the list of the world's best countries in terms of the quality of healthcare

To achieve various health-related goals set in the National Agenda and the UAE Vision 2021, all public and private hospitals in the UAE are to obtain accreditation by fulfilling all national and international standards, ensuring good quality services and an adequate number of medical personnel.

The move is in keeping with the directives of Vice President, Prime Minister and Ruler of Dubai, His Highness Sheikh Mohammed bin Rashid Al Maktoum. The UAE has declared its National Agenda indicators and set up executive teams to implement them.

The National Agenda aims to promote preventive measures, reduce instances of chronic diseases such as diabetes, cardiac diseases and cancer, cut down smoking and obesity in children, and work towards increasing longevity. It is aimed at putting the UAE in the list of the world's best countries in terms of the quality of healthcare.

QUALITY OF HEALTHCARE INDICATOR

The year 2016 saw the UAE attain 28th position in the quality of healthcare indicator, up from 34th in 2015. The

Legatum Institute for Prosperity, which issues this indicator, covers 149 countries and measures the quality of healthcare services on three counts: fundamental healthcare, infrastructure and preventive healthcare, and the level of satisfaction with mental and physical healthcare services.

Results showed that most of the residents answered "no" when asked if they suffer from health problems that prevent them from doing their work. The response took the UAE to the top position internationally in this sub-indicator.

In case of another sub-indicator about the level of satisfaction about healthcare services, the UAE emerged in 9th position internationally, thus joining the top ten countries in the world whose people expressed satisfaction about the healthcare services. The results reflected that UAE society enjoys good mental and physical health.

The number of accredited health facilities in the UAE rose from 46.8 percent in 2014 to 55 percent in 2015. Accreditation is a UAE indicator to measure the level of

compliance of public and private hospitals with national and international standards.

The International Diabetes Federation, IDF, put the number of diabetic patients in the UAE in 2015 at 19.3 percent of the population, making it the best state in the GCC after Oman, which accounted for 14.8 percent of its population who suffered from this condition. The National Agenda is keen to bring down the instance of diabetes by promoting a healthy lifestyle, encouraging healthy eating habits, and encouraging sports.

The expected average healthy age indicator, which measures the average number of years for which an individual lives a healthy life, is issued by the World Health Organisation as part of its compilation of world health statistics covering 194 countries.

NEARING SELF-SUFFICIENCY IN GENERIC DRUG PRODUCTION

Furthermore, the UAE is close to being self-sufficient in producing generic drugs as 16 pharmaceutical facilities are manufacturing up to 1,000 such drugs. The country is also planning to increase the number of facilities to 30 by 2020, according to a senior official from the Ministry of Health and Prevention.

The UAE is close to being self-sufficient in producing generic drugs as 16 pharmaceutical facilities are manufacturing up to 1,000 such drugs. The country is also planning to increase the number of facilities to 30 by 2020.

This is another indication of the strong growth of the pharmaceutical industry and the efforts being exerted to improve the UAE's global competitiveness, said Dr Ameen Hussain Al Amiri, the Ministry's Assistant Under-Secretary for Public Health and Licensing, while speaking at a workshop on the pharmaceutical industry, organized by the Ministry.

"The global biopharmaceutical market is huge as manufacturers are planning to produce biopharmaceuticals - biologic medications or biologics - using living organisms and DNA. Producing biologics is more expensive and more effective than generic drugs;

As the population increases and healthcare demands burgeon, government strategies such as Emirates Vision 2021 are committed to continuing improvements in healthcare services throughout the emirates. Reducing the need for Emiratis to travel abroad for specialized treatment is a key driver in this area.

however, biologics will remain less expensive," added Al Amiri, who is also Vice Chairman of the Ministry's Drug Pricing and Registration Higher Committee.

A biopharmaceutical is any pharmaceutical drug product manufactured in, extracted from or semi-



synthesised from biological sources. Different from totally synthesised pharmaceuticals, these include vaccines, blood, blood components, allergenics, somatic cells, gene therapies, tissues, recombinant therapeutic protein and living cells used in cell therapy.

SOPHISTICATED INFRASTRUCTURE

The UAE has a highly developed health service, including a sophisticated physical infrastructure of well-equipped hospitals, specialised clinics and primary care centres. Health care in the UAE is provided in over 70 public and private hospitals. In addition, over 150 healthcare centres and clinics focus on primary care. This health infrastructure stands in stark contrast to the 7 hospitals and 12 health centres that were in place

Al Mafrq Hospital Abu Dhabi



when the UAE Federation was established in 1971.

The UAE Ministry of Health oversees implementation of government policy in relation to the provision of comprehensive health care for all UAE citizens and residents. UAE nationals are covered by free health insurance schemes and sponsors are required to provide health insurance for all employees and their dependants.

Health Authority – Abu Dhabi (HAAD) introduced mandatory health care for all workers in 2006. By 2013,



the Abu Dhabi health insurance system covered 2.73 million people. Dubai Health Authority (DHA) has also implemented insurance schemes for nationals and residents.

As the population increases and healthcare demands burgeon, government strategies such as Emirates Vision 2021 are committed to continuing improvements in healthcare services throughout the emirates. Reducing the need for Emiratis to travel abroad for specialized treatment is a key driver in this area.

The 364-bed Cleveland Clinic Abu Dhabi (CCAD) opened in mid-2015. This is part of a growing network of medical facilities operated by Abu Dhabi investment company Mubadala. Eighty per cent of doctors at CCAD come from



institutions in the United States and one-third of these have medical experience at the Cleveland Clinic in Ohio. Cleveland Clinic personnel have a long-standing presence in the region through management of Sheikh Khalifa Medical City. Services at the new facility have been tailored under the mandate of HAAD to complement the range of healthcare services that are already being offered in the emirate.

The new Paediatrics Clinic at Tawam Hospital, which is

operated in affiliation with Johns Hopkins Medicine and Abu Dhabi Health Services Company (SEHA), is also designed to fill gaps identified in HAAD Gap Analysis reports.

In certain situations healthcare can be delivered remotely using sophisticated telemedicine facilities such as Telemed, which is available at Abu Dhabi Telemedicine Centre, a joint venture between Mubadala Development Company and Switzerland's leading telemedicine provider, Medgate AG.

Abu Dhabi's CCAD, Sheikh Khalifa City Hospital, Mafraq and Tawam Hospitals join the many hospitals throughout Dubai and the other emirates in providing UAE residents and nationals with a high stand of medical care. Dubai Healthcare City, which has recently announced its second phase, is instrumental in this process. As well as minimising the necessity to send patients abroad, medical tourists are also encouraged to come to the country to avail of these new facilities. The medical tourism sector is projected to grow by about 15 per cent annually.

DHA'S MASTER PLAN

The Dubai Health Authority (DHA) master plan 2013–2025 includes a Dh3 billion revamp of Rashid Hospital, which incorporates a new Trauma Care Centre, and the 200-bed Al Jalila Children's Speciality Hospital. The plan also includes establishing 40 new primary healthcare centres and three new hospitals, as well as three new medical colleges and five nursing schools over the coming ten years. These three new colleges are in addition to the University of Sheikh Mohammed bin Rashid for Medicine and Health Sciences. A strategy has also been developed to make the nursing profession more attractive, especially to Emiratis.

Currently, pre- and post-natal care in the UAE is on a par with the world's most developed countries. Maternal mortality rates in 2008 were 10 per 100,000 and 99 per cent of births are attended by skilled health personnel. The infant mortality rate in 2012 was 7 per 1,000 live births and the mortality rate for under-fives was 8 per 1,000 live births.

Available figures on immunisation ratios for all vaccines show that they are administered uniformly to over 90 per cent of newborns. Most infectious diseases like malaria, measles and poliomyelitis that were once prevalent in the UAE have been eradicated. New vaccination campaigns are taking place to protect against chicken pox, pertussis and the rotavirus.

LIFESTYLE DISEASES STILL PREVALENT

As a consequence of this high standard of care at all stages of the system, life expectancy at birth in the UAE, at 76.5 years, has reached levels similar to those in Europe and North America. Unfortunately however, as elsewhere, lifestyle diseases such as heart disease, diabetes and cancer are taking their toll in the UAE. Cardiovascular diseases account for the highest proportion of deaths from non-communicable diseases and high rates of obesity in the local population increase the risk of diabetes and hypertension. Cardiovascular disease accounted for 36.7 per cent of all deaths in Abu Dhabi in 2013.

According to HAAD, in 2013 injuries were the second leading cause of death (19.6 per cent) and healthy life years lost in Abu Dhabi. Fatal injuries were caused primarily by road traffic accidents (62 per cent), followed by injuries due to falls and falling objects (11 per cent), and suicide (8 per cent). Occupational injuries and childhood injuries accounted for 18.4 per cent and 12.2 per cent of total injury deaths respectively. Cancer is the third-leading cause of death in the country, after heart disease and accidents. Breast, colon and prostate cancer are the three most common types.

As already outlined, world-class facilities such as the Imperial College London Diabetes Centre, the Gulf International Cancer Centre, Dubai Hospital, University Hospital Sharjah and the Tawam Hospital in Al Ain provide high standards of care for people suffering from these diseases. However, a renewed focus on prevention and management and health awareness drives promoting healthy lifestyles are being initiated and supported by public and private bodies. Initiatives include major information campaigns, walks to raise awareness about diabetes, anti-smoking campaigns and healthy diet and fitness drives. For example, the Healthy Children 2020 initiative, which aims to reduce child obesity in the UAE by 12 per cent by 2021, targets school children in the UAE.

One of the consequences of an increase in life expectancy is an ageing population. This presents particular challenges to a sustainable healthcare system and efforts are continuing to significantly enhance care of the elderly, including establishing geriatric clinics dealing with dementia, osteoporosis and rehabilitation. Home-care services for geriatric patients who are unable to visit clinics will also provide services.

AIMING TO BE AMONG TOP HEALTHCARE MARKETS



On a related note, high quality continuing medical education (CME) is to help GCC physicians improve their care of patients in the UAE and across the region, US-based healthcare experts said ahead of the upcoming Arab Health Exhibition and Congress. And with the

UAE's vision to rank among the world's top 20 healthcare markets in the next four years, there is a renewed focus on the quality of education offered to the country's medical practitioners.

"We are confident that the UAE can achieve this ambitious target, and giving healthcare professionals credible, evidence-based CME programs will support



realizing that goal," said Steven Kawczak, PhD, director of Professional Development at US-based Cleveland Clinic.

"The field of medicine is constantly evolving, including new research findings, emerging technology, and changing policies. This dynamic environment makes it crucial that healthcare practitioners stay up-to-date on the latest medical advancements and standards of quality care. CME serves as the catalyst to bridge that gap and improve patient care," Dr. Kawczak added.

Following global best practices, CME is a requirement for most GCC healthcare professionals so that they may continue practicing in their fields.

At Arab Health, Cleveland Clinic will be offering physicians and other healthcare professionals an opportunity to participate in nine multidisciplinary conferences, all accredited for CME. These feature 15 key physician speakers from Cleveland Clinic's main campus in Ohio. The conferences include interactive didactic sessions and roundtable discussions on a range of topics, including Imaging, Surgery, Quality Management, Pediatrics, Orthopedics, Oncology, Gastroenterology, Public Health, and Emergency Medicine.

Cleveland Clinic has been ranked among the top 5 in the US News & World Report's annual hospital rankings for 18 consecutive years, and has most recently climbed to No. 2 in the US, while retaining its position as the nation's No. 1 hospital for cardiology and heart surgery for the 22nd successive year.



Exponential growth expected in global medical device sector

As the sector witnesses a 'resurgence of small acquisitions', global medical device and technology growth is to go up by 5 per cent or more annually until 2022, reaching around \$530 million, market research firm Evaluate reveals.

The role of technology is vast in the field of medicine as it is considered to be the driving force behind healthcare improvements, aiding doctors to diagnose, study and treat the specific parts of the body in a short period of time.

However, during the 18th century doctors and biomedical specialists had developed numerous instruments such as thermometer, microscope and many others in revealing how a healthy and a diseased body worked. As this was just the start, other major instruments followed and were developed over the century.

Market research firm Evaluate expects global medical device and technology growth to go up by 5 per cent or more annually until 2022, reaching around \$530 million as the sector is "witnessing a resurgence of small acquisitions on which startups, a significant source of disruptive new technologies depend on," Ian Strickland, EvaluateMedTech product manager said in a report, recently released at the Advanced Medical Technology Association.

Today, major hospitals and clinics worldwide use complex, sophisticated and computerised machines to image the body and speeding up the diagnosis.

Health IT opens up many more avenues of exploration and research, allowing experts to make healthcare more driven and effective than it has ever been. Another key area that has grown and continues to do so is patient care.

HEALTH IT

According to Chicago's University of Illinois' Health Informatics, a number of industry analysts have observed that increased accessibility of treatment is one of the most tangible ways that technology has changed healthcare. Health IT opens up many more avenues of exploration and research, allowing experts to make healthcare more driven and effective than it has ever been. Another key area that has grown and continues to do so is patient care. The use of information technology has made patient care safer and more reliable in most applications.

Software also plays a pivotal role in tracking procedures and using billing methods that not only reduces paperwork levels, but also allow practitioners to use this data to improve quality of care and all around efficiency in creating a greater degree of transparency in the healthcare system.

The fact that nurses and doctors who are working on the frontline are now routinely using hand-held devices to record important real-time patient data and then sharing it instantly within their updated medical history is an excellent illustration of the benefits of health IT.

Being able to accumulate lab results, records of vital signs and other critical patient data into one centralized area has transformed the level of care and efficiency a patient can expect to receive when they enter the healthcare system.

An increased level of efficiency in data collection means that a vast online resource of patient history is available to scientists, who are finding new ways to study trends and make medical breakthroughs at a faster rate. The development of specific software programs means that, for example, the World Health Organization has been able to classify illnesses, their causes and symptoms into a massive database that encompasses more than 14,000 individual codes.

This resource allows medical professionals and researchers to track, retrieve and use valuable data in the fight to control disease and provide better healthcare outcomes in general.

Software also plays a pivotal role in tracking procedures and using billing methods that not only reduces

paperwork levels, but also allow practitioners to use this data to improve quality of care and all around efficiency in creating a greater degree of transparency in the healthcare system.

Moreover, Diagnostics have never been easier and more accurate, especially due to advancements in areas like nuclear medicine. Nowadays, numerous methods of imaging allow for technicians and physicians to examine a patient's anatomy without needing invasive procedures to form a diagnosis. The demand for MRI technologists and radiologists has also increased as a result of rapid advances in imaging technology. This not only saves time but also results in better data coordination and management. It is also technological innovation that has opened the door to more non-invasive procedures.

HEALTH IMPROVEMENTS

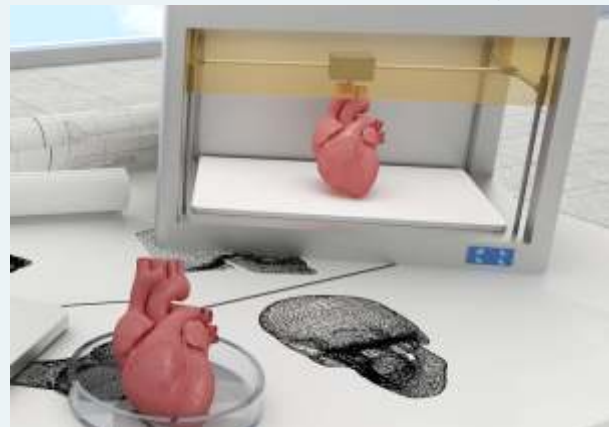
The epidemiology of medical care and its effect on health has risen life expectancy rate by 23 per cent, according to Oxford Journals' International Journal of Epidemiology. This attributes to the treatment of a particular condition involving a three-step procedure: calculation of increases in life expectancy resulting from a decline in diagnosis-specific death rates, estimation of increases in life expectancy when therapy is provided under optimal conditions, and estimation of how much of the decline in disease-specific death rates could be attributed to medical care when provided on a daily basis.

Secondly, estimated years of pain and other physical or mental dysfunction were prevented as a result of treatment similarly constructed. For example, the effective treatment or prevention of hypertension contributes to a fall in the subsequent incidence of non-fatal as well as fatal heart attacks and strokes, resulting fall in months and years of poorer physical and mental function.

HEALTHCARE REVOLUTION

The VP of Strategic Relations for Singularity Medicine Robin Farmanfarman lists top five medical technologies that are currently under process in revolutionising healthcare sector include:

1. 3-D PRINTING: 3D printing is already making its presence felt in medical device world. Ninety-five percent of all hearing aids today are 3D printed. Align Technology prints 650,000 pairs of Invisalign teeth-straightening braces a day. This tech is also pushing into prosthetics. There are also custom-made back braces for scoliosis patients and casts for broken bones (perforated



with holes so people can finally scratch through their

casts) and, in the latest development, 3D printed facial prosthetics (noses, ears, etc.). According to her the biggest development in the medical history has been organ printing. While the bio-printing of whole organs is still a little ways off, already Organovo, a California-based research company, has printed human liver tissue for drug toxicity testing purposes. And once it is capable of whole organ printing, dying patients will no longer suffer an interminable wait while they discover if they've been selected to receive a life-saving organ. Instead, they will be able to make organs from our own stem cells and replace them when needed, and all without the fear of rejection or lifelong dependence on harsh drugs.

2. ARTIFICIAL: Artificial Intelligence has remerged as an incredibly robust diagnostic aid that is already



being used for everything from training medical students to managing the treatment of lung cancer. The London-based Isabel Healthcare has just released their own AI-based diagnostic tool—as an app. What began as diagnostic decision support engine for doctors was just made available to consumers for free via a smartphone. Of course, this is only the beginning. Soon enough the access to supercomputers capable of evaluating and analysing all your current symptoms, biometric data, environmental data and personal data (i.e. diet and activity level) and your entire genome.

3. BRAIN-COMPUTER INTERFACES: This tech



was originated to help paraplegics and quadriplegics control computer cursors with only their brains. Of course, these developments will continue apace, bringing far more liberation to the disabled than ever before possible, but the bigger news is in BCIs that can control robotic limbs or even restore function to paralyzed limbs. These devices are also starting to make their way into the consumer realm. Today, companies

like Muse and NeuroSky make a wireless BCI headsets that can monitor changes in brainwave activity and help people train concentration. Eventually, the hope is that such wearable tech will be used in the treatment of Alzheimers, pain management and well. Point of fact: Harvard University researchers recently created the first brain-to-brain interface, allowing a researcher to control both a rat's tail and another human's movements with his mind.

4.ROBOTICS: Certain developments like the nanobots swimming through our bloodstream and



scraping plaque from our arteries, robots are already deep into the healthcare space. This trend will only continue. Service robots are expected to enter the healthcare sector soon, doing everything from distributing patient meds to picking up dirty laundry. And, as many of these service bots are able to do the work of three humans for the cost of less than one, no doubt they'll be spreading quickly as well. Finally, exoskeletons—which are sort of external strap on robots—are now market ready. Recently, Ekso Bionics introduced the first commercialized robotic exoskeleton that allows paraplegics to stand and walk independently and over 1 million steps had been taken by patients wearing their devices. This is merely the beginning.

5. POINT-OF-CARE DIAGNOSTICS: In medicine, one of the major promises of technology is patient empowerment- especially when it comes to diagnostics. The XPRIZE Tricorder Challenge is a \$10 million incentivized prize for the development of a hand-held, non-invasive electronic device that can diagnose patients better than a panel of doctors. Patients no longer will have to go to the doctor's office or hospital. Instead, in the comfort of your home, the Tricorder will analyse data, diagnose the problem and send that information to a doctor who, quite possibly, can treat you remotely. In the developed world, where doctors make diagnostic errors 10% of the time, this will make a significant difference in quality-of-care and significantly reduce the roughly \$55 billion spent annually on the malpractice system). In the developing world, this will make healthcare far more accessible.

FUTURE STRATEGIES

To sum up, the benefits of increased investment in medical care make the greatest and most predictable contribution to the reduction of death and to the relief of suffering and disability. The gains from increased investment in medical care would begin to be seen almost at once only as rapidly as the public responds with a healthier lifestyle. Redistribution of wealth and resources for the sole purpose of reducing inequalities in health would be a long-term strategy of uncertain success.

Beyond the Cold Chain

Final mile transportation and subsequent user storage conditions present unique challenges when it comes to ensuring the safe and effective use of pharmaceutical products.

by Corneliu Tobescu, Chief Operation Officer at Berlinger & Co AG



The Mini-tag from Berlinger is a tiny electronic indicating device designed for direct attachment to containers, packaging or delivery devices

INTRODUCTION

Cold Chain logistics is a \$10 billion component of the \$1 trillion global pharma industry. Around 80 per cent of drugs require temperature controlled transportation and the trend is distinctly upwards. In some drug categories the proportion is even higher. For example, according to the World Health Organisation, more than 90 per cent of all vaccines require a temperature-controlled supply chain.



A unobtrusive Mini-Tag seen attached to pharmaceutical primary packaging.

The need for these controls is driven by the increasing sensitivity of modern drugs, particularly those of a 'large-molecule' i.e. biologic nature. It is a requirement that is underpinned by tight regulatory controls and compounded by factors such as globalised production, new market development and new systems of transportation. And the problem of maintaining the correct product temperature during shipment is not insignificant. According to industry sources the incidence of temperature excursions during pharma transportation may be as high as 5 per cent of the total.

MARKET TRENDS

Currently one of the biggest market trends in pharmaceuticals is the move towards biologic medicines and personalised, patient-centric remedies. The complex nature of biologics and vaccines means that they are often extremely reliant on the maintenance of a highly controlled environment in order to be fully effective or even be viable at all. With the basis for many of these treatments being living cells or complex chemical molecules there is significant risk of therapeutic loss or impairment in the event of unacceptable temperature exposures.

It's not just the drugs themselves that are becoming more complex. The supply chains involved in moving these products around have become increasingly long, tortuous and diverse.



Corneliu Tobescu, Chief Operation Officer at Berlinger

Today's multi-step cold-chains require the seamless integration of a large number of parties across several shipping modes, climate zones, storage facilities and patient health facilities.

And even when robust thermal management systems are in place and rigorously enforced, the problem is not necessarily solved. Simple human error or uncontrolled events such as a vial left out of a fridge or an unexpected power dropout, might spell the difference between life and death for an unfortunate patient further down the line.

Other circumstances where there can be life threatening breaks in the cold chain include the delivery of vaccines, clinical trial materials and other essential drugs into remote regions of the world where the infrastructure is often not available to ensure safe final-mile delivery.

THE REGULATORY POSITION

However it is important to note that regulatory authorities require that a manufacturer ensures product quality not only during storage and transport but until the drug concerned is used for patient treatment. This stipulation presents a formidable hurdle for a pharma manufacturer, since the conditions for product safety must be safeguarded even after the controls by the manufacturer in the primary supply chain have come to



Vaccines are particularly susceptible to temperature extremes



Medicines in the home are rarely temperature managed

an end. This, for example, would include the transfer and storage of pharmaceutical products to and from pharmacists, retailers, hospitals and community doctors and even extends to when consumers take and store the product at home.

Official guidance in this respect is unequivocal and invariably recommends that drugs that are subjectively judged at point of use to be degraded or out of tolerance should be discarded. For example, the Centers for Disease Control and Prevention in the US advises: "It is better to not vaccinate than to administer a dose of vaccine that has been mishandled."

DOMESTIC SAFETY

All of this begs the question: "How many bathroom cabinets and kitchen cupboards are full of pharma products that are of questionable quality?"

Today's consumers are much too busy to read the fine print of every pharma label that comes their way. Few are competent to judge whether a product they buy or have stored for a time is safe or fit for purpose. Practically none can vouch for the temperature storage record of their household pharma supplies.

A recent study(1) provided the users of a temperature-sensitive biologic drug with a data recorder to monitor the real storage temperature conditions that were being used. The results were startling. Out of 255 participants in the study only 17 (6.7pc) had stored their medication within the recommended temperature range. Of those who did not, 24.3 per cent had stored their medication for more than 2 hours outside of the recommended range.

Difference between temperature loggers & time-temperature indicators

Freight temperature loggers or monitors are portable electronic devices that measure, record and, sometimes, transmit temperature data over a defined time period. A time-temperature indicator is designed for a different purpose. Temperature indicators also measure temperature but rather than record data for subsequent analysis purposes, they monitor the accumulated temperature exposure over time and provide a clear, visual indication if a product has exceeded pre-determined temperature limits within this period. In this way they can be used to protect products from all the way from manufacturing to final use. These indicators can be either digital or chemical depending on the requirement.

Why we need electronic point-of-use temperature indicators

- 1. Product potency:** the administration or ingestion of compromised products may have serious repercussions including mortality implications and the re-emergence or occurrence of preventable infectious diseases.
- 2. Waste and cost minimisation:** Medicines and vaccines can be expensive and are often a scarce resource in remote communities with limited transportation infrastructure.
- 3. Confidence and trust:** Programs to treat and prevent disease and illness, especially in developing regions, may be seriously undermined by the existence of ineffective or dangerous products.



Last-mile logistics & the storage of medicines at home present particular problems in remote and developing communities

REMOTE CONTROLS

Final mile delivery and household storage has further connotations when we start to talk about the situation in



The storage conditions of household medicines by consumers is often poor or inappropriate

less developed nations.

There is a huge potential for life-threatening breaks in the cold chain when we consider the delivery of vaccines, clinical trial materials and other essential drugs into the remoter regions of the world. In these situations the infrastructure and qualified staffing are



The stock-piling of prescription and OTC drugs is prevalent in many countries

often not available to ensure safe final-mile delivery nor the necessary intervention systems to allow impaired products to be removed from the supply chain.

In many countries, due to general drug scarcity, high prices and a lack of community medical services, there is a long-standing tradition of stockpiling drugs in the home for 'emergency' use. This often results in seriously out-of-date medicines being kept in wholly inadequate storage conditions. One study in Sudan, for example, found that 97.7 per cent of households were storing medicines. Apart from drugs that are being used or on-going treatment such medicines are usually treatment leftovers or obtained from OTC sources when available and accumulated for future use. The climatic extremes in many of these countries compounds the risk of deterioration and expiry.

In a survey of in-home drug storage in Iraq conducted in 2009³ it was found that a majority of households (94pc) stored drugs at home with only 31 per cent of these being used for current medication purposes. Nearly 60 per cent of the drugs were deemed to be kept in inappropriate storage conditions, a figure that is of particular concern in a location where the summer heat can reach up to 50°C. Another study conducted in Saudi Arabia⁴ found a mean of eight drugs stored per household, and up to 30 per cent had at least 10 medications in their home. A similar situation was found to exist in Qatar where poor levels of patient-pharmacy interaction were cited as a reason low awareness of correct storage practice.

These findings indicate a pressing need to extend temperature management in the direction of the final consumer. A reliable point-of-use temperature indicator is a means of ensuring that drugs that are consumed or administered at home or away from direct medical supervision are not outside acceptable margins for safety in terms of temperature history.

By the same token, there will be many drugs that are discarded because little or nothing is known of their temperature record even though they are fit for use. The presence of an accurate temperature indicator means that drugs can be consumed during their 'safe period' reducing unnecessary drug wastage and minimising the consumption of potentially dangerous drugs.

TEMPERATURE INDICATORS

How many drugs are thrown away due to being judged unfit for human consumption at point of use? How many drugs are consumed that are outside the official margins for safety? These are serious issues that to a large degree can be addressed through equipping individual medicine containers with inexpensive temperature indicators that are accurate, reliable and easy-to-use. Such a safety feature will undoubtedly reduce waste and improve curative outcomes.

Handle with Care – Medical Gas Training



Having successfully executed many prestigious government and private sector projects, the Aras Group of Companies are specialist in medical & Laboratory gas engineering systems along with design, supply, training, installation, testing & commissioning PPM, AMC and operation & maintenance for complete range of medical, biomedical, laboratory and architectural engineering system.

Providing healthcare services & industrial engineering solutions across the United Arab Emirates, United States and India for over three decades, the Aras Group of Companies is a professionally managed organization with a team of well-qualified engineers, technicians and support staff. The company pioneers in handling Central Piped Medical & Laboratory Gas Engineering Systems, Nurse Call & Communication Systems, Bed Head Units, Pendants, Architectural Products, Downstream Equipments, Modular Operating Theatres, Operation Theatre Lights, Surgeon Control Panels, IPS & UPS Systems, Hospital Furniture's, Bio medical Equipments, Medical Disposables and Consumables.

The group's activities include Design, Supply, Supervision, Installation, Testing & Commissioning, Operation & Maintenance with a sharp focus on initiating new products in healthcare sector. The

group of companies has successfully executed many prestigious government and private sector projects in medical gas engineering systems, air and vacuum plant, laboratory gas engineering systems along with the supply of complete range of biomedical equipment.

The Aras Group of Companies is also the authorized distributors of some of the world renowned principal companies such as Beacon Medaes (USA), Medaes (UK), Lawton (UK), Therapy Equipments (UK), Emerson (USA), TESCOM (Germany), Bally Mortuary Systems (USA), Fanem (Brazil), Medec (Belgium), Worthington Creyssensac-Compressor (Belgium), GSR (Germany), General Europe Vacuum (Italy), Walker Filtration (UK), Stenhoj (Denmark), and more.

Aras Group operates with branches in MENA, Asia and South East Asia region.

ARAS EASTWOOD PARK TRAINING

Among the several major initiatives of Aras Group of Companies is the establishment of a partnership with a UK-based company, Eastwood Park, to offer training courses in the UAE. In this line, Aras Eastwood Park was established as a gas safety training company delivering specialist medical gas training.



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The establishment formally marked the partnership that has been developed over several years, combining the skills and knowledge of two world leading experts, both well-established and highly regarded within medical equipment supply and education and training, imparting quality engineers training courses.

Eastwood Park is delighted to be working with Aras Group delivering new nurses training and medical gas training in Dubai, UAE at its extensively equipped medical gas certification training facility.

Talking to MediWorld ME Magazine at Aras Group of Companies' headquarters in Dubai, UAE, Mr K C Babu has underlined the importance of their partnership with a well-established and prominent training company in the UK and how this partnership has evolved in offering specialist medical gas training to the course attendees.

"We offer the best of technical training in our facilities here as safety is of utmost importance especially with different types of gases found in a healthcare facility. Starting with the design, layout and installation of gas pipes, we teach how to safely handle and administer various types of medical gases. This includes even the handling and transportation of gas cylinders as they are highly pressurised and any mishandling of the cylinders may lead to undesirable consequences."

Mr Babu also highlighted why all concerned people from the receptionist to the specialist doctors at a medical facility need to be aware of all aspects of medical gases that are administered to the patients. He remarked that even the call attendant needs to understand what a fault with the system would mean and know whom to contact immediately to rectify any issues that may arise with the medical gas systems.



SPECIALIZED DIVISIONS

Providing more information on the company's other divisions, Mr Babu explained that the medical engineering division is the core of business with a sound project management infrastructure. With over three decades of experience, Aras Medical Devices & Equipments Co LLC offers a complete engineering solution for Medical/Laboratory Gas Engineering Pipeline System (MGPS/LGPS).

"The medical gases used in a hospital, medical colleges, life science universities, polyclinic, medical centres, clinics & animal research are life-supporting element



that gives direct influence in maintaining the life of a patient. The company's Medical Gas Pipeline System has cleared those regulations and standards as well as passing strict company standards," the CEO added.

Approved by UAE Ministry of Interior, Ministry of Health & Ministry of Public Works, ARAS Medical Devices and Equipments Co is an ISO 9001 Registered company providing Central Piped Medical & Laboratory Gas Systems according to NFPA, HTM, EN, BCGA, other local & international standards.

Furthermore, the Industrial Engineering Division supplies with industrial products like vacuum pumps and systems, compressors, compressed air products, gear motors, frequency converters, electronic sensors, proximity switches, pneumatic systems, pneumatic valves, solenoid valves and controls, compressor replacement parts, vacuum pumps and blowers. The division is also the exclusive agents for Stenhoj compressors (Denmark) Worthington compressors (Belgium), GSR Ventiltechnik GmbH (Germany) for process control valves, Walker Filtration Ltd. (UK) for compressed air filtration products.



DUBAI

MEDICAL TOURISM:

Relief in the desert

UAE ranks 1st among top travel destinations in the world with Halal ecosystems

Despite its young age, the United Arab Emirates (UAE) has successfully carved a name for itself as the only Arab nation with an innovation-driven economy in a post oil-wealth era.

And this is very much apparent in all industries across the country, including the medical field, which is fast gaining attention with its state-of-the-art facilities and new research findings with profound global impact.

The country is also recognized as the first in the global assessment of travel destinations with the best developed Halal ecosystems, based on the findings of the 2016-2017 Global Islamic Economy Report developed and produced by Thomson Reuters.

Malaysia and Turkey closely followed the UAE in the global ranking system that evaluated the countries

based on four criteria: inbound Muslim travel, the quality of their Halal-friendly ecosystems, awareness campaigns, and the sector's contribution to employment.

"The study has also proven that more and more Muslims are showing strong preference for Halal destinations and travel services. Today, it is becoming more important for us to look into the industry and bridge the emerging gaps," said Mohammed Saleh Badri, Secretary-General of the International Halal Accreditation Forum, said,

THE MUSLIM TRAVEL MARKET

Valued at US\$151 billion in 2015, the Muslim travel market is steadily expanding, marking a year-on-year growth rate of 4.9 percent, even higher than the overall travel industry growth of 3 percent.



The Muslim market, 72 percent of which originates from OIC countries, is the second largest travel market next only to China (\$168 billion) and ahead of the United States (\$147 billion).

"This upward trend presents good business opportunities for the industry. However, stakeholders should start addressing challenges to make the most of the momentum and boost tourism activities," Badri said.

MEDICAL FRIENDLY

Not only has the UAE topped in terms of being a Halal travel destination, it has also gained a name as the top place to be considered for medical tourism among Arabs and Africans and even Westerners who find the treatments here more pocket-friendly and convenient.

For many Arabs and Africans, traveling to Asia, Europe or Americas for medical purposes entails long-haul flights, costly accommodations and cost of living, and limited access to families and friends in case of any eventualities due to distant geographic boundaries.

Dubai, on the other hand, is ideally located within hours around the Middle East and North Africa, giving patients ease of travel and their families with close access in case of any emergency.

Dubai, the nation's tourist hub for shopping and sightseeing, envisions welcoming half-a-million medical tourists by 2020, the same year that it's hosting the World Expo 2020.

The emirate had since adopted medical-friendly policies to compliment the best practices and facilities the country has to offer.

These include launching a medical complaints portal for patients within the country and those coming for medical tourism purposes.

Dr. Layla Al Marzouqi, Director of Health Regulation and Dubai Medical Tourism Project at the Dubai Health Authority, said, "We already have a robust medical complaints procedure in place and the move towards an e-complaints system will further enhance efficiencies and streamline processes.

"Our aim is patient satisfaction and implementing mechanisms that ensure delivery of world-class healthcare in the Emirate and electronic integration for all our regulatory processes is an important criterion to achieve our goals," she added.

Patients can go to DHA website and log into the medical complaints portal option which has a separate tab for UAE residents and medical tourists

There are more than 2,780 healthcare facilities in the country which accept universal health insurance policies to cover patients' medical treatments.

These hospitals and clinics are well-equipped to handle all sorts of medical situations with emphasis in seven areas: orthopaedics, ophthalmology, assisted reproductive techniques, dermatology, bariatric and weight-loss surgeries, plastic surgeries and dental care.

Under the project, Dubai: A Global Destination for Medical Tourism, offshore patients seeking medical treatments in the UAE can remotely plan for their trip to the country via the DXH.ae website.

This first-of-its-kind website has all the relevant medical tourism services including: medical tourism packages, booking tickets, buying medical insurance and hotel booking, etc.

DHA said the health insurance would include medical insurance covering all travel costs and health complications as well as the cost of emergency cases

and return tickets should a medical tourist need it. The insurance is activated as soon as the booking is made through DXH's website.

DXH provides a package of specialized medical services in collaboration with strategic partners that include Emirates Airlines, the Dubai Department of Tourism and Commerce Marketing and General Directorate of Residency and Foreigners Affairs in Dubai as well as other private sector entities, the government said.

UP FOR MORE GROWTH

Colliers International, a global leader in real estate and research in various industries, estimates the population of Dubai to reach 3.48 million by 2020. With such growth, coupled with rising average income levels, the demand for better infrastructure and services, is inevitable.

And all of these would have positive impacts on the economy and the healthcare sector.

"The UAE is an attractive market for investors and companies, reinforcing its position as a leading global business hub. While economic growth in developed

Despite this marked increase, the UAE remains a small player with the global medical tourism industry valued at up to \$60 billion a year.

"If medical tourism in Dubai were to capture 2% of its international tourists in 2015, an additional US\$1 billion in revenues would be generated by the healthcare sector," said Colliers.

CRAFTING A NICHE

Linda Abdullah, head of Dubai Medical Tourism Office, said the emirate's plans centre on crafting its own niche in a broad international market, which includes centers of excellence like Singapore, Switzerland and the United Kingdom, and cheaper more geo-centric destinations like India.

"What we have done, and what's different here, is we have put together a product of medical tourism to fit those who would like to enjoy tourism as well as good quality elective healthcare," she said in a statement.

"Although it is important, the cost is not our focus, our focus is more to give the quality of the healthcare service and to couple it with the tourism side."



countries remains sluggish, the UAE's GDP is forecast to grow between 3.4 percent and 3.9 percent annually for the next 5 years," Colliers said in its report entitled "Dubai Healthcare Overview.

"With the third best air transport infrastructure in the world according to World Economic Forum, and being 8 hours from two-thirds of the world's population, Dubai is an ideal place for medical tourism," it added.

Colliers said with Dubai's population up for more growth, the demand for a more efficient healthcare system would also rise and that would also positively impact services available for medical tourism.

Colliers International estimates the value of Dubai's private hospitals reached US\$430 million in 2005 and US\$870 million in 2013. It is anticipated to reach US\$ 1.62 billion by 2020.

Yet if Dubai is not looking to compete with other medical tourism hubs on price terms it is in other metrics. On top of the 500,000 tourists target for 2020, another goal of the emirate is to enter the top 10 in the Medical Tourism Association's Global Medical Tourism Index, which assesses countries based on their environment, attractiveness, costs and facilities and services.

In the 2016 index, Dubai ranked 16th with a score of 67.54, in a list topped by Canada (76.62) and the UK (74.87). It will need to overtake the likes of the Dominican Republic, Costa Rica, Panama, Japan, Spain and Colombia to enter the top 10.

Experts suggest the path to doing so will involve filling the middle ground between more expensive Western treatment and cheaper alternatives in Asia, but without compromising on quality.



Healthy growth continues with GCC healthcare construction market

Life expectancy in the GCC improved to an average of 76.4 years in 2014 (as per World Bank) from approximately 62 years in 1970. This essentially means that statistically people are living much longer than what they used to do over 40 years ago, leading to slower subtraction from the population equation. Moreover, this also highlights the rise in the ageing population which draws attention towards the demand for specialized old age health centers and pain management centers.

The healthcare construction market in the GCC appears to be growing at a steady rate as various high-value construction projects are being developed in the region, revealed a recent report published in Saudi Gazette.

According to the BNC Project Intelligence Database, there are approximately 709 healthcare construction projects with a combined estimated value of \$65 billion out of which 133 healthcare projects are each worth over \$100 million. These projects make up almost 80 per cent of the total value of all healthcare projects in the region. However, there are also many healthcare projects on hold, including Dubai healthcare City in the UAE (\$1.8 billion), Bahrain Health Oasis in Bahrain (\$1 billion) and King Faisal Medical City in Saudi Arabia (\$1 billion).

Saudi Arabia makes up approximately 53 per cent of all healthcare projects in the GCC. The UAE has the second highest number of healthcare projects in region at 17 per cent. The combined estimated value of healthcare



Sheikh Jaber Hospital
Kuwait

Among the GCC countries, Bahrain has the highest healthcare expenditure as a % to GDP of 5 per cent for 2014 while Qatar's healthcare expenditure to GDP was at 2.1 per cent. However, Qatar leads GCC in terms of GDP per capita which stands at a whopping \$96,733 in 2014 whereas the lowest GDP per capita is in Oman at \$19,310. In terms of absolute healthcare spending, GCC spent \$64.4 billion in 2014 as compared to \$58.3 billion in 2013 registering a rise of 10.5%YoY.

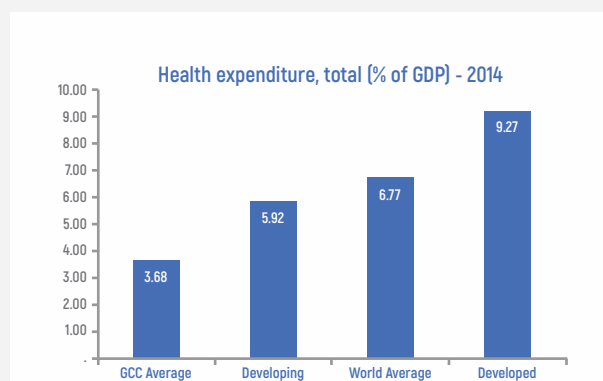
projects between Saudi Arabia and the UAE is \$40.6 billion, and they account for over 60 per cent of total value of all healthcare projects. Kuwait constitutes only 6 per cent of all healthcare projects but in dollar terms, Kuwait makes up around 11 per cent of all total project values in the GCC. The variance is because of several mega construction projects in the country. Examples of some of the mega construction projects in Kuwait include Jaber Ahmed Al Jaber Al Sabah Hospital, Al Jahra Hospital Extension and the New Farwaniya Hospital Expansion. Each project is worth over \$1 billion and they have a combined estimated value of \$3.8 billion.

Moreover, GCC countries can use PPPs as a medium to manage increasing healthcare cost, to boost competencies in the healthcare system and effect systematic transformation in the sector. As per a Frost & Sullivan study, healthcare PPPs have enabled governments globally to cut their costs by as much as 25%. The PPPs would have to be tailored to the specific requirements of the particular GCC country and healthcare system. Directly adopting PPP models from

overseas would prove ineffective as schemes would need to be altered to suit the country's requirement.

Among the GCC countries, Bahrain has the highest healthcare expenditure as a % to GDP of 5 per cent for 2014 while Qatar's healthcare expenditure to GDP was at 2.1 per cent. However, Qatar leads GCC in terms of GDP per capita which stands at a whopping \$96,733 in 2014 whereas the lowest GDP per capita is in Oman at \$19,310. In terms of absolute healthcare spending, GCC spent \$64.4 billion in 2014 as compared to \$58.3 billion in 2013 registering a rise of 10.5%YoY.

Interestingly, GCC's average GDP per capita stands remarkably higher than the world average, even almost equivalent to the developed world whereas the healthcare expenses per capita is slightly higher than the world average and markedly lower than that of developed economies which indicates sizeable room for growth in the healthcare industry in GCC. To prove that



further, GCC regions also stand far behind the developing world, let alone the developed worlds in terms of healthcare expenditure (government) as a % of total (budgetary) expenditure.

Population growth is a driving force for any country's

Al Mafraq Hospital Abu Dhabi

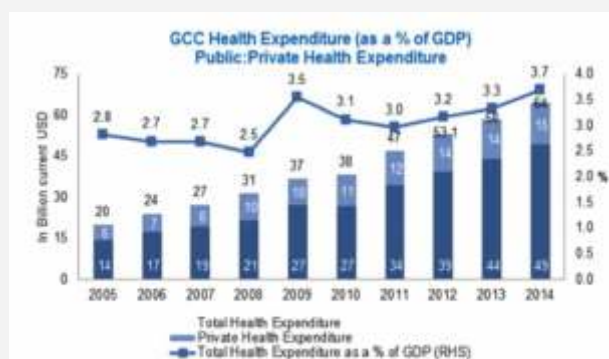


healthcare services, which help in giving shape to the system and attract investments. The collective population of the GCC is around 53mn, as of 2015 and population has been increasing at a 10-yr CAGR of 4.0 per cent which is quite high as compared to the world average of just 1.2 per cent. High influx of expatriate population, already high birth rates and greater life expectancy are major factors driving that.

Life expectancy in the GCC improved to an average of 76.4 years in 2014 (as per World Bank) from approximately 62 years in 1970. This essentially means

To meet the growing demand for healthcare and reduce the burden of healthcare expenses on the public sector, some GCC countries have recently introduced Mandatory Health Insurance (MHI). This initiative has increased the private sector's share in health infrastructure, establishing facilities growth in private care, which has led to expansion in health service utilization in the region. Saudi Arabia took the lead in implementing mandatory health insurance policy for the private sector, benefiting both locals and expatriates.

Among the various global challenges related to health systems is the rising concern of non-communicable diseases (NCDs) and injuries. After handling infectious diseases over the past five decades through essential health services, countries are now struggling with the growing burden of non-communicable diseases and the risks related to them. The increasing prevalence of sedentary lifestyles and the move away from traditional, nutritious diets to fast-foods have led to an increase in diabetes, hypertension, obesity, cancer, heart conditions and other lifestyle-related diseases in the GCC. This has been exacerbated by the sharp increase in the income of population (represented by the GDP/capita).



Source: World Health Organization

that statistically people are living much longer than what they used to do over 40 years ago, leading to slower subtraction from the population equation. Moreover, this also highlights the rise in the ageing population which draws attention towards the demand for specialized old age health centers and pain management centers. It should also be understood that an ageing population is closely associated with a drain on the healthcare resources since typically 4/5th of a person's healthcare needs are incurred after his age of retirement.

The GCC had 600 hospitals in 2008 which grew to 684 by 2013 which exhibits a CAGR of 2.7 per cent. Public sector hospitals dominate GCC's hospital base constituting around 62 per cent of the total as of 2013. Saudi Arabia and the UAE have the largest number of hospital with 65 per cent of the total hospitals in Saudi Arabia, which is a function of their population; only 2 per cent of the total hospitals are in Oman. The majority of general hospitals in the region indicate a clear opportunity for specialized and super-specialty hospitals.

Dubai Creative Clusters Authority signs agreement with Ministry of Health and Prevention



His Excellency Dr. Amin Hussain Al Amiri, Assistant Undersecretary for Medical Practice and License Sector in the Ministry of Health and Prevention, said: "We are committed to our leadership's directives that seek to elevate the healthcare sector and achieve the UAE Vision 2021 in terms of making the country one of the best globally in the quality of healthcare services. As part of our efforts to cooperate with many vital partners, our new partnership with DCCA will further boost the progress of the UAE's healthcare sector."

Dubai Creative Clusters Authority (DCCA), a government regulatory body mandated to foster the economic development of Dubai's creative clusters and related knowledge industries, has signed a partnership agreement with the UAE Ministry of Health and Prevention to support the country's efforts in developing the healthcare sector and providing an enabling environment for advancing the pharmaceuticals industry.

The new partnership aligns with efforts by DCCA and the Ministry of Health and Prevention to boost the pharmaceuticals industry. It will also strengthen mutual cooperation in terms of developing licensing procedures and registering plants located in areas under DCCA's jurisdiction to allow them to operate more efficiently.

The agreement was signed by His Excellency Dr. Amin Hussain Al Amiri, Assistant Undersecretary for Medical Practice and License Sector in the Ministry of Health and Prevention, and His Excellency Ahmad bin Bayat, Director General of DCCA. It aims to develop mechanisms of collaboration and coordination towards advancing the pharmaceuticals industry and products

as well as medical equipment in Dubai and the UAE.

In addition, the agreement stipulates both parties to execute UAE legislations pertaining to registering plants of pharmaceutical products and medical equipment, as well as to cooperate on overcoming challenges facing plants and investors.

His Excellency Dr. Amin Hussain Al Amiri, Assistant Undersecretary for Medical Practice and License Sector in the Ministry of Health and Prevention, said: "We are committed to our leadership's directives that seek to elevate the healthcare sector and achieve the UAE Vision 2021 in terms of making the country one of the best globally in the quality of healthcare services. As part of our efforts to cooperate with many vital partners, our new partnership with DCCA will further boost the progress of the UAE's healthcare sector."

Dr. Al Amiri pointed out that the UAE has become an attractive destination for global pharmaceuticals and medical equipment companies, with the number of plants amounting to 16, in addition to 18 more plants still waiting for initial approvals, raising the total number of pharmaceuticals and medical equipment plants to 34 by 2020. Over 1000 new and existing pharmaceutical products are made in the UAE. Five agreements were signed between global companies and local plants to manufacture new pharmaceuticals in the UAE, with production starting in March 2015.

DCCA will work on enhancing the pharmaceuticals industry - a vital sector with a market size exceeding AED11 billion in the UAE - through providing a stimulating environment for industry professionals and helping them grow their businesses. The Authority will offer pharmaceutical companies operating in Dubai Science Park (DSP) a flexible regulatory framework that ensures ease of business and meets their demands through an integrated ecosystem that supports scientific research and innovation.

With the fast growth of the pharmaceuticals industry in the UAE, the partnership will provide further support to an already distinct legislative environment in the emirate and the country. Such an environment helps attract more investors in the healthcare sector. Furthermore, the agreement will enhance Dubai's position as a leading healthcare and medical tourism hub.

Dubai government's keen interest in establishing solid foundations for the healthcare sector is clearly demonstrated through its many initiatives, including the Dubai Health Strategy 2021 that aims to reengineer the healthcare sector to meet the growing demands and expectations of citizens and residents. The sector is also one of the Dubai Industrial Strategy's pillars since the strategy focuses in its first phase on manufacturing medical cosmetic products and developing R&D capabilities in the pharmaceuticals industry. Dubai is also aiming to attract 500,000 medical tourists in the next five years.

Intensify scientific research, use qualified human capital to improve public health, urges VP



Relevant authorities should intensify efforts and employ capable human resources to focus on conducting scientific researches and studies in the healthcare sector, and keep pace with the latest developments in medical technology and equipment, treatment techniques, medicines and rare surgeries that all contribute towards enhancing public health, urged Vice President and Prime Minister and Ruler of Dubai, His Highness Sheikh Mohammed bin Rashid Al Maktoum.

His Highness said that the healthcare sector, which is the most important in Dubai and the wider UAE, receives his personal attention because it affects people's lives and happiness, and also impacts future generations. He was speaking at a panel discussion held at the opening of Dubai Health Forum 2017.

Organized by the Dubai Health Authority, DHA, and held under the patronage of H.H. Sheikh Mohammed bin Rashid, the two-day forum attracted healthcare experts

and industry leaders from across the world who came to share their ideas and experiences on a variety of topics ranging from healthcare technology to disease prevention.

Investment in the sector is the most important and most successful in the short and the long term, H.H. Sheikh Mohammed bin Rashid stressed while attending the forum's first session that discussed investment in scientific researches and studies in healthcare.

Highly qualified human resources are needed to run this sector, a task that requires high professionalism, prioritisation and insightful vision, as well as scientific researches and studies that will lead to significant medical discoveries and improve prevention and treatment, he further noted.

Achievement of this goal, His Highness Sheikh Mohammed said, would ensure that the healthcare sector can keep pace with global scientific developments that constitute the foundation of progress in the country and the rest of the world.

The panel discussion was attended by Humaid Al Qatami, Chairman of the Board and Director-General of the DHA; Lt. General Dahi Khalfan Tamim, Deputy Chairman of Police and General Security in Dubai, and Khalifa Saeed Suleiman, Director-General of Dubai Protocol Department.

Later, H.H. Sheikh Mohammed toured the exhibition area of the event and lauded the ideas presented during the event.

DHA signs MoU with three hospitals

The Dubai Health Authority (DHA) signed three Memorandums of Understanding (MoU) with Prime Hospital, ProVita International Medical Center and International Modern Hospital. The three MoU's are part of the authority's strategy to partner with the private sector to provide the public with the best medical services possible.

His Excellency Humaid Al Qatami, Chairman of the Board and Director General of the DHA signed the MoU with Dr Kishan Pakkal, CEO of International Modern Hospital, Dr Jamil Ahmad Managing Director of Prime Healthcare Group and Micheal Davis, Chief Executive Officer ProVita International Medical Center.

Al Qatami said that providing the best care for the public is a joint responsibility for both the public and private sector, which is why the authority strives to partner with the private sector to better serve patients effectively and efficiently, while maintain high quality standards.

The MoU aims to facilitate the transfer of patients who need long term care and depend on ventilators - between the DHA and the hospitals and medical centers who signed the MoU.

The hospital officials said they are looking forward to collaborating with the DHA believing that together they can provide quality health services that can achieve a happier and healthier society.



Over 1 million patients

Meanwhile, more than 1.1 million patients visited the Dubai Health Authority (DHA) Hospitals and medical centres in 2016, revealed Dr Ahmad Bin Kalban, CEO of Hospital Services Sector at DHA. Bin Kalban said that Dubai and Rashid hospitals had the highest number of visits in 2016 as Dubai Hospital received 382,106 patients while Rashid Hospital received 325,619. Meanwhile Latifa Hospital received 161,006 patients while Hatta Hospital received 124,074 patients in 2016.

Bin Kalban said the Dubai Diabetes Centre received 44,074 patients, the Dubai Physiotherapy and Rehabilitation Centre received 42,350 patients, the Thalassemia Centre received 7,848, the Airport Medical Clinic received 33,856 patients and the Dubai Gynaecology and Fertility Centre received 14,122 patients.

DHCC establishes Emirates Reference Laboratory

Dubai Healthcare City (DHCC) announced the launch of the Emirates Reference Laboratory (ERL) under the directives of Vice-President and Prime Minister of the UAE and Ruler of Dubai His Highness Sheikh Mohammed bin Rashid Al Maktoum.

In line with HH Sheikh Mohammed's vision, the laboratory, which is a key part of DHCC, will provide UAE and GCC patients with access to efficient, reliable and cost-effective pathology testing services, in addition to specialized services that are currently unavailable in the region. Dr. Ali Ridha Al Hashimi will oversee the establishment of the ERL, and comes highly recommended for his wealth of experience in this area.

"The Emirates Reference Laboratory is one of many projects that Dubai is implementing to improve quality and access to world-class healthcare, through the DHCC," said Chairperson of Dubai Healthcare City Authority HRH Princess Haya bint Al Hussein.

"I am very grateful for the DHCC team's efforts in working towards those goals, and as we continue to work hand in hand, we will achieve great results, positioning Dubai as the healthcare destination of the Middle East. I am also confident that Dr. Ali Ridha's passion for medical sciences is evident in his many accomplishments in the field, and his wealth of experience equips him with the skillset needed to oversee the laboratory and ensure that it operates at world-class standards," she added.

The facilities that the ERL will provide will further support the Dubai 2021 vision of being the preferred place to live, work and visit by having the Best



Educational and Healthcare Services Catering to Everyone's Needs. The laboratory's goal also aligns with DHCC's vision of becoming an integrated centre of excellence for clinical and wellness services, medical education and research.

Through its operations the ERL's primary objective is to serve Dubai, the UAE and the GCC's needs for advanced medical testing, which, up until now, is currently being outsourced to laboratories in Europe, Asia and Australia. It will also play a key role in supporting professors from Mohamed Bin Rashid University Hospital (MBRUH) in their undertaking of advanced medical research, and in turn will provide a unique learning experience for MBRUH students.

The long-term goal of the ERL is to allow existing and future DHCC hospitals including MBRUH, Al Jalila Children's Specialty Hospital and Dubai Bone and Joint Hospital to have specialized and advanced testing undertaken at ERL.

UAE's first robot pharmacy starts at Rashid Hospital



Dubai Health Authority inaugurated its first "robot" pharmacy at Rashid Hospital. The smart pharmacy is deploying a robot for the first time in the UAE for dispensing prescribed medication. The robot can dispense prescribed medication at the click of a button

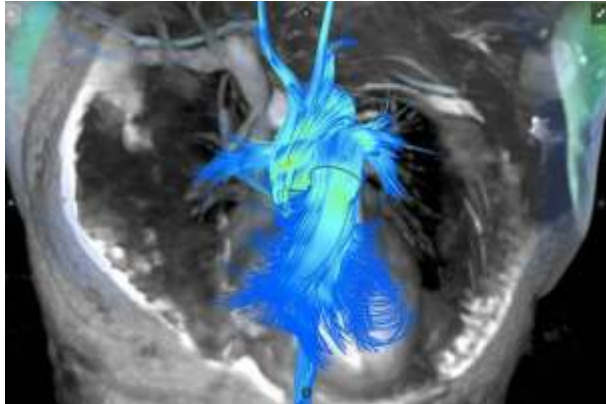
based on a bar code, thus minimising any human error. The DHA will soon adopt the use of robot in all its hospitals.

The robot is one of the latest smart technologies adopted by the authority to meet the 2016-2021 strategy, which aims to achieve a happy and healthy society, said Humaid Al Qatami, Chairman of the Board and Director-General of DHA.

The robot, which can store up to 35,000 medicines and dispense around 12 prescriptions in less than a minute, has started serving customers.

The smart pharmacy was inaugurated in the presence of Dr. Ali Al Syed, Director of the Pharmaceutical Services Department; Dr. Ahmad Bin Kalban, CEO of Hospital Services Sector, and Dr. Alya Al Mazroui, CEO of Rashid Hospital.

As the robot can dispense up to 12 prescriptions in less than a minute, it will significantly reduce a person's waiting time, Dr. Al Syed said. The dispensing process will be paper-free as the robot will store the prescription as soon as a doctor documents it electronically. Leveraging the robot for dispensing medication will also allow the pharmacist to focus on giving the customers right instructions on taking the medication, he added.



Arterys receives FDA clearance for Cardio DLTM application

Arterys, a pioneer in cloud-based medical imaging software, has received 510(k) clearance from the US Food and Drug Administration (FDA) to market its Arterys Cardio DLTM application. Arterys Cardio DLTM is the first technology to be cleared by the FDA that leverages cloud computing and deep learning in a clinical setting.

Arterys Cardio DLTM provides automated, editable ventricle segmentations based on conventional cardiac MRI images that are as accurate as segmentations performed manually by experienced physicians. The US clearance complements the CE Mark received in late December for commercialization of the Arterys Cardio DLTM product in Europe.

Unlike traditional medical imaging software, Arterys Cardio DLTM uses deep learning, a form of artificial intelligence, to automate time-consuming analyses and tasks that are performed manually by clinicians today. The physician can edit the automated contours if desired. These images show the Cardio DLTM generated contours of the insides and outsides of the ventricles of the heart. The software can process a scan in just 10 seconds, compared to manual contouring performed by clinicians.

The Arterys Cardio DLTM application is vendor agnostic and was developed using data from several thousand cardiac cases. The software produces editable automated contours, providing precise and consistent ventricular function in seconds. The trained deep learning algorithm was validated as producing results within an expected error range comparable to that of an experienced clinical annotator. This clearance enables Arterys to make use of its unique clinical annotation platform, which collects ground-truth data every time a user views a study on Arterys.com. In the future, the deep learning model can be optimized as new data is collected from all global users.

Both the FDA clearance and CE Mark expands on the recently 510(k) cleared 4D Flow post-processing software features that provide comprehensive anatomy and blood flow visualization and quantification within and around the heart in a simple manner.

Philips highlights cloud-based digital health innovations during CES

Royal Philips showcased innovative connected health products and solutions that empower consumers to become ever-more engaged in their health. Leveraging Philips' expertise in the consumer and professional healthcare domains, and the advanced analytics and computing power of the company's secure HealthSuite cloud platform, these new connected digital health products and services further illustrate Philips' commitment to delivering meaningful innovations for every stage of life – from birth to healthy living and healthy aging.

"The personal and professional healthcare worlds are converging, with traditional models of care being challenged at every turn, and connected digital technology is now the key to empowering consumers to take care of their health and that of their loved ones," said Pieter Nota, CEO Personal Health Businesses and Chief Marketing Officer, Royal Philips. "In areas such as oral health, mother and child care, sleep and respiratory care, heart health, and home monitoring, Philips is showcasing its ecosystem of connected products and services at CES, once again demonstrating its leadership in the world of digital health."

Philips' new consumer health products and services are powered by the Philips HealthSuite cloud, allowing consumers to combine their health data and use it in smarter and more meaningful ways to support a healthier lifestyle, manage their health conditions and connect and share data with their healthcare professionals.

Key product innovations being showcased at CES 2017 include:

Philips Avent uGrow1 digital parenting platform: Designed to help new parents understand and support their baby's healthy development, the uGrow app connects wirelessly to the Philips Avent smart baby monitor and smart ear thermometer as well as collating manually inputted data such as feeding and sleeping patterns

Philips DreamStation Go portable CPAP technology: Compact, lightweight and slim enough to pack in a carry-on flight bag or briefcase, Philips' soon-to-be released DreamStation Go means users never have to miss out on CPAP (Continuous Positive Airway Pressure) therapy when traveling.

Philips Heart Health program: An app-based behavior change program aimed at reducing lifestyle-induced risk factors for cardiovascular disease in adults.

Philips digital oral care management platform: The Philips Sonicare FlexCare Platinum Connected toothbrush uses unique smart sensor technology inside the toothbrush and personalized coaching to help improve brushing technique, while the Philips Sonicare Breath care system, featuring our new connected Breath analyzer, measures, tracks and helps users improve their breath quality and oral care habits.



Healthcare investment

in MENA sees Arab Health & MEDLAB develop into stand-alone events



In 2016, Arab Health, the largest healthcare event in the Middle East, featured 4,187 exhibiting companies and will now showcase in excess of 4,400 companies at the 2017 event. MEDLAB, the world's largest medical laboratory exhibition and congress hosted 589 leading exhibitors last year and will now welcome over 700 participating companies, from 38 countries

Due to the significant increase in healthcare investment across MENA, the region's two largest healthcare shows – Arab Health and MEDLAB Exhibitions & Congresses – are being launched as two stand-alone events that will take place consecutively during January and February this year.

In 2016, Arab Health, the largest healthcare event in the Middle East, featured 4,187 exhibiting companies and will now showcase in excess of 4,400 companies at the 2017 event. MEDLAB, the world's largest medical laboratory exhibition and congress hosted 589 leading exhibitors last year and will now welcome over 700 participating companies, from 38 countries demonstrating a truly international base of suppliers.

“The UAE alone is experiencing fast expansion in the medical device, healthcare IT and medical education fields. At Informa Life Sciences Exhibitions, we aim to provide delegates, visitors and exhibitors a tailored experience for their specific areas of focus in a technological evolving scene,” said Simon Page, Managing Director, Informa Life Sciences Exhibitions, Middle East.

The 42nd edition of the Arab Health Exhibition & Congress 2017 takes place between 30th January and 2nd February 2017 with the exhibition expecting more than 120,000 healthcare and trade professionals attending from 70 countries. The Congress includes 14 conferences with international speakers on topics such as emergency medicine, oncology and workforce empowerment. The conferences offer CME accreditation and will be attended by more than 8,000 delegates from around the globe.

“MEDLAB and Arab Health bring together stakeholders and experts from around the world to showcase the latest in healthcare technology and techniques. Separating Arab Health and MEDLAB gives attendees a deeper understanding of different areas of healthcare, and an opportunity to specifically hone in on areas that are of interest to them,” Simon Page continued.

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The 16th edition of MEDLAB takes place from 6th - 9th February 2017 and is expecting to welcome over 30,000 laboratory and trade professionals from all continents. During the four-day event, 11 multi-disciplinary conferences offer up to 28 CME credits that will be led by globally recognised speakers on topics including laboratory management,



microbiology, immunology and clinical chemistry. While incorporating new tracks specialising in blood transfusion medicine, laboratory informatics and updates in clinical diagnostics of cardiology and diabetes, enabling the correlation of roles between laboratory professionals and clinicians.

Addressing gaps in provision of emergency care

In 2014 alone, the emirate of Abu Dhabi saw more than 1.1 million emergency care cases[1] and, with the demand for emergency medicine projected to increase exponentially by 2035, six additional hospitals are to be added in the capital by 2020 to provide further capacity in emergency care. Analysis also shows that the projected demand for major trauma in Abu Dhabi is double that of major trauma rates in the UK and Australia, for example. However, Emergency Medicine (EM) in the UAE has come a long way in a short time. Compared to majority of Middle Eastern countries, the specialty is advancing rapidly in different dimensions including training programs and systems of care; but a few more steps need to be taken to reach the goal of world-class emergency care in the UAE.

Arab Health has announced the addition of two novel training tracks in emergency medicine and oncology to discuss the latest developments in emergency care preparedness as well as the most recent advancements in oncology treatment. For the first time, the congress will feature a three-day skills workshop by Médecins Sans Frontières (MSF).

Oncology will also be a key feature of the congress, bringing together local, regional and international oncology experts to discuss and present the latest advancements in the diagnosis and treatment of cancer. With the Middle East predicted to have the highest increase in cancer cases when compared to other regions, and an estimated 400,000 deaths as a result of cancer per year, knowledge in oncology treatment remains a key focus for the region. The oncology conference addresses this rising tide of cancer in the Middle East.

Improving patient care in the GCC

Recent findings indicate that limited super-specialised care in areas such as oncology and cardiology are driving outbound medical tourism in the GCC. In Dubai alone, the Dubai Health Authority (DHA) spent AED 307 million towards overseas treatment for its citizens. Around 14 per cent of this expense was incurred on neurosurgery treatments, followed by 12 per cent on oncology treatments, 11 per cent on orthopaedics, and around 7 per cent on cardiology surgeries due to the existing gap in specialized care currently available in the country.

These statistics show that there is an evident need for increased investment in specialised care in the region. A number of new, advanced medical hands-on-training courses, which will take place during the



upcoming Arab Health Exhibition & Congress have been added to train more than 900 healthcare specialists in advanced medical techniques and help bridge the current specialist skills gap in the region. The training will allow physicians, surgeons and technicians from the region to learn and practice new techniques utilising pioneering equipment. Training will focus on specialised treatments in cardiology, neurology, surgery, gastroenterology, urology, oncology, 3D medical printing, bariatric surgery, ultrasound, haematology, neonatal respiratory and radiology using state-of-the-art equipment.

David Mezher, General Manager of GE Healthcare Middle East, strongly agrees that the upskilling of doctors should be a priority for the Middle East: "Providing local physicians with access to practical training in the latest innovation technologies is crucial. These hands-on-training sessions at Arab Health will ensure physicians from this region are equipped with the latest knowledge and tools to help enhance their skills and, ultimately, it will provide better outcomes for patients too."

Courses will be delivered by world-renowned experts from institutions including GE Healthcare, 3D Lifeprints, Alder Hey Hospital in the UK, SAH Global Hampton Proton Therapy Institute in the U.S.A., GSD University and Research Hospitals, Carestream, Houston Methodist, Emirates Urology Society, Nihon Kohden and Philips.

Industry leaders discuss **HEALTH TECHNOLOGIES** at Dubai Health Forum

The health sector is one of the most vital sectors that affect people's well-being and the country's development. That is why the forum aims to bring together healthcare stakeholders to share ideas, perspectives and forward-thinking trends, which will help implement actionable insights and determine Dubai's future directions in the healthcare space.

Nearly 2,000 global healthcare experts and industry leaders came together at the Dubai Health Forum, DHF to share their ideas and experiences ranging from health technologies to disease prevention. The event, organized by Dubai Health Authority, DHA, was held under the patronage of Vice President and Prime Minister and Ruler of Dubai, His Highness Sheikh Mohammed bin Rashid Al Maktoum.

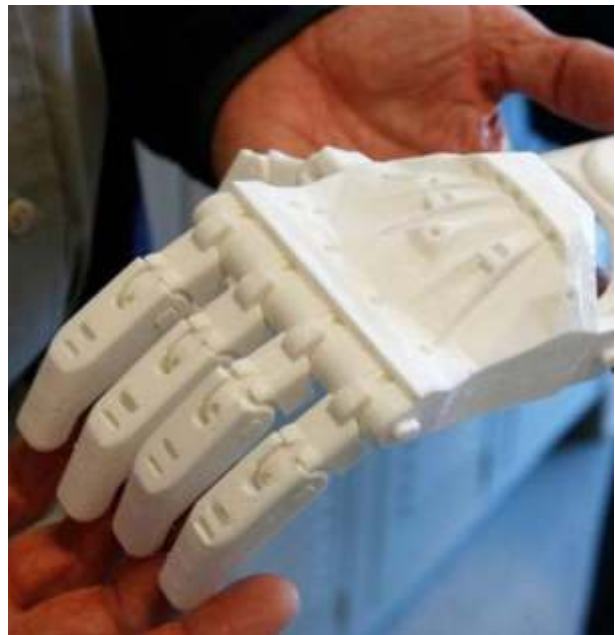
Humaid Al Qatami, Chairman of the Board and Director-General of DHA, inaugurated the event that aimed to provide a platform to bring together well-known decision makers, health practitioners, international speakers and industry experts for launching next-generation, game-changing technologies in the medical field.

According to Al Qatami, the health sector is one of the most vital sectors that affect people's well-being and the country's development. That is why the forum aims to bring together healthcare stakeholders to share ideas, perspectives and forward-thinking trends, which will help implement actionable insights and determine Dubai's future directions in the healthcare space.

The first day of the event featured a session titled "Design thinking in Healthcare: Ideas to Opportunities" by University designer and researcher Glen Hougan.

Hougan discussed the evolution of design thinking and how it would fit in Dubai's Vision 2021. He said that design thinking is no longer about the product; it is about how one manages change.

Ahmed Mohammed Obaid Al Saidi, Minister of Health from the Sultanate of Oman, and Abdulla Al Qahtani, former Minister of Health, Qatar, took centre stage and discussed the role of the government in healthcare in the session titled "The Future of Healthcare, A Minister's Point of View."



Abdul Rahman bin Mohammed Al Owais, the UAE Health and Prevention Minister, also addressed the audience on what measures are being taken to prevent diseases and medical conditions such as obesity and diabetes.

Ohood bint Khalfan Al Roumi, Minister of State for Happiness, spoke about how healthcare professionals from both public and private sectors can work towards spreading happiness.

The interactive sessions on day one included topics about 3D printing medicines and drug-loaded medical devices, investment in healthcare and changing the fitness movement for future generations, to name a few. The future of surgeries aided by robots was showcased as well as the technological evolution of robotics in the field of health and the evolution of endoscopic surgeries.



Medlab Dubai 2017

6 – 9 February, 2017
Dubai, UAE
www.medlabme.com

Saudi Gastroenterology Association 15th Conference

11 – 12 February, 2017
Saudi Arabia
www.saudigastro.net

Fourth Annual Extracorporeal Life Support Organization

15 – 18 February, 2017
Doha, Qatar
www.else-swac2017.org

International Symposium on Neurovascular & Neurosurgical Disorders

12 – 15 February, 2017
Abu Dhabi, UAE
www.isnnd.com/index.php

2017 4th International Conference

16 – 18 February, 2017
Dubai, UAE
www.4tsconference.com

7th Emirates Diabetes & Endocrine Congress

16 – 18 February, 2017
Dubai, UAE
www.edec-uae.com

3rd Experts in Stone Disease Conference

16 – 18 February, 2017
Dubai, UAE
www.endourology.org/events/experts-in-stone-disease-esd/

7th Emirates Otorhinolaryngology Audiology and

Communication Disorders Congress

18 – 20 January, 2017
Dubai, UAE
www.emiratesrhinologyandotology.ae

Arab African API Congress (AAAPCI)

21 – 22 February, 2017
www.aaapci.com/

10th International Conference on Healthcare, Nursing and Disease Management

22 – 23 February, 2017
Dubai, UAE
www.iaphlsr.org

Cardiovascular Pharmacology and Cardiac Medications

April 13-14, 2017
Dubai, UAE
<http://cardiac.pharmaceuticalconferences.com/>

8th World Congress on Toxicology and Pharmacology

April 13-15, 2017
Dubai, UAE
<http://toxicology-pharmacology.conferenceseries.com/>

Cosmetology, Trichology & Aesthetic Practices

April 13-14, 2017
Dubai, UAE
<http://cosmetology-trichology.conferenceseries.com/>

Clinical and Medical Case Reports

April 17-19, 2017
Dubai, UAE

<http://clinicalcasereports.conferenceseries.com/>

Medicare Expo on Primary Healthcare

April 17-19, 2017
Dubai, UAE
<http://primaryhealthcare.conferenceseries.com/>

24th International Conference on Dentistry & Oral Care

April 17-19, 2017
Dubai, UAE
<http://dentistry.conferenceseries.com/>

2nd International Conference on Neuro Oncology & Neurosurgery

April 24-25, 2017
Dubai, UAE
<http://neurooncology.conferenceseries.com/>

16th Global Annual Oncologists Meeting

April 24-25, 2017
Dubai, UAE
<http://annualmeeting.conferenceseries.com/oncologists/>

Conference on Pharmaceutical Development and Technology

April 24-26, 2017
Dubai, UAE
<http://pharmatech.pharmaceuticalconferences.com/>

Annual Congress and Expo on Biofuels and Bioenergy

April 27-28, 2017
Dubai, UAE
<http://biofuels-bioenergy.conferenceseries.com/middleeast/>



Quick References

BAHRAIN

Royal Bahrain Hospital
Tel: +973 17 246 800
www.royalbahrainhospital.com

KIMS Bahrain Medical Centre
Tel: +973 17 822 123
kimsbhrn@batelco.com.bh
www.kimsbh.com

Dr. Sulaiman Al-Habib Medical Center
Tel: +973 77 310 000

Al-Amal Hospital
Tel: +973 17 602 602
admin@alamal-hospital.org
www.alamal-hospital.org

Al-Hilal Hospital
Tel: +973 17 344 700
Email: info@alhilalhospital.com
www.alhilalhospital.com

Al-Kindi Specialised Hospital
info@alkindihospital.com
www.alkindihospital.com

American Mission Hospital
Tel: +973 17 790 025
www.amh.org.bh

Awali Hospital
Tel: +973 17 753 300

Bahrain Defence Force Hospital
(also known as Bahrain Royal Medical Services or Military Hospital)
Tel: 973 17 766 666
www.bdfmedical.org

Bahrain Specialist Hospital
Tel: +973 17 812 080
bshinfo@bsh.com.bh
www.bsh.com.bh

Dr. Tariq Saeed Hospital
Tel: +973 17 822822
Email: tariplas@batelco.com.bh
www.dermaplast.com.bh

German Orthopedic Hospital
Tel: +973 17 239 988
Email: info@germanortho.com
www.germanortho.com

Gulf Dental Specialty Hospital
Tel: +973 17 741 444

Email: denthosp@batelco.com.bh
www.gulfdental.com

Gulf Diabetes Specialist Center
Tel: +973 17 239 239
info@gulfdiabetes.com
www.gulfdiabetes.com

King Hamad University Hospital
Tel: +973 17 444 444
www.khuh.org.bh

Noor Specialist Hospital
+973 17 260 026

Kingdom of Saudi Arabia

Al Iman Public Hospital
011-447-1900

King Faisal Specialist Hospital and Research Center
Tel: 1990099 Ext 121

Imam Abdul Rahman bin Faisal Hospital
Tel: 013-858-1111

King Abdul Aziz University Hospital
Tel: 012-640-1000

King Fadh Hospital
Tel: 012-660-6111

Maternity & Children's Hospital (Jeddah)
Tel: 012-665-1636

KUWAIT

Al Zuhair Medical Center
Tel: +965- 2224 8777

Al Rashid Hospital
Tel: +965- 2562 4000

Dar Al Shifa Hospital
Tel: +965-1802 555

Al Sabah NBK Pediatric Hospital
Tel: +965 4833618
Fax: +965 4814977

Hadi Hospital
Tel: +965 1828282
www.hadiclinic.com

London Hospital
Tel: +965 883883

New Mowasat Hospital
Tel: +965 1826666
www.newmowasat.com

OMAN

Starcare Hospital
Tel: +968 24557200
Email: info@starcarehospital.com
www.starcarehospital.com

Al Hayat Hospital
Tel: 22 004 000
www.alhayathospital.com

Hatat Polyclinic
Tel: +968 24-563641/2/3

Al Raffah Hospital
Tel: +968 24618900/1/2/3/4
www.dmhealthcare.com

Badr Al Samaa Hospitals
Tel: +968 2 479 9760

Barka Branch
Tel: +968 26884918
www.badralsamaahospitals.com

Kim's Oman Hospital
Tel: +968 24760100 / 200 / 300
www.kimsoman.com

Atlas Healthcare
Tel: +968 2 450 2560
www.healthcare.atlasera.com

The Royal Hospital
Tel: Oman – (+968) 24.59.90.00
www.royalhospital.med.om

Sultan Qaboos University Hospital Patient Services Department:
Tel: 00968 - 24415747
Operator: 00968 - 24413355
extension 4625 during working hours
www.squ.edu.om

Lama Polyclinic
Tel: +968 24799077
www.lamapolyclinicoman.com

Muscat Private Hospital
Tel: (+968) 24583600
www.muscatprivatehospital.com

Apollo Medical Center
Tel: (+968) 24787766 / 24782666 / 24787780
www.apollomuscat.com

Sultan Qaboos Hospital (Salalah)
Tel: +968 2 321 1555

Adam Hospital
Tel: +968- 244 - 25434055

Al Buraimi Hospital
Tel: +968 25652319

Al Nahdha Hospital
Tel: +968 24837800

QATAR

Al Khor General Hospital
Tel: +974 4474 5555

Children's Emergency Centre (Al Sadd)
Hotline: +974 4439 6059; +974 4439 2948

Al Amal Oncology Hospital (cancer treatment)
Tel: +974 4439 7800

Hamad General Hospital (includes Accident and Emergency)
Tel: +974 5584 7803

Rumailah Hospital
Tel: +974 4439 3333
www.hmc.org.qa/en/

Al Ahli Hospital
Tel: +974 4489 8888
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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

Sha'biah, Hatta, UAE
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Police Post-Shaikh Khalif Hospital, Ajman

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www.ajmanpolice.gov.ae

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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)
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+971 4 8845777

Iranian Hospital
Tel: 04-344 0250

Belhoul Speciality Hospital Tel:
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+9714-2140257

Medcare Orthopaedics and Spine Hospital
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Canadian Specialist Hospital
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+9714-7072222

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+9714-8818816

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+971 4 3157777

Zulekha Hospital
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Al Zahra Private Hospital
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Royal Hospital
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Central Private Hospital
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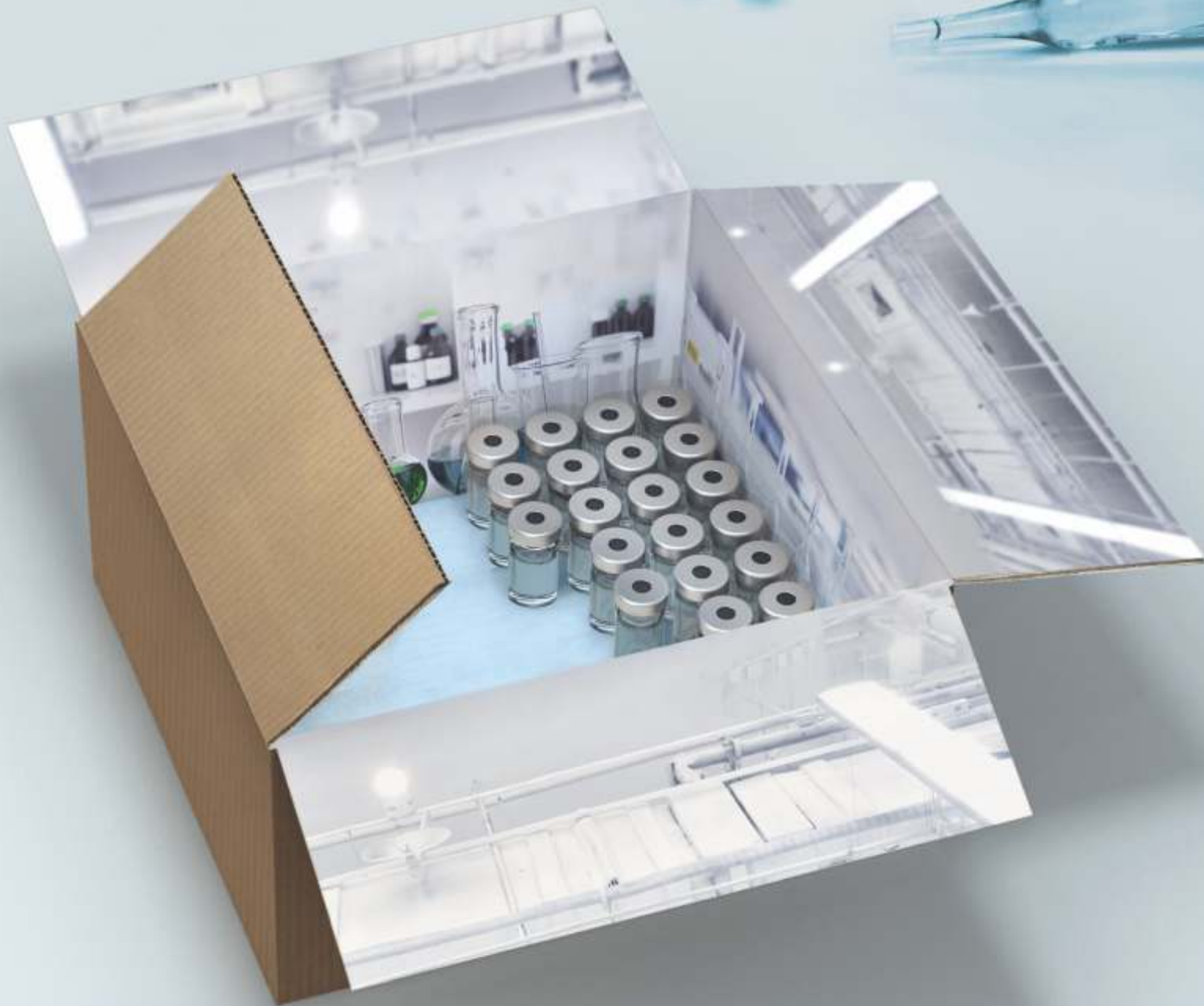


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