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DAY 02 TUESDAY 31 JANUARY 2017

arab health

DAILY DOSE

THE OFFICIAL DAILY NEWSPAPER OF THE ARAB HEALTH EXHIBITION

His Highness Sheikh Hamdan Bin Rashid Al Maktoum Officially Launches Arab Health Exhibition and Congress 2017

THE 42ND EDITION OF ARAB HEALTH EXHIBITION

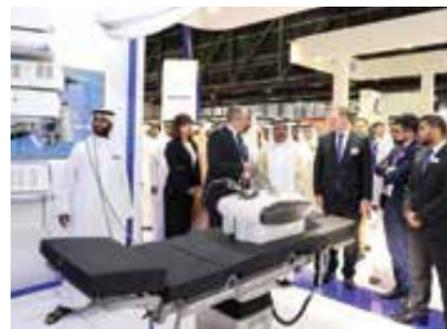
and Congress was officially inaugurated yesterday by His Highness Sheikh Hamdan Bin Rashid Al Maktoum, Deputy Ruler of Dubai, UAE Minister of Finance and the President of the Dubai Health Authority.

Arab Health 2017 is fully underway and this year features an additional 400 exhibitors, with 4,400 companies showcasing their latest innovations to an expected 110,000+ attendees from over 70 countries.

The event saw the introduction of the new Hands-on-Training (HoT) sessions, which allow more than 900 physicians, surgeons and technicians from the region to learn and practice new techniques using state-of-the-art equipment for specialised treatments in areas such as cardiology, neurology, surgery, gastroenterology, urology, oncology and radiology.

At the ceremony, His Excellency, Humaid Al Qatami, Chairman of the Board of Directors and Director-General of the Dubai Health Authority (DHA) said that "the Arab Health Exhibition and Congress is an important opportunity for international health institutions to exchange knowledge, access the latest in medical technology, and review what has been achieved within healthcare and emerging fields of healthcare such as smart health technology."

Arab Health has become a key event says Simon Page, Managing Director, Informa Life Sciences Exhibition, that "brings together many of the world's pioneering medical manufacturers, respected healthcare providers and most eminent medical professionals all under one roof."



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Joining up healthcare

By Laurent Marini, Managing Director, Saudi Arabia, Oman & Bahrain, Orange Business Services

HEALTHCARE SERVICES AROUND THE world are facing unprecedented demand from growing and aging populations and the rising costs of supporting them.

Can telemedicine and e-health be the answer to improving the efficiency of services for providers, while keeping the patient at the heart of the system?

Providing healthcare for an aging population is a growing challenge.

According to the UN, the number of over-60s is expected to triple to two billion by 2050. Thanks to medical progress, once-fatal illnesses, such as diabetes, breathing difficulties and kidney failure, are now considered chronic diseases.

However, this progress means that people live longer with their diseases, and treatment becomes a part of their daily lives. Giving them the opportunity and confidence to enjoy life outside the hospital environment, while also reassuring them that help is always at hand, is crucial.

The number of doctors, and notably specialists, has not grown with the global increase in healthcare spending. In 2030, it is estimated that there will be 32% fewer dermatologists and 35% fewer ophthalmologists than today. A report by the Economist Intelligence Unit found that less than one third of medical professionals think their country's healthcare system has the capacity to cope with the rapidly growing demand for care.

How is technology helping

To help meet these challenges, new developments in e-health are being pioneered, integrating communications, infrastructure and software solutions into hospitals and clinics.

Technology can add further value by improving healthcare delivery.

Information technology (IT) solutions enable more effective collaboration in traditional healthcare networks. In practice, this means healthcare professionals can make informed decisions, avoid costly mistakes, and get on with the job of caring, while meeting their legal obligation to preserve and secure confidential medical data.

In addition, we IT solutions can help providers offer home-based care. This creates a greater focus on prevention rather than reactive treatment and encourages people to participate in their own health and wellbeing as a more progressive rather than passive kind of care.

IT solutions for healthcare must enable the secure access and seamless transmission of sensitive medical information, whilst interconnecting infrastructures, enabling improved coordination, cooperation and fluidity of information exchange.

IT-enabled healthcare services outside the usual treatment environment – at home for example – should allow patients to stay in permanent contact with healthcare professionals, making it possible to provide the highest quality care to a wider population. These tools give patients the ability to manage their own health and well-being. For example, Connected Health Center is a secure platform for the aggregation and exchange of health data. Medical information from various medical devices is transmitted directly to the health platform and to and from any device (smartphone, PC, tablet), enabling the continuous confidential monitoring of remote patients by their physicians.

Coping with an ageing population

The ageing populations of developed societies, because of increasing life expectancy, are now presenting huge challenges in terms of funding and structure of our social welfare and socio-medical systems.

For example, by 2050, one in every three French people will be over the age of 60. But old age is

becoming less and less synonymous with illness or disability. People are staying independent until much later in life.

However, whether they are active, vulnerable or dependent, senior citizens can also create value for society and addressing their needs can be a driver for economic growth.

The Silver Economy is, therefore, the economy geared towards the elderly. The issue is crucial: to enable and encourage innovations to support people as they grow older and to reduce the numbers of people losing their independence.

Ageing well with digital technology

When people talk about the Silver Economy, they don't often think of innovation. However, these days more than half of all senior citizens have a smartphone and a quarter are on Facebook; use of digital technology is, therefore, already a reality,

major steps to be taken to digitalise life-styles and so to place the citizen-user-patient at the heart of the system and in so doing to join up well-being with living well and ageing well.

Nowadays, there is a vast range of services available. They are all ambitious, but they lack coordination. In fact, in the current climate of a boom in digital-based services, the real value of these services for the user will lie in how they are integrated into a care and healthcare pathway.

Over and above how the services are structured, coordinating care and monitoring patients are even more crucial for elderly people than at any other stage in life. In the end, then, it is by taking an approach based on a shared intermediation platform that synergies can be established between the worlds of social and socio-medical services.

A shared information and orientation platform

in prevention initiatives and countries in which the healthcare system is less robust than ours are paving the way in this regard. Digital technology is one of the building blocks of moving from a curative model to a preventative one.

3.4 billion people worldwide will have smartphones and half of these will use mobile health apps by 2017.

Digital technology: the cornerstone for dissemination of prevention initiatives

Technological innovations change the context in which disease is prevented and treated. In many developing countries, electronic applications are already widely used in the field of healthcare.

PwC recently stated that mobile healthcare could save one million lives in Sub-Saharan Africa by 2017. In fact, mobile phone penetration is very high in this area. A mobile phone, an easily-used



even for the over 65s.

The innovations in products and usage generated by this technology mean that they can age well at home in safety. Digital links offer senior citizens access, either directly or through their carers, to a wide range of information and services, and to maintain social connections with their friends and family.

Technology can help provide reassurance to people who are suffering loss of independence with tele-assistance service or companionship and reassurance services over their land-line phone; enable the efficiency of homecare services to be managed and monitored using a timestamp service;

use digital technology for the benefit of old peoples' homes; or to assist with setting up service platforms to help keep dependent elderly people and/or patients with chronic conditions in their own homes.

These types of platforms are crucial to structuring the services available for prevention, supporting an ageing population and medical monitoring. Telemedicine solutions are rolling out all over France, mainly in gerontology departments. This is another example of how indispensable information and communication technology is to the healthcare pathway approach.

Tomorrow's challenge: achieving the life-style digital switchover

Healthcare, social and socio-medical services are sectors that have still not taken full advantage of the digital revolution.

Although initiatives are being developed and some solutions are already working, there are still

can help address the demands of diminishing independence at home (in terms of well-being, prevention, vulnerability, dependency and chronic illness). It makes it possible to set out processes whereby human help interacts with technical aids to prevent interruptions in treatment, avoidable admissions to hospital and to facilitate admission and discharge when hospital is necessary.

Moving from cure to prevention

According to the World Health Organisation (WHO) in 1948, prevention is "the range of measures aimed at preventing or reducing the number and seriousness of diseases, accidents or disabilities".

There are three types of prevention:

■ **Primary prevention:** is the range of actions directed towards decreasing the incidence of a disease in a population and to reducing, as far as possible, the risk of new cases emerging.

■ **Secondary prevention:** seeks to reduce the prevalence of a disease in a population. This stage covers action designed to take effect when the disease or disorder first appears in order to arrest its development or to eliminate any risk factors.

■ **Tertiary prevention:** comes in when it is important to reduce the prevalence of chronic conditions and recurrences in a population and to reduce complications, disabilities and relapses caused by the disease.

In 2012, only 2.4% of healthcare expenditure in France was for prevention initiatives, which demonstrates that even now our healthcare system still prefers to take a curative approach to care. However, increasing interest is being shown

personal device is, therefore, a powerful tool for improving access to healthcare. All the more so since the countries concerned are vast and healthcare facilities are often located far away from the patients that need them most. Due to the range of services offered, the mobile phone is becoming the most effective way of accessing healthcare and public health information.

And so SMS messages are widely used by the Ministries of Health to inform people about how they should behave if an epidemic breaks out. They also help to improve treatment compliance, especially for patients receiving antiretroviral therapy, and make it easier to remind patients about appointments and when to take their medication.

Healthcare professionals use mobile phones as a working tool, and so there have been examples of dermatological diagnoses being made remotely on the basis of photos sent by SMS, or of epidemiological data being uploaded via mobile phone.

African healthcare systems are developing solutions that use the 600 million mobile phones in circulation on the continent to their best advantage. In Cameroon, for instance, customers have access to My Healthline, an anonymous SMS hotline they can use to ask a team of healthcare professionals questions on all their health concerns, and receive a personal response.

Mobile phones are also used in the fight against malaria in Kenya, Senegal, Burkina Faso, Ghana and Tanzania. A big pharmaceutical company can also monitor the side effects of their new vaccine in 40,000 children and confirm that this is a suitable treatment in Africa.

TODAY AT A GLANCE

ARAB HEALTH 2017 CONGRESS

CONFERENCE	ROOM	LOCATION	START TIME	FINISH
3D Printing	Dubai D	Above Shk Maktoum Hall	1000	1700
Oncology	Abu Dhabi A	1st Floor building opp Hall 5	900	1630
Public Health	Abu Dhabi B	1st Floor building opp Hall 5	850	1645
Emergency Medicine	Umm Al Qwain	2nd Floor building opp Hall 5	830	1730
Total Radiology	Al Multaqua Ballroom	Between Halls 4 & 5	830	1730
Surgery	Shk Maktoum Hall section B	Concourse 2	855	1710
Orthopaedics	Shk Rashid Hall - Part C	Shk Rashid Hall	820	1730
Paediatrics	Shk Rashid Hall - Part D	Shk Rashid Hall	850	1715
Rheumatology	Ras Al Khaimah	2nd Floor building opp Hall 5	915	1630
Surgery	Umm Al Qwain	2nd Floor building opp Hall 5	850	1730
Big Data	Al Ain J	Above Hall 4	900	1710

ARAB HEALTH DAILY DOSE

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Managing Director Simon Page
simon.page@informa.com

Publications Director Joseph Chackola
joseph.chackola@informa.com

Editor Nicolas White
nicolas.white@informa.com

Assistant Editor Deepa Narwani
deepa.narwani@informa.com

Senior Graphic Designer Mark Walls
mark.walls@informa.com

Group Marketing Director Celine Fenet
celine.fenet@informa.com

Marketing Manager Hannah O'Toole
hannah.otoole@informa.com

Print Media Sales Roshal Solomon
Roshal.Solomon@informa.com

Digital Media Sales Ayush Agarwal
Ayush.Agarwal@informa.com

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GLOBAL MEDICAL DIRECTORY

OMNIA Global Medical Directory is a new digital platform brought to you by Informa Life Sciences, the organisers of 27 exhibitions worldwide. This comprehensive catalogue of all things medical allows companies and customers to connect both on-site and beyond our exhibitions, 365 days a year.

COMPANIES

FULL ANALYTICS DASHBOARD

Gain insight into your target audience with our full analytics dashboard. In addition to being able to view the full contact information of all those who enquire, the dashboard allows you to track the performance of your company and products, as well as providing you with statistics on the overall performance of OMNIA.

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QUALITY AND QUANTIFIABLE LEADS

Not only will you receive the direct contact information of enquiries, OMNIA will also show you their intention, such as 'ready to buy' or 'researching'. You will also receive their purchasing timeframe and budget, giving you quality leads that you can follow up on.

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Engage your target audience beyond the exhibition by immersing them in an interactive experience with your product. Demonstration videos are a fast, simple and effective way of catching potential clients' interest.

VISITORS

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As well as allowing you to view which companies are exhibiting at our shows, the platform also offers access to company and product information 365 days of the year, providing you with a wealth of information in-between exhibitions, whenever and wherever you need it.

WALKING LIST

Create a wish list of companies you want to visit at any of our exhibitions throughout the year. Filter alphabetically, by hall or section, print and bring it with you to the show, allowing you to spend more time networking and less time searching for a stand.

REQUEST INFORMATION

Make appointments ahead of the show. With our new 'Request Info' feature you can reach out to exhibitors and book a slot for a full product demonstration in advance of the event, allowing you to maximise your time on-site.

DEMONSTRATION VIDEOS

Get a deeper look at the product before purchasing with a virtual experience, offering you all the information you need to make the right decision for your business. Omnia is the fastest and simplest way to get an interactive experience with the product beyond the exhibition.



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Carestream Demonstrates

New Compact, Lighter Weight Mobile X-ray System as Work in Progress at Arab Health 2017

“When we launched the DRX-Revolution Mobile X-ray System, we introduced a new generation of mobile imaging that features an automatic collapsible column for enhanced visibility, powerful dual motor drive, long tubehead reach and specialized image visualization software”

DRX-Revolution Nanotube System Will Feature Innovative Carbon Technology

Carestream shows its DRX-Revolution Nano Mobile X-ray System (INVESTIGATIONAL-Not available for commercial sale) at Arab Health 2017 (Booth#S3F10) This fully integrated DR portable imaging system will offer a compact design with an articulating arm and rotation column, small footprint, and carbon nanotube technology that significantly reduces weight.

“When we launched the DRX-Revolution Mobile X-ray System, we introduced a new generation of mobile imaging that features an automatic collapsible column for enhanced visibility, powerful dual motor drive, long tubehead reach and specialized image



visualization software,” said Kurt Hufkie, Carestream Health (Near East) Business Manager for X-ray Solutions.

“The new DRX-Revolution Nano system will use carbon nanotube technology to deliver an innovative lighter weight, non-motorized system that will be even easier to transport and position in cramped critical care areas,” she explains.

Benefits of the DRX-Revolution Nano system will include:

- A sleek design with enhanced visibility both over and around the system
- A compact footprint that makes it easy to maneuver and position in tight spaces
- Independent controls of the diaphragm without moving the tubehead; and
- Carbon nanotube technology and an advanced lithium iron phosphate battery that contribute to longer life and an intended weight of 205 pounds (93 kilograms).

Like Carestream’s DRX-Revolution system, this new system is designed to operate with FDA cleared Carestream software that generates companion images from an original exposure to enhance visualization of tubes and lines, as well as pneumothorax. This software also suppresses the appearance of posterior ribs and clavicles, and enhances visualization of soft tissue.

The DRX-Revolution Nano system will support sharing of a DRX detector with any DRX room or mobile imaging system, which can help healthcare providers maximize return on investment and reduce costs.

Carestream



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BIG DATA IS TRANSFORMING the healthcare industry, and the Middle East region is focused on leveraging the potential of advanced analytics to deliver better patient care.

According to the Global Big Data in Healthcare Market Development and Demand Research Report- Forecast to 2022, the global big data in healthcare market is expected to reach US\$34.27 billion by 2022.

A report by Gartner states that healthcare providers in MENA were billed to spend US\$2.78 billion on IT products and services in 2016, especially on internal services, software, IT services, data center systems, devices and telecom services.

Transforming care to a more digital model is already a priority for countries such as the UAE and Saudi Arabia, where the potential of advanced healthcare analytics is being put to use.

With digital healthcare solutions as a key priority for GE Healthcare, its comprehensive portfolio of Healthcare Analytics solutions enables healthcare providers to unlock insights from big data – covering the entire value chain.

GE's Healthcare Analytics solutions are comprehensive and cover perioperative care, cardiology, maternal infant care, enterprise imaging, financial management, workforce management, patient monitoring, asset performance management, in-patient and ambulatory care. It quickly identifies trends and gives an overview of the data including opportunities to reduce materials/inventory and their costs, improve operational efficiency, patient status volumes and staffing hours with cost.

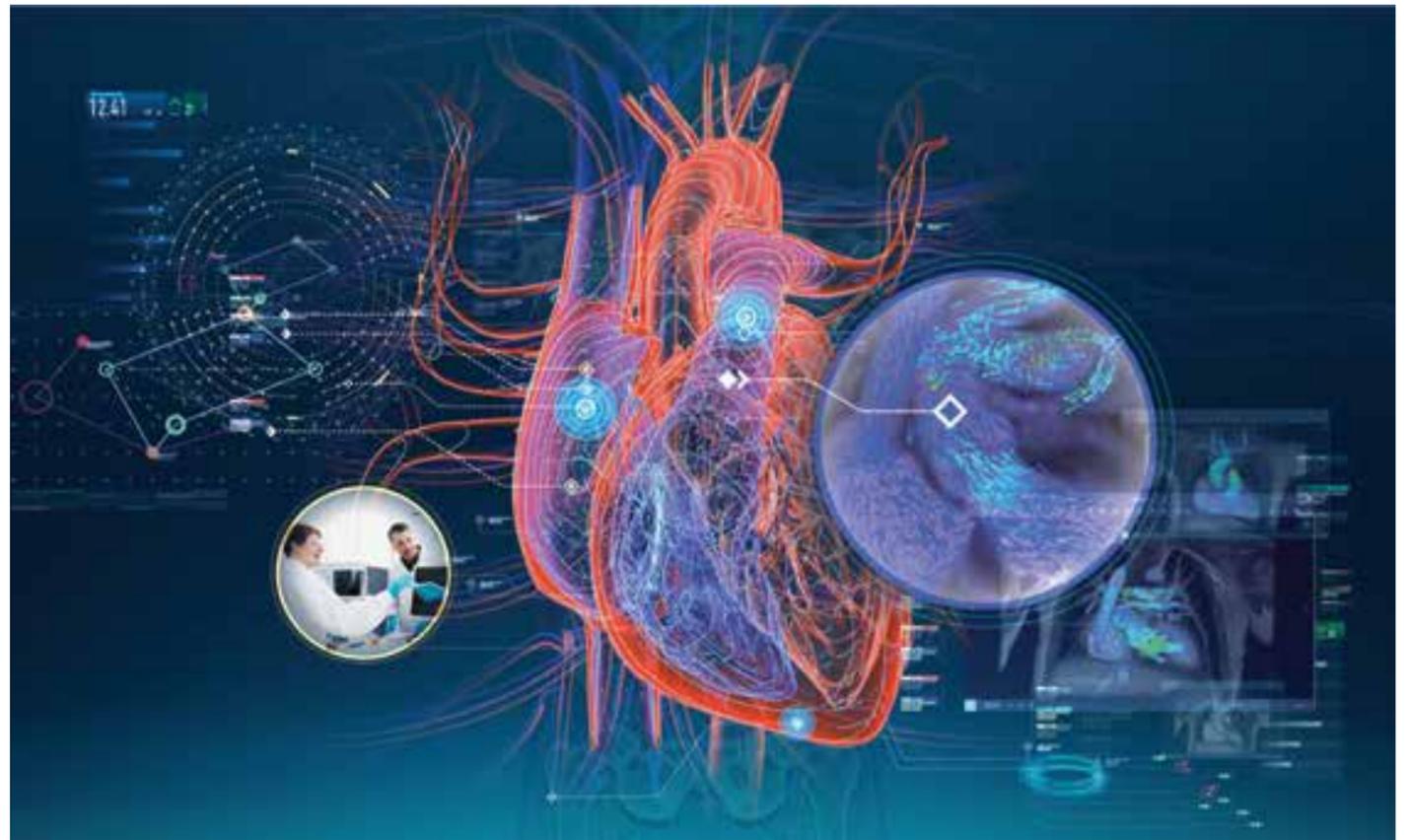
GE has been a pioneer in shaping the next era of healthcare analytics, where the focus is not just digitization of healthcare information but sharing and analyzing data.

David Mezher, General Manager, of GE

Healthcare Middle East said: "Our Healthcare Analytics solutions help draw insights from big data to improve clinical, operational and financial outcomes. The solution also includes a team of healthcare consulting experts, with

deep clinical domain expertise, who guide in every step of the way."

GE's Healthcare Analytics solutions are highlighted at GE's stand at Arab Health Exhibition & Congress 2017.



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experts are evaluating the candidatures and assess the finalists during a visit in their hospital in order to elect the winning hospitals. The winners will be invited to a regional infection control congress to get honored in a winning ceremony and to present their success story. Then they become role models in their region inspiring and teaching other hospitals who want to follow.

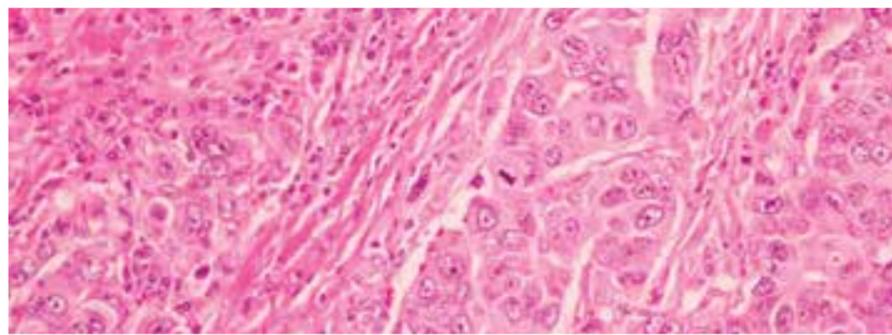
The award is endorsed by the Aesculap Academy and supported by B. Braun, one of the world's leading manufacturers of medical devices and pharmaceutical products. The essence of the HHEA matches perfectly with the B. Braun core values sharing expertise and to protect and improve people's health.

Apply for the MENA Hand Hygiene Excellence Award until 5th of May 2018 and show how you improve patient safety by reducing HAI with excellent hand hygiene programmes. Learn more at www.hhea.info



New Era In Cancer Treatments

Professor Introduces Oncolytic Virotherapy



MEDICAL DIRECTOR OF INTERNATIONAL Virotherapy Center, professor Dace Baltina, who is also chief specialist in oncology at the Latvian Health Ministry, will give a lecture on Oncolytic Virotherapy at the Oncology Conference at Arab Health 2017 in 'Abu Dhabi A' hall at 4 pm.

Professor Dace Baltina will introduce the participants to the use of viruses in the treatment of cancer since the beginning of the 20th century. A historical perspective will be provided on how the oncotropic and oncolytic properties of various viruses culminated in the first marketing approvals.

Oncolytic virotherapy is a cancer treatment using a virus that finds and destroys malignant cells in the human body. It improves time to progression, survival and quality of life for cancer patients. Virotherapy is particularly important in the treatment of those cancers types, which are insensitive to radiotherapy or chemotherapy, for example, melanoma. Virotherapy is safe and effective cancer treatment with minimal side effects. The most common side effect is subfebrile temperature (~37.5°C) for a few days.

Virotherapy effectiveness has been proven in

many clinical studies. For example, in 2015, the medical journal Melanoma Research published a study that revealed that melanoma patients treated with oncolytic virotherapy with RIGVIR were 4 to 6 times more likely to survive than those, who did not receive virotherapy.

Recent publication in APMIS journal (Acta Pathologica, Microbiologica Et Immunologica Scandinavia) showed surprisingly positive treatment outcomes using oncolytic virotherapy with RIGVIR for late stage cancer patients. The patients of melanoma stage IV M1c, small cell lung cancer stage IIIA and histiocytic sarcoma stage IV, who used oncolytic virotherapy have significantly exceeded the life expectancy, which is usual for such diagnoses. After beginning the therapy their condition stabilized and their quality of life significantly improved. Conventional cancer treatments have some limitations, such as resistance and toxicity, but oncolytic virotherapy is an emerging treatment modality that targets only cancer cells without harming normal healthy cells.

Both publications are available at Z6.F30 in hall Za'abeel.



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Healthcare Expenditure

The Kingdom of Saudi Arabia is the largest healthcare market of all Gulf Co-operation Council (GCC) countries and is growing rapidly. The Public sector still supplies the majority of health care services in Saudi Arabia. The budget for 2016 was SAR 840 billion (US\$2323.8), of which SAR 105 billion (US\$28 billion) was allocated towards health and social affairs. This budget will sustain the growth in the sector and ensure that the government's strategic development plan continues on track.

The Government is encouraging private sector participation by expanding health insurance, providing higher loan amounts at low interest rates to construct hospitals, and promoting partnerships with private entities.

There is already a core of successful Saudi companies working in the healthcare but the intention is to develop these companies further and attract foreign investors to locate facilities in the Kingdom.



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With approximately 70% of medical decisions influenced by laboratory testing, laboratories are at the heart of the healthcare system. The decisions, outcomes, efficiencies and costs of a medical facility, in an age of ever more complicated medical conditions, greatly rely on the proficiencies of the laboratory operations and the quality of laboratory services.

The demand for science-focused, accurate, timely and efficient laboratory testing for the provision of excellent patient care is a requirement in today's competitive healthcare market. To attain the quality-balance of ensuring patient safety while implementing operational and financial efficiencies requires an experienced management team. In this context, choosing the right partner to manage these services, in the diverse healthcare market of today, becomes a critical decision.

Choosing the right laboratory partner: NRL- a proven track record

National Reference Laboratory (NRL) is leading the way and has implemented the highest international standards of laboratory expertise, design, equipment, processes, accreditations and best practices in the region. As a Mubadala company which is part of its healthcare network, NRL is managed by Laboratory Corporation of America (LabCorp), the world's leading laboratory company and therefore benefits from LabCorp's extensive experience in laboratory management and technical

support agreements.

A network of stand-alone and on-site laboratories, NRL provides a broad scope of more than 4,700 laboratory tests and conducts 15,000 analyses a day, ranging from routine tests to cutting-edge, complex diagnoses of genetic conditions, cancers and other rare diseases.

As part of its network, NRL manages nine diverse laboratories which include on site laboratory operations, such as at Healthpoint Hospital in Abu Dhabi and all of Imperial College London Diabetes Centre's branches. In partnership with Cleveland Clinic Abu Dhabi (CCAD), NRL jointly manages the Anatomic Pathology laboratory and is responsible for all of CCAD's referral testing. The network recently expanded to include Etihad Airways Medical Centre in Abu Dhabi and Valiant Clinic in Dubai, a premium outpatient clinic managed and operated by Houston Methodist Global Health Care Services and brought to Dubai by Meraas. NRL also owns two laboratories, one in Abu Dhabi and one in Dubai.

Every laboratory is unique

While providing complete, on-site, laboratory management solutions, customized to meet the diverse needs of providers that want to increase efficiencies and quality while reducing cost, NRL recognizes that each laboratory is unique. NRL's laboratory management solutions cover a broad spectrum of laboratory business models, to include selected services of specific managed processes and comprehensive outsourcing models in which NRL is responsible for complete laboratory services, operations and assets.



During these changing times in clinical laboratory medicine, NRL's scale and expertise with quality accreditation, diagnostic vendors, state-of-the-art equipment and staffing models provides opportunities to run and optimize laboratory services while containing costs. NRL's network, to this date, consists of facilities with a wide range of requirements: routine and esoteric testing needs, inpatient and outpatient services, primary and tertiary care with short turnaround time requirements.

Achieving gold standard quickly

NRL's laboratory management implementation model, means that for all laboratories joining the network, NRL pursues international accreditations such as the College of American Pathologists (CAP), International Organization for Standardization (ISO) 15189 as well as Joint Commission International (JCI)

where applicable, one year after commencement of services. This strategic direction has enabled NRL, as of this date, to be the largest referral laboratory network in the Middle East accredited by CAP, with six accredited laboratories. The scope of our accreditations, in every laboratory, covers all tests performed in that laboratory in every department.

NRL's Laboratory Management Systems

The ability of NRL to seamlessly expand by adding new laboratories in its network is enabled by NRL's accreditation agency-approved systems. With consistent application of its Quality Management System (QMS), NRL provides diverse services to clients to drive continuous process improvements, increase quality practices, ensure consistency and improve laboratory operations.

For more information, please visit www.nrl.ae.



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NEW ARTICLE SHOWCASES

An Effective Surveillance System for General Care Units Using Masimo Patient SafetyNet™

A NEW ARTICLE PUBLISHED in The Joint Commission Journal on Quality and Patient Safety reports on the results of an expansion of the use of Masimo Patient SafetyNet™* to more than 200 general floor beds at Dartmouth-Hitchcock Medical Center (D-H) in Lebanon, New Hampshire.¹ Patient SafetyNet is a remote monitoring and clinician notification system that works in conjunction with a variety of bedside monitors, such as Masimo Root® with Radical-7® and Root with Radius-7®, powered by Masimo SET® pulse oximetry – the first Measure-through Motion and Low Perfusion™ pulse oximetry and the most accurate and reliable pulse oximeter in such conditions according to over 50 studies.²

Masimo Patient SafetyNet was first implemented in the 36-bed orthopedic unit at D-H in December 2007, as part of a surveillance strategy supporting patient safety improvement. Clinicians reported that after 11 months, rescue events had been reduced by 65% and intensive care unit transfers by 48%, and calculated annual cost savings of \$1,480,000.^{3,4} They also announced that they had experienced zero preventable deaths or instances of irreversible seizure brain damage due to opioids since installation.⁴ As a result of the positive outcomes of the pilot unit implementation, D-H expanded this continuous patient monitoring approach, including the use of Patient SafetyNet, to remaining post-surgical ward units in February 2009, to medicine ward units in April 2010, and to the pediatric ward unit in February 2012. Patients in more than 200 beds are now covered by D-H's patient surveillance system. As the authors note, "The original success in terms of patient outcomes and enthusiastic endorsement by nurses prompted request from other units for the system and led to the rapid spread of the system across the institution." The improvements first seen in the pilot unit – in addition to the dramatic reductions in rescue events and unplanned transfers, approximately two alarms per patient per 12-hour nursing shift, and resolution of more than 85% of all alarm conditions within 30 seconds and more than 99% before escalation was triggered – have been "sustained over time in spite of increasing patient acuity (up 20% from 2010 to 2015) and unit occupancy (93% in 2015)."

Much of the initiative's success is due to D-H's development of a robust general care alarm management strategy, including the implementation of Masimo SET® Measure-through Motion and Low Perfusion™ pulse oximetry. As the authors note, "device-level characteristics such as measurement reliability and alarm annunciation" are critical. A systematic approach to alarm management is needed because of the growing problem of "alarm fatigue" – the growing desensitization of health care providers to alarms" as a result of the "growing number of monitoring devices, combined with suboptimal patient monitoring and alarm management strategies." False and/or nonactionable alarms may occur as much as 90% of the time, according to one study⁵; another, involving the Philips HP Merlin M1094 monitor, found that 77% were either not recognized or ignored⁶; a third, involving Nellcor pulse oximetry, found an actual risk for patients in only 3% of alarm states, and that anesthesiologists have been shown to disable alarms because of high false alarm rates.⁷

D-H attempted to optimize several key elements of an effective alarm management strategy: 1) static alarm settings – setting thresholds based on patient groups to reduce nuisance alarms; 2) alarm delays – introducing a delay of 15 seconds before an alarm sounds, as "Many changes in physiologic parameters are brief and self-correcting"; 3) alarm threshold



adjustments – adapting to "physiologic variation among different patients" by adjusting alarms based on a three-tiered system of the static defaults, independent nurse adjustments, and provider-ordered individualized settings; and 4) alarm announcement – having the alarm sent to the nurse in charge of the patient via remote pager and allowing customization of when and how alarms are escalated to additional clinicians, by which practice alarm exposure has now been reduced by almost 90%.

Important to the success of the D-H alarm management strategy was the selection of Masimo SET® and Patient SafetyNet architecture, as part of D-H's patient surveillance system. As the authors note, a fundamental factor affecting operation of and response to clinical monitor alarms is "device-level characteristics such as measurement reliability and alarm annunciation." As the initiative's centrally-monitored parameter they notably chose oxygen saturation (SpO₂), measured using Masimo SET® pulse oximetry, which has been shown to reduce false alarms by over 95% and increase true alarm detection to over 97%, even during motion and low perfusion.⁸ Regarding the choice of remote monitoring system, the authors note that "A previously installed multiparameter monitoring system on the pediatric unit was largely rejected by the staff because of alarm system issues, such as high false alarm rates, lack of directed notification, and ambiguous alarm indicators. The alarm rate [with Masimo Patient SafetyNet] was 75% lower than the

alarm rate of the previous system immediately following implementation of [Masimo Patient SafetyNet], and 100% of nursing staff survey respondents were in favor of continuing use of [Masimo Patient SafetyNet]. The staff credited the robust alarm management strategy and leadership rounding with the improved system performance and high level of staff adoption."

"Dartmouth-Hitchcock provides a compelling example of the benefits that a robust patient monitoring and surveillance system, coupled with a carefully executed strategy, can reap," said Joe Kiani, Founder and CEO of Masimo. "It is estimated that as many as 50,000 patients die each year due to failure to rescue patients in the general ward.⁹ Any hospital that wants to eliminate general ward preventable deaths should read both this article and Dartmouth-Hitchcock's original study, 'Impact of pulse oximetry surveillance on rescue events and intensive care unit transfers: A before-and-after concurrence study,' published in 2010.³ Together, they provide an excellent guide to designing, implementing, and maintaining a successful hospital-wide continuous monitoring system, as well as showcasing the innovative practices that have arisen out of their focus on alarm management. Dartmouth-Hitchcock's success story, laid out in a well-executed plan and follow on analysis over nearly a ten-year period, sets a powerful precedent for other medical facilities: it's time for all hospitals to develop hospital-wide alarm management strategies and as part of that, to implement Patient SafetyNet – to help save money and save lives."

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- *The use of the trademark SafetyNet is under license from University HealthSystem Consortium.

Leading the world into a new generation of health Healthcare provision and The Middle East

By Barry Landrum, Associate Director in Design Management of SSH

HEALTHCARE IS CHANGING AND evolving around the world, and nowhere is this more evident than in the Middle East. With the rise of digital healthcare and other expanding and innovative approaches to hospital and care centre designs, the landscape has been evolving with a clear focus on improving the patient experience. In the past functionality may have been achieved at the expense of comfort. Research evidences that high quality patient care and recovery rates can be improved through careful design for better patient outcomes. With regional targets and standards being firmly put in focus by governments across the GCC, and specifically within the UAE, in Dubai and Abu Dhabi, the healthcare services in Middle East are increasingly improving to deliver to international standards.

The way that hospitals are designed and built has changed considerably in recent years, in a way that is positive for the patient. While functionality and cost will always be considerations, other factors are increasingly being introduced as desirable in any design brief for a healthcare facility. On one level, a hospital is about the flow of goods, people and waste. While it is essential to the successful delivery of services in every hospital that the flow of people, materials and waste functions smoothly and efficiently these elements shouldn't be considered in isolation as to do so disregards the human element that could ultimately make the difference to a patient and positively impact on the healing process.

There have been many studies into how design, light, providing scenic views, displaying art and other non-medical elements influence patient wellbeing. Vibrant and welcoming spaces can reduce stress, lower blood pressure and be a positive distraction for patients, visitors and staff enabling the

environment to facilitate healing. These are vitally important ingredients to incorporate in the design of the building and the build process thereafter. An example of design for healing can be seen at the Sheikha Salwa Al-Sabah Centre for Stem Cell and Umbilical Cord in Kuwait. Clean lines with a focus on enabling natural day light to enter internal spaces provide patients with tranquility and invite a sense of calm while undergoing treatments.

The challenge of designing a medical facility can be considerable. The creation of safe and secure, well equipped, functional spaces that work in relation to each other can make the difference between life and death. Efficient floor planning must be aligned with the philosophy of the organisation in respect of patient care and engagement and be supported by the necessary technology in order for well planned buildings to deliver the best environments for patients, visitors and medical.

Architecture and medicine are team-based activities. Medical teams bring clinicians and medical staff members together to deliver holistic patient care. The collaboration between pharmacists, social workers, lab technicians, nurse practitioners and many more specialists drives the need for a variety of treatment spaces. It also requires a level of coherence of staff spaces, requiring prescribed adjacencies of workspaces to enable them to function efficiently.

Recent developments in the Middle East suggest that countries are enhancing their capacity, making the GCC a hub for healthcare. Dubai and Saudi Arabia are aggressively building an increasing number of hospitals, of greater size, followed by Kuwait and Qatar. In the UAE, Dubai has launched the world's first medical tourism

portal, where international medical tourists can book procedures, with discounted travel rates and visas. The medical tourism initiative in the UAE has set a target of receiving over 500,000 international medical tourists by the year 2020, underlining the determination for increased medical capacities in the Emirate.

SSH holds a growing portfolio of prestigious healthcare projects and is currently working on the largest specialist paediatrics hospital of its kind in the world. It will be a landmark project for the Kuwaiti Ministry of Public Works and Ministry of Health, consisting of 792 beds with diagnostic and treatment facilities capable of treating patients from across the Middle East. It will have the capacity to cater for the healthcare needs of 4.5 million people.

Modern healthcare provision in the Middle East is taking an evolutionary turn, adding a dimension of luxury that currently can only be found in this part of the world. As innovation and the requirements for different types of hospital has grown, so have the demands made on master planning and design teams. Architects could now take inspiration from the levels of comfort in hotels or the communication connectivity in office spaces for example and incorporate them into healthcare design. When doing so they will need to retain the necessary hospital layout requirements, enabling the next generation of healthcare services to be delivered in comfortable healing environments, providing privacy in addition to efficient operations and management. It will not be long before there is a 5* hotel in a hospital.

Additionally, a new field of study that emphasises the significance of credible evidence to influence

healthcare design, known as, Evidence-Based Design (EBD) is employed by SSH. It provides a mechanism for clients and designers to incorporate empirical evidence to best design healthcare environments. By introducing positive distractions (artwork, entertainment and nature) designers are able to improve patient healing, reduce stress, increase safety and reduce the need for infection control. All result in fewer staff errors and positively impact on patient outcomes. To support the delivery of accurate information, SSH also applies BIM software to produce co-ordinated sets of complex data, while Codebook and Activity Data Base (ADB) are used to assist with the production of repetitive information for example. Used wisely these tools deliver direct cost savings throughout the life of a project enabling shorter delivery periods and securing the standardisation of information. In unison, as an ongoing process they bring positive financial benefits to any investment in healthcare facilities.

SSH has extensive experience in the sector across the globe. Their rich talent pool of shared professional expertise and knowledge is invaluable in a sector where design integrity matters, and facilitates collaboration with clients to create buildings that assist with the healing process. The ultimate goal at SSH is to lead the design of the expanding national healthcare system in the UAE, continuing to produce world-class architecture that facilitates faster recovery, improving the standard of care offered by the hospital's operators. With the growth of the healthcare sector in terms of hospitals and the growing specialised healthcare workforce, alongside the technological developments, SSH is well placed to lead healthcare design into a new 'gold standard' generation of healthcare.

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*Siemens AG, "Sustainable healthcare strategy – Indicators in fiscal 2014", page 3-4

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From Home to Hope

Saudi Arabian teen receives lifesaving care for rare disease at Children's Hospital of Philadelphia

TIME WAS RUNNING out for Arwa Alqahtani.

Born with a congenital heart defect and hearing loss, she developed thoracic insufficiency syndrome – a life-threatening spine and chest wall condition that affects breathing and lung growth – in her teens.

By age 15, the question was whether her heart or lungs would fail first. She began to tire more easily and sleep more often. She stopped hanging out with friends and became too sick to go to school.

As Arwa's condition deteriorated, her family sought help from doctor after doctor in Saudi Arabia, where they lived. Doctors could see that her lung deficiency was making her heart work harder – and vice versa – but could not agree on the best approach to treat her complex, multisystem medical issues.

One thing was certain: If Arwa didn't get help soon, she would die.

Finding the right experts

Arwa's parents, Mubarah and Khairiah Alqahtani, searched the Internet for a place that could help.

They found Children's Hospital of Philadelphia (CHOP). As the United States' first pediatric hospital, CHOP has a long history of pioneering care for children. The hospital has been recognized for its expertise in all pediatric specialties – including orthopedics, cardiology and pulmonology, which Arwa desperately needed.

CHOP also had Robert M. Campbell Jr., MD, an internationally renowned expert in thoracic insufficiency syndrome (TIS), director of CHOP's Center for Thoracic Insufficiency Syndrome.

With the help of the government of Saudi Arabia and International Patient Services at CHOP, Arwa and her family joined thousands of other international patients who have turned to Children's Hospital of Philadelphia for care.

"We came here to save Arwa's life," says her father.

Coming to America

Arwa and her family arrived in the United States in August 2015. Within days, Arwa was at CHOP to begin the battery of diagnostic tests that would help her multidisciplinary care team create the best treatment plan to address her unique condition.

To help Arwa's family and CHOP staff members communicate with each other, two medical interpreters were provided to the family: An Arabic interpreter worked with Arwa's parents, and a sign language interpreter helped Arwa, who is deaf, understand what was being said around her.

Testing at CHOP confirmed what Arwa's doctors in Saudi Arabia had found: She had congenital scoliosis, thoracic insufficiency syndrome, Ebstein's anomaly of the tricuspid valve and hearing loss.

But CHOP doctors also discovered another genetic condition, CHARGE syndrome. Children with CHARGE syndrome have a distinct pattern of features that include heart anomalies, breathing difficulties, hearing loss, and delays in growth and development.

With a better understanding of Arwa's health, doctors agreed her lung issues were most critical. Her spine curvature, uneven shoulders, and the resulting compression of her chest wall caused her lung volume to dip to a dangerous low of 30 percent.

Treatment options

A multidisciplinary team of orthopedic surgeons, cardiologists, pulmonologists and anesthesiologists at CHOP met to discuss possible treatment options for Arwa.

Dr. Campbell proposed that a VEPTTR implant was the best choice for Arwa. Invented by Dr. Campbell, vertical expandable prosthetic titanium ribs (VEPTTRs) have been in use for more than 20



years and remain the only U.S. Food and Drug Administration (FDA)-approved treatment for thoracic insufficiency syndrome.

In 2014, the FDA ruled VEPTTRs could be used in any age group – not just growing children. This change made it possible for Dr. Campbell to offer this innovative device to older teens like Arwa, who would likely die if not treated.

The orthopedic surgeons at Children's Hospital were confident in this approach. They'd performed thousands of VEPTTR surgeries on critically ill children, and dozens on patients as sick as Arwa.

A small team of doctors talked to Arwa and her family about their options and provided their recommendations. The ultimate decision about whether to get surgery or not rested with Arwa's family.

"We could take Arwa home to slowly die or we could stay here and try to save her life,"

Mubarak says. "We had to try."

VEPTTR surgery

For the next few months, Arwa lived with her family in a rented house outside Philadelphia, and commuted to CHOP as needed. She received supplemental nutrition at night to help build up her strength.

In March 2016, Dr. Campbell operated on Arwa

and installed two VEPTTRs in her back to frame her rib cage. Positioned on both sides of her spine, the VEPTTRs attached to Arwa's shoulders and hips. The devices would allow her lungs room to expand as much as possible for breathing, and could be lengthened as she grew.

Arwa remained in the Hospital for a month after surgery so her medical team could monitor her cardiac condition and ensure there were no complications from surgery. Her mom stayed with her the entire time; her father and siblings visited often.

Road to recovery

After Arwa returned to the family's temporary home, her father said he and his wife knew they'd made the right decision for Arwa's future.

"We noticed a difference in her overall health after surgery," Mubarak says. "It was much better and Arwa was acting like herself again."

She engaged with her family more, wanted to learn again, and perhaps best of all, Arwa smiled more.

She also became very independent. Because she no longer needed assistance getting ready in the morning, Arwa began waking early, getting dressed and doing her chores – often before anyone else in

the family was even awake.

While her change in health status was a medical breakthrough, Arwa was looking forward to achieving more personal goals: Heading home to Saudi Arabia, returning to school and seeing her friends again.

Hope for tomorrow

In early November, Arwa had VEPTTR expansion surgery to lengthen the titanium rods in her back, further straightening her spine and giving her lungs more room to expand. A second expansion surgery is scheduled for March 2017. The VEPTTRs will likely remain in her back indefinitely.

At a recent follow-up visit to CHOP, Arwa's fondness for Dr. Campbell was evident. She beamed at him and gave him her highest praise – a double thumbs up.

The feeling is mutual, and Dr. Campbell says he's happy that he and Children's Hospital of Philadelphia can help children like Arwa who have complex, life-limiting illnesses.

"There are no guarantees in a case as complex as Arwa's, but we do know this: She now has a real shot at a future."

Home sweet home

On December 8, Arwa and her family took the 14-hour flight home to Saudi Arabia. Back in the comfort of her own home, Arwa grows stronger by the day.

"Thank God, she is fine," her father says. "We believe the surgery was a success – but God knows more about her future. For now, she is back to her normal life."

"We can't thank Dr. Campbell and the staff of International Medicine enough for the care and compassion they showed Arwa and our entire family."

For more information about the Center for Thoracic Insufficiency, please visit chop.edu/tis, or to refer a patient, contact the Department of International Medicine at Children's Hospital of Philadelphia at 001-267-426-6298.

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Spine Care at Rush: Ahead of the Curve

By Rush University Medical Center

DEVELOPING AND REFINING MINIMALLY invasive surgical techniques and technology. Giving hope to patients with failed prior surgeries. Conducting groundbreaking research on bold new approaches, such as a stem cell therapy to improve function in patients who are paralyzed due to spinal cord injury.

In these and many other ways, world-renowned spinal surgeons at Rush University Medical Center in Chicago do more than just treat spinal conditions and injuries; they are actually transforming how the spine is treated.

"Rush is without a doubt the premier spine center in the United States," says neurological spinal surgeon Richard Fessler, MD, PhD. "Patients receive the most advanced treatments from surgeons who are on the cutting edge of their specialty. Our highly specialized nurses provide outstanding support, both in the operating room and on patient floors. And every aspect of a patient's care is tightly coordinated, from the initial evaluation through rehabilitation."

Pioneers in minimally invasive spine surgery

In fact, Rush is a destination, both nationally and globally, for spinal surgery — especially minimally invasive spinal surgery.

Surgeons at Rush have pioneered numerous minimally invasive procedures for the spine, including fusions, decompression of stenosis, and disk replacement. "We also have the ability to perform scoliosis correction minimally invasively, which is rarely done anywhere else in the world," Fessler says.

More important, spinal surgeons at Rush are developing the technology used in these procedures, which are performed all over the world. For instance, they are helping to design innovative expandable implants for minimally invasive fusions that can be inserted through small incisions in the spine, allowing a surgeon to treat the patient using a band-aid-sized incision.

Less is more

Their considerable expertise with minimally invasive approaches enables spinal surgeons at Rush to achieve exceptional outcomes with

significant potential benefits to the patient:

No muscle cutting, so patients do not have to wear a brace after surgery. In fact, patients are encouraged to return to normal activity almost immediately following their surgery.

No blood transfusion

Very limited use of narcotics both during and after surgery. Spinal surgeons at Rush have conducted pioneering research in minimizing narcotic utilization for spinal surgery.

Physical therapy begins the same day as surgery for faster recovery and rehabilitation.

"We're able to get patients up and around and back to their lives very quickly," says orthopedic spinal surgeon Kern Singh, MD. "I had a patient who flew in, I did his lumber fusion the next day, and the day after that he was up and walking around. The difference in quality of life after minimally invasive surgery is truly remarkable."

Giving patients a second chance

Spinal surgeons at Rush are also leaders in revision surgery, treating a high volume of patients with failed back, neck and deformity surgeries — including many international patients.

"We have extensive experience with computer navigation and robotic surgery, which is helpful for revisions because it enables greater visualization and precision before and during the procedure," says Singh. "Often, these patients are extremely debilitated when they come to us. Most of the time, we can correct the issue, restore function, and relieve symptoms."

Your trusted spine care partner

Rush has provided expert spine care to adults and children from all over the world. Our International Health Services program provides personal assistance to patients from outside of the U.S., their families, and referring physicians before, during, and after their visit to Rush.

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Spinal surgeons Kern Singh, MD (left), and Richard Fessler, MD, PhD, and their colleagues at Rush University Medical Center in Chicago provide world-class spine care, including minimally invasive and complex revision procedures.

Medical devices manufacturing in India: A sunrise segment

The Government of India has taken several initiatives to boost manufacturing of medical devices in India.

INDIA IS WELL PLACED in some segments of the medical devices sector such as outsourced contract design, development and manufacturing. Manufacturers in India have significant focus on 'designing-to-cost' factor owing to the price sensitivity in Indian market. This in-turn has led Indian products gain competitive position in majority of the global markets. Indian manufactures range of predominantly low value to high end medical equipment catering to one of the most diverse set of consumers. India has steadily built capabilities in designing and development of vast range of electro mechanical diagnostic and therapeutic devices. Besides implantable devices and active implantable like pacemakers are also developed for most stringent quality norms. Today, all segments of medical devices are being developed in India including high precision components, sub-assemblies, printed circuit boards assembling, implantable grade materials and sterile packaging,

bio gradable implantable materials, noble metals and biomaterials like nitinol, polymers, silicones, epoxy, microelectronics, polymers, laser welding-hermetic sealing etc.

The Indian medical devices industry is a sunrise segment in the healthcare space. With a strong focus on technology, innovation and a conducive regulatory framework, this sector is expected to attract strong investments in the coming years. Many international companies in this field are already using India as a manufacturing base by either setting up facilities of their own or by acquiring domestic manufacturers. Some examples include 3M's manufacturing plant in Pune, Becton Dickinson's manufacturing facility in Haryana, Hollister's setting up manufacturing facility in India and Philips Medical Systems' acquisition of Medtronic and Alpha X-Ray Technologies.

The Government of India has taken multiple steps to boost the medical device manufacturing



in the country. One such step is permitting 100% automatic foreign direct investment in the sector. Another step has been the rolling back import duty concessions for 67 medical devices. In addition, the country is in the process of setting up three Med Tech Parks. The Parks are expected to come up in Andhra Pradesh, Maharashtra and Gujarat. The three states have already initiated plans for medical tech parks and their success will be critical for the sector's future. The major purpose of these Med Tech Parks will be to reduce cost of production or manufacturing as these parks will have in-house

common manufacturing facilities and also for consolidated raw material procurement.

Many skill development and training programs are being carried out for the medical sector by the government and private sector to learn how to design and develop medical devices of international quality & standards and also to meet the medical device directive regulatory requirements. As India already has the largest number and best of doctors in the world, the strong foothold in the medical devices manufacturing sector will only further improve India's reputation in the global healthcare sector.



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Understanding Colorectal Cancer

By Jonathan Efron, Division of Colorectal Surgery Johns Hopkins Medicine, Baltimore, USA

COLORECTAL CANCER SYMPTOMS CAN be embarrassing to address or easy to dismiss. But discussing your bowel movements with your doctor can be a lifesaving conversation.

The most common signs and symptoms are rectal bleeding, which can be painless, diarrhea or constipation. However, what makes colon and rectal cancers scary is that there usually are no symptoms.

Anyone can develop colorectal cancer, but chances increase markedly after age 50. The recommendation for people over 50 is to have a digital rectal exam and a colonoscopy, in conjunction with radiology tests, to look for either precancerous or cancerous conditions. Tests can be done earlier if a direct relative – mother, father or sibling – has had colorectal cancer.

Screenings are important because often, the cancers develop from precancerous lesions, and if they are detected early, they can be removed right away.

To make the most timely and accurate assessment of the patient, institutions like The Johns Hopkins Hospital are using a multidisciplinary approach to colorectal cancer. This means a team of experts from different specialties – such as oncology, surgery and radiology – discusses each case and then tailors a care plan to the specific needs of the patient.

On that same line, almost all patients with colorectal cancer nowadays undergo some form of genetic testing, which looks at specific gene defects. That information helps physicians decide the type of chemotherapy to which the patient will respond best after surgery.

There are three minimally invasive approaches to surgery for colorectal cancer.

The laparoscopic approach places cameras



and instruments in small incisions to see exactly where the cancer is located, detach it, and remove the part of the colon or rectum that has the cancer. Transanal minimally invasive surgery allows physicians to operate through the anus, freeing up the rectum in difficult places. Robotic surgery can also remove portions of the colon and the rectum, and put everything back together.

Technology is advancing at a very rapid pace. Every two or three years, there is a new piece of

equipment that makes it easier to do these complex surgeries without making large incisions, ultimately improving the patient's recovery time.

Over the last 10 years, dramatic improvements have allowed physicians to treat patients with colorectal cancer and advance their quality of life. Early diagnosis is key.

It makes having that conversation with your doctor about bowel movements and undergoing the recommended screenings worth it.

For more information, visit hopkinsmedicine.org.

Did you know? Johns Hopkins Hospital offers colorectal care for adults in its Colon Cancer Center and its Rectal Cancer Multidisciplinary Clinic. A new colorectal surgical center in the Johns Hopkins Children Center is tailored to pediatric patients' needs. For more information, visit hopkinsmedicine.org.

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Modular Interior Construction Is it a better Approach for healthcare?

The only constant in today's healthcare environment is change. And one of the things we are trying to change is our behaviors as it relates to how we build out our interior environments in Healthcare applications.

The biggest challenge in new hospital construction is the amount of time it takes from medical planning and design, to when the hospital is actually ready to be occupied. Decisions related to interior aesthetics and functionality, and which technologies to integrate, are typically decided years before a hospital is occupied. Examples are abundant and they haunt healthcare facility users, and hospital planners every day.

None of us has a crystal ball; we don't know how technology is going to look like 2 years, 4 years, or 10 years from now. Yet we are trying to design spaces conventionally that are in need to be flexible enough to handle whatever may be coming our way. Facilities need an environment that is going to be flexible enough to handle the necessary changes today...but more importantly they need an environment that is going to be flexible enough to handle the technologies of the future.



"There is a better way to design and build our interiors", one that gets away from fixed in place construction. With a modular solution we can reduce our initial construction waste, but more importantly, be able to respond to the need for flexibility, not only today, but in the future too.

A pre-engineered wall, with med gases installed, low voltage, AV systems, and hospital grade electrical plug and play connections installed with the desired look, driven by the architect or designer arrives onsite. Tilt up construction for the interiors means clean construction; but more importantly patients get to move in faster.

Instead of worrying about diverting waste...what if we don't create it in the first place? That's what a modular solution brings to a healthcare facility; being able to reduce waste, clean construction, faster delivery, and most valuably, being able to reuse our interiors.

Construction behaviors in healthcare environments need to change — focusing on reduce and reuse, saving costs through rapid interior construction and enhanced coordination, creating environments that help the overall healing process of patients and retention of staff. This is true sustainability - and this is what modular interior construction is all about.

For more information, visit Arab Health Exhibition 2017, NMG Booth number 4F30- Hall 4 Contact us: info@nmg.us.com

Impactful Realism

Enhancing Physician Training On Complex Procedures

FOR THE CENTRE FOR BIOMEDICAL and Technology Integration (CBMTI), a commercial spinoff of the University of Malaya in Malaysia, 3D printing is vital to innovation. CBMTI uses PolyJet Technology to deliver a range of services including custom medical implants, prototypes for new devices and patient-specific models for surgical planning. But where CBMTI truly stands out is in creating clinically impactful, sophisticated training simulators.

At CBMTI's inception, the primary tools for training neurosurgeons were mentoring on live human cases, cadaveric dissection and computer simulations. In a groundbreaking step to enhance training, the center adopted 3D printing. Its first 3D printer made spatially accurate models in a single material, but did not mimic human pathology without a costly, time-consuming post process. This changed when they acquired PolyJet 3D Printing technology.

"Once we got the Stratasys multi-material printer, we were able to print models that could, for instance, mimic the texture of the nose, the linings, and the harder tissue at the back of the nose. We found this very useful, especially in teaching trainees how to handle different materials," said Vicknes Waran, MD, director of CBMTI.

Better Prepared With Realistic Patient-Specific Models

CBMTI now 3D prints detailed multi-material models that mimic real anatomy, even down to a specific patient's tumor. With access to advanced multi-material 3D printing, CBMTI can fabricate models that feature different textures and densities over surfaces and throughout interiors, just as human body parts do.

"The [Stratasys] J750 allows us to create models with both texture and color variations that mimic actual tissue handling and appearance better for



these complex models," said Dr. Waran. "With the Connex, we can simulate realistic layers of human tissue like skin, bone, dura, brain and tumors within the printed model for surgical simulations."

CBMTI develops its training courses in partnership with leaders in various fields. Together, they identify a patient with the anatomy and

pathology they wish to train physicians to treat. CBMTI engineers then convert the patient's CT and MRI scans into digital design files, and select materials that best match the physical, tactile and color characteristics of the target anatomy. CBMTI has even found ways to use support material, typically removed from the final model, to enhance

clinical realism.

"We have also incorporated features such as fluid dynamics so we can simulate endoscopic neurosurgical procedures," said Yuwaraj Kumar Balakrishnan, CBMTI chief operations officer. "We find surgeons who train on these models are much better prepared in terms of dealing with complex surgeries, simply because they are able to train and retrain on the models until they perfect the procedure."

Industry Leaders in Medical Models

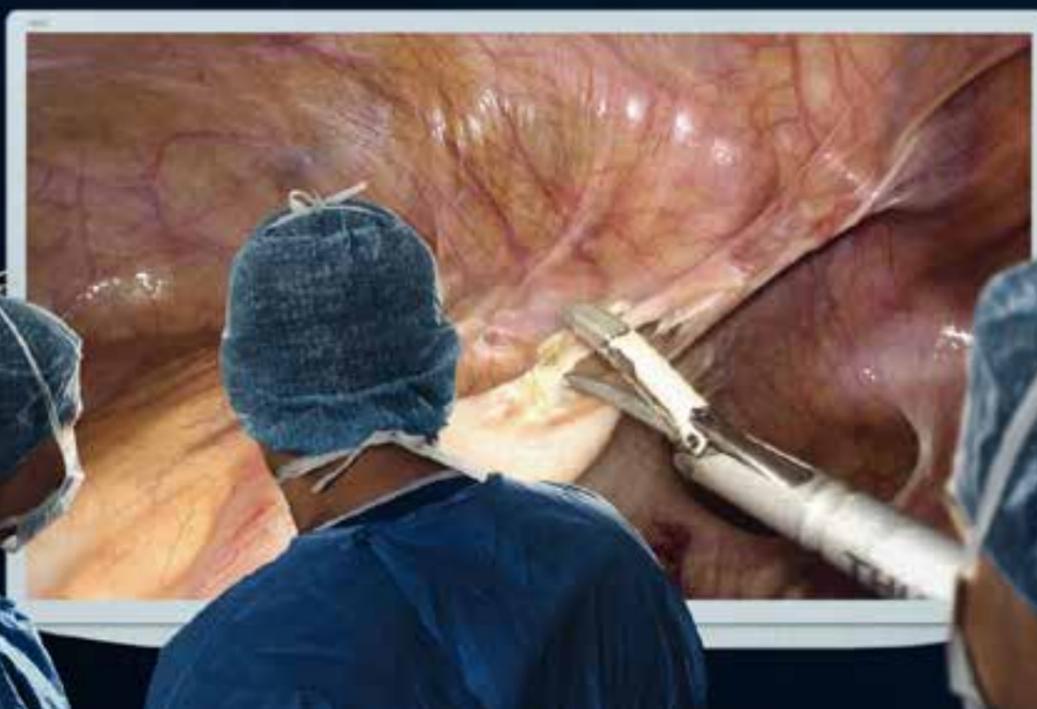
A recent program was developed to train surgeons on ear, nose and throat surgeries in collaboration with Professor Prepageran Narayanan from the University of Malaysia.

"When you use a 3D model with a tumor or lesion, it is very important to have color. Only if you see the color separation do you know that you're in the right plane," said Narayanan. "Now you can use a model based on a patient's pathology to simulate the entire surgery before the surgery itself."

Interest has significantly increased since CBMTI invested in 3D printing and the company has increased production capacity by 40 percent with its 3D printers. A team of 20 medical clinicians, rapid-prototyping engineers, computer programmers and electrical engineers work together on their main 3D printing lines of business: creating prototypes for university research, developing custom titanium implants and manufacturing custom simulators for surgical training.

"Researchers' interest in our models has increased a hundredfold since we began using these printers," said Balakrishnan. "Stratasys printers are the ideal platform for innovation. We have gone from being only able to mold titanium plates for cranial implants to being able to create biomodels with pathology from actual patient imaging data."

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4K UHD technology is the new benchmark in surgical endoscopy: Olympus

VISERA 4K UHD Endoscopy System from Olympus gives surgeons four times higher resolution

OLYMPUS, A WORLD LEADER in high-end optics and precision digital solutions, believes that the 4K UHD technology is the new benchmark in surgical endoscopy.

And setting that benchmark is the company's VISERA 4K UHD system, which benefits surgeons with particularly sharp images thanks to integration of 4K Ultra HD technology.

The VISERA 4K UHD delivers images in 4K resolution (4096 x 2180 pixels) and Ultra HD (UHD) with 3840 x 2160 pixels, providing four times more image information than Full HD.

The VISERA 4K UHD is part of Olympus' aim to provide surgeons with even better support in their challenging and high precision work, and to thereby help improve clinical outcomes and the quality of life for patients.

Ultra-High Definition

The Sony Exmor R™ CMOS image sensor in the camera head of the VISERA 4K UHD produces detailed, low-noise images. The one-touch autofocus feature delivers sharp pictures on the surgeon's screen at the push of a button.

The system incorporates an ultra-telescope with an extra low dispersion lens that reduces chromatic aberration caused by light dispersion at the visible edge. This ensures that the system will consistently provide incredibly sharp depictions in true colors, even on the fringes of the visible edge.

Wider Color Gamut

4K and UHD provide surgeons with finer color calibration possibilities by broadening the range of



color reproduction compared by a factor of 64 to predecessor models featuring Full HD technology.

An enlarged color spectrum encompassing around one billion colors is now reality.

The system improves the visibility of edges and fine details of delicate tissue, such as blood and lymphatic vessels and nerves. Above all, the richer reproduction of reds assists surgeons in ensuring that incisions are even more accurate.

Magnified Visualization

A 55-inch screen provides a truly immersive environment and displays the razor-sharp images being transmitted from the endoscope in 4K Ultra HD brilliance. Sony's OptiContrast™ Panel guarantees that images impress with high-contrast



VISERA 4K UHD Arthroscope

and minimal glare. The magnified visualization function allows the surgeon to use the telescope fitted to the VISERA 4K UHD even at some distance from the part of the body being operated on, while still delivering high-resolution sharp images.

The remote position of the VISERA 4K UHD also prevents collisions with other handheld instruments.

Key benefits of VISERA 4K UHD

Ultra-High Definition:

- Improves visibility and allows more precise and safe surgery
- Provides four times more information than conventional Full HD

Imaging Systems:

- Closer distance - half the distance of HD

Wider Color Gamut:

- Realizes rich color reproduction and provides suitable colors for each

Clinical Discipline:

- Enables easier determination of tissue boundaries (fat, nerves, vessels, etc.)
- Better visualization of blood vessels and lesions due to high range of red color reproduction

Magnified Visualization:

- Improves visibility and operability with a large screen and electronic zoom
- Reduces "sword fighting" of hand instruments and prevents mist and smoke
- Allows surgeons to observe fine patterns and structures of tissues in the body in extreme detail even when enlarged

Historic Joint Venture

VISERA 4K UHD was developed by Sony Olympus Medical Solutions, a medical joint venture between Olympus and the Sony Corporation, which was founded in 2013.

For more product information: www.olympus.eu/4K

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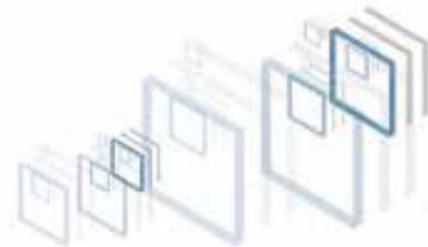
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SOLSTEO the leading European manufacturer of first-class industrial EO sterilisers at Arab Health 2017



Leading manufacturer of EO sterilisers for the medical device industry

STERILE EO



THE KNOWLEDGE OF EO STERILISATION processes and the SOLSTEO team's focus on innovation make the company a recognised global expert in this field of expertise: SOLSTEO is a member of the ISO/TC 198/WG 1, representing the French mirror committee.

"Using innovation to keep one step ahead of the competition" could be SOLSTEO's motto. This culture of innovation is rooted in the passion for automation shared by all SOLSTEO team members. This year in Arab Health, SOLSTEO will present 2 technological breakthroughs, bringing innovation in the automation of EO sterilisers to guarantee 100% data recording and reporting:

EQ-Sim: software programs tested and validated 95% by virtual machines!

The commissioning a new production equipment is always a challenge. Programs of automated machines, sometimes quite complex, must be tested extensively to avoid delays during validation phase on-site. It is not unusual to detect bugs when the software is installed in the machine. From then onwards, correcting bugs can take for ever... and turn into real nightmare!

EQ-Sim is an innovative simulation tool that makes it possible to test and validate programs before the actual software is injected in the PLC of a machine. Like a flight simulator,

EQ-Sim reproduces the exact same physical parameters of the EO sterilizer when it is in real operation. Consequently, programs are tested and validated at 95% "off-site" in SOLSTEO offices Paris, FR. Software validation on the real machine takes only a couple of days at Customers' factory. This is a huge advantage when it comes to commissioning a new EO steriliser, or when making a software upgrade on an existing machine.

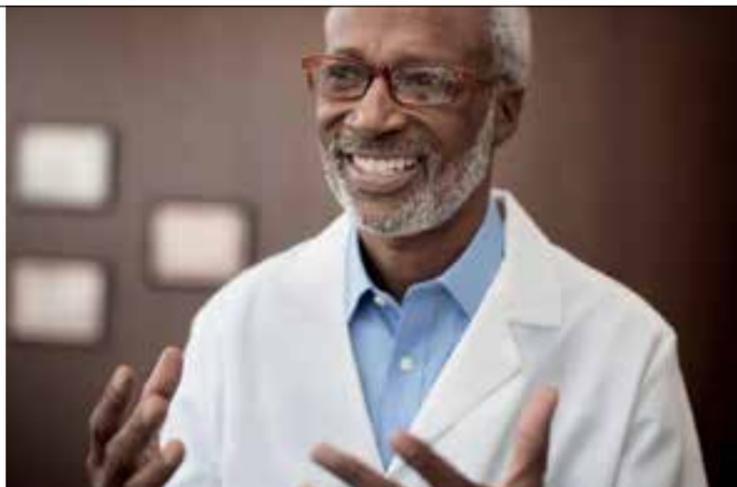
PLC-embedded memory

Data integrity and traceability are essential aspects when product release is based on

cycle report. Data losses on final report are not unusual, and incomplete reports always have a cost: from product re-sterilisation in the best case, to batch destruction in the worst case.

The innovation with the PLC-embedded memory is that data recording doesn't take place in the HMI (Human Machine Interface) anymore, but data are recorded directly in the PLC of the machine. This guarantee 100% recording of ALL cycle data at ALL time. This software solution is compliant with the FDA 21 CFR Part 11.

SOLSTEO is exhibiting at the France Pavilion in Zabeel2, Stand G70



We believe that a better future for the treatment of cancer and neurological disease is about achieving more focus where it matters.



Learn more about treatment solutions for cancer care, visit Elekta booth S1A30.



Specialized programs

offer critical, comprehensive services for adolescents and young adults with cancer

By Joseph Pressey, MD, Adolescent and Young Adult Oncology Program Leader Cincinnati Children's Hospital Medical Center

We address each patient's needs from diagnosis to cancer survivorship. Patients receive a personalized care plan that balances treatment tolerability and the treatment intensity needed to treat their particular cancer.

ADOLESCENTS AND YOUNG ADULTS with cancer face unique challenges, and the care they receive should be unique as well. A growing number of pediatric and adult cancer centers offer dedicated programs for these patients. These centers are designed to address the medical, emotional and psychosocial concerns these patients face.

According to the National Cancer Institute, patients who are ages 15-39 are considered adolescents/young adults. Each year in the United States, about 70,000 people in this age group are diagnosed with cancer. This accounts for about five percent of cancer diagnoses in the United States, and is six times the number of cancers diagnosed in children ages 14 and younger. Among the most common cancers affecting these patients include bone and soft-tissue sarcomas, leukemia/lymphoma, female genital tract and testicular tumors, and brain tumors.

Complex challenges Unfortunately, adolescents and young adults with these types of cancer often do not respond well to treatment. Why is this? The reasons are not clear, but researchers are working to identify the underlying causes. In the case of solid tumors, one cause may be tumor biology. Researchers at Cincinnati Children's routinely perform genomic analysis on these tumors, and have found them to be more complex genetically compared to similar tumors in younger patients. Further research is needed to determine whether this is a factor in how these tumors respond to treatment.

Another challenge for patients in this age group is that they often do not tolerate chemotherapy as well as patients who are younger. In some cases, oncologists may treat with a less aggressive course to reduce side effects. Obviously, this may significantly impact effectiveness of treatment.

A dedicated program At Cincinnati Children's, our Adolescent and Young Adult (AYA) Cancer Center leverages our institution's longstanding experience in caring for these patients. Our goal is two-fold: to make sure these patients receive state-of-the-art cancer care, and to provide more opportunities to advance the care of AYA patients through clinical and translational research.

The center's multidisciplinary team includes pediatric oncologists and others in radiation therapy, surgery, orthopedics, behavioral medicine, obstetrics/gynecology, psychology and social work. All have expertise in adolescent and young adult oncology. Together, we address each patient's needs from diagnosis to cancer survivorship. Patients receive a personalized care



plan that balances treatment tolerability and the treatment intensity needed to treat their particular cancer.

Below are a few key elements that are part of our program.

Age-appropriate support Adolescence and early adulthood is a time of life when things are changing fast. Patients are facing complex social and cultural issues that likely affect adherence to therapy and quality of life. Our psychologists, social workers, child life specialists, chaplains, music therapists and holistic health specialists are trained to provide age-appropriate support to patients with cancer whose lives have become even more complicated.

When patients are in the 20s and 30s, we work with adult care physicians to ensure they have the most comprehensive care available. These specialists can address issues such as hypertension and tobacco use, among others.

Fertility preservation Specialists from our Comprehensive Fertility Care and Preservation Program meet with eligible patients to discuss how their specific cancer therapy might affect their ability to have children in the future. The team consists of experts in pediatric oncology, pediatric urology and adolescent gynecology, as well as representatives from reproductive endocrinology at the nearby University of Cincinnati Center for Reproductive Health. The team works to provide all available fertility preservation options to patients undergoing gonadotoxic therapy.

Peer support Volunteers in our peer-to-peer program reach out to newly diagnosed adolescents and young adults to provide encouragement and support. They might talk about how to deal with

The AYA Cancer Center at Cincinnati Children's is growing, and we are committed to ongoing improvement.

inpatient stays, cope with side effects, maintain friendships and reduce stress. They speak from experience—all were diagnosed with cancer during adolescence or young adulthood.

A dedicated space Adolescent and young adult patients at Cincinnati Children's have their own outpatient clinic, as well as a dedicated inpatient unit. We created these spaces with the help of our AYA advisory board of cancer survivors. Patients tell us they feel their needs are being cared for in a setting where they are comfortable.

Educational services Our licensed professional educators help adolescents and young adults work toward their educational goals and maintain academic skills while receiving treatment. We collaborate with high schools and universities to obtain assignments and materials, and offer individualized lessons year-round.

Long-term survivor program Cincinnati Children's Cancer Survivorship Center provides specialized medical care and psychosocial support to childhood cancer survivors – continuously and without interruption through adulthood. Cincinnati Children's established the program over 30 years ago as one of the first of its kind in the country. Greatly expanded in the past five years, the Cancer Survivorship Center today cares

for more than 1,800 children and adult survivors, who range in age from five to 65+ years old.

Research Cincinnati Children's oncology faculty members are leaders in research in adolescent and young adult cancers. We are one of the nation's largest centers for new pediatric and young adult anticancer drug research and stem cell transplant. However, we recognize a crucial need for more patients in this age group to participate in clinical trials in order to develop more effective treatment protocols and better understand outcomes gaps and quality of life concerns. Our researchers are enrolling these patients in investigator-initiated studies as well as trials conducted by various consortia and by industry.

The AYA Cancer Center at Cincinnati Children's is growing, and we are committed to ongoing improvement. As we continue to focus on comprehensive case management, offer extensive support services and pursue scientific investigation, we expect our patients to experience positive outcomes and a better quality of life during and after treatment.

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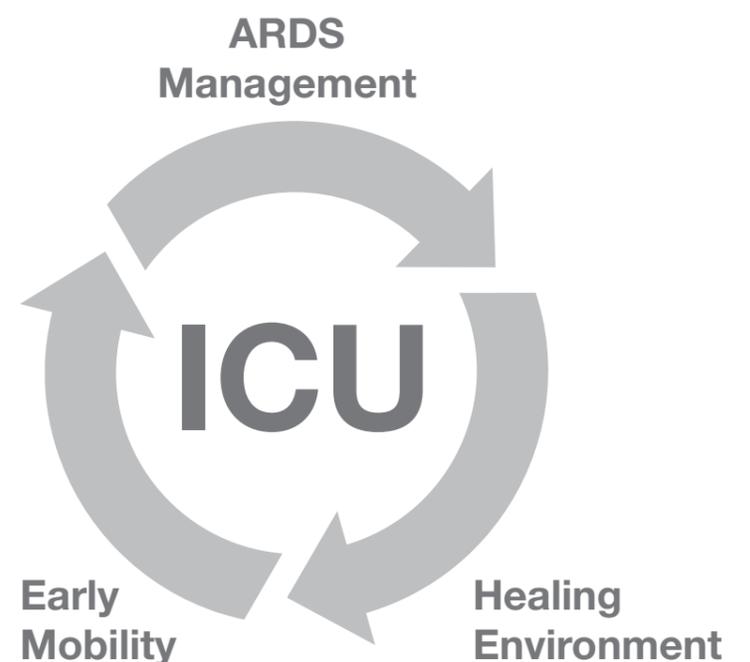
From admission to discharge

Intensive Care Units (ICU) are the locations where the most difficult to treat patients are often staying for days or even weeks. For this critical and costly environment, Getinge always focus on developing user-friendly and reliable solutions that help caregivers to achieve tangible and cost-effective patient outcomes.

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Patient Flow Management: INSIGHT effectively supports the work- and patient flow in a modern hospital with real-time overviews of staff, beds, patients including treatment plans and tasks. In short, INSIGHT is all you need to ensure a smooth, planned and coherent patient flow from arrival to discharge.

Surgical Integration Management: TEGRIS gives you full control of the information and equipment in your operating room. TEGRIS helps you integrate the latest OR technologies with information from your IT systems and ensures you the best workflow in your operating rooms.

Sterile Supply Management: T-DOC provides you with a complete traceability of your instruments and endoscopes all the way to the patient. With T-DOC, we give you the optimal workflow for your sterile supply to ensure patient safety in your hospital.

Visit us at booth no. S2.G30 and learn more about our IT solutions.

Explore Getinge Group's unique value proposition mirroring the continuum of care

Getinge Group will be at Arab Health 2017 with one stand presenting three major product brands together. Cutting edge therapies and customer solutions under the product brands Maquet, ArjoHuntleigh and Getinge will be showcased on a 600 m² stand.

The set-up of the solutions in the CSSD follows the workflow for the reprocessing of instruments. The flow covers equipment and consumables as well as areas for project planning of a sterile supply department and IT solutions for managing and monitoring the sterile production flow.

With our joint forces we are proud to present a wide-ranging IT solution covering all aspects of the surgical workflow. Real time collaboration and transparency about the flow of patients, material and information in OR, ED, ICU and classical ward is

ARJOHUNTLEIGH GETINGE GROUP

ArjoHuntleigh solutions and innovations reduce the risk of life-threatening adverse events and improve the lives of people affected by reduced mobility. An interactive display will demonstrate safe patient transfer solutions between care environments.

MAQUET GETINGE GROUP

The stand will highlight Maquet infrastructure and therapy products in the intensive care unit (ICU), and will contain a complete operating room as well as a complete hybrid OR.

Visit Getinge Group: S2G30 in Sheikh Saeed Hall 2

the specialty of our INSIGHT clinical logistics solution. Comply with best practices and international guidelines using T-DOC management tools in tracking instruments and optimizing and documenting process flows.

Maquet's infrastructure and therapy products in the intensive care unit (ICU) are in focus. The eye-catching ICU wall system VARIWARD will be a highlight on the joint Getinge Group stand. VARIWARD will be launched at Arab Health – together with the latest pendants generation. A whole operating room set-up will

attract the audience. Patient positioning on an innovative operating table will be demonstrated hourly.

ArjoHuntleigh are dedicated to increasing the quality and efficiency of care. Showcased on stand will be the solutions and innovations that continue to improve care environments around the world – by creating cultural change, reducing the risk of life threatening adverse events and improving the lives of people affected by reduced mobility. An interactive display that will demonstrate safe patient transfer solutions between care environments.



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A central sterile service department (CSSD) and an endoscopy reprocessing area will be displayed, along with latest equipment and consumables.



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- Reducing operating costs
- Wide portfolio of different sizes of sterilizers and three choice of programs from fast, standard and advanced sterilization
- Complete range of consumables
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