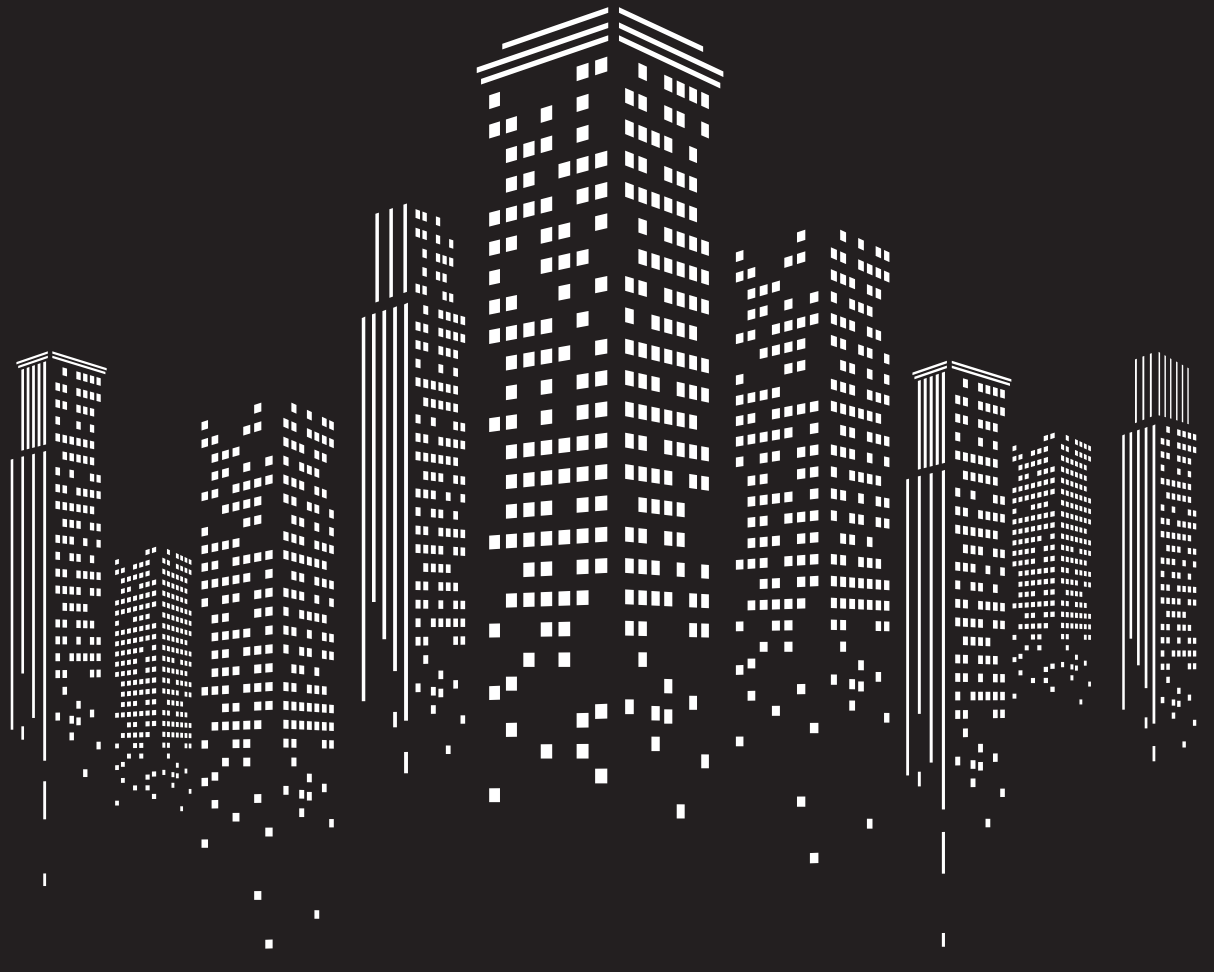
SEPTEMBER 2018 **ISSUE 5**

arab health

THE **OFFICIAL MAGAZINE** OF THE ARAB HEALTH EXHIBITION

BUILDING HEALTHCARE 2018:

Shaping the Future of Healthcare Facilities



THE POWER OF PARTNERSHIP:

GCC Healthcare Industry's Collaborative Endeavours

www.**arabhealthmagazine**.com

THE LEADING ITALIAN HOSPITAL GROUP

INNOVATION

We use the most innovative technology and equipment, which enable us to offer increasingly accurate and high-quality care.Thanks to our three research hospitals we create and provide new procedures that do not existanywhere else in the world.

EXCLUSIVITY

Comfort and luxury treatments are always the first goal and GSD can assure the best possible service by providing tailor-made proposals.

SMART SERVICES

We are committed to find new solutions to provide our patients with quicker access to our facilities, specialists and healthcare services. A Smart service for greater accessibility.

FOCUS ON THE PATIENT

We consider every patient as a person with his/her own story, culture and feelings. Our specialists design healthcare pathways tailored on each patient.

GRUPPO OSPEDALIERO
SAN DONATO

arab health
THE OFFICIAL MAGAZINE OF THE ARAB HEALTH EXHIBITION

President, Global Exhibitions EMEA Peter Hall
peter.hall@informa.com

Publications Director Joseph Chackola
joseph.chackola@informa.com

Editor Deepa Narwani
deepa.narwani@informa.com

Contributing Editor Sangeetha Swaroop
Sangeetha.C.Swaroop@informa.com

Contributing Writer Inga Stevens
inga.stevens@informa.com

Creative Director Mark Walls
mark.walls@informa.com

Project Manager, Marketing Divya Jashnani
divya.jashnani@informa.com

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

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

Editorial Consultants
Frost & Sullivan

Printed by
Zabeel Printing Press
Tel: 04 2626171 Fax: 04 2696067

Published by
Informa Middle East Media FZ LLC

For subscription information visit
www.arabhealthmagazine.com and follow the link.
Follow us on
@ArabHealthMag Arab Health Magazines

Official magazine of Arab Health Exhibition:
ARAB HEALTH
Part of:
informa exhibitions

letter from the editor

Partnering for Excellence

Partnership is a key theme across the magazine this month as we look at examples of successful collaborations between international healthcare brands and local hospitals who are striving to provide excellent treatment options to the local GCC population.

Plus, we also take a look at the GCC healthcare industry's changing model of care and how digital technology, such as Artificial Intelligence, has a vital role to play in supporting the aim of providing access to high quality and cost-effective patient care, with improved medical outcomes.

Furthermore, from pages 14 to 48 speakers of the different conference tracks at Building Healthcare Innovation & Design Show 2018 give us an insight into all the latest trends and developments taking place in the industry. For instance, Ben Gonzalez, the co-chair of the Design & Build conference shares some in-depth insights about what really goes on behind planning, designing, building, and the associations required for operating a healthcare facility. Whereas Brian de Francesca, Chief Executive Officer at Ver2 Digital Medicine, who will be speaking at the event on 'Digitisation of healthcare' and 'The Internet of healthcare things', discusses the tremendous positive impact that the union of digitalisation and connectivity will have, specifically on healthcare staffing and facilities.

We look forward to welcoming you to Building Healthcare that will bring together key decision makers involved in the design and management of medical facilities, from October 2 to 4. You can also connect with us on Twitter @Arab_Health.

STUDEX®
Made in U.S.A.
ear piercing

World's finest Allergy Free fashion ear studs

24 karat pure gold plated
Allergy Free
Ideal for every day wear
Made in U.S.A

Importer & Distributor of Studex, Medispet piercing systems to MENA
Piercing Systems DMCC
Tel; +971 (0)4 554 7071 | Toll Free 0800 STUDEX | Email; sales@studexuae.ae | studexuae@studexuae.ae | Web; www.studex.com

contents

BUILDING HEALTHCARE

DESIGN/INFRASTRUCTURE

HEALTHCARE MANAGEMENT

TECHNOLOGY

BUILDING HEALTHCARE
Innovation & Design Show

SHAPING THE FUTURE OF HEALTHCARE FACILITIES

By Arab Health Magazine Staff

Construction is a trending topic in the healthcare sector with numerous projects being planned or under construction throughout the GCC. The aging population, market competition, and the need to continually raise the bar in the delivery of care have kept healthcare organisations vigilant. While balancing these dynamics with financial resources has proven to be challenging, companies are confidently forging ahead with initiatives that are benefiting the entire sector.

According to a recent BNC Network GCC construction intelligence report, the healthcare industry constitutes 4 per cent of all active projects in the GCC's urban construction sector and in dollar terms, these projects account for 5 per cent of the total estimated value.

The report further highlighted that the total value of the 707 healthcare projects currently under development across the GCC exceed $60.9 billion. Of this the 445 projects collectively worth $51.9 billion are hospital projects, while the other 262 projects, worth $9 billion, are medical clinics or research centres.

These investments and rapid growth are in direct response to significant opportunities and challenges created by various socio-economic and business trends. Demand for healthcare in the GCC countries has been driven by changing demographics, including a surge in population, rise in income levels and a greater prevalence of lifestyle-related chronic diseases. Among the different factors driving this growth are the recently introduced mandatory health insurance schemes that are driving investment in hospitals, clinics, pharmacies and other healthcare facilities

Putting a spotlight on this burgeoning sector is the Building Healthcare Innovation & Design Show 2018, taking place from October 2 to 4, in Hall 8, at the Dubai World Trade Centre, that will bring together key decision makers involved in the development, design and management of hospitals and other medical facilities. It offers a unique platform for investors, architects, consultants, contractors, developers, planners as well as healthcare professionals such as medical directors, department heads, facility managers, among others, to discuss the latest developments in the industry.

The show is co-located with Cityscape Global, one of the most influential real estate exhibitions in the Middle East that attracts influencers within the construction, design and development industry in the region.

At Building Healthcare, visitors will get the opportunity to engage with over 3,800 decision makers. Plus, they can connect with existing clients or partners and reach new hospital project representatives to build lucrative business contacts, gather market insight and key knowledge on how to do business in the Middle East, and showcase latest products and services to decision makers, architects, and government officials.

The show will bring together a targeted audience of industry professionals, such as from the architecture and design, fitting and hardware, healthcare planning, construction, and facilities management industry who will be displaying their latest design solutions, as well as be sourcing new concepts that balance the technical needs of doctors and staff with the comfort of patients for their healthcare facilities.

Along with the industrial workshops, the conference tracks based on the lifecycle of the hospital build, and the exhibition, the show gives the region's healthcare authorities the opportunity to network and to share their knowledge and solutions to current challenges faced by a healthcare facility.

Conference Agenda

Based on the theme "Delivering fit-for-purpose healthcare facilities", the Building Healthcare Congress 2018 aims at addressing the main challenges involved in planning, designing, building and operating a healthcare facility. Here international and national industry experts will discuss current topical issues in building different healthcare facilities.

The congress will offer access to the latest developments, innovations and best practices to keep healthcare build projects ahead of the curve in this evolving market. It is providing five half-day tracks spanning the entire lifecycle of a healthcare facility build: Vision & Masterplan; Invest; Design & Build; Equip; Operate. It is structured to align with the holistic nature of current healthcare developments and provide an all-encompassing view of the key challenges and best practices involved throughout. Below is a look at the topics each conference track will cover:

Vision & Masterplan: This session will focus on the importance of defining the vision of a healthcare facility at the beginning of a project to ensure the right facility is being built with the end in mind. It will address the challenges that arise in the planning stages of a build project while offering practical take-home solutions for a successful strategy. The session will also provide a unique platform for all stakeholders involved in the project to exchange best practice procedures and assess how to best optimise their involvement in this stage of the project.

Invest: Everyday billions of dollars are being poured into new projects to build top facilities for patients. In a region where competition is extremely high, and the market is already on the way to saturation, this session will provide the finer details on healthcare investment in the region. Join industry leaders to discuss investment perspective and the current trends and challenges when looking to invest in healthcare.

Design & Build: A healthcare facility's design establishes the basis for safe and effective care within its environment. As the market shifts from the government to the private sector, there's a larger emphasis on fit-for-purpose, efficiency and financially responsible designs. This implies that we analyse not only first costs but more importantly life cycle costs. Designing and executing the construction of a healthcare project requires the collaboration of appropriate expertise. This session will discuss the lessons learned as we strive to design and construct "fit-for-purpose" facilities, as well as the impacts of various construction elements such as engineering, operations and technology have on the healthcare business.

Equip: Whether equipping a new healthcare facility or keeping up to date with advances in medical technology in an established facility, it is a stage of the lifecycle that requires constant attention. Medical equipment accounts for 60-70 per cent of healthcare facility design and can be one of the biggest challenges in any new or existing project. This session will explore the latest trends and strategies from design and master planning to procurement and delivery illustrated through lessons learnt from challenging projects in the region.

Operate: This session will focus exclusively on operational planning, which addresses the hospital and its role in the health service system in a comprehensive manner. The session will outline how to set up structures for governance and staffing, develop plans for hiring, and how to create standard operating procedures for how everything will run when the hospital opens.

CONFERENCES AT A GLANCE

	Day 1 Tuesday 2 October	Day 2 Wednesday 3 October	Day 3 Thursday 4 October
Conference Room 1 *10:00 - 13:00pm*	Vision & Masterplan	Design & Build	Equip
Conference Room 1 *14:00 - 17:00*	Invest		Operate
Seminar Room *10:00 -17:00*	Healthcare Build Insights	Healthcare PPP Industry Seminar	Industry Seminar

Hospital Projects in the GCC

Building Healthcare brings out the Hospital Projects in the Middle East Report that details current and future hospital and infrastructure projects. It gives an insight into the following areas: Market Synopsis & Trends; Overview of the healthcare infrastructure; Insight into the region's investment climate; Indication of growth drivers and challenges; and Project updates per GCC country, Iran, and Egypt. Below is a look at key highlights:

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

Saudi Arabia: According to investment banking advisory firm Alpen Capital, the Saudi Arabian healthcare market is forecasted to reach $27.4 billion in 2020, registering a CAGR of 11.0 per cent from 2015. The outpatient and inpatient markets are expected at $15.2 billion and $12.2 billion, respectively, in 2020. From less than 70,000 in 2015, the number of beds required in the Kingdom is likely to cross 76,500 in 2020.

Egypt: According to 2013 statistics from the World Health Organization (WHO), the most recent data available, health expenditure accounts for 5.1 per cent of Egypt's gross domestic product (GDP). WHO data also shows that as of 2013, the country had five hospital beds per 10,000 residents, down significantly from 17.3 beds in 2010.

Seminars and Workshops

In addition to the five conference tracks, Building Healthcare will feature a range of seminars and workshops on the exhibition floor. These educational sessions will examine ongoing projects in the MENA region, discuss how to invest in new markets and assess case studies of planning, design, and construction that can be used in future projects.

The special focus sessions on regional healthcare infrastructure projects will home in on the current state of the healthcare market. Information will be provided on both current and upcoming projects, investment opportunities and gaps in the market to give attendees the knowledge needed to expand their business throughout the MENA region. AH

For more information and to download the report visit www.buildinghealthcare-exhibition.com

RAK HOSPITAL
Premium Healthcare. Premium Hospitality

General Surgery, GI, Minimal Access and Laparoscopic

Surgery Department at RAK Hospital

Meet our surgeons:

Dr. Jean Marc Gauer

Sr. Consultant & Head of Department

Dr.Anup Kumar Panigrahi

Sr. Specialist & Head of Department (Minimal Invasive Surgery)

Dr. Shekhar Upadhyay

Sr. Specialist

Dr. Imtiyaz Ahmad Zaki

Specialist

Our surgeons provide and emphasize on complete commitment to our patient throughout every stage of the medical process; from diagnosis to post-surgery care, we make sure that every phase is handled with precision and compassion.

The least amount of disruption in a patient's post-surgery life is our ultimate goal . We focus on minimally invasive procedures , an expertise our team of expert surgeons have extensive experience in. We even offer single-port surgery in selected cases where the entire procedure is done through only one single small incision in the umbilical area.

Our expertise includes:

- Cholecystectomy (removal of Gallbladder)
- Appendectomy (removal of Appendix)
- Repair of hernia (inguinal, umbilical, abdominal and femoral)
- Surgery on the small and large intestine, stomach and liver, including cancer surgery
- Surgery on the kidney (including removal of kidney for cancer)
- Surgery on the uterus and ovaries (including repair of fallopian tube for extra-uterine gravidity removal of uterus removal of fibroids)
- Thoracoscopic surgery (surgery for chest)
- Pediatric surgery (hernia, Hirschprung's disease)
- Bariatric surgery (Weight-loss surgery)

For more information, call 07 207 4444

THE SWISS LEADING HOSPITALS
Arabian Healthcare GROUP LLC
RAK DIABETES CENTER
Premium Healthcare. Premium Hospitality
JUMEIRAH, DUBAI

Rak Hospital • PO Box 11393, Ras Al Khaimah, United Arab Emirates T +971 7 207 4444
F +971 7 207 4455 | E mail@rakhospital.com
www.rakhospital.com

#RakHospital

Advanced Care. Expertise. Compassion.

The Power of Partnership

A look at the GCC healthcare industry's collaborative endeavours that involve international and home-grown hospitals coming together to improve the culture of health in the local communities

By Deepa Narwani, Editor

According to the recent Alpen Capital GCC Healthcare Industry Report, the region's population size is estimated to increase by 6.6 million individuals to 61.6 million by 2022, of which nearly 17 per cent will be people aged above 50. Plus, the region's propensity for non-communicable diseases, the expanding size of the population and the ageing factor, are all set to exert pressure on the existing healthcare system.

In order to tackle the high expenditure, the GCC reportedly has over 700 healthcare projects worth US$ 60.9 billion under various stages of development, of which more than 85 per cent of the projects, by value, are hospital projects and rest are clinics and research centres. The report highlighted that of the total, 264 projects worth US$ 24.7 billion are under the construction stage.

In this regard, the Ministry of Health in Saudi Arabia reportedly aims to increase private sector contribution in total healthcare spending to 35 per cent by 2020. In the UAE, the Dubai Health Authority (DHA) expects Public-Private Partnerships (PPPs) to increase in ambulatory care, home care, long-term stay, and day-surgery centres. While in Kuwait, the Kuwait Authority for Partnership Projects will be implementing PPP projects in the country. The other GCC countries are also participating in such developments and creating opportunities for the private healthcare providers.

One of the notable trends witnessed in the region is that of local providers tying up with international healthcare brands or leading hospitals opening up branches locally and even working with distinguished doctors, in order to share their trusted expertise locally. The spectrum of collaborative endeavours is diverse in healthcare and involves international hospitals coming together to improve the culture of health in the local communities. There is enough evidence that suggests such collaborative partnerships can indeed have a beneficial collective impact.

For instance, the U.S.-based Johns Hopkins works with affiliates in the UAE, Lebanon, and Saudi Arabia to set new standards for healthcare in those countries and to train and inspire local clinicians, researchers, and administrators.

Pamela Paulk, President, Johns Hopkins Medicine International told *Arab Health Magazine*: "Our goal is not to develop a one-time set of solutions to immediate challenges before we move on to the next opportunity. Instead, we develop close, sustainable relationships with our colleagues, so they can take full responsibility – for maximum benefit to their communities – long after our collaboration ends.

"We collaborate on research that has the potential to change medicine for generations. We also share with our affiliates the latest research advances achieved here in Baltimore, so our affiliates can quickly apply them at the local bedside."

One other notable case of such cooperation was the opening of Moorfields Eye Hospital NHS Foundation Trust's first overseas branch, after more than 200 years of its foundation, in Dubai. It is one of the oldest centres for ophthalmic treatment, teaching, and research. The outpost has now become one of the GCC's leading eye care institutions and has led to further expansion in the UAE with the opening of Moorfields Eye Centre Abu Dhabi.

Elhadi Hassan, CFO, Moorfields Eye Hospital Dubai said: "The Moorfields international business model incorporates teaching and research as well as clinical care and has proved to be very successful over more than 10 years in the UAE. It may even provide a blueprint for other leading UK and international healthcare institutions looking to expand internationally."

Hassan shared that many of the consultants in Dubai undertook their training at Moorfields London and all of them are based in the Middle East full time, to ensure the quality and consistency of patient care and follow up.

Another example is the model adopted by RAK Hospital, which has close ties with a number of Indian hospitals that are instrumental in sharing their know-how. It is also managed in co-operation with Sonnenhof Swiss Health (SSH) of Switzerland.

Dr Raza Siddiqui, CEO at Arabian Healthcare Group and executive director at RAK Hospital shared: "The concept of international cooperation is very dear to my heart because I started this 20 years ago. At RAK Hospital, we get the best from outside and bring them here when we need to. For example, we have tied up with India's Apollo Hospitals as well as Fortis Escorts that offers the best in cardiology services and they have deputed a team of eight full-time staff. Here doctors have the option of going for temporary posting overseas and can go back to their home institution when they want."

Plus, RAK Hospital's association with SSH was strategically planned, as Dr Siddiqui's aim was to promote RAK Hospital for medical tourism. "After basic research, we realised that Switzerland was a pioneer in medical tourism and many people were heading there for medical treatments. Therefore, we tied up with SSH to offer the best of both hospitality and healthcare to the local community."

Blueprint for Success

When such collaborations are forged, institutions have to respect the local culture and vision of international colleagues. The strategies must be adapted to each affiliate's specific needs, resources and cultures – all as part of the collaboration between experts of both the parties.

Individuals around the world have different ideas about what constitutes quality healthcare and how it should be delivered. Paulk commented: "Even though Johns Hopkins has a global reputation for excellence in healthcare, research and education, it would be wrongheaded to think that what we do in Baltimore can be applied ▶

Partnering for Health

King's College Hospital London (KCH) first entered the UAE market in 2014 with the opening of its flagship clinic in Abu Dhabi. KCH in the UAE is a joint venture with Al Tayer Group, Dubai Investments and UK-based Ashmore Group. The joint venture aims to merge KCH's international expertise, with local market know-how and access and brings KCH's 175 years' experience as a world-renowned British teaching hospital to the emirates.

Christian Schuhmacher, CEO of KCH in the UAE shared: "One of the deciding factors for KCH to bring its world-class care to the UAE was to give back to this impressive and generous nation. In 1979, the late Sheikh Zayed bin Sultan Al Nahyan, the founding father of the UAE, provided a sizable donation that helped establish KCH's liver research centre in London, which is now amongst the top three liver specialist centres in the world. Our commitment to the UAE is unwavering and we are proud to play a role in helping it become a leading international healthcare hub. We are fully aligned with the UAE government's healthcare vision and delivering on our promise of giving back to the UAE."

In line with this vision, KCH's Dubai-based hospital is set to open in Q1 2019, and will provide advanced tertiary medical care, including cutting-edge treatment and procedures.

"Our biggest focus has been to marry the best practices from the UK with the gaps in the local healthcare landscape and our inherently connected, always-on relationship with London and commitment of sharing expertise has meant we are able to do just that on a local level," he concluded.

RAK Hospital

KCH's newly opened Marina Medical Centre in Jumeriah

directly in other places in the world."

Moorfields, for example, has established itself as an integral part of the healthcare community in the UAE and works with public and private hospitals, referring primary physicians, and the insurance sector, as well as working directly with the staff and families of some of the major public and private sector organisations.

"As one of the first healthcare organisations in Dubai Healthcare City, we have actively supported the Dubai Healthcare City Authority (DHCA) in shaping the direction of Dubai's healthcare sector and regularly meet DHCA visitors or potential investors from an educational, research or treatment, and clinical side, to share our experience and expertise at our location in Dubai Healthcare City," Hassan said. "This includes other NHS providers who may be considering opening here. We help shape the growth and development of the healthcare market in Dubai, not only from a private standpoint but also in working with the government on PPPs to raise the standard of care."

The collaboration among hospitals also extends to other areas such as research and training. In fact, Moorfields Dubai has engaged in a unique collaboration with Mohammed Bin Rashid University of Medicine and Health Sciences (MBRU) and also works together with the Dubai Medical College.

Overcoming Challenges

Recently, RAK Hospital entered into a partnership with Dr William Hodge who is mentoring a team of doctors at the hospital. Dr Hodge is a celebrated orthopaedic surgeon, who developed the patented 'Arabic Knee' treatment and specialises in hip and knee joint replacement.

Dr Siddiqui explained that the resident team has to fully understand the technology and concept, to make the partnership successful, otherwise the element of competition creeps in, which needs to be avoided. Also, working in isolation would not be beneficial to either the patients or the organisation.

He emphasised: "With any personal or professional relationship in life, I follow the principle of safeguarding the interests of your partner and never being selfish. Once you enter into a relationship you have to ensure that the partner's interest is met. We have done the same, and our partnerships have been very fruitful and beneficial for us."

On the other hand, Hassan stressed that once Moorfields had identified the Middle East and GCC region as the preferred location for its first international site, there were several challenges such as, where to base the hospital for optimum impact and the creation of world-class facilities; how to attract and recruit the professional staff required to support the Moorfields team of consultants; and how to ensure equivalent high standards of quality and safety through a robust governance framework.

Therefore, the best solutions often come from finding the right balance between two opposing approaches – providing the aspects of healthcare that make sense to everyone and honouring those aspects that might vary from region to region.


Elhadi Hassan


Dr Raza Siddiqui


Pamela Paulk

Paulk said: "Much of our international collaborative healthcare work – including opening access to quality care, promoting the importance of nursing and creating stronger clinical programmes that address the most pressing medical needs of the community – have proven applicable and even necessary in every country where we've worked.

"Our goal is not homogenising healthcare but creating comprehensive local programmes that will thrive long after we finish our collaborative work. By respecting the richness and diversity of how medicine is practiced and received in local communities, we can have much more success in opening access to quality healthcare around the world – a core tenet of our mission."

Benefitting Communities

As the healthcare industry struggles with rising cost burdens, inefficiencies, and patient dissatisfaction, there is a need to reward physicians for implementing prevention strategies – such as cancer screenings and smoking cessation – and for providing treatments that achieve good outcomes for patients.

"More advanced systems are starting to shift from a volume-based model to one that's value based–focused on prevention and population health," said Paulk. "We need to continue to move care from hospitals to outpatient settings, as well as into the community to address population health needs, determine social issues that impact health and emphasise prevention."

She highlighted that for example, in the Middle East – a region of over 400 million people – nearly 65 per cent of the population is younger than age 30. This can be seen as a great opportunity to begin early education about preventive care to shift the focus from sickness and cure to wellness and prevention.

"In terms of health propensities, cancer accounts for almost one in five deaths in the UAE. We are working closely with Tawam Hospital to establish a centre of excellence to enhance and expand oncology services," she highlighted.

Additionally, in order to bring efficient techniques at affordable costs to the local community, Dr Siddiqui shared that collaboration is a great exercise as it allows individuals and organisations to learn from the best and pass on the benefit to the people. "The whole idea behind the collaboration is to bring the best policies, procedures, protocols, techniques and pass on to the patient for his benefit," he added.

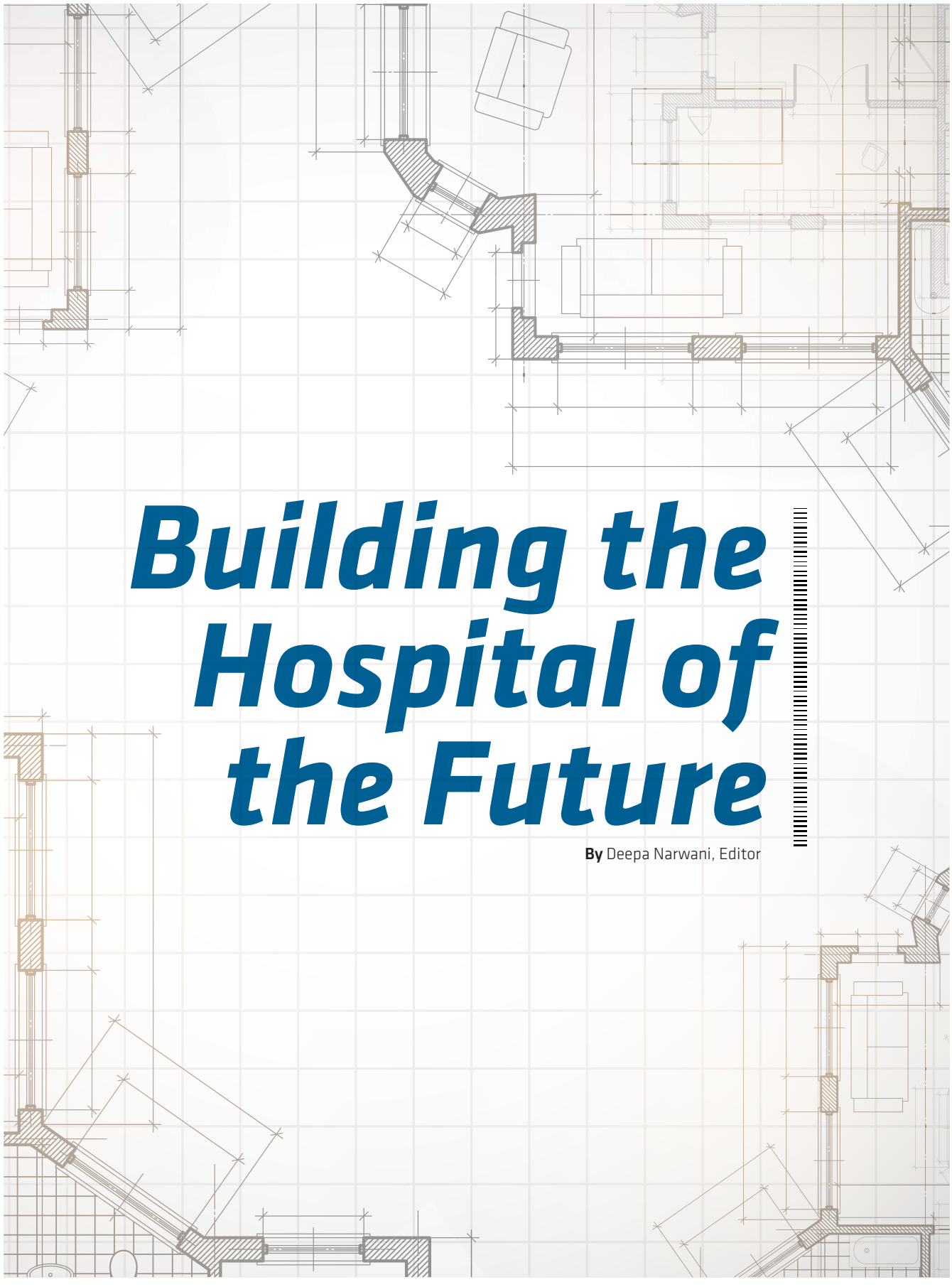
Furthermore, Hassan highlighted that Moorfields Dubai meets the need for a specialist eye hospital serving the local, regional and wider international populations, in a subspecialist area which private or public sector investors may find attractive.

The experience of these institutes demonstrates that international healthcare brands can successfully establish their own operations and build partnerships to provide access to more local care for communities across the GCC and maybe even beyond. AH

Successful Collaboration

A look at some other examples of effective international cooperation in hospitals:

- **American Hospital Dubai:** The hospital is the first healthcare organisation in the Middle East to join the Mayo Clinic Care Network. The agreement gives it access to the latest Mayo Clinic knowledge and promotes collaboration among physicians to benefit patients.
- **Mediclinic Middle East:** It is part of Mediclinic International, a private hospital group with three operating platforms in Southern Africa (South Africa and Namibia), Switzerland and UAE, and a 29.9 per cent shareholding in Spire Healthcare, a UK-based healthcare group with 38 hospitals. In February 2016, Mediclinic International combined with Al Noor Hospitals Group, with operations mainly in Abu Dhabi. Currently, Mediclinic Middle East operates six hospitals and 24 clinics in the UAE, with more than 700 inpatient beds.
- **Cleveland Clinic Abu Dhabi:** The hospital was established as the result of an agreement signed in 2006 between Mubadala Development Company, and U.S.-based Cleveland Clinic in support of the Abu Dhabi government's Economic Vision 2030 to develop a world-class healthcare sector in the emirate. The hospital is a 364 bed facility and is a physician-led medical facility served by North American board certified or equivalent physicians.



Building the Hospital of the Future

By Deepa Narwani, Editor

Putting emphasis on fit-for-purpose, efficiency, and financially responsible designs, the Design & Build conference at Building Healthcare Innovation & Design Show 2018 has an engaging agenda in store for attendees. The conference track will be discussing the impact of various construction elements such as engineering, operations and technology on the healthcare business, and ways of cutting cost in construction and improving healthcare operational system efficiency by design, among other topics.

In an interview with *Arab Health Magazine*, Ben Gonzalez, Vice President, HKS MENA Health Director, and the co-chair of the Design & Build conference shared some in-depth insights about what really goes on behind planning, designing, building and operating a healthcare facility and certain important factors to consider when designing a hospital. These include:

Patient and Family Experience: The overall patient experience includes interaction with the caregiver as well as the built environment. It is well researched that satisfying experiences lead to happier, more engaged patients. Involved patients will be willing to ask more questions and follow advice and medication orders. In the MENA region, healthcare can be a sensitive topic and many patients do not want to discuss their personal health issues in public. Gonzalez said: "Therefore, designing with privacy in mind becomes integral in the patient experience. Family support is a major factor in a patient's healing process, so patient rooms, lobbies and waiting areas need to be well designed to accommodate multiple family groups."

Efficiency: "We should develop layouts that are effective and efficient, minimising the travel time for caregivers. The less time a caregiver spends walking, the more they can spend with patients. This also includes making practical use of multi-purpose spaces and consolidating spaces when possible," he added.

Flexibility and Adaptability: Clinical models of care will continue to evolve as technology advances. Hospitals should consider strategic design initiatives such as modular layouts, universal rooms, location of soft spaces and adaptability of the engineering systems through an interstitial floor.

Sustainability: Rising energy costs and a harsh Gulf regional climate mean that sustainability is being pushed to the forefront. Designers need to be more responsible in designing energy-efficient buildings through simple, passive design solutions (such as how the building is oriented in relation to the solar path) and developing energy model analysis. Several of the Gulf countries do have a minimum sustainability requirement for government projects.

Optimising Speed and Quality

When asked about how hospital design and construction processes can be improved, Gonzalez highlighted a number of factors, such as:

BIM in Manufacturing: The benefits of Building Information Modelling (BIM) are not only limited to the modelling of buildings, but they can prove to be valuable to the management of the construction process. Hospitals that are virtually built can be monitored, eliminating issues that could potentially arise during the construction process. Furthermore, this data-rich model can be used by the project owner for future maintenance and operation of the building. Other benefits of using BIM in manufacturing include cost savings, accelerated processes, and higher quality results.

Prefabrication: "A client ultimately looks for efficient project delivery, optimising speed and quality, and minimising material wastage. The process of prefabrication can assist in achieving these goals. Constructing sections or modules of standardised rooms such as bathrooms, patient rooms and other building elements at a controlled manufacturing site will result in project schedule savings as several construction activities can be carried out in parallel," he explained.

Design Directly to Manufacturing (Design Directly Working with People Building- Sub-Trades): Hospital construction projects feature many variables that can hinder the project team's performance. By using the design-build approach that integrates the design and construction phases, project managers can more easily overcome these hurdles and improve their team's performance. "Some of the biggest benefits of design-build are rapid delivery, smooth processes through an integrated approach, better value and fewer problems. This is all dependent on developing a good contract with an experienced contractor," Gonzalez added.

Earlier Involvement of Construction in Design to Assist with Constructability and Cost Issues: Having the construction team involved in the early stages of the design process provides the project owner with the benefit of having multiple experts at the table from the outset. This brings added value to the owner by providing price checks consistently as the architect is developing the design. It ensures that the project stays on budget and on schedule by mitigating risk, as issues are detected and discussed during the planning phase.

Changing Approaches to Healthcare Delivery

With rapid developments in technology, people expect to be kept healthy as opposed to being only treated when they are ill. Gonzalez sheds light on elements that will provide greater flexibility in the future when it comes to designing spaces.

Predictive Health Analytics, Wearables and Diagnostic Apps: Advancements in nanotechnology, coupled with home monitoring technology will allow physicians to treat and monitor patients remotely.

He emphasised: "This means that the healthcare system will be disrupted, and support to use these technologies will be required as homes become extensions of hospitals. Wearable devices will empower patients to work in real-time, giving them the opportunity to monitor their own health. The sensors on these devices can collect biometric data to help diagnose, supervise medicine and even detect serious conditions."

Community Healthcare: Gonzalez stressed: "We are seeing a trend for smaller facilities integrated within communities, and more mixed-use clinics. There are higher expectations for user experience, and patients are demanding more in terms of convenience, the latest technology and prompt access to treatment. Mixed-use models are integrating retail and residential offers alongside hospitals, clinics or ambulatory centres. As care is decentralised, it will encourage physical activity but also walk-in appointments driving preventive care. This will increase the need for buildings and spaces to be multifunctional and adaptable to technology development."

Healthy Hospital Environment

According to Gonzalez, a healthy hospital environment is a result of the collaboration between the patient and the healthcare provider. Factors impacting the healthcare system as well as the caregiver affect the quality of a hospital. Attaining better healthcare quality requires supportive leadership, high staff morale, smooth operation processes and dedicated focus on patient experience. ▶

Research suggests that there is a high correlation between the healthcare environment and patient outcome. Patients entering a healthcare facility feel stressed due to the unfamiliar environment and uncertainty about their health. Being isolated from their families and social relationships can make them feel anxious and apprehensive. Hence, it is crucial that hospitals are therapeutically designed. Such considerations include not only reducing environmental stressors such as crowding in public spaces, unwanted noise, or unpleasant odours, but also providing positive distractions, access to nature through courtyards, and offering spaces that allow patients to interact comfortably with their families.

"One such certification that measures the impact on people is the WELL Certification. WELL provides a performance-based framework to measure and evaluate buildings on their direct impact on people, particularly on the quality of air, light, water, fitness, nourishment, comfort, and safety, among other factors," he concluded. AH

FOCUS ON REGIONAL TRENDS AT BUILDING HEALTHCARE

Gonzalez shared: "When Gary Walton (co-chair) and I set out to plan for the Design & Build sessions, we considered: attendee feedback from previous events, current market landscape, responsible and sustainable design, and efficiency with a quality execution. We decided to focus on three key points.

"First, we want to be aligned with the overall conference theme of "delivering fit-for-purpose healthcare facilities." I thought this was very important as the market begins to mature and certainly given the current shift toward private growth and participation. Second, we want to provide content that is relevant to this region. The challenge is to not focus on macro or global trends but instead on those that can impact the regional market at a micro level. Third but not least, based on the feedback from previous conferences, we understand the desire to better integrate design and build topics in a holistic manner. We are thrilled to have put together what we believe is an exciting agenda and are looking forward to the presentations."

Ben Gonzalez

DIGITAL FUTURE

Gonzalez underlines the technological changes and developments that will have an impact on clinical design in the near future.

Medical Records: Currently electronic health record (EHR) systems are mainly stored on servers. As security technology develops further, more healthcare entities will adopt web or cloud-based systems, enabling patients and healthcare providers to access their information securely via any device such as laptops and/or smart phones.

Telehealth: Technology offers new ways for providers to connect with patients in a more flexible manner. One such method is telehealth, which uses digital information and communication technologies, such as computers and mobile devices, to access healthcare services remotely and manage your health care. The technology used to provide telehealth will only improve with time; especially when combined with other technologies such as artificial intelligence, remote monitoring, wearables, and mobile health apps. This will result in a transformation of spaces within healthcare facilities, and possibly a reduction in cost as more patients will be cared for by shared physicians.

3-D Printing: Developments in the field of 3-D printing have the potential to significantly transform the care provided at hospitals. Increasingly, this technology is being used to improve prosthetics for patients, as well as in joint replacement surgery. In the future, 3-D printing may even revolutionise organ transplants and body parts.

195 countries on earth. People from 180 have come to us for world class care.

Same-day appointments available.

Cleveland Clinic

Every life deserves world class care.

clevelandclinic.org/international

Cleveland • Florida • Las Vegas • Toronto • Abu Dhabi

Designing Spaces that Treat and Heal

By Deepa Narwani, Editor

Recently, global design firm Perkins Eastman announced the appointment of C. Carson Shearon, as the new Principal and Director of International Healthcare at Perkins Eastman. Shearon brings with him nearly 25 years' experience in the health industry, and he capitalises on his multi-disciplinary training in the medical sciences and architecture to partner with clients in multiple cultures and marketplaces. In fact, he is passionate about implementing efficient and sustainable design solutions that respond to the aspirations of patients, families, clinical caregivers, and clients.

In an interview with *Arab Health Magazine*, Shearon talks about his new role, his thoughts on the GCC's healthcare construction industry, as well as his vision for the future. Excerpts from the interview:

Tell us about yourself. How did you venture into the healthcare design industry?

Throughout my childhood in California, I would frequently visit my grandfather in the hospital. During his final admission I remember being struck by how much he and his room transformed when my grandmother brought him a colourful blanket, pictures, and an overstuffed chair. I guess I have always been fascinated by how environments influence experiences. I feel that when it comes to hospitals, the place where so many people begin and conclude life, as designers, we can create better suited environments.

I completed my post-baccalaureate studies in biomedical science and architecture; combining these two passions naturally led me to healthcare design. I have concentrated my career on developing shared understandings and adroitly managing complex healthcare engagements in multiple cultures. I have partnered with healthcare clients in 18 countries. From Iceland to India, it is critical to understand how regional healthcare delivery paradigms and contextual cultural practices influence the translation of global best practices and design. I have developed dedicated healthcare design teams in the GCC and across the globe and enjoy traveling internationally nearly every month to engage existing and new target clients. I represent the firm at global healthcare conferences as well as industry speaking and teaching engagements. Recently, I was appointed to the Architecture Advisory Board at the American University in Dubai.

What are your thoughts on the GCC's healthcare construction industry? According to you, how can hospital construction processes be improved? What are some of the important factors to consider when designing a hospital?

Increasing capacity to meet the demand for inpatient and ambulatory services continue to drive the healthcare industry in the GCC. The healthcare facilities of tomorrow embody global best practices to focus on user experience, clinical outcomes, growth, fiscal stewardship, operational efficiency and brand recognition. Currently, the industry is challenged to push seamless collaboration throughout project delivery. A collaborative approach increases value, reduces waste, and maximises efficiency within all phases of the project. Successful delivery of healthcare facilities requires transparent processes that align users, stakeholders, operators, systems, business structures, and clinical protocols from visioning through design, construction, and operation. Specifically, in the GCC, it is critical to think of design as an alliance that addresses user experience, patient outcomes, talent recruitment and retention, cultural clinical care delivery paradigms, owner and operator expectations, efficient and standardised processes, as well as brand development.

What are some of the latest trends in hospital design? What types of technological developments will have an impact on hospital design in the near future?

The healthcare industry is evolving beyond solely the acute care of illness and injury. Digital technology is transforming the healthcare experience to respond to a "customers first" philosophy. Today's healthcare consumers seek an active partnership with their providers that offer personalised and convenient options to address wellness, disease prevention, and chronic management. Consumers seek walk-in visits, no waiting or registration, kiosk check-in, online scheduling, virtual visits, direct messaging with providers, and self-monitoring and self-management of personal health. In the GCC, the demand for Concierge Medicine is rapidly increasing.

Tell us about your new role, its challenging aspects, and your vision for Perkins Eastman.

As a healthcare leader at Perkins Eastman, one of my primary objectives is to grow the firm's international portfolio of healthcare clients, specifically in MENA, India and China. We focus on developing strong client bases in these regions and implementing business practices that enable international resources to operate successfully in these countries from the firm's 17 office locations. Strategically, I enjoy establishing firm direction for near- and long-term goals that elevate the Perkins Eastman healthcare brand internationally. This includes the development of high-performance teams poised to deliver global thought leadership to clients worldwide. Perkins Eastman is a global design firm founded on the belief that design can have a direct and positive impact on people's lives. By keeping the user's needs foremost in the design process, the firm enhances the human experience in the places where people live, work, play, learn, age, and heal. AH

C. Carson Shearon

Discussing Strategic Approaches at Building Healthcare

Shearon shares: "This will be the eighth year I am participating in the Building Healthcare Innovation & Design Show in Dubai. Each year I am impressed with the conference's increasing calibre of contributors and content. I'm honoured to be speaking at this year's conference themed "Delivering Fit-for-Purpose Healthcare Facilities". The big picture objective is addressing the main challenges involved in planning, designing, building and operating healthcare facilities in the MENA region. I am looking forward to delivering a platform presentation on October 2, day one of the three-day conference. The first session's morning agenda is dedicated to "Vision and Masterplan" and will cover analysis of the MENA healthcare market, executive perspectives, facility responses, and game changers. Specifically, my presentation will discuss strategic and comprehensive large-scale masterplan approaches to developing successful medical cities that adapt to tomorrow's needs and technologies."

ACHIEVING NET ZERO ENERGY FOR HOSPITAL BUILDINGS

By Ted Jacob and Shulamit Rabinovich, Ted Jacob Engineering Group, Oakland, CA, U.S.

As the world's natural resources such as fossil fuel and water are becoming scarcer, government legislators along with professional societies are setting energy strategies to meet certain goals of building energy performance.

As an example, the U.S. Green Building Council supported by the U.S. Department of Energy and other professional organisations are focusing on designing Net Zero Energy Building with the ultimate goal of Carbon-Neutral buildings by 2030. Dubai has set clean energy strategy of 7 per cent by 2020, 25 per cent by 2030 and 75 per cent by 2050.

The key to achieving these goals is by incorporating energy efficient strategies into the design, construction, and operation of the new building and undertaking retrofits to improve the efficiency of existing building. Once the building energy usage has been optimised, renewable energy such as solar can be applied to achieve Net Zero Energy Building.

Net Zero Energy Building

Using the concept of a Net Zero Energy Building, one which produces as much energy as it uses over the course of a year, can further reduce dependence on fossil fuels by increasing use of on-site and off-site renewable energy sources. Net Zero Energy design depends on two key elements, the reduction of energy demands and the on-site production of energy. Building design in achieving Net Zero Energy includes the following:

Passive design is the key to sustainable building. It responds to local climate and site conditions to maximise building users' comfort and health while minimising energy use. Some of the features include:

- Building orientation
- High-performance envelopes
- Daylighting
- Sun control and shading devices
- Prudent selection of windows and glazing

Active building design includes all the

mechanical and electrical system designs to achieve the most energy efficient systems with better indoor air quality, such as:

- High-performance HVAC systems
- Energy efficient plug loads
- Energy efficient lighting

Energy efficient strategies, such as energy conversion systems including:

- Combined heat and power systems
- Fuel cells
- Micro turbines
- Co-generation

Renewable energy strategies to accomplish Net Zero Energy Building capturing energy from natural resources such as solar, wind, geothermal, etc., is not derived from fossil fuel or nuclear fuel. It can be tapped into from:

- Photovoltaic
- Solar hot water
- Wind turbines
- Ground water

Design Challenges for Healthcare Facilities

Healthcare building design presents both challenges and opportunities in the development of sustainable facility. Some of the challenges are:

- The 24/7 operation of the hospital.
- Infection control.
- Indoor air quality.
- High outside air ventilation rate.
- Stringent temperature and humidity requirement for critical areas.
- Room pressurisation.
- Room supply air-changes per hour as required by code.
- High degree of systems reliability and redundancy.

Successfully Implemented Innovations

The incessant drive to reduce energy consumption while maintaining all functions and achieving goals of the mechanical systems spurned evolution of the energy reduction innovations in the hospital design that has been successfully implemented by Ted Jacob Engineering Group (TJEG).

Ventilated Double-skin Façade System (Figure 1)

Double-skin façade has been used in buildings as a passive building technology to enhance the energy efficiency and improve indoor thermal comfort at the same time. This includes the use of passive double-skin where air is taken from the bottom of the double façade and plumed up between the double façade layers. This concept has been used successfully in cold climates.

The passive double-skin facade would not work in hot and humid climate of the Gulf Region. We did implement ventilated double-skin façade concept where we discharged the building exhaust air at the bottom of the double-skin façade at a much lower temperature than the design ambient air temperature keeping the temperature in the intermediate space at constant supply air temperature year-round. The use of the above concept also eliminated condensation on the outer façade.

100 per cent Outside Air System with Run-Around Heat Recovery (Figure 2)

This concept requires only two main duct systems – supply air and general exhaust air, thus reducing first cost of the system as well as the maintenance cost. It is the most adaptable to the space utilisation changes.

In addition, Code permitted reduction of the amount of supply air led to the energy consumption reduction.

TJEG determined that when compared with the conventional, three-duct, supply, return and exhaust systems, the two-duct, 100 per cent outside air system, not only offered first cost and energy savings but also had lower life cycle cost.

The most important advantage of this concept is that it provides 100 per cent outside air and, as a result, the best Indoor Air Quality (IAQ) all year around.

Variable Air Volume (VAV) System

All outside air system allowed introduction of the VAV concept while achieving Code compliance.

To implement VAV system local Code requires automatic modulating dampers in the room supply/return/exhaust ducts. The two-duct, 100 per cent outside air system allowed for a reduction in the number of the control dampers required and, thus, made possible the use of the VAV system in the patient occupied areas.

This innovative approach represents a departure from the conventional constant volume air conditioning system typically found in the healthcare environment and greatly increases patient comfort control while reducing energy consumption.

Displacement Ventilation (Figure 3):

Displacement ventilation is a well-known approach to the air supply used in all kinds of the buildings, except healthcare. In order to respond to concerns related to the infection control and space comfort, air velocity, temperature and stratification rigorous CFD analysis was undertaken.

A mock-up patient room was built in the laboratory to test performance of the displacement ventilation and confirm validity of the CFD analysis.

Through an extensive study of several HVAC system options TJEG determined that when compared with other systems, the Displacement Ventilation, VAV, two-duct, 100 per cent outside air system with run-around heat recovery, offered energy savings and had the lowest life cycle cost.

Fan Array with Variable Frequency Drives

Fan arrays or fan wall systems create uniform air flow across the coils and in the ductwork and minimise noise and vibration. Multiple fans increase systems redundancy and reliability. Fan array installations reduce overall length of the air handler's cabinet due to shorter space requirements downstream of the fans. Also, they eliminate the need for the sound eliminators, thus further reducing the length of the cabinet as well as the fan horsepower. Multiple variable frequency drives control fan operation to modulate air supply to fit building needs.

Bypass Dampers

Air handling units contain heat recovery and cooling coils that introduce resistance to the air flow resulting in the pressure drop. By-pass dampers at all coils in the air handling units are programmed to open when the coil is not in use. This measure presents a reduction in the air pressure drop, and thus, a reduction in the energy consumption.

Heat Harvesting and Rejection

Heat is harvested from miscellaneous heat producing equipment, such as computer room air conditioning units, refrigeration equipment condensers, medical and lab equipment, etc. and is used for reheating coils and preheat domestic water. Heat recovery run-around system may be used to reject the excess harvested heat into the system. ▶

Integrated Project Delivery (IPD) and Net Zero Energy Building (NZEB)

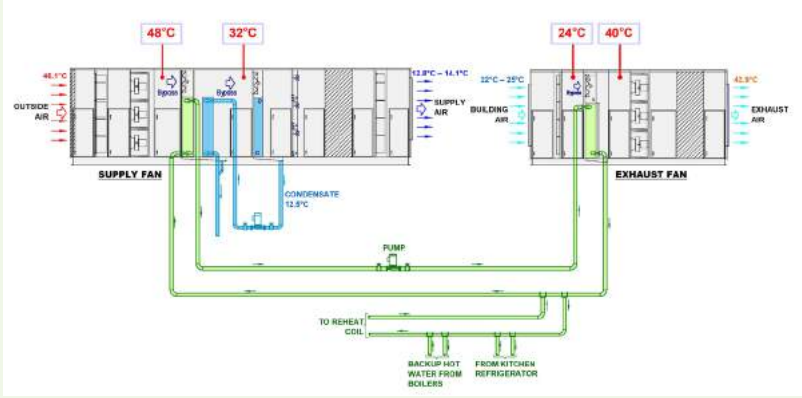
Adopting new technologies and creative systems is often met with challenges from the client and building operators since they don't want to be the first to implement these technologies.

IPD established a collaborative three-way relationship between owner, consultant and contractor that allowed thinking and visualisation outside the box. It anticipated future needs and identified potential energy efficiency strategies through the engagement of many different participants during the project delivery.

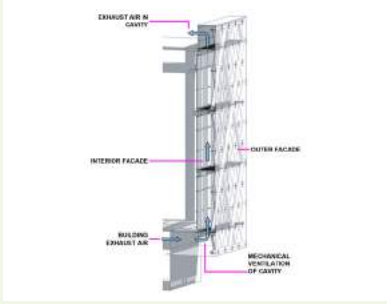
Vital to the success of the project was the participation of the owner's representatives supporting innovation and team work during the design process, and being open, receptive and encouraging the team to introduce new energy efficiency features to the ever-evolving HVAC systems.

In addition to the project coordination benefits of IPD, it provides a project delivery model that can better conceive and implement the concept of the NZEB by encouraging building design to minimise energy requirements and implementing renewable energy systems that meet these reduced energy needs.

▼**FIGURE 2:** 100 per cent Outside Air System with Run-Around Heat Recovery



▼**FIGURE 1:** Ventilated Double-skin Façade System



▼**FIGURE 3:** Displacement Ventilation

***Ted Jacob** will discuss 'Achieving Net Zero Energy', as part of the Design & Build conference, on October 3, at Building Healthcare.*

Conclusion

In the past decade, the building design industry has undergone a major transformation due to the implementation of sustainable building design measures on projects. The guidelines for sustainable building design for hospitals is being set by the U.S. Green Building Council "LEED", and Green Guide for Healthcare and regionally by the Emirates Green Building Council. These are excellent guidelines for implementation of the Green Buildings approach that are encouraging innovation for the new designs towards Net Zero Energy Buildings.

New construction in healthcare facilities offer the greatest energy saving potential on a building-by-building basis. Renovation of existing healthcare facilities provides the maximum overall energy savings because of their remaining service lives and the large number of facilities in operation.

We encourage every design professional to integrate principles of the sustainable design into their practice when working on new and/or renovation projects. These designs should look at reducing the overall energy and water consumption and related emissions of greenhouse gases. The facility will be rewarded with better indoor air quality, lower building first and operating costs, and above all an environment that meets its mission of saving lives. AH

CLINICALL

Meet the future for your hospital.

- ClinicAll provides a clinic-wide network for safe data exchange
- Runs on every device at the bedside, in nurse rooms, mobile etc.
- New ClinicAll App for Android and iOS
- Easy communication for everyone: doctors, staff and patients
- Implementation of diverse clinic-specific apps from third parties

Visit us at Arab Health 2019!

Dubai International Convention
and Exhibition Centre

28 – 31 Jan 2019
Saeed Arena, booth SA.E39

ARAB HEALTH

Meet the future – with ClinicAll.

www.clinicall.de

ClinicAll Germany GmbH
Hellersbergstrasse 6
41460 Neuss, Germany
+49 (0) 2131 528 130
info@clinicall.de

LINKING DESIGN TO OUTCOMES:

How Health Facilities Can Become Health Facilitators

By Dr. Upali Nanda, Director of Research, HKS Architects

▼**FIGURE 2**: Texas Health Frisco, Breezeway Connector to activate biophilic public space – ©HKS Architects

The environments we live in impact our health. This is not an over-statement. This is a fact that has been proven, again and again, via scientific evidence. Yet, we don't think of the design of the built environment as fundamental to the care of the patient, similar to the care regiment or a clinical protocol. What if we thought about our health facilities, as a key component of the patient's treatment plan – not just providing the stage on which health delivery happens, but as an active component of the healing process as well. In this article we will explore how the built environment, via health facilities, can be a health facilitator.

Daylight: To Improve Sleep, Stress, Mood and Burnout

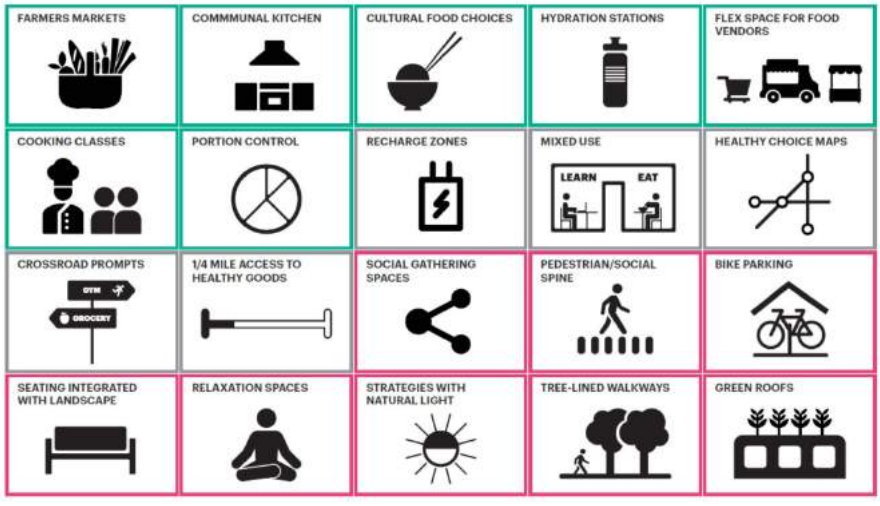
Daylight is an area with compelling evidence around it. Studies link daylight to reducing depression, improving mood, reducing opioid usage, reducing ICU delirium (by supporting circadian rhythms) and reducing LOS (Length of Stay). Orientation matters when it comes to daylight – research shows that in brighter orientations, such as SE, the average LOS was shorter than patients in rooms with No Window (NW). In healthcare environments daylight is now mandated in all patient rooms in the U.S. But daylight can have profound impact on caregivers and family as well. For example, exposure to daylight for at least three hours a day was found to cause less stress and higher satisfaction at work. Using daylight as a key component of not just design, but the health plan in itself, is a great opportunity. What if doctors prescribe daylight as part of the discharge plan for patients? Or as part of a healthcare stay?

Access to Nature to Reduce Pain Medication, Stress and Anxiety, Improve Social Connection and Memory, and Encourage Mobility

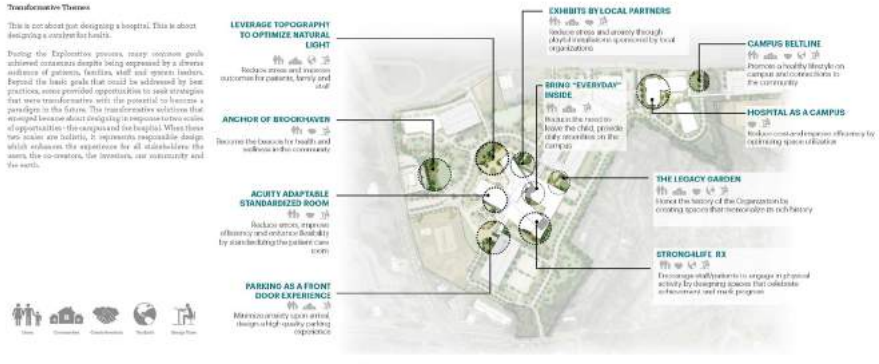
Nature can be considered another powerful non-pharmacological intervention. A compelling body of evidence links exposure to nature to reduced LOS, reduced

▼**FIGURE 1:** Waiting area of inpatient tower at Promedica, Toledo – allowing daylight, access to nature and social connectivity

▼**FIGURE 3:** Strategies for promoting healthy movement and healthy food choices ©CADRE 2017



▼**FIGURE 4:** Proposed Master Plan for Children's Hospital Campus (c) HKS Architects



medication, and reduced stress. Exposure to nature can also improve memory, which is key for an increasingly aging population. Research also shows that exposure to nature can be beneficial in both real, and simulated settings (through visual art, VR, multi-media etc.).

Additionally, having nature as a destination within a health facility can also become a mobility incentive that can enable early mobility, and thereby discharge, for patients. Gaining health habits while in health facilities could be a powerful goal.

Point of Decision Design Strategies to Nudge Healthy Choices

In all health settings, but especially primary care settings, the built environment can also be used to encourage patients (and staff) to make better decisions around food and movement. Recent research argues that the most effective way of promoting better health decisions is to focus on designing for points of decision. For example – to think about where someone decides about eating junk food or healthy food, and make the healthy food option more available, accessible, affordable, and appealing. Similarly, to think about where someone plans about movement – walking/ biking/ public transport or car and make healthy mobility choices easier and more attractive. Figure 3 shows some of the strategies that can be used to promote healthy diet and movement in health facilities. If health facilities can serve as catalysts for healthy habits, then they can actively influence the continuum of health.

Public and Fluid Spaces to Promote Social Connectivity and Patient Engagement

Public spaces can also be used to facilitate social connectivity. The ability to leverage waiting areas for education, empowerment and engagement, as well as build communities (especially for specialty clinics) could be significant. Research also suggests that social integration is a strong predictor of well-being and longevity and the characteristics of outdoor common spaces can play a role in maintaining social ties. All too often the health facility is constrained to the walls of the building. Tremendous potential of making health facilities, health facilitators, lies in the master planning. This way the entire design can have a connective tissue of whole health.

In summary, we do our field a disservice if we limit ourselves to purely clinical objectives. Clinical excellence is key and should be a given. However, it is creating a healing fabric, where facilities can actively promote, rather than passively support health, that can make our facilities, health facilitators, and an active contributor to better health for our people and communities. AH

References available on request.

Dr. Upali Nanda will be discussing 'Linking design to outcomes: How health facilities can become health facilitators' as part of the Design & Build conference on October 3, at Building Healthcare.

What's Easier: Implementing Health Reforms or Climbing Mount Everest?

By Alberto de Rosa, CEO, Ribera Salud Group

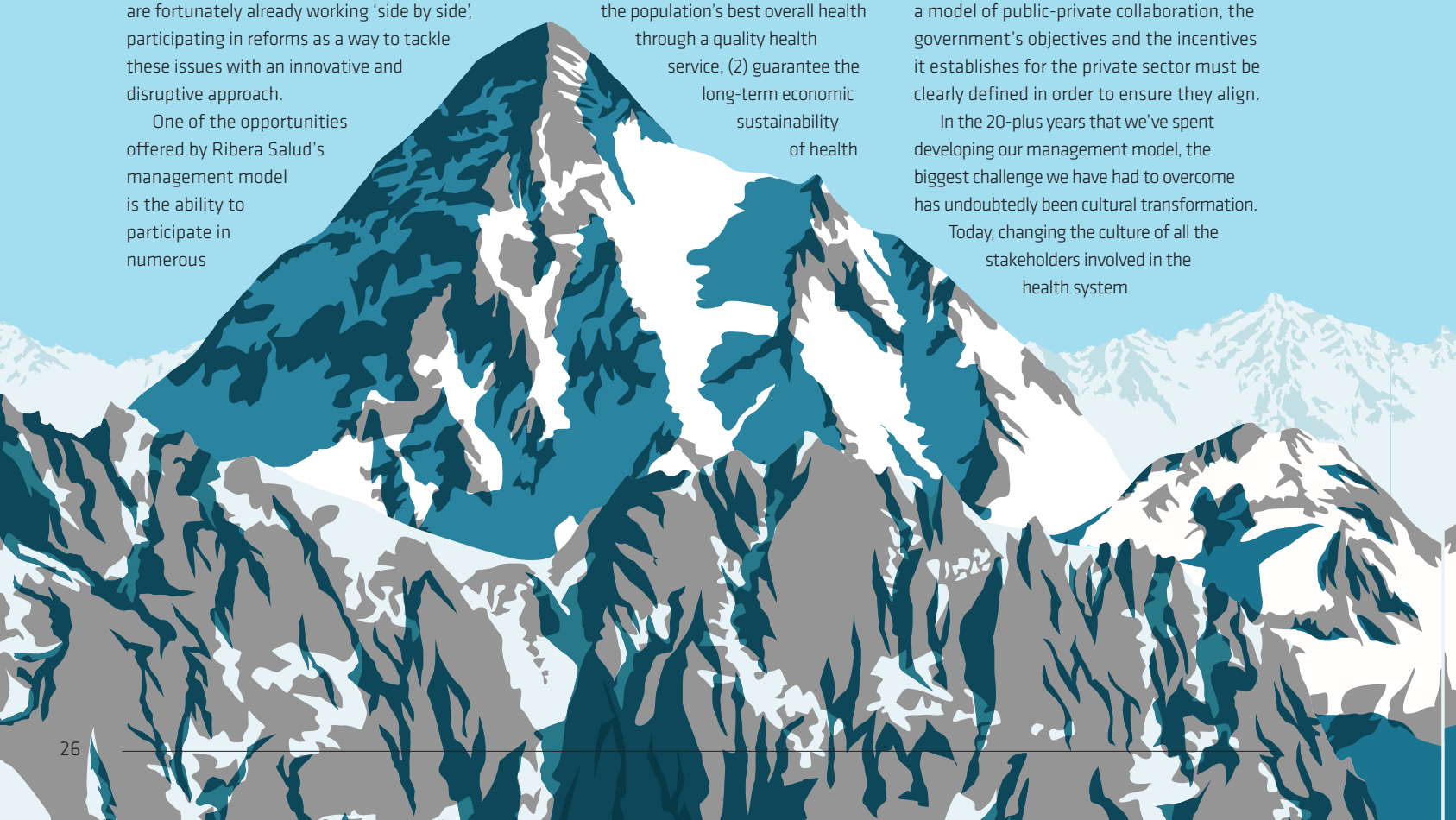
Health systems around the world must face major global challenges like an aging population, chronic diseases, the evolution of technology, and the introduction of new medicines. While it is true that we are still in the beginning stages of defining a strategy to address these challenges, many countries are fortunately already working 'side by side', participating in reforms as a way to tackle these issues with an innovative and disruptive approach.

One of the opportunities offered by Ribera Salud's management model is the ability to participate in numerous discussion forums, contributing the experience of the model our company developed as a strategic guideline for facing the global issue of reform.

In my opinion, the major reforms that governments around the world are trying to introduce in their health systems are based on three common points: (1) achieve the population's best overall health through a quality health service, (2) guarantee the long-term economic sustainability of health systems and (3) apply best practices through the use of technology in order to achieve high levels of specialisation and a much more efficient system. These three elements are the foundation of the public/private collaboration model developed by the Ribera Salud Group.

However, according to the Group's experience, in order to successfully develop a model of public-private collaboration, the government's objectives and the incentives it establishes for the private sector must be clearly defined in order to ensure they align.

In the 20-plus years that we've spent developing our management model, the biggest challenge we have had to overcome has undoubtedly been cultural transformation. Today, changing the culture of all the stakeholders involved in the health system



–politicians, professionals, managers, and patients – is unavoidable because health systems can no longer be managed like they were 50 years ago. Introducing innovation and flexibility is crucial if health systems are going to be adapted to today's profound social changes.

We have discussed the 'Triangle of Transformation' (modern clinical management, advanced information systems, and innovative human resources management) as the cornerstone of our strategic policy. In my opinion, we must implement action plans in each of the three parts of the triangle at the same time because we cannot develop a true programme of reforms if these three areas are not addressed simultaneously.

First, we are committed to modern clinical management based on population health management, which harnesses continuity of care in the clinical process and the pro-activity of all the stakeholders involved in the population's overall health by implementing plans to promote health and disease prevention. At the same time, we introduce elements of predictive medicine that make it possible to personalise health programmes to the fullest extent possible.

Second, we advocate for the use of technology as a way to transform and update the health system, as well as a benchmarking tool. On the one hand, advanced information systems give citizens greater accessibility and increased participation in the management of their own health; on the other, they contribute to enhanced, more fluid communication between professionals at different levels of care and, finally, they help managers in decision-making, because information and a thorough analysis of data is required before the right measures can be taken.

Third, people management. Just like we advocate for the alignment of the company's and government's objectives in the public/private collaboration model, we believe that aligning the professionals strategy with the organisations is crucial. To that end, we must introduce innovative models for talent management that range from variable compensation to a policy of recruiting, promoting, and retaining talent, to a professional career with ongoing training.

In addition to these three areas, I would like to emphasise that the most important element of public/private collaboration models is measurement and transparency. It is necessary to periodically measure and analyse results from the public and private sectors, and make these results available to citizens. Clarity in accountability to citizens, responsibility, and active participation of the stakeholders involved (particularly professionals) in management are key, because the extent of the efficiency of public/private collaboration is directly related to the standards of good government.

Those of us who have worked in the health sector for years believe moving forward in this direction is essential, because only then will we be able to make 'objective' decisions based on 'real results'. This is why we have advocated for the creation of an independent observatory that, using data and logic-based thinking, analyses different forms of management.

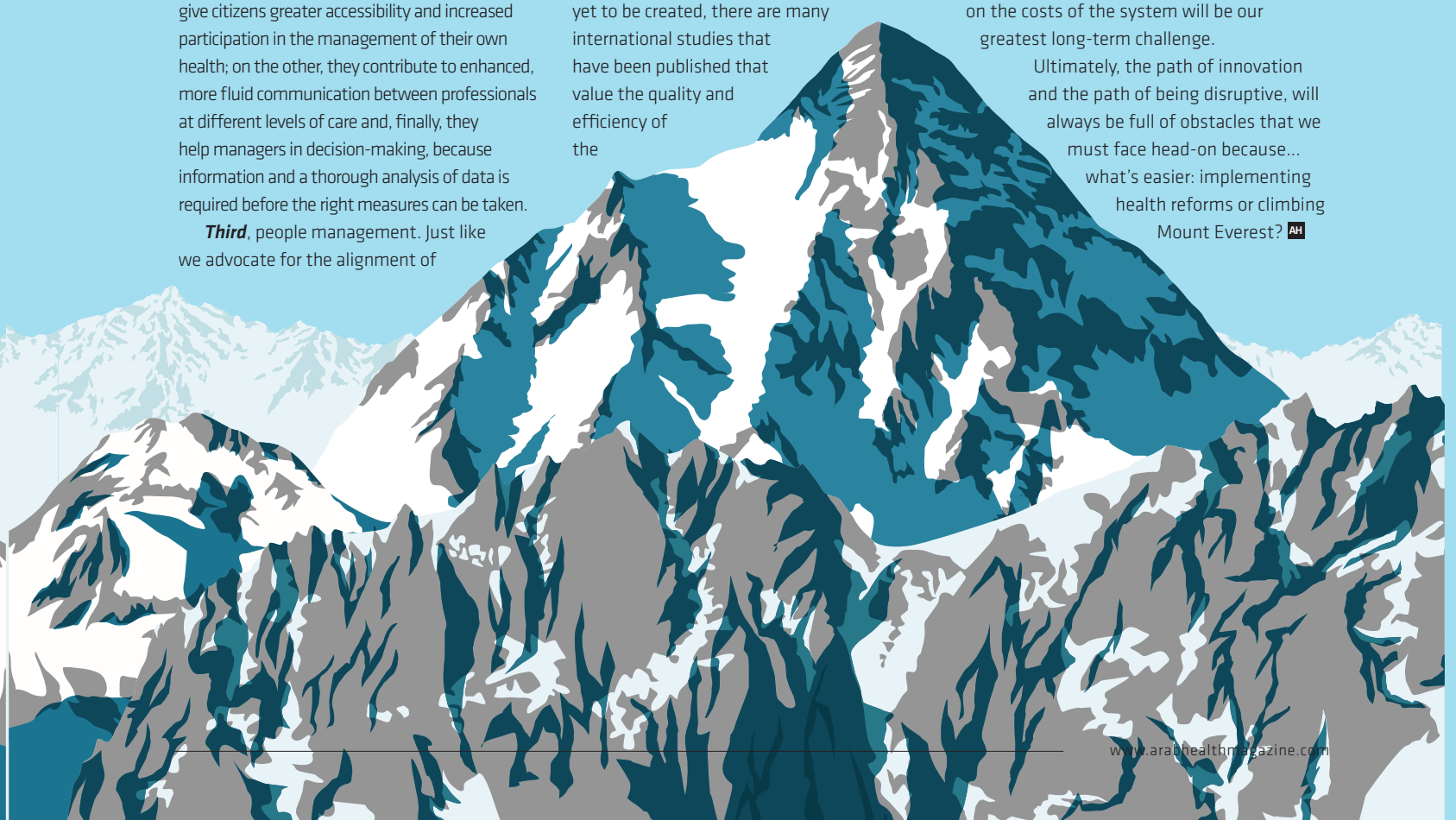
While it is true that this institution has yet to be created, there are many international studies that have been published that value the quality and efficiency of the private management of a public service.

One of the most recent reports was developed in Spain by the Audit Office of the Valencian community. The Valencian government commissioned this study from the public auditor just over a year ago, and the study concluded that the private health departments represent a saving of 25 per cent to the public administration, the waiting lists for private health are much shorter, its quality indicators are much higher, citizens are more satisfied with their care, and the per capita investment is practically double. In short, higher quality at lower cost. We have always requested the preparation of independent reports like this one as part of our commitment to responsibility, transparency and good governance.

Although I recognise the difficulty, all these elements must serve to make the development of new health management policies possible. New policies focused on the patient are needed, which ensure the population's best overall health status, which harness the available technological tools and establish new financing models, such as the capitation payment, a ground-breaking system proposed by Ribera Salud.

Although much remains anchored in the debate about whether reforms should be implemented or not, what is clear is that the growing and increasingly stronger pressure on the costs of the system will be our greatest long-term challenge.

Ultimately, the path of innovation and the path of being disruptive, will always be full of obstacles that we must face head-on because... what's easier: implementing health reforms or climbing Mount Everest? AH



Driving Private Investment in Healthcare: ***Roles and Responsibilities of Regulatory Authorities***

By Arnaud Bauer, Managing Director and Dr. Madiha Qazi, Manager, Advention Business Partners, Dubai

The healthcare sector is one of the GCC's most dynamic business environments, driven by an ever-expanding domestic population, an increasing need for quality services, growing burden of chronic conditions requiring extensive care, and an improving collective coverage for services. With the support of local authorities, the private sector has been at the forefront of this development for years. For example, each of the nine new hospitals added in Dubai between 2010 and 2016 are private. The same applies to Oman, where 10 new hospitals were built over the same period, exclusively by the private sector. In Abu Dhabi, one new public hospital was added between 2010 and 2016, compared to 22 for the private sector.

Providers that focus on standards of care are consolidating to normalise the level of care being offered, and investors are contributing to innovative care solutions such as telehealth, which have helped address the requirements of patients.

Despite many changes in recent years, rapidly evolving healthcare needs of the population and the scale of technology-induced change have led many to doubt the value and practicality of government regulation. Regulators and the regulations they create and enforce play a critical role – but one that may need to evolve to remain relevant and effective to keep up with the need for further investment.

Here we try to examine the core challenges experienced by the private healthcare sector in the GCC, and the role regulators are expected to represent in the rapidly evolving landscape of private healthcare provision. Specifically, we'll explore challenges related to keeping up with a growing number of service providers, dealing with continuously under-supplied areas of care, and introduction of innovative technologies.

We then try to identify opportunities for regulatory bodies to navigate today's challenging landscape and prepare for enhancing investment – both in the way they make rules and the way they enforce them. In many ways, regulators can harness the very trends that

have caused disruption and use them as means to modernise regulatory practices and increase effectiveness of the healthcare system.

Challenges

In our opinion, it is a myriad of complexities that the maturing private healthcare sector experiences in the region, as regulators are finding it more difficult to balance the need to provide healthcare coverage and provide a fair playing field for both providers and payers, with the need to avoid impeding innovation.

Other destinations around the world who are competing to attract patients for medical tourism that provide high quality care in the private sector are better supported on key capacity and investment. This has primarily been the case due to the presence of strategic frameworks from regulatory bodies, aligning the needs of the region with the standards and coverage of care required.

A trend that afflicts the GCC's private healthcare sector has been investors targeting a narrow space of infrastructure (i.e. multispecialty hospitals and clinics in secondary care), which contrasts with the holistic range of services offered globally by most destinations that house high quality providers. A further focus highlights the trend to invest in already competitive, high return services in contrast to several under-supplied areas of care. As an example, the recently released HAAD Capacity Masterplan for Abu Dhabi highlights strong gaps in medical specialties that would appear quite common in mature markets, such as: rheumatology, paediatric surgery, surgical oncology, or mental health.

On the other hand, we see investors facing a lack of overall funding (when compared to other attractive investment destinations globally) and simplified licensure mechanisms with complex multiple overlaps, for both greenfield projects and acquisitions, which could result in lengthy, stressful and quite discouraging processes, especially for foreign investors who have limited prior business exposure to the region.

Coverage of services remains patchy, due to lack of supportive cost savings evidence as well as directive for insurers to consider preventative and other long-term medical services from any of the regulatory bodies. Additionally, inflexibility to adopt more innovative models primarily to enhance coverage can be attributed to general lack in frameworks to regulate Third-Party Administrators (TPAs). Finally, the introduction of basic coverage in some of the GCC countries aimed at offering healthcare coverage for low skilled expat workers has admittedly contributed to creating a new market for healthcare providers, but is widely considered as a low profitability activity, and certainly does not contribute to elevating the overall quality and diversity of care in the region.

Lack of clarity on adoption, development and implementation of standards and guidelines for good practice pale in comparison to that of other maturing systems. Very little emphasis is placed on maintaining professional standards, studying introduction of innovative care, patient data protection, and actively encouraging adoption of stringent quality of care. Several initiatives continue, however their complete adoption lags considerably.

Opportunities

In our opinion, a distinctive regulatory management system used by regulators to attract investment includes: a clear articulation of strategy and overall agency direction; a well-defined operating model; and an organisational culture needed to achieve the regulatory body's mission. Strong capabilities in all three components are critical and must be consistent and reinforce each other. We understand that a distinctive regulatory management system is the foundation of efficient and effective regulatory programmes. Each of the three tenets below clearly define what is needed to achieve improved outcomes:

Regulatory management system:
Strategy – Policies and standards, risk assessment, regulatory science, collaborations and partnerships;
Operations – Core processes and systems, IT and informatics, infrastructure and footprint;
Organisation and culture – Organisation structure, governance and decision making, performance management, talent development

Effective regulatory activities:
Pre-market – Standards and guidance, licensure;
Post market – Inspections and safety surveillance, operations

Regulatory impact monitoring:
Patient – Quality of outcomes, out of pocket expenses, overall experience and satisfaction;
Provider – Price and profitability dynamics, talent and competences development, overall competition and consolidation dynamics, investment in research and innovation;
Payer – Premium dynamics, financial solidity, range of services covered, quality of operations

Those regulatory programmes must be sustained and enhanced over many years, with clearly communicated roadmaps and objectives. As any provider or investor will say: anyone can accommodate weak regulatory systems, it's the abrupt and unexpected change of regulation that can harm a market. AH

Arnaud Bauer will be discussing 'Driving private investment in healthcare: role and responsibilities of regulatory authorities', as part of the Invest conference, on October 2, at Building Healthcare.

CHALLENGES OF CONVERTING NON-CLINICAL BUILDINGS TO HEALTHCARE FACILITIES

By Jeanine Mansour, Healthcare Projects Director MENA / Biomedical Engineer, Leo A Daly

Repurposing existing non-clinical buildings into healthcare facilities is a strategy for providers to infiltrate the healthcare market quicker and offer services to new patient populations in need. While this is a great way to get project registration approval from a capacity master planning perspective, providers run into problems during the design and construction process in ensuring codes and compliances are up to standards with local licensing authorities. Try renovating a mall into a fertility centre or a bank into a neonatal intensive care unit or an office building into a long-term critical care facility and it is guaranteed challenging surprises will be encountered. This is when design firms get called in; specifically, creative teams who welcome challenges.

In 2015, we were appointed by the Department of Health (HAAD/Health Authority Abu Dhabi at that time) to conduct a third-party review on behalf of the authority for facilities seeking licensing at the Step 4: 90 per cent inspection stage. Many of the facilities seeking healthcare licensing were converting existing non-clinical spaces. Even the other facilities undergoing renovation were existing healthcare services that during the documentation review revealed that the original as-built drawings were a bank, hotel, office building, etc. During the 90 per cent of inspections, there is a moment of empathy for all parties involved. From the Department of Health perspective, there needs to

be a response to the current and future healthcare demands catered by service type and specialty where it is important these conversions are compliant with local requirements. In support of the providers, they are trying to expand their reach either from main branches or they are new to the market and the conversion is a quick prime location solution to deliver quality care to a new patient population where it is imperative to save cost and time. Maybe the most empathy falls within the selected design and construction team where it is imperative to implement innovative solutions to take advantage of reducing the carbon footprint by recycling built-environments for adaptive use yet must confront challenges that range from access, engineering, safety, security, infection control, waste management, etc.

Example 1: Office Building to a Long-term Critical Care and Rehabilitation Hospital

An entity out of the U.S. was exploring investing in healthcare in Abu Dhabi to convert an existing office building into an inpatient critical care and rehabilitation hospital. The intent of the project was to have both long term-critical care as well as acute physical rehabilitation inpatient services. Typically, office buildings are designed with features such as setbacks and large lobbies for access control, which can seem appealing to insert a healthcare facility. However, this building faced many critical items, such as ambulance access. It was difficult to provide ambulance access from grade level, yet it did not meet minimum height clearance on the ramp down to basement. Also, the elevator for stretcher circulation was explored in multiple locations. One location for the stretcher elevator impacted the fire escape strategy yet the other locations impacted programming and made the floor inefficient due to the existing structural grid not being ideal for healthcare facilities. At one point, the gurney elevator was explored to be built along the façade. However, the massing was not stacked to have a linear geometry impacting that the mezzanine floor would need to be extended to accommodate an external elevator. In the end, the programme was impacted, and the facility did not match the investor's needs and other real estate options were then explored.

Example 2: Mixed-Use Development to a Fertility Centre

An established operator expanded their reach into the local market by inserting a Fertility Centre in a mixed-use development. The main challenge is that the development supports residential, retail, and commercial spaces, which are typically open social experiences with direct quick access. In contrast, this healthcare facility (In Vitro Fertilization Centre) is a space that requires extreme privacy, security, and infection control, as well as dedicated cultural and religious responsiveness. Upon initial facility assessment, the proposed floor level of the fertility centre was not viable due to access, circulation, and ceiling height. The ground floor was then reviewed, which presented a significant challenge between planning and engineering. The best location for the operating theatres and clean rooms being driven by lean processes of patient and staff flow was the worst location for Mechanical, Electrical, and Plumbing (MEP) due to existing drop-down beams with drainage pipes running under the drop beam. This space is optimal for rooms with low false ceilings, not operating theatres or clean rooms. This brought us to explore option three: extreme raised floor levels. Note that the development was originally planned to be retail and commercial spaces where variation in floor levels can provide playful architectural experiences. However, the best location for the engineering systems were in a zone with a major drop in elevation. The solution was to raise the level by two to three metres and identify an optimal location for the return ductwork early on during the space programming. Determining the transfer of genetic material, location for specimen collection, medical waste pick-up, and cultural and religious responsiveness were challenges that were successfully solved.

Conversation of Conversions

Recently, I had two interesting conversations; one with a former health authority official and one with a seasoned senior operations manager. Both have seen first-hand how healthcare in Abu Dhabi has evolved over the past few decades. The consensus was that conversions are more expensive and challenging than new construction. One example discussed was a comparison between new construction of a 200-bed hospital being substantially lower in cost than a smaller day surgery conversion in a retail mall with the added responsibility of renting the space rather than owning the plot in new construction. Factors such as getting into the market in six to 12 months for a conversion rather than approximately 24 months for a new construction is a major factor driving the feasibility assessment. From the engineering perspective, it is more feasible to insert lower acuity wellness-based centres such as general clinics and primary urgent care centres to avoid issues. Inserting a CT or MRI in a villa has been very challenging on previous projects due to structural limitations and ADA patient circulation. There was one facility that had issues with the disposal of silver chloride from radiographic film (X-ray film) as it was cross-disposed with general residential sewage. Insertion of healthcare facilities in residential towers has presented challenges in the separation of peoples and goods as well as visitors and residents. Imagine a parent and their child in an elevator with an infectious patient. The frequency of infectious patients visiting that site is more likely increased to interface with parent and child's regular daily activities. There is even one major hospital within the Abu Dhabi emirate that has 20 staff working the valet services at the main entrance to maintain patient and visitor access, and yet the entrance is still crowded and clustered. There is a continuous need that can drive cost to upgrade engineering systems such as outdated sprinkler systems, fire code strategies, and HVAC systems during conversions.

While there are many challenges in the trend to convert non-clinical buildings into healthcare facilities, as a healthcare consultant, I welcome a future project aimed to convert a fast-food drive-through into a retail pharmacy satellite clinic where you can receive your flu-shot or vitamin-infusion through the window! AH

Jeanine Mansour will be discussing 'Challenges and trends: Converting existing non-clinical buildings to healthcare facilities', as part of the Equip conference on October 4, at Building Healthcare.

Developing effective value ANALYSIS COMMITTEES

By Kristen Barrett, Planning Consultant, Attainia Professional Service

With supply costs projected to outpace labour costs by 2020, hospital supply chain departments are focusing on their capital equipment expenditures. One significant area of focus is Physician Preference Items (PII). According to Definitive Healthcare, physician preference items constitute 40-60 per cent of a given hospital's total supply costs. While physician feedback on supplies will always remain a central component in decision making, healthcare supply chain touches biomedical engineering, clinical engineering, clinicians, facilities, construction, and more. Effective decision making requires each stakeholder to provide feedback during the purchase process.

The cornerstone of a first-class equipment procurement initiative is a high functioning value analysis committee (VAC). Before the emergence of VACs, purchasing decisions were subject to influence by one or two key individuals. VACs are comprised of a diverse collection of individuals who are employed by the hospital. While they differ in size and composition, VACs typically include at least one of the following:

- Clinical staff who will be using the equipment
- Members of the hospital's purchasing department
- Hospital supply chain managers
- Members of the hospital's finance team
- Hospital administrators
- Risk mitigation specialists
- Clinical engineering specialists
- Facilities management and operations team

VACs meet on a regular basis to review equipment requests and determine whether the hospital can accommodate proposed devices and whether procurement makes financial sense. In addition to contributing to a standardised equipment purchasing strategy, VACs serve as a checks and balances system that prevents any single stakeholder or individual from single-handedly controlling the purchasing process.

The Greatest Challenge to Procurement Efficiency

Even with a robust equipment procurement strategy and the rise of VACs, today's hospitals still face barriers in the procurement arena. Of all of the roadblocks in the supply chain management process, one of the most challenging barriers is a lack of equipment standardisation throughout the hospital and collaborative vendor vetting protocol. This typically stems from conflicting product preferences among clinical staff in different departments. Examples of this type of conflict include the following:

- A new staff member demands a different style of stretcher than the stretchers currently used in recovery, but research shows currently used stretchers could meet their requirements with addition of accessory
- Physician requests specific transport ventilator because they used that model throughout their residency, but current ventilators meet all clinical requirements for the facility.
- Medical equipment vendor works directly with physician to spec out equipment, but the equipment does not meet procurement standards.
- The monitors used by a hospital were supplied by four different manufacturers and accessories are not interchangeable
- Staff request for newest and highest-grade model of equipment as opposed to mid-grade model that meets requirements.

When a hospital purchases from a variety of different equipment manufacturers in an effort to satisfy the individual preferences of multiple clinical departments, the end result is higher expenses. Suppliers are less likely to extend package discounts to hospitals that do not purchase in bulk or with any consistency. Additionally, equipment servicing expenses are costlier because service contracts must be established for every manufacturer. Essentially, the hospital's buying power is compromised due to a lack of consistent purchasing.

Building a thorough vendor procurement protocol requires collaboration between physicians, clinical engineering and sourcing from planning inception through long term strategic planning. A solid process ensures medical equipment standards are created and maintained.

Bringing in key stakeholders early allows both clinical requirements from physicians and standardisation from sourcing to meet specific criteria before making a purchasing decision.

Streamlining the Purchasing Process

Fortunately, stakeholders, managers, and hospital staff are beginning to recognise that a unified, streamlined effort is required to control costs and improve outcomes. Leveraging a well-organised capital equipment request and budgeting software is a key building block of successful hospital supply chain management.

Ideally, the software should make it easy for a diverse value analysis committee to identify why the equipment is needed and whether procurement would be cost-effective. A well-organised request capital budgeting software should include the following elements:

1. Preloaded contact details for ease of submitting requests.
2. Robust catalogue that incorporates updated equipment categories and associated information
3. Vendor catalogue with concise contact information
4. Categories for financial and safety related benefits.
5. Supporting documentation to include cut sheets, specifications and reporting on previous success with the device.
6. Ability to attach and share documentation such as formal quotes, technical information and pro forma from vendors.

Utilising a tool to funnel information such as Attainia's BUDGET offers a simplified method to:

7. Determine critical need
8. Simplify the review and approval by the value analysis committee.
9. Consolidate and standardise final requests
10. Create a pathway for review and approval.
11. Automated prompts to ensure completion of all requests.

Capitalising on GPO Contracts

"Group Policy Objects (GPOs) save hospitals and free-standing nursing homes between 10 to 15 per cent off their purchasing costs. Overall, this means GPOs enable hospitals to save up to $33 billion each year through lower product prices." – Healthcare Supply Chain Association (HSCA)

GPOs are playing an increasingly critical role in controlling hospital purchasing costs. With GPOs saving hospitals billions of dollars annually, it is no surprise that 96 to 98 per cent of hospitals now use GPO contracts to facilitate their purchases. As noted by the HSCA, GPOs offer a number of valuable services that extend beyond volume discounts. They include the following:

- GPOs help hospitals navigate through an increasingly complex purchasing system
- They help eliminate medical errors by promoting equipment standardisation and product education
- GPOs provide a means by which doctors and other providers can evaluate new products and share feedback

With nearly every hospital in the U.S. now reaping the benefits of GPO memberships, suppliers have responded by adjusting their sales tactics. Specifically, they are proactively working with hospitals to standardise their equipment, offer package discounts, and help hospitals streamline their purchasing processes. Capital budgeting software should include a catalogue of capital equipment indicating whether an item is on contract to encourage leveraging GPO pricing.

The Key to Future Supply Chain Excellence

Building a collaborative VAC enables hospitals to ensure that stakeholders are able standardise equipment throughout a hospital. Hospital systems are constantly increasing scrutiny on cost efficiency, which is correctly driving systems to streamline their procurement systems.

The key to maximising cost efficiency is to introduce a user-friendly, software platform that can transform a hospital into a model of efficiency. This can be done by bringing together a single system so equipment planners, hospital systems, suppliers, and GPOs can successfully request capital equipment through a digital process such as with Attainnia's BUDGET software. AH


Kristen Barrett

CRITICAL SUCCESS FACTORS FOR A GREENFIELD HOSPITAL PROJECT

By Rebecca Samuel, Consulting Manager, GE Healthcare Partners

In the last decade, healthcare has become a booming business in the Middle East. This is clearly seen by the number of Greenfield Hospital projects under development. A Greenfield development is defined as a project that is completely new or a start-up organisation, and in hospitals it usually refers to a newly constructed stand-alone facility.

According to BNC Network, there are currently over 445 Greenfield Hospital projects in planning or execution phase throughout the Gulf Cooperation Council (GCC) countries. However, many of these projects will not come to fruition or meet the expectations of their investors and owners. There are multiple reasons why this is so. Hospitals are highly complex facilities and organisations that require in depth planning, market driven services, the right number of qualified staff, hospital management expertise, and a long-term mindset.

Realistic Vision

The first step to any successful project is to have a clearly defined vision and understanding of what the investors/

owners expect from the hospital. This vision needs to be based on realistic projections and growth plans. It is unrealistic to believe "if we build it they will come". Most people prefer to access healthcare services close to home. The first step of any project is to understand the catchment area this hospital will serve and the demographics of that area. The demographics will drive the number of patients, visits and procedures, types of clinical services required as well as the ability of people to pay for healthcare services. For example, building a 1,000-bed hospital in a catchment area of 400,000 people will never generate enough patients, visits and procedures to fill the hospital even if 100 per cent of the population made it their preferred hospital. When you add in competitors in the catchment area, insurance plans, income level of the population, you reduce these numbers even more.

It is critical for any successful project to have a comprehensive, geographic specific market study. The study should define a realistic catchment area, create a demographic profile, analyse the local competition and their service offerings, analyse how healthcare is paid for i.e. insurance, out of pocket, government and evaluate the current and future burden of disease for the area. This study then in turn will drive the medical and business concept for the hospital. For example, a catchment area of 400,000 people of which 25 per cent are under age 20 and 60 per cent are nationals may indicate a need for 150 bed specialised children's hospital while the same size catchment area of which 70 per cent of the population is under 45 and 70 per cent expatriate might indicate a need for a 100-bed primary care hospital to cater to basic insurance patients. Each of these hospitals would then have a very different financial profile with differing levels of revenue, expenses and profitability, which may or may not meet investment criteria or expectations.

Once a realistic financial feasibility study is completed and it is agreed to go forward with the project, it is imperative to engage companies with strong hospital expertise whether it be architects, contractors, consultants, advisors or planners. It is also important to engage expert hospital management professionals early on. The planning and design of a hospital can have significant impact on patient safety, operational efficiency and financial profitability. For example, if you plan for 20 medical beds and design them as two 10 bed wards this may require duplication of staff to operate them safely when compared to a single ward of 20 beds. With staffing accounting for anywhere from 50–70 per cent of a hospital's operating cost, this can have significant impact on financial performance. Improper planning, design and project management can also lead to delays during construction, which can end up costing millions of dollars in re-work, in cost of staff and resources not being properly utilised and in not beginning to generate financial return in a timely manner. It is critical to involve seasoned professionals with strong track records in hospital planning, design, start-up and management.

It is also important to involve the hospital operator early on, usually during the design phase, to avoid delays and design issues. During construction, the operator will begin developing the policies and procedures, systems, and processes, as well as assist with project management and supervision. Over time they will also begin to hire key senior management and staff to prepare for operational commissioning and opening. The commissioning of a hospital can take up to nine to 12 months, so it is best to begin during the latter part of construction and not wait until three months before opening. Recruitment of staff is also crucial to a successful opening. It can take six to nine months to recruit one doctor or nurse given visa and licensing requirements. Once recruited, the staff need to be oriented and trained on the policies, processes, equipment and practices of the hospital. This can require another two to three months. The operational planning time frame is lengthy and needs to be incorporated into the overall timeline of hospital construction, technical commissioning and building handover to avoid delays.

Rewarding Investment

In addition to the hospital operator, there are many external parties such as the Ministry of Health, Civil Defense, Department of Radiation Protection, and Electric Company to name a few, that need to approve, certify and/or license the building before it can be operated. If not involved early and communicated with frequently external parties can create significant delays and additional costs before the hospital can be occupied. Proactive project and stakeholder management is vital to keeping a Greenfield project on time and budget. A project requires people who are skilled and knowledgeable in local codes, regulations and licensing requirements for not only the building but for hospitals and specific hospital departments such as radiology, lab, waste management.

Lastly, it is important to understand that most Greenfield hospitals require three to five years of operation before they reach their capacity and begin to turn a profit. Focus is usually put on the cost of designing, constructing and equipping the building and not on initial operational start-up deficits. Once the facility and staff are ready for operation, there needs to be enough funds or working capital available to see the hospital through the first few years. The costs of running the hospital i.e. salaries, medicines, supplies, utilities need to be covered during the period the hospital is ramping up its services. In many cases, working capital is often forgotten in the budgeting stages for a Greenfield hospital and can create additional delays as well as investor/owner dissatisfaction when additional funds are required.

Building a hospital is a complex and highly technical initiative that requires a well-conceived, market-based plan, realistic projections and budget, early involvement of subject matter experts and rational time lines to attain the owners/investors vision and expectations. Even when implemented well, there are still many things that can go wrong. Strong project and risk management are imperative, as well as a clear understanding of all that is involved and required. If given the right ingredients for success, a Greenfield hospital can be both personally and financially rewarding. Hospitals can provide a long term, stable investment that provide a much-needed service while giving back to the community. AH

Rebecca Samuel is the Chair of the Operate conference and will share her opening remarks as well as take part in the panel discussion 'How to prepare for a successful opening of your Greenfield hospital' on October 4, at Building Healthcare.

HEALTH BEYOND A HOSPITAL

Retail centres could be an unexpected ally in reducing diabetes in the Middle East

By Henry Chao, AIA, Principal and Senior Project Designer at HOK; Stephanie Timm, PhD, Director – Delos Insights, Delos; and Whitney Austin Gray, PhD, Senior Vice President – Delos Insights, Delos

Project name: *Suzhou Times Square in Suzhou, China*
Suzhou Times Square in China by HOK provides a weather protected shopping trail crossing multiple stores and a street.
Credit: *Ben McMillan*

Diabetes in the Arab World

In 2017, it was estimated that 39 million people in the Middle East and North Africa (MENA) had diabetes. According to the International Diabetes Federation, this number is projected to surge by 110 per cent to 82 million by 2045. The increase in diabetes has been attributed to rising obesity, unhealthy diet, rapid urbanisation and lack of exercise – factors that largely lie outside the realm of healthcare.

Of course, this is not breaking news. Doctors have long been aware that access to hospital care is considered one of the smallest determinants of human health. Other factors such as economics, physical environment, behaviour and genetics all play an arguably larger role.

Designing homes, offices and schools to support human health and well-being is frequently discussed in both academic and industry literature. But what about 'third places' such as retail establishments? The scale and prevalence of retail centres in the MENA region make them ideal spaces to promote health and wellness.

How can these retail centres be key, unexpected allies in helping the public lead a healthier lifestyle?

The Potential of Retail

Designing wellness-focused retail spaces could be a particularly strategic opportunity to offer preventative health solutions. In general, the MENA region's hot, arid climate has largely made enclosed malls a preferred retail solution. Shopping centres are omnipresent and operating 24/7 in some regions. They are the centres of neighbourhoods, communities and cities; and serve as bustling hubs for shopping, social gatherings, entertainment and information.

In the last few years, the retail market has expanded to include more civic, culinary, educational and cultural elements to offer experiences beyond shopping. A growing number of enclosed retail centres are connected to multiple modes of transportation and offer security, cleanliness, community connection, improved air quality and a comfortable temperature. Amenities that can be offered to support social connection (e.g., tables and chairs, free concerts, etc.) and cleaner indoor air (e.g., air filtration) are particularly important. Recent research shows correlation between social isolation and Type 2 Diabetes and $PM_{2.5}$ air pollution and risk of Type 2 Diabetes.

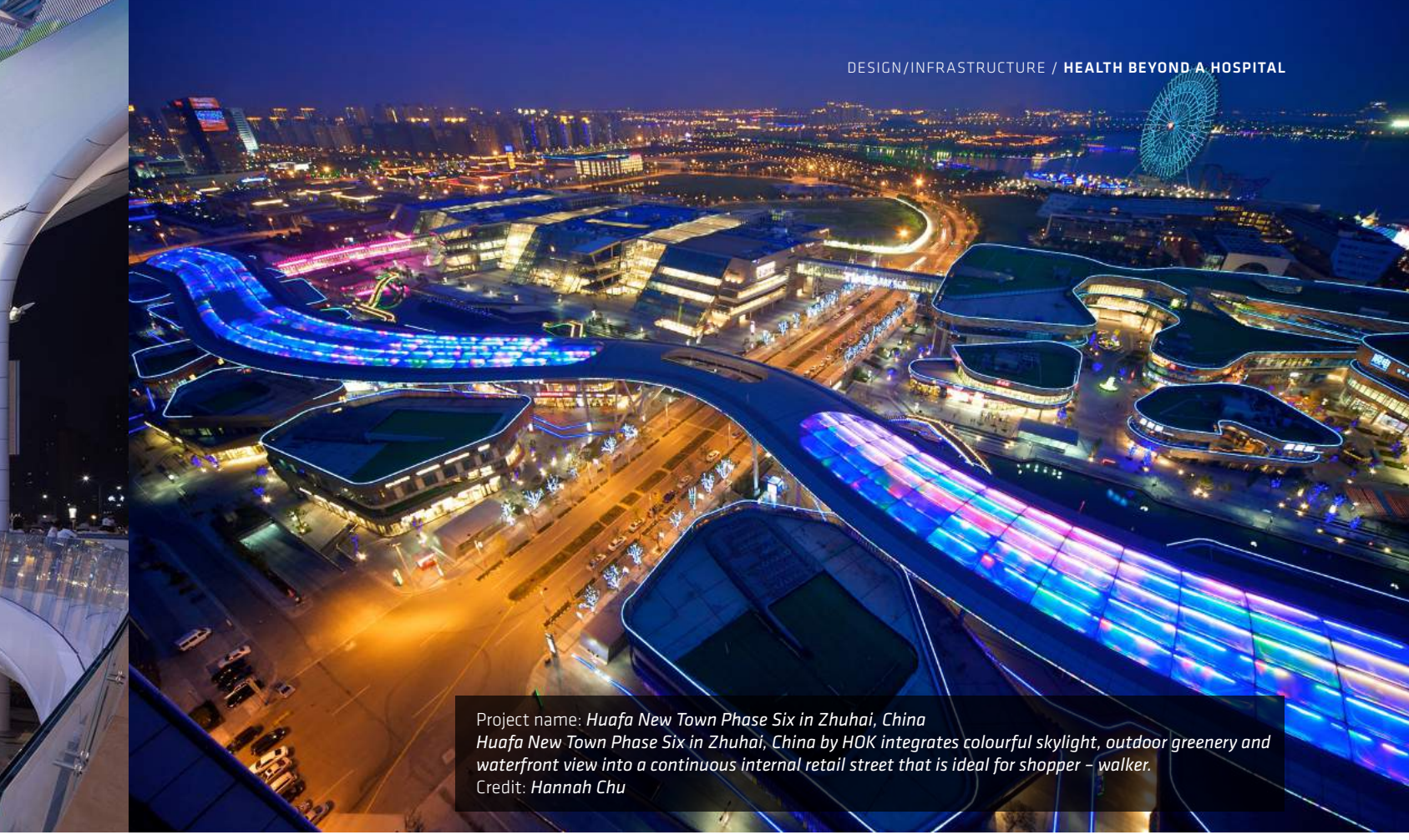
Some institutions and entities are already paying attention to this potential preventative health solution. For example, the U.S. Centers for Disease Control (CDC), together with Health Promotion Research Center at the University of Washington School of Public Health, published "Mall Walking – A Program Resource Guide" in 2015. This guide outlines the benefits of mall walking and design suggestions that 'nudge' physical activity.

Elements of Wellness Retail

Most major cities in the MENA region have large shopping malls, like The Avenues in Kuwait City, and the Dubai Mall in Dubai. These malls offer kilometres of walking area with weather protection, security and amenities. A daily dosage of widely recommended 8,000 to 10,000 steps can be easily exceeded by walking each floor of the Dubai Mall.

If interested, designers and developers can take several actions that may enhance the health and wellness potential of these modern retail facilities. These might include:

- Using environmental graphics and signage to encourage walking
- Offering healthy dining options in food courts
- Creating open spaces for exercise



Project name: *Huafa New Town Phase Six in Zhuhai, China*
Huafa New Town Phase Six in Zhuhai, China by HOK integrates colourful skylight, outdoor greenery and waterfront view into a continuous internal retail street that is ideal for shopper – walker.
Credit: *Hannah Chu*

- Incorporating biophilic elements (like interior green spaces and living walls) into building design
- Launching apps to help people navigate healthy features of space
- Increasing daylighting and views to the outdoors

Traditional patterns of design that have been proven successful should also be acknowledged and incorporated into more modern facilities. The "souk" (or traditional Arab retail street market), for example, offers local food options and space to walk and connect to the community. Coupling these design elements with modern solutions (like mobile apps) will likely be key in promoting increased physical activity.

Wellness retail could benefit a wide range of ages and demographics –particularly 'vulnerable populations' such as children and the elderly. Families with children might feel safer in an enclosed environment away from cars and other potentially dangerous activities on the street. Older individuals will likely be more comfortable with temperature-controlled spaces that have easy access to amenities like benches, air filtration, drinking fountains, restrooms and spaces for social connection.

Evolution of the Mall

The rapid rise of diabetes in the MENA region is an urgent health issue that needs to be addressed from multiple angles and across industries. Hospital campuses will not be able to address an issue of this magnitude in a silo. Healthy, preventative behaviours like physical activity and healthy diet will need to be integrated into daily life. Wellness retail is one way to provide environments that support and encourage this.

Along with the growth of the experience economy, health and wellness are trendy topics especially among millennials. Wellness benefits are the ideal perk for health-conscious shoppers as they bring their foot traffic to stores and businesses. The emphasis on retail venues as centres for health and wellness can have a significant reciprocal effect for the stores. By reframing the existing space as a free exercise opportunity, for example, retail centres may bring more foot traffic to all stores, restaurants, entertainments venues and other attractions – reaping the benefits of spontaneous shopping experiences.

In this way, building retail centres that support a key societal value – health and well-being – can be a win-win-win for hospitals, businesses, and consumers alike making us rethink health beyond the hospital. AH

Diabetes Breakthrough

According to a recent report, the prevalence of diabetes in the UAE dropped to 11.8 per cent of the total population in 2017 from an alarming 19.3 per cent in 2013, the National Health Survey revealed. The figure is reportedly from preliminary results of a pan-UAE study conducted in October 2017. Over the years, the UAE has developed a clear roadmap for the prevention of non-communicable diseases (NCDs), which includes development of a national plan, creation of a multi-sectoral committee, double taxes for tobacco products and soft drinks and a strategy to combat prevalence of obesity among children.

Henry Chao is the Chair of the Vision & Masterplan conference and will be sharing opening remarks at the start of the conference, while Whitney Gray will be discussing 'Building health without hospital', on October 2, at Building Healthcare.

Evolving Role of the MEDICAL EQUIPMENT PLANNER

By Francesco Angeloni, Ph.D., Medical Equipment Planning Manager

Successful healthcare project planning is a dynamic process involving an entire team, typically comprising clinicians, architects, engineers and project managers, who are tasked with balancing the needs of patient care, and the realities of the design and construction process. However, there is a professional figure who plays a major role today in the creation of a cutting-edge hospital providing high patient satisfaction: the Medical Equipment Planner.

Usually a biomedical equipment planner performs a wide range of tasks, including evaluation of different medical equipment, making recommendations on their installation and use. They are responsible for the definition of room layouts and for the validation of structural layouts and requirements of the hospital. They develop, coordinate and manage the hospital equipment list. Moreover, this professional is asked to coordinate projects with other planners and engineers, architects and administrative personnel. The role of the biomedical planner is further going to undergo major changes stemming from Artificial Intelligence (AI) and Machine Learning (ML).

While China's first smart hospital featuring AI recently opened in Guangzhou, in the U.S. a study demonstrated that the AI health market is poised to reach $6.6 billion by 2021 and by 2026 can potentially save the U.S. healthcare economy $150 billion annually. ML healthcare applications seem to top the list for funding and press in the last three years. Many of the ML start-ups are targeting healthcare, scuh as Nervanasys, Ayasdi, and Digital Reasoning Systems.

In this context, the medical equipment planner must not only acquire knowledge about AI and ML but must understand their fields of application. They must also acquire all the technical notions to implement new technology in new projects, defining its requirements, as well as the infrastructure, the needed hardware and the management systems.

As a result, the biomedical equipment planner needs to evolve beyond the current tasks to acquire the "flexibility" and the "elasticity", which allow him to "metabolise", manage and implement new technologies. The biomedical equipment planner must be able to understand how AI and ML impact the current medical devices in the future and how these technologies can modify layouts, assets and operational workflows of a hospital.

A medical institution will get the greatest value from a medical equipment planner who is able to integrate the medical equipment with the infrastructure technology, including the exchange of information between disparate systems such as audio-visual, security, and information technology infrastructure and information technology systems where AI and ML are implemented. This integration, known as ME-IT, can bring the client a seamless integration of services that will result in a cost-effective design.

The biomedical equipment planner must bring this holistic approach to medical planning. This can be achieved by a professional figure with a solid clinical experience combined with a strong technical knowledge of medical devices, medical planning and ICT Systems. This unique combination of clinical knowledge and practical and technical know-how will allow the biomedical equipment planner to address the development of medical facilities with a comprehensive, holistic view.

The biomedical equipment planner will bring together the expertise of biomedical engineering, a clinician as well as an ICT system, AI, and ML.

If on the one hand more energy and effort must be spent on acquiring new skills, on the other hand we cannot fail to see the new opportunities that the advent of these new technologies can bring not only to the entire healthcare ecosystems, but also to the figure of the biomedical equipment planner.

In fact, whenever there are big technological revolutions, there are always great opportunities for professional growth. Although many applications of AI and ML in the healthcare sector are already known, there are still wide margins of growth and entire "unexplored" areas of patient care chain, where these technologies can be applied.

A biomedical equipment planner with a wide range of skills and knowledge is a professional who can produce innovative solutions.

Researchers at Harvard spent half a decade studying the world's greatest innovators. They found that innovators "associate" ideas and knowledge from different fields and apply them to the product or service they're working on.

Therefore, in the next few years the biomedical equipment planner will be called on to integrate AI and ML with biomedical engineering, thus becoming a pioneer in a strongly growing sector. For more info visit www.biomedicalequipmentplanner.com. AH

Francesco Angeloni will discuss 'Saudi Vision 2030: The Security Forces Medical Center Project', as part of the Vision & Masterplan conference, on October 2, at Building Healthcare.

One hundred and HDR. A century of pushing the boundaries of what's possible.
A legacy of bringing innovative solutions to every project—no matter the challenge.
A future of collaborating and creating the only way we know how. Together.

hdr100.com

ONEHDRED™

BLINDLY OFF A CLIFF

Decoding the digitalisation of medicine and its impact on healthcare facilities

By Brian de Francesca, Chief Executive Officer at Ver2 Digital Medicine

Is it too bold, too brash, too arrogant to say that the majority of the those in the healthcare industry are racing blindly down a dead-end alley – and that probably includes you and the organisation you work for? Or more precisely, you may be crawling out on a tree limb that will eventually break under the combined weight of you and your peers, sending everyone crashing down into a burning financial abyss? I am specifically referring to the type, size, and the number of healthcare facilities we are plopping down everywhere like Monopoly houses and hotels, and then attempting to staff them with enough warm bodies to run these money machines. Simply put, we are building too many hospitals, with too many beds that will not be needed in the near future.

Yes, that is a very aggressive and provocative opening – and it is also painfully accurate. We are collectively making several critical mistakes when it comes to facility planning: First, we are using antiquated demand analysis models that do not take into consideration increasing market competition in this region; second, we are ignoring the massive and rapid shift to more and more "day case surgeries," that will not require hospital admission, added to the fact that we will soon sort out how to better manage chronic diseases, which will greatly reduce bed demand; and finally, no deep analysis has been done on the impact that digitalisation and connectivity will have on healthcare facilities and their staffing.

If you were asked what has had the greatest positive impact on improving the health and well-being of our species over the past 100-200 years, you may first answer with the name of some antibiotic, like penicillin, or a surgical procedure, such as an appendectomy. You may think more deeply and consider the standardisation of medical education or improved diagnostic tools like the MRI. While each of these did contribute incrementally to the improvement of the practice of medicine, it was having access to potable drinking water and the creation of sewage disposal systems and networks implemented during the Victorian era that, in tandem, had the greatest sustained improvement on the health of the public. Improvements have been modest and incremental since then, more evolutionary than revolutionary. However, we are on the front edge of another period of revolution that may surpass anything from the past – the digitalisation of medicine.

David Taylor, Managing Director of global healthcare workforce solutions company, MEDACS Healthcare commented: "With a solid history of delivering traditional staffing solutions for nearly 30 years to clients across the globe, we know that digitalisation in the healthcare industry is going to have a significant direct impact on staffing and the entire staffing industry. The sooner we adapt our business models to fit with the objectives of the variety of healthcare facilities we serve in this new digital ecosphere, the sooner we will be able to support the changing staffing landscape; ultimately, resulting in supporting the delivery of better, and outstanding cost-effective care to patients."

Digital Transition

My definition of "digitalisation and connectivity" includes much more than phone apps, which is the first assumption that often comes to mind when you think "digital medicine." Smartphone applications are one small piece of the broader and deeper digital landscape that is developing around us and within us. This digitally connected ecosphere includes ubiquitous, high-speed, low-cost tele-connectivity for education, collaboration, and myriad other applications, such as cloud-based storage, the cost of which is dropping as I type, access and sharing of information, synthetic intelligence (aka AI), and sensors of all types. Individually, these various technologies are important and valuable, however, these technologies will not be used in isolation, but combined to produce many exponential benefits.

The tremendous positive impact that digitalisation and connectivity will have, specifically on healthcare staffing and facilities, will surpass the improvements in the public's health afforded by the connection of sewage systems and having continual access to clean water, creating a paradigm shift after which their integration into medical practice will seem just as obvious and common sense as hygienic standards have become since the Victorian era.

These technologies, when combined with standardised processes and workflows, will improve access, quality, and safety, while significantly lowering cost. These integrated advances will first be embraced in developing countries, that are not handicapped by antiquated legacy systems and the intricate web of self-serving self-interest groups and individuals who are suffocating innovation and positive change in the developed world. Once these first world healthcare systems finally burn down, their practitioners will finally embrace the much more efficient and effective models that we are implementing today in developing countries and will ▶

continue do to so over the coming decades. It's a bold statement, but history does tend to repeat itself; humans are not very good at learning from the mistakes of their predecessors. The developing countries will leapfrog the currently developed countries over the coming decades – specifically in the areas of human resource development and utilisation and the planning and deployment of healthcare facilities.

Half of a hospital's operating cost goes towards paying humans to work. There are tremendous supply-demand imbalances across healthcare systems, countries and the world. The healthcare workforce can be divided into two: Those workers who must be physically present to provide their work "value" and those who can provide their work value remotely (healthcare knowledge workers). I estimate that 25-50 per cent of the healthcare workforce may fit into the healthcare knowledge worker category – the daily increase in connectivity, will allow us to greatly improve the utilisation of, and access to, these healthcare knowledge workers.

Debate Around Diagnosis

The foundation of healthcare delivery is "the diagnosis." There are many people involved in diagnosing what is wrong with us – not only the doctor or nurse in front of us but a larger assortment of caregivers that includes pathologists, radiologists, laboratory specialists and many more specialists. Diagnosing an illness or injury consists of working through algorithms and looking for familiar (known) patterns. Running algorithms and pattern recognition are functions that are much better done by computers than humans. I am not saying that there will no longer be a warm-blooded empathetic human serving as your primary interface, just that the diagnostic tasks will be performed by computers – thus greatly reducing the required manpower, speeding up the process, improving the accuracy and lowering the cost. This is already starting – but we are just scratching the surface.

Billions of sensors in and on our bodies, and within our physical environment as well – will continually feed enormous amounts of data into cloud storage that will be curated, accessed and analysed by advanced thinking machines, which will have access to all of this monitored patient data, health records as well as all published research for us.

I realise that I make "going digital" sound like a panacea, and it could be – but, there are risks and problems to overcome with this transition to digital; and no, it is not the dehumanisation of healthcare, or replacing doctors with computers. Digitalisation and connectivity will improve access and make healthcare much more personal and humane than it is today. The problem is that most healthcare IT initiatives are miserable money wasting failures.

There was a survey conducted by McKinsey & Company several years ago of more than 2,200 hospital and health system executives – roughly 70 per cent of executives said their strategic initiatives failed. I believe the root cause of the majority of these failures, is the lack of standardisation in healthcare, process illiteracy and the wrong-headed belief that medicine is a dark art, only to be understood by mystics and wizards. Before we can properly "go digital" we must become process literate and embrace standardisation – all of that "lean sigma Kaizen event" stuff that gets a lot of talk, but not enough walk. Medicine is not a dark art; much of it can be standardised and industrialised, which would result in better patient care and experience. And upon this foundation, we can then overlay a powerful digital ecosystem.

Brian de Francesca will be discussing 'Digitisation of healthcare', as part of the Vision & Masterplan conference, on October 2, and 'The Internet of healthcare things', as part of the Equip conference on October 4, at Building Healthcare.

WORLD FORUM FOR MEDICINE

MEDICA

Leading International Trade Fair

DÜSSELDORF, GERMANY
12–15 NOVEMBER 2018

www.medica.de

Member of MEDICAlliance

- The medical world on its way into the digital future
- Worldwide overview: Only at MEDICA 2018

BE PART OF THE NO.1!

IFP Emirates LLC
P.O.Box 117772 _ Garhoud Area
The Arcade Building _ Mezzanine Floor, M02
DUBAI
Tel. (00971 4) 2822 543 _ Fax (00971 4) 2824 573
e-mail: info@ifpemirates.com _ Internet: www.ifpemirates.com

Basis for Business

Messe Düsseldorf

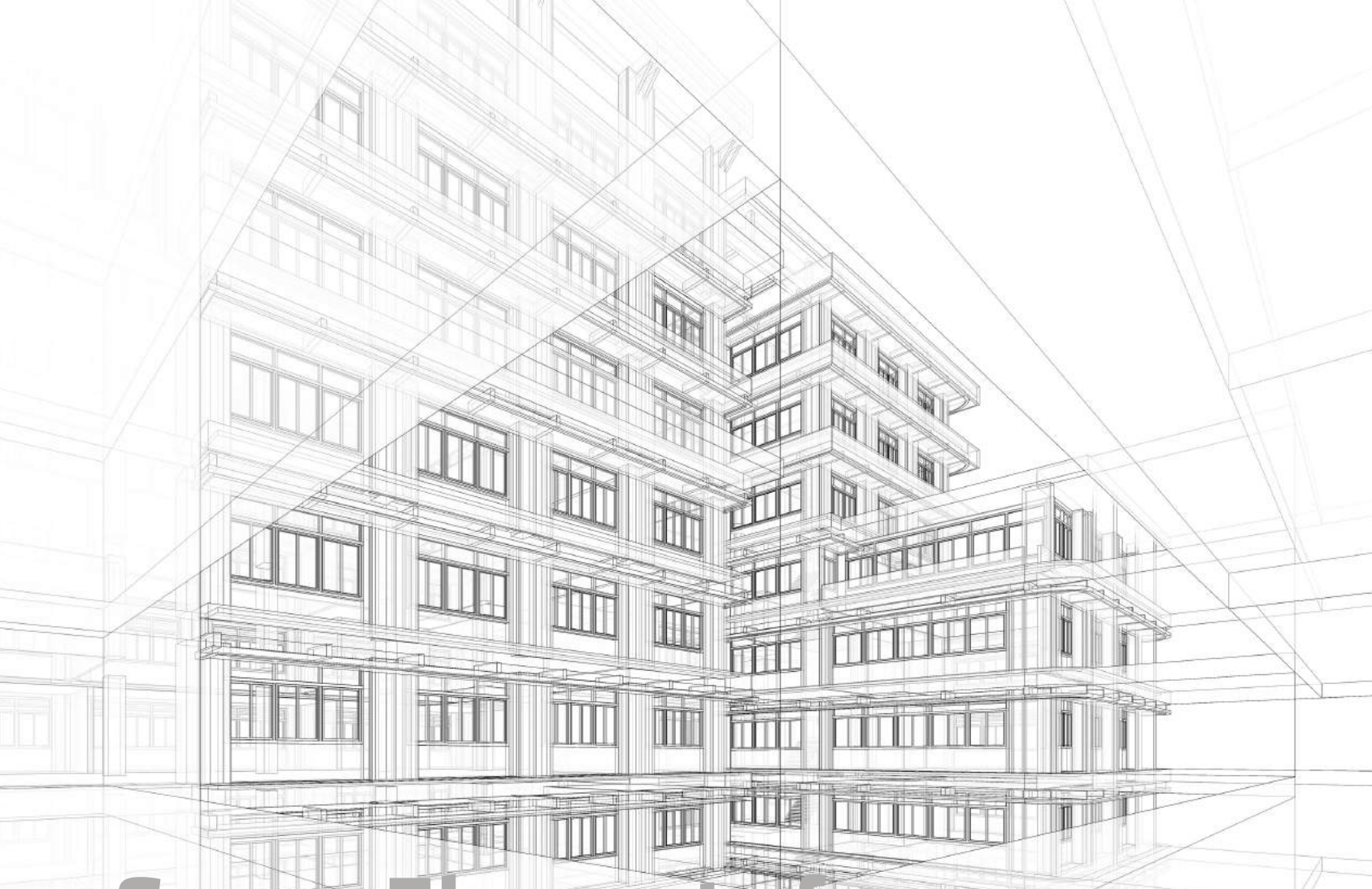
Versatile Textiles from TREVIRA CS

Trevira CS provide safety textiles for interior design that is patient-oriented. It offers solutions for hospitals, clinics, medical practices, rehab and care institutions, retirement homes, design and furnishing for assisted living, hospices, mental health institutions. The list of items that have particularly high requirements on the functional qualities of their textiles, is a lengthy one. These are demands that cover both preventive fire safety and also specific wishes in terms of easy care, hygiene and appearance.

Trevira CS materials come with many plus points. The fabrics in their antimicrobial variant are of particular interest for use in the hospital and care sector, since the applied flame retardant bioactive Trevira yarns protect the textiles by inhibiting the growth of microbes on or in the textile.

In addition to flame retardant properties, Trevira CS Bioactive textiles possess an active agent based on silver, which is firmly integrated in the fibre raw material. The additive exercises a permanently antimicrobial effect that is not affected either by washing or usage. The effect works on the fibre surface, yet the antimicrobial agent does not migrate into the environment. It has been shown that Trevira Bioactive causes no changes to the skin flora and is therefore compatible with the skin. Trevira CS Bioactive textiles are consequently ideal for use in areas where there is strong emphasis on cleanliness and freshness. It goes without saying that both flame retardant and antimicrobial Trevira fibre and filament types hold the Oeko-Tex Standard 100 certificate and are thus free from toxic substances.

Wherever textiles require frequent washing there are questions raised about factors like easy care and economic maintenance. Trevira CS safety fabrics are easily cleaned, remain durable and keep their shape despite frequent washing. In the wash process they absorb only slight amounts of water – less water means at the same time fewer detergents and shorter drying cycles and therefore energy-saving. AH



Seven Elements for Successful Healthcare Projects in the Middle East

By Vivek Shukla, Director, Healthcare & Lifesciences, Frost & Sullivan and Dr Fatih Mehmet Gul, MD, Chief Operating Officer, Fakeeh University Hospital

Creating infrastructure in healthcare is no mean task. Projects are usually large-sized and involve adherence to many standards, regulations and best practices. If thrown into this the challenge of economic viability, it certainly is a daunting task at hand. The undertaking of creating healthcare infrastructure that is sustainable and viable is not impossible, even though it is a tough challenge. To tackle this, here are a few learnings that we hope will be useful for people who want to manage these projects successfully.

Start Right

We can say with considerable impunity, most hospitals that do not do well actually fail in the project conception stage itself. The importance of starting right cannot be stressed enough. You always start with getting the depth of demand right. The gap between what is required in the region that you are serving or looking to serve and what is already being provided has to be gauged as objectively as possible. "We have been in this business long enough to understand the gaps and there is no need for an in-depth objective analysis" is not an acceptable answer. The stakes in these capital-intensive projects are too high to be left to the 'we know it all' syndrome.

The demand study, among many other things, defines the following:

- Services that need to be provided
- Design required for those services
- Overall business model of the facility
- Available/unavailable service review for the market
- Technology and equipment that needs to be incorporated

- Local flavour that will need to be infused in the design and delivery of services

Once the demand depth is gauged, the team usually creates a brief on what is required from the overall design and delivery point of view. This brief is then part of all discussions with possible vendors and project partners.

Partner Right

Selection of partners can be another make or break decision for the project's success. It is imperative to have project partners who have sound local knowledge and expertise in the overall concept that you have envisaged. There have been times when big international brands have been hired for projects and have failed to deliver, as they did not have the requisite know-how of the local markets and its regulations.

We always recommend doing a thorough background check on the project partners, even if it means spending extra days or weeks. Find out about the previous projects delivered by them and visit those places, apart from speaking to the teams that they worked with in those projects. Try and find similar projects as you have conceptualised for yourself. Be wary of partners who hesitate to provide details of contacts in previous projects. Firms that are in bad health financially must also be avoided.

Integrated Approach

Another key element in any hospital design and planning pertains to how seamlessly the technology integrates throughout the system. In the modern times, hospitals are heavy on technology and its interface with care delivery. For instance, a patient's journey from the ambulance, to the emergency ward to the OT to the ICU must be integrated in terms of patient care data that can be seamlessly collected and transferred among all care points. The system should integrate the pharmacy and billing too, in addition to other things.

Beware of Buzzwords

Many a time, the promoters and project owners get smitten by the buzzwords that are doing the rounds. Be aware that not all predicted fads will become long-term trends. Have a realistic view and knowledge about what may become a necessity in future and what will pass away as a short-term fad. Just because people are talking about it in articles and conferences, doesn't mean you spend millions in chasing those concepts. It pays well to objectively gauge the fit between your demand depth and the buzzword or new trend.

Project Management

This is where the action actually takes place. The entire plan is laid out with pre-conditions and timelines. A common mistake made by project owners here is lack of communication among stakeholders. Not everyone knows all the details about the plan. In large projects, it has been our experience that over-communication is better than under-communication. If you have to err, do it towards over-communicating.

Information about the deadlines that are likely to be missed needs to be communicated as soon as the owner gets the first whiff of delay and not on the deadline date. This may sound counter-intuitive, but it builds immense trust and transparency among the team. Similarly, deadlines that will be met must be communicated boldly and loudly as well. This builds the momentum and encourages everyone else.

Another important factor is Change Control Management. Allowing changes during the execution of a project is the perfect recipe for delays. Design stage can have umpteen iterations, but once it is completed and frozen, changes allowed are to be very minimal to ensure on-time delivery of the project.

Get the Core Team Right

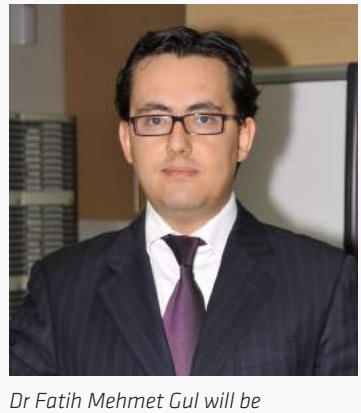
One common mistake often made is that the composition of the core project team is not adequate. For example, sometimes the head of operations comes into the picture only when he is handed over the building for commissioning. It is a bit late in the day if that happens. The senior operational team and senior medical team representatives should be part of the project from the very beginning. Some promoters think that hiring an operational team beforehand is an unnecessary expense, as the hospital is not even ready. As it turns out, it may prove costlier to re-do a hospital after it is done wrongly, than to hire two senior people who will be running most of the project anyway once it is ready. They need to be a part of the bigger picture right from the start.

Cost vs Investment Mentality

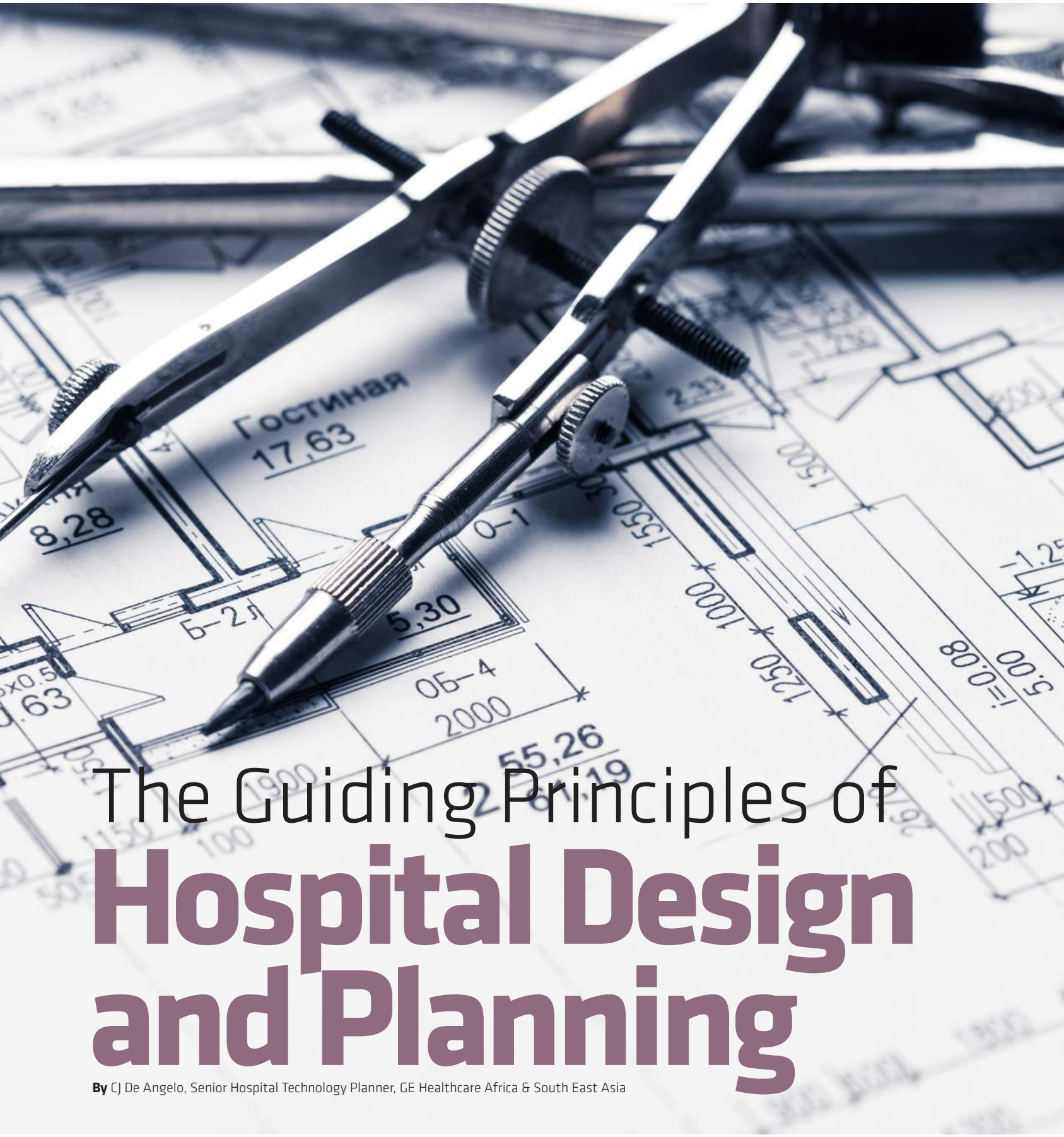
This brings us to another related point. You have a choice in how to perceive the spending on various project-related items. Everything that is being conceived for the project can either be viewed as a cost or as an investment. A positive way to look at things is to see if they are an investment for the demand-based model that you are making. The investment can be dismissed if it either does not bring promising returns or it is inconsistent with the business model. Overall, having an 'investor mindset' is healthier and more rewarding than the 'cost-saver mindset'.

To sum it up, in this article, we have tried to simplify in 7 points – a tedious, complex and a cumbersome process of conceiving, designing and building hospitals. The journey to create something new is exciting. It becomes even more rewarding when the project takes off on a successful note and adds the value that was envisioned for it. AH

Vivek Shukla, Director, Healthcare & Lifesciences, Frost & Sullivan



Dr Fatih Mehmet Gul will be discussing 'Hospital Executive Perspective', as part of the Vision & Masterplan conference, on October 2, at Building Healthcare.



The Guiding Principles of Hospital Design and Planning

By CJ De Angelo, Senior Hospital Technology Planner, GE Healthcare Africa & South East Asia

In an environment where failure to plan is planning to fail, time and time again I have witnessed the devastating effects poor planning can have on the design and construction of healthcare facilities in both developed and developing markets. Despite the best intentions of providing healthcare to a growing market, the importance of infection control, staff efficiency, hospital workflow, as well as patient safety and comfort are often overlooked.

This seems to occur more frequently when the project is not championed by an experienced healthcare design team, or when the structure is not built to the specific needs of a healthcare facility or healthcare market. Another major issue appears when the wrong stakeholders are asked to advise. People just don't know what they don't know. Most hospital CEO's will experience one major construction project in their career. By contrast, healthcare planning and design firms will build five to 10 a year.

During a recent customer site visit, I was asked to walk through a shell and core building that I quickly realised was never intended to be a hospital. Just by looking at the architectural drawings, I discovered some clear giveaways: a small actual footprint, central core elevators and multiple stories. This building was a hotel. This kind of design makes it difficult to separate inpatient and outpatient flow due to the limited availability of vertical movement options. This footprint also impedes department adjacencies or the need to house some departments on a single floor, like radiology and surgical floors. Not every building can be turned into a hospital; a medical facility is a purpose-built structure.

Five Key Principles

In my 34 years in international healthcare, I have had many similar experiences, which have led me to adopt five guiding principles when advising clients in their hospital design and technology planning.

One: Equipment dictates design, design does not dictate equipment. Advisers sometimes forego critical equipment simply because they will not fit within a design or in a shell and core structure repurposed as a healthcare facility. Large, heavy pieces of equipment like MRIs for example, need to be positioned on an outside wall in the structure to plan for delivery and possible replacement. I've seen this dozens of times at the cost of several thousands of dollars in reconstruction.

Two: Design today for tomorrow's expansion. I particularly see a lack in vision in renovations of projects that have been constructed within the last five years, which addressed only current problems and were therefore time-locked. Most communities don't shrink in population and a good healthcare facility will grow a community around it. The healthcare facility must not only address today's issues but have vision toward future challenges. In this case, growth in number of beds, additional departments and the changing structure of population and healthcare needs should be considered during the planning phase of the facility. A good healthcare facility will last about 30 years or more.

Three: Core is key. I start every design review around four key departments. Emergency Department, Radiology Department, Operating Theatres, and intensive care units. My thought process is that each of these departments feed patients to each other so having them in close proximity can reduce patient travel and the need for duplicate equipment. During my imaginary travels from department to department I always keep in mind what I call PDR: privacy, dignity and respect of the patient. PDR can be as simple as providing curtains, walls or doors between patients; not parking inpatients' stretchers on corridors or public waiting! There needs to be an understanding that many patients can't choose for themselves, so you will be making choices for them. These considerations will aid in planning the movement of patients from department to department, so they don't cross with general hospital population.

Four: Solve problems with pen and ink instead of sledge hammers. Talking through, walking through, mock ups, and 3-D renderings are all methods of identifying issues before they become real construction problems. It is important to remember that you will pay for a mistake three times; once to build it, once to tear it down and once to rebuild it. Moving into construction without an adequate review process, will increase the likelihood of change orders/variations further down the line. On many projects I've reviewed, in the rush to construction, simple mistakes that could have been avoided resulted in tens of thousands of dollars of costly corrections. An example of that is an MR landlocked in the centre of the building and walls that had to be torn down for installation.

Five: Design with caregivers in mind. I apply a rule that a caregiver should never move more than 25m in any direction to obtain the supplies needed to do their job. This is accomplished by locating support rooms to adequately supply the staff. During review of plan elevations, it is important to remember simple rules; like a caregiver should never move their feet with sharps or needles in their hand. Accordingly, locating sharp disposal boxes at the site of injections is a simple measure that has great impact. Another easy fix is to mount patient monitors on articulating arms, which can be adjusted to the height of the caregiver. A nurse's time should be spent with the patient, not chasing down supplies; so, by simply by locating support rooms within those 25m of where the care occurs can drastically reduce the amount of time a caregiver spends traveling the hallways. I believe strongly that taking care of your caregivers is a great consideration in planning and is accomplished without costly measures.

Optimised Workflows

To address some of these key guiding principles, I developed a detailed Design Review Methodology in the past years. At the heart of this methodology is the need to retain an experienced hospital technology planning team and senior technology planner.

The overall goal of an experienced Hospital Technology Planning team is to assist in the establishment of international standards in hospital design that support patient safety, infection control and optimised workflows based on room and department placements and functional adjacencies.

A senior technology planner can provide quick desktop reviews of designs, in depth design reviews and BOQs, in addition to supporting the Client Design Team with the application of best practices in hospital development during the design phase. In addition, the senior technology planner will support the creation of a project plan for technology installation, pre-installation and commissioning needs with their main focus being the hospital as a whole and all equipment from an agnostic point of view.

Out of the hundreds of hospitals I have had the opportunity to work on over the past 30 plus years, I would estimate one third run into trouble; and by having a hospital technology planner at the centre of the discussions you could reduce this number significantly.

Medical facilities are some of the most technically complex building projects in the world and obtaining the right advice is key; and should be applied as early as possible to avoid costly mistakes and making the project a long-lasting success. AH

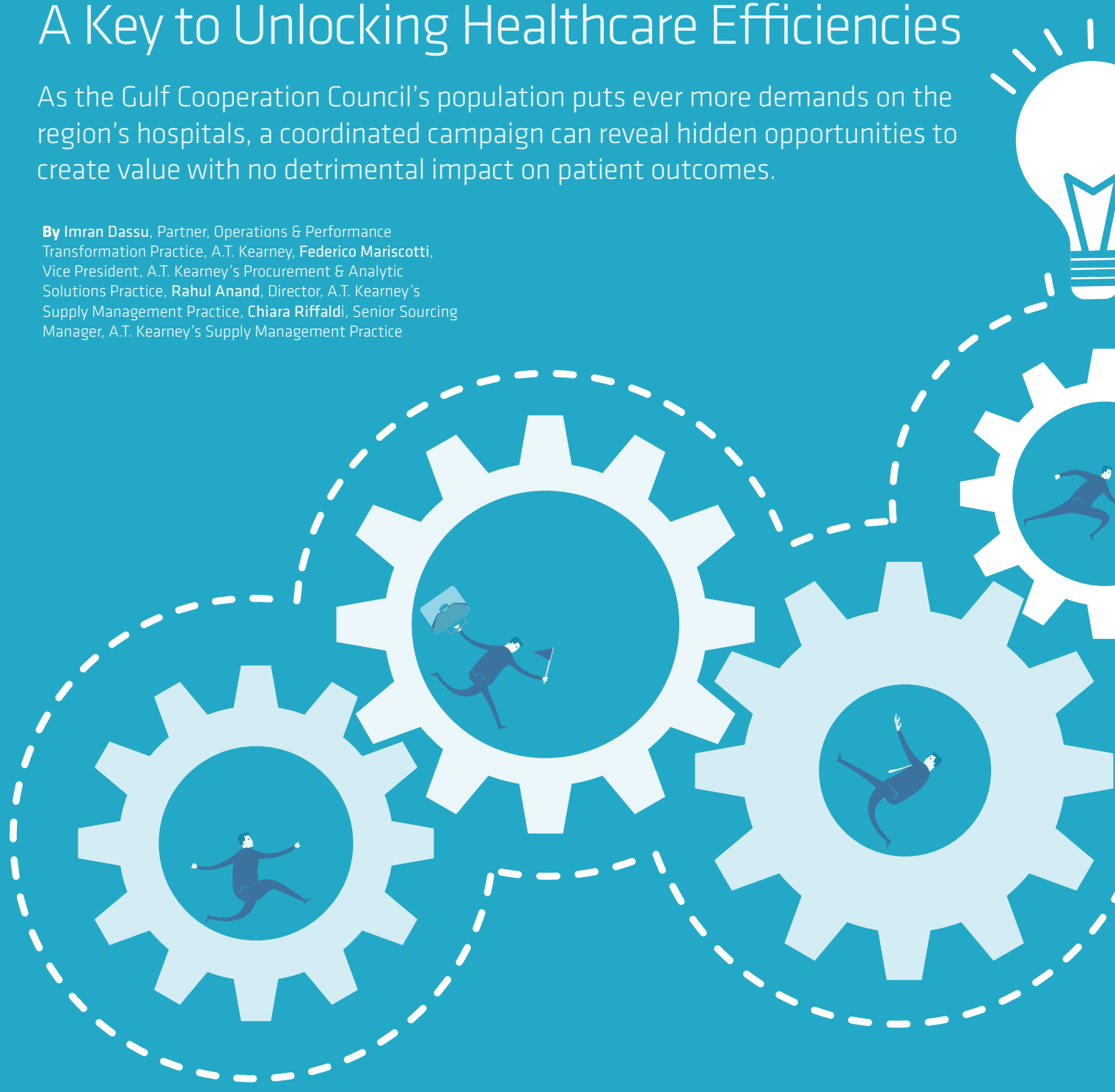
CJ DeAngelo will be discussing 'Plan, Design, Align', as part of the Equip conference on October 4, at Building Healthcare.

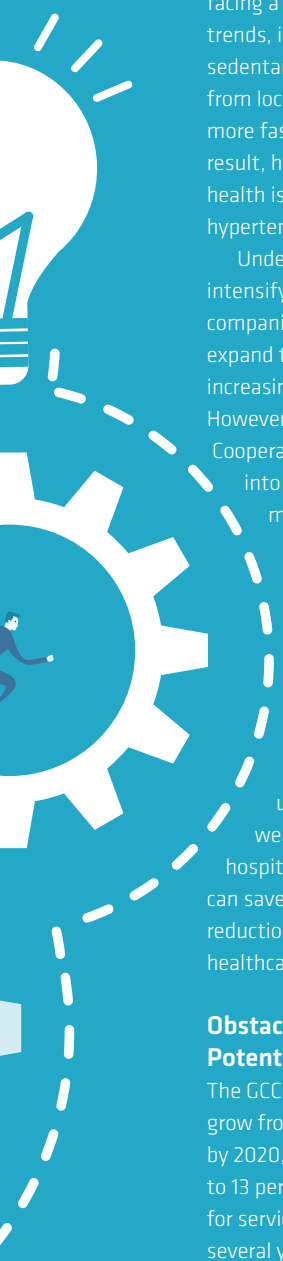
Third-party Spend:

A Key to Unlocking Healthcare Efficiencies

As the Gulf Cooperation Council's population puts ever more demands on the region's hospitals, a coordinated campaign can reveal hidden opportunities to create value with no detrimental impact on patient outcomes.

By Imran Dassu, Partner, Operations & Performance Transformation Practice, A.T. Kearney, **Federico Mariscotti**, Vice President, A.T. Kearney's Procurement & Analytic Solutions Practice, **Rahul Anand**, Director, A.T. Kearney's Supply Management Practice, **Chiara Riffaldi**, Senior Sourcing Manager, A.T. Kearney's Supply Management Practice





In the wake of rapid population growth, the Middle East's hospital systems have been under mounting pressure to serve more people. With an aging population bringing an array of health problems, healthcare providers are also facing a deluge of issues from new consumer trends, including urbanisation and more sedentary lifestyles along with dietary shifts from locally-grown, unprocessed food to more fast foods and sugary drinks. As a result, hospitals are seeing more chronic health issues from obesity and diabetes to hypertension and cardiovascular disease.

Under pressure to meet these intensifying needs, governments and private companies have spent billions of dollars to expand the region's healthcare facilities, increasing capacity and improving outcomes. However, healthcare systems in the Gulf Cooperation Council (GCC) have yet to tap into a powerful way to make hospitals more efficient: optimising the way goods and services are selected and sourced.

An advanced approach can reduce a hospital's external costs by 20 per cent and cut waste in half, whilst improving the quality of care. In this article, we discuss how GCC healthcare providers can use these techniques to unlock a wealth of value. A typical 1,000 bed hospital with an operating budget of $1bn, can save $100m a year in sustainable cost reduction. Reinvesting these sums into healthcare priorities creates huge possibility.

Obstacles to Reaching the Full Potential

The GCC healthcare market is expected to grow from $40 billion in 2015 to $71 billion by 2020, with the market expanding by 11 to 13 per cent in every country. Demand for services has been growing for the past several years driven by, amongst other factors, a larger and–thanks to a longer life expectancy–aging population. Consequently, healthcare providers have a much larger base of consumers to serve. Adding to the demand for services is the higher incidence of chronic and non-communicable disease compared with more advanced economies. To address these demands, most GCC healthcare systems have focused on infrastructure: building hospitals and adding beds. This has caused spending to escalate.

Advanced methods can reduce costs and improve efficiency while still providing high-quality patient care. This effect is even more pronounced in GCC hospitals, where up to half of annual operating costs go on third parties (Figure 1).

Across the region, private and public organisations have made efforts to drive down external costs with different degrees of success. In healthcare, four regional challenges tend to thwart attempts to reduce costs:

Doctors' diverse backgrounds: GCC healthcare systems are staffed with doctors from around the world. This unique diversity of backgrounds brings with it an endless array of preferences for medical equipment, consumables and pharmaceuticals, making it difficult to standardise using basic methods.

A skills shortage: There is a lack of procurement professionals who specialise in healthcare, and local schools do not offer courses to train the workforce in healthcare supply chain management. Therefore, recruiting category managers who are key to driving the advanced techniques is exceedingly difficult.

Procurement's low status: Even when limited procurement skills do exist, supplies functions are often seen and operate as a transactional entity that simply purchase goods and services under instruction from doctors and others. Few hospitals give procurement a genuine voice in which products are purchased.

Competitiveness of the local supply market: Local companies often have exclusive rights to international products and brands and distributor mark-ups can double costs. A nascent manufacturing sector means a limited local market for even basic products

A Much-needed Transformation

Most GCC healthcare systems have put third-party spend into too small of a box tagged with a narrow definition of procurement: basic tendering and material handling. Much bigger benefits can be achieved if board's give procurement a more advanced role.

Four sourcing strategies can deliver substantial–and sustainable–cost reductions. (Figure 2)

Change specifications: Optimise what you buy. Hospitals have an excessive number of products, primarily because of a lack of governance and control mechanisms. For example, in the GCC, doctors and nurses often have a choice in which gloves they buy. Because of variations in personal preferences, hospitals end up purchasing a wide variety of gloves. In more advanced hospital settings, purchasing departments have a strong influence over the final decision. One hospital system we worked with was buying three brands of infant formula with identical specifications but vastly different prices. By standardising to the most affordable option, the company reduced its costs for formula by 70 per cent with no negative impact on the standard of care.

Reduce demand: Decrease waste and underuse. GCC health organisations have expanded quickly to meet the population's needs, often without setting up clear rules for spending. Because of this, many warehouses are full of an assortment of items, often in quantities, which invariably leads to a lot of it becoming obsolete and being thrown away. Policies contribute to stockpiling because many hospitals have a use-it-or-lose-it budgeting practice that results in unnecessary purchases. What's lacking is rigorous planning with stock thresholds and governance mechanisms that define what is desirable and what is excessive.

Leverage competition: Do things better. Despite the region's healthcare market being relatively small, two factors give it a big bargaining power: the growing and aging population and the fact that GCC countries tend to be cash rich and have demonstrated a willingness to invest in healthcare. This makes the region attractive for companies with an eye on growth. For example, the UAE is among the world's top improvers in terms of its business environment, and the government is committed ▶

foreign direct investment. Too often, however, negotiating power is lost because of poor planning. For example, one company we worked with was buying blood-collection tubes from the same supplier every few months but at hugely variant price points, primarily because orders were being placed by different hospitals. Combining demand and establishing long-term contracts lowered the cost of the tubes by 74 per cent.

Partner with the right vendors: Choose your suppliers wisely. Identifying strategic vendors and forming meaningful partnerships can create the right conditions to benefit both the hospital and the supplier. For example, a hospital in the United Kingdom has a long-term partnership with a provider of cardiac devices. The partnership extends beyond product supply into patient lifestyle sessions and follow-up clinics. This encourages both the hospital and the vendor to take a long-term view of patient satisfaction and clinical outcomes as well as the commercial opportunity.

Locking in Sustainable Results

Four practices are proven to help keep costs down:

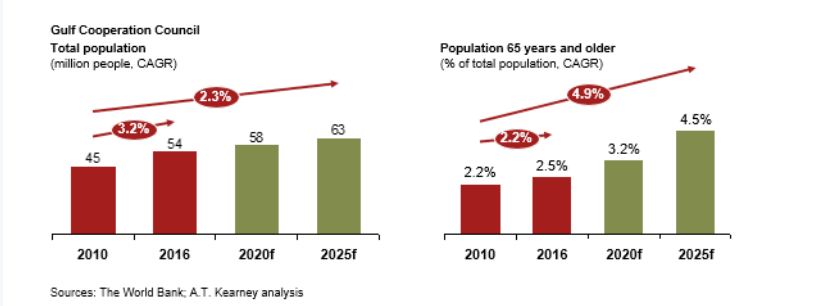
Change the setup of your procurement team: A world-class procurement organisation is created by investing in talent and, infrastructure to build serious capability, and consulting support to mobilise that capability quickly and with immediate results. The return on this investment is measured by the benefits that procurement delivers, including lower costs and better results. A.T. Kearney's unique Return on Supply Management Assets study found that for every dollar invested in developing and running a health organisation's procurement function, the company gets $4.30 in return.

Bring stakeholders together in a cross-functional clinical value team. Advanced healthcare organisations have clinical value teams that act as decision-making groups. Comprised of doctors and nurses along with people from supply management and finance, these teams pinpoint the right specifications for the whole organisation, for example the ideal type of gloves. In addition, this level of transparency and information-sharing enhances compliance to the jointly agreed product selections

Overhaul the engine with fit-for-purpose processes. Many GCC health organisations struggle with the timely management of procurement requests. Bottlenecks and delays tend to be the norm. Strategic sourcing requires a flexible approach to adapt to both the organisation's needs and the market's changing conditions. Category managers need the freedom to choose the most appropriate strategy, from making purchases on demand to setting up multi-year agreements. Leading organisations standardise and automate the process, often by using dedicated software.

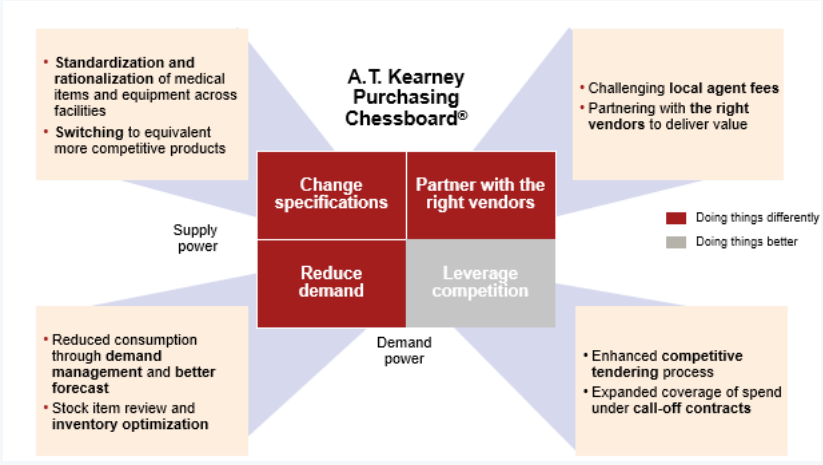
Use enhanced analytical capabilities to uncover hidden opportunities. With the large variety of products that a healthcare system buys, and the countless unique item numbers, enhanced analytical capabilities are essential to uncovering the opportunities buried under all the data. Analytics can also prevent overstocking and reduce working capital by optimising inventory and defining reordering policies. In more advanced applications, statistical analysis of historical patient data from electronic medical records can be used to develop predictive models for low-cost interventions, reduce the number of readmissions, identify chronic illnesses, and evaluate the effectiveness of treatment.

▼FIGURE 1: The region's population is growing and getting older



Sources: The World Bank; A.T. Kearney analysis

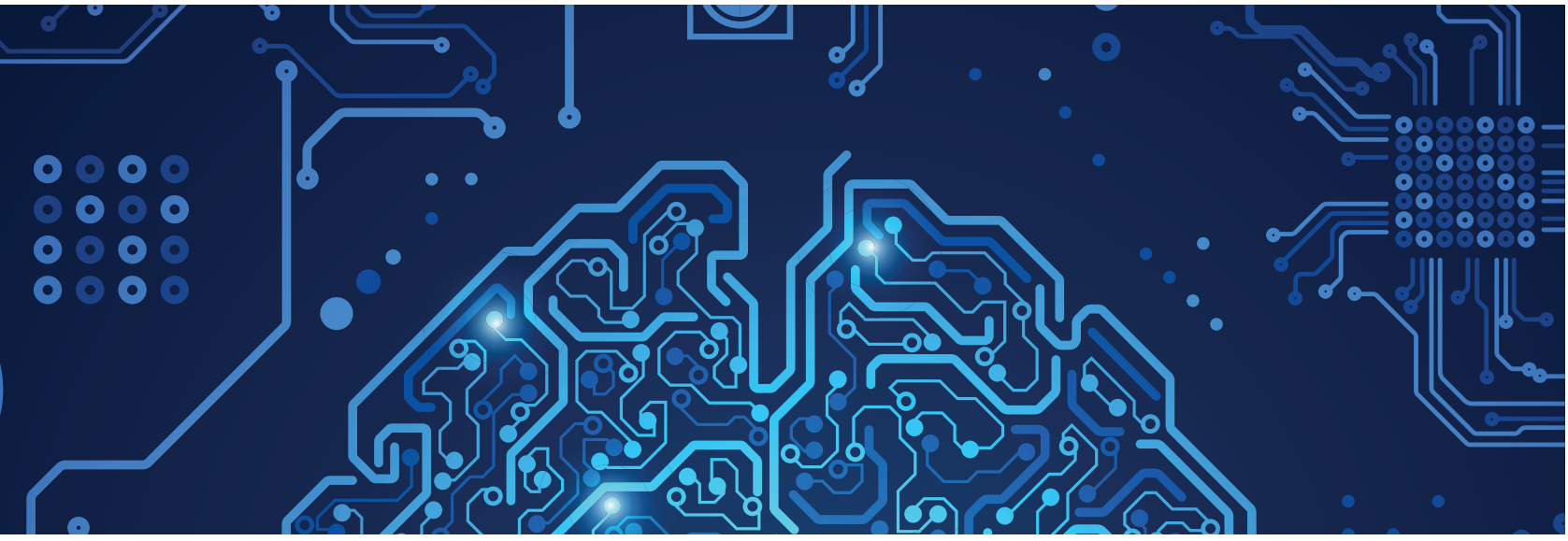
▼FIGURE 2: Hospitals can lower costs by revamping their purchasing processes



The Way Forward

A forward-thinking approach to third- party spend can create significant economic gains, including reducing third-party spend by 20 per cent, which can in turn be used to support investments to sustain the region's escalating demands for healthcare. Unlocking the full range of opportunities will require a proficiency in generating competition among suppliers to get the best prices, systematically managing demand to avoid unwarranted range complexity, creating clinical value teams to facilitate a healthier cost-benefit dialogue with clinicians, and, most challenging of all, developing differentiated supplier interaction models, including strategic partnerships, to get the most from your suppliers

A complete improvement transformation can take 12 to 18 months, but we have found that by working collaboratively most of the savings can be delivered in the first six to eight months. AH

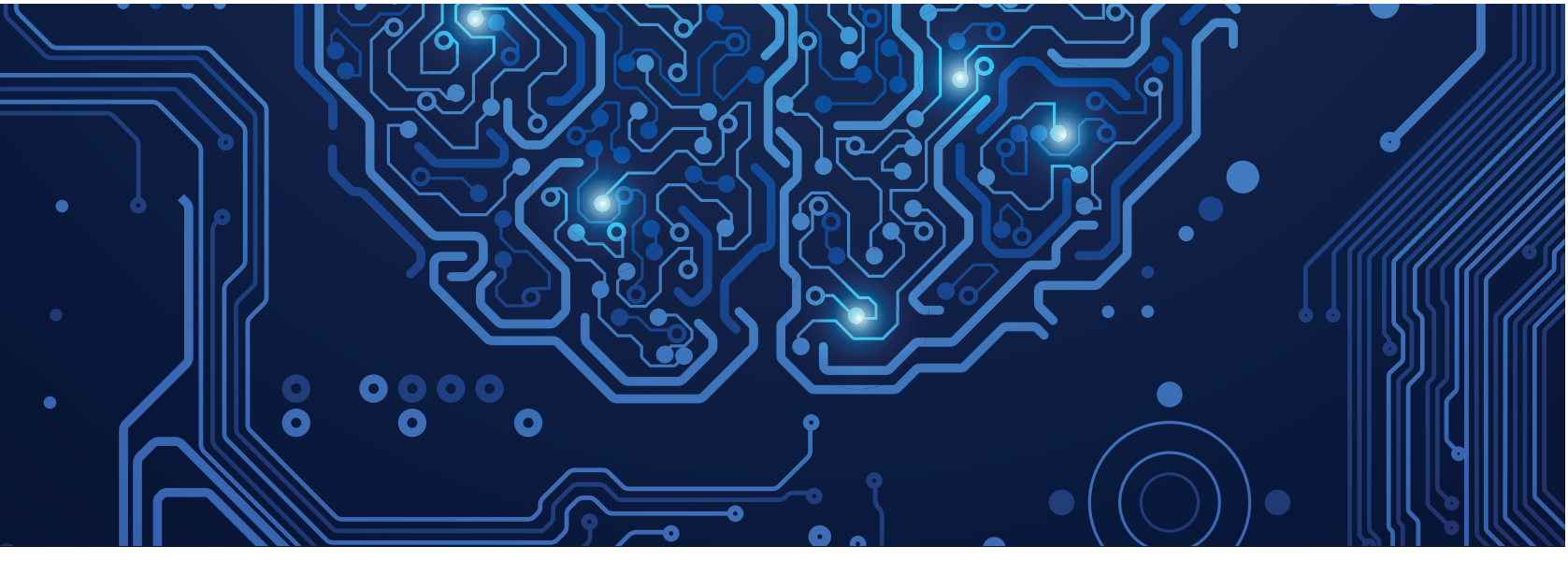


DUBAI TO DEPLOY

CUTTING-EDGE AI DEVICES IN HEALTHCARE

By Kamakshi Gupta, Communications Analyst at Dubai Health Authority

Utilising the latest medical technologies in Artificial Intelligence (AI) in a healthcare setting will improve efficiencies, health facility management and most-importantly enhance patient-care, says His Excellency Humaid Al Qutami, Director-General of Dubai Health Authority (DHA), while outlining the inventive healthcare innovations being adopted that will strengthen the authority's medical system in both diagnosis and treatment.



Accounting for 26 per cent of the total healthcare spend by GCC governments, the UAE finds a spot in the top 20 countries in the world with US$1,200 per capita spend on healthcare (AED 4,400). The healthcare sector in Dubai too remains robust driven chiefly by continued growth in population and supported by economic growth and Dubai's position as a financial, trading and aviation hub for the Middle East region.

Innovations in clinical services, the adoption of new technology in care pathways, and mobile health solutions are changing the way health services are delivered across the world, and Dubai is also witnessing new and innovative models of care and the use of technology in early diagnosis (e.g. genome sequencing), and treatment of diseases (through precision medicine, use of 3-D printing, advanced robotic surgeries, use of VR and AI in disease management and treatment pathways).

"The Dubai Healthcare Authority (DHA) has prioritised fostering the development of future technologies," says His Excellency Humaid Al Qutami, Director-General of Dubai Health Authority (DHA), in an interview with *Arab Health magazine*. "Artificial intelligence (AI) is at the forefront of the UAE government's strategic plans. In 2017, the country launched the 'UAE Artificial Intelligence Strategy 2031' – the first of its kind in the region, and this aims to bring AI tools and technology to various sectors including healthcare. In alignment with this vision, in May this year, DHA launched its Innovation and Artificial Intelligence strategy that seeks to use AI and robotics to largely automate the process."

According to Al Qutami, the new strategy is going to be the cornerstone of all DHA projects and initiatives that aim to acquire AI to serve its objectives, projects and development programmes.

His Excellency Humaid Al Qutami

"Over the last few years, DHA has increasingly begun adopting smart technologies such as Artificial Intelligence as we recognise the potential of this technology in transforming the health sector," he adds. "Our aim is to make a quantum leap, strengthen the authority's health system, and empower its human capital by equipping them with the latest technologies used in diagnosis and treatment."

The main factors that make AI important in the future healthcare landscape are faster diagnosis, accuracy, cost-efficiency and the capability of this technology to decipher vast amounts of data that can be used for ▶

disease detection as well as prediction. "We are therefore keen to use AI in various fields of healthcare particularly to minimise and manage chronic diseases, deliver cost-effective, high-quality diagnostic and treatment services, help improve clinical productivity and enable care providers to better serve the community," he says. "We will also use AI in screening, prevention and remote patient monitoring as we look to integrating it into the healthcare ecosystem to capitalise on the technology's immense potential."

The Dubai Health Authority has carried out several proofs of concepts using AI and the results have been highly promising. In partnership with Artelus, for instance, the DHA-run Dubai Diabetes Centre recently completed a proof of concept project for the implementation of Artificial Intelligence (AI) to detect diabetic retinopathy.

"The results have shown that if we use AI, it takes only 10 minutes from the time a patient has conducted the test until a doctor sees the results, as opposed to four working days," he says.

There is no doubt that the use of AI in detection of diabetic retinopathy can revolutionise the manner in which patients are screened for retinopathy. Apart from being cost effective, it will also lead to higher-quality care and better utilisation of resources. "Ophthalmologists will only need to see retinal images of patients with retinopathy that the system detects as opposed to the current system where they need to screen all patients," explains Al Qutami.

In the UAE where it is estimated that one in five people are diabetic and another one in five are pre-diabetic, the benefits of using AI in detection of diabetic retinopathy are simply multi-fold.

"As per international diabetes standards, we need to have 14 retinal images per diabetic. The estimated number of diagnosed diabetics in the UAE exceeds 1 million. To interpret 14 million images per year, we need more than 50 eye specialists working full-time. Deep learning system (DLS) using artificial intelligence (AI) are capable of identifying diabetic retinopathy and related eye diseases using retinal images with a high degree of accuracy. Thus, using AI can not only help provide retinopathy screening for a large number of diabetics but also lead to better utilisation of resources and time of ophthalmologists."

The American Academy of Ophthalmology has recently selected the abstract of this study as a Poster for its Annual Meeting in Chicago in October this year.

Earlier this year, DHA announced plans to use AI technology for chest X-ray scans required for mandatory medical fitness for residency purposes. The move is aimed at improving the workflow, ensuring faster image analysis and automating reports. Accordingly, DHA signed a Memorandum of Understanding (MoU) with Agfa HealthCare for validation of the first radiology AI algorithm in the UAE.

Over a period of two years, DHA and Agfa HealthCare reviewed Artificial Intelligence enabled workflows in radiology across the radiology departments of DHA's medical fitness centres. Upon completion of onsite validation, the algorithm was able to correctly identify diseases in chest X-rays approximately 95 per cent of the time.

The DHA will first trial the technology in a few medical fitness centres, before expanding it to other facilities, informed Al Qutami. Given the huge scale of this service and the vast number of people who use this service per year, undoubtedly using AI will lead to faster image analysis, automated reports and improved clinical efficiency. We will continue the validation process with Agfa HealthCare to further improve the accuracy of AI Algorithm detection."

Dubai Future Accelerators Initiative and AI Technology

In March this year, DHA selected four firms for the fourth cohort of the Dubai Future Accelerators Initiative where Artificial Intelligence (AI) and its deployment in the health care setting are a key focus during this cycle.

"The aim of the DHA as part of the Dubai Future Accelerators initiative is to explore the latest in technology," says Al Qutami. "We aim to revolutionise the way healthcare is delivered while focusing on patient-centric care. We are looking for ways to improve the lives of patients and on ensuring patients lead a high quality of life to the best extent possible."

DHA has signed MoUs with four cutting-edge international companies to adopt their inventive healthcare innovations in AI. This includes the implementation of virtual health through an app in partnership with Babylon, which uses AI technology to provide remote General Practitioner, GP, consultations round-the-clock. Additionally, the app syncs with 100 devices so that information about the patient's daily activity is recorded. This information is available to the GP along with the patient history at the time of consultations.

"Another innovation we are working on that promises to have huge potential to enhance patient-care is in partnership with Healthcare and Innovative New Technology (HiNT)," he adds. "We carried out trials at the DHA run Rashid Hospital to see the usage and viability of HiNT's innovative stroke detection headband. They have developed a wearable point-of-care monitoring device that detects when patients at high-risk are having a stroke. The device alerts the caregiver, the ambulance and the emergency within minutes. Every minute counts when a stroke takes place as two million brain cells die every minute when a patient is having a stroke. Our doctors are working with HiNT to see whether this system can be used not only for home-patient monitoring but also in hospital set-ups."

In association with Bodyo, DHA is also planning to set up free to use AI pods across Dubai that will do quick health scans for the public and give immediate results. "Bodyo has developed mobile AI-assisted pods or cubicles where people can step in and be screened for body temperature, blood sugar, blood pressure, body composition such as height, weight and other such vital parameters. The procedure is simple and takes not more than 13 minutes the first time. Our aim is to set up these pods across Dubai for residents to have access to free health screening," he elaborates.

Preventive health is also being taken to the next level by deploying flow cell sensors that will detect sudden drops in vitals in ICU patients. Admetsys is the fourth company chosen for the Dubai Future Accelerators' current project. "Admetsys has developed flow cell sensors to detect sudden drops in vitals in ICU patients through an algorithm that measures these vitals constantly and it can be read by a nurse on the monitor at a glance," explains Al Qutami. "Any drop or rise is alerted by an alarm system. This saves vital time for the nurse and makes round-the-clock monitoring possible. DHA is currently studying the viability of this project in hospital settings."

In the previous cycles of the Dubai Future Accelerators Initiative, DHA worked with 3-D printing firms and deployed the technology across its dental services. As a result, several complicated surgeries were performed using this technology and 3-D printed artificial legs were used to provide amputees with a new lease of life. AH

HEALTHCARE FACILITIES IN DUBAI TO BE RATED FROM 2019

DHA is implementing the rating system for all healthcare facilities including public and private hospitals in accordance with the Dubai Health Facilities Performance Framework.

Article provided by Dubai Health Authority

Dubai Health Authority (DHA) will rate all healthcare facilities including public and private hospitals and day-care health centres in Dubai in accordance with the Dubai Health Facilities Performance Framework (DHFPF).

The framework, known as Qeyas, will be finalised and implemented by the beginning of next year and has five pillars which include patient safety, clinical quality, patient happiness, financial and operational indicators.

The DHA's Health Regulation Sector recently held a workshop with the private health sector to discuss the design and implementation of the framework. This is one of the several workshops and feedback cycles conducted with an aim to design a framework with buy-in from hospitals and other healthcare facilities.

Dr Marwan Al Mulla, CEO of the Health Regulation Sector said, "Benchmarking and measuring the quality of care is fundamental to help build a robust health system where patient-centric care and patient safety is the cornerstone. We are working closely with the private sector to design a system which uses health data intelligently to help enhance health service delivery."

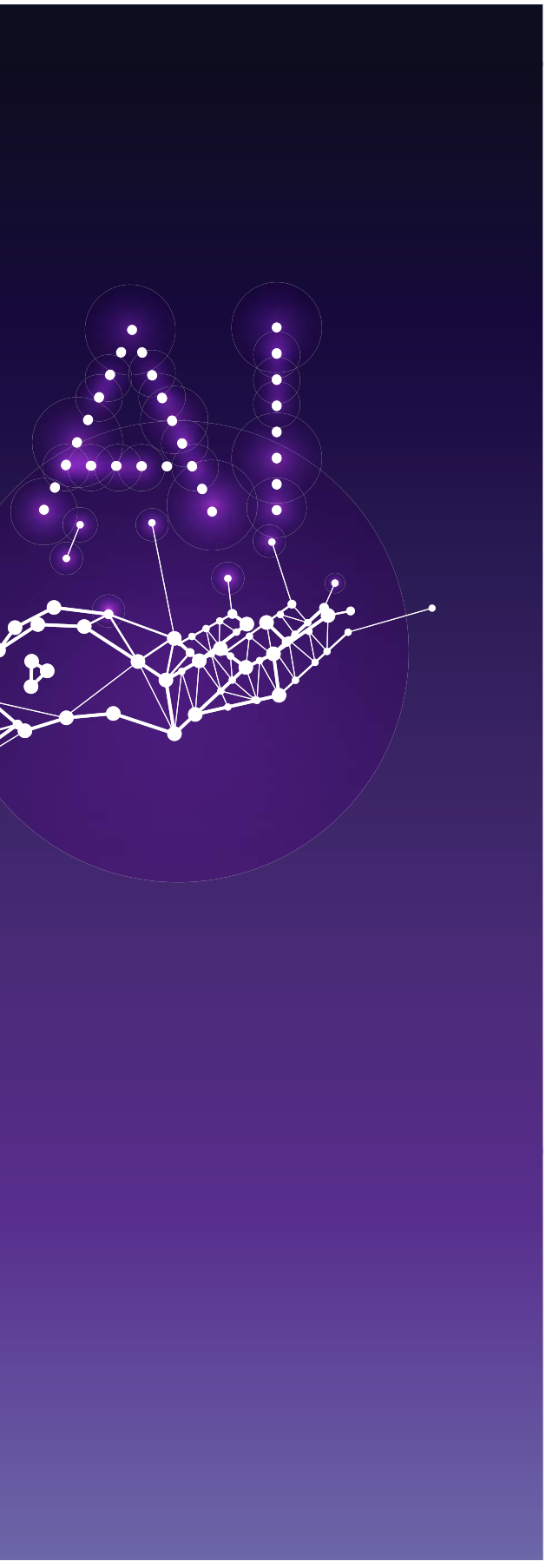
Following the implementation of this system, DHA will be able to:

- Improve quality across the health system in Dubai
- Provide consumers with information to help empower them to make better choices about healthcare providers
- Provide medical tourists with trustworthy, independently validated information about Dubai's healthcare quality
- Develop a long-term reimbursement strategy, which is based on evidence of the quality of care provided

Dr Mohammed Al Redha, Director of Project Management Office, Informatics and Smart Health Department at the DHA said, "The methodology will be data-driven and grounded in sound principles of data consistency, relevance, accuracy and integrity in order to drive crucial decision-making and strengthen the health sector in Dubai."

The DHFPF will include data from e-claims, Sheryan (DHA's health regulation system), Salama (electronic patient file system for all DHA health facilities) and a range of private healthcare providers. The DHA will also engage with major private hospitals, day care surgery centres, selected polyclinics, Dubai Healthcare City (DHCC) and Ministry of Health & Prevention (MoHAP) facilities in Dubai and support them to help provide data.

AI: Taking a Bigger Role in the Healthcare Conversation



On the road to automatically adding precision to a decision

By Inga Louisa Stevens, Contributing Writer

There was one buzzword that dominated the discussion at Arab Health Exhibition & Congress 2018 – Artificial Intelligence (AI). Whether it was computer-assisted robotic technology being showcased on the exhibition floor, or an in-depth discussion about whether AI will eventually replace humans in the future taking place in the seminar rooms, everyone was talking about it. *Arab Health Magazine* sat down with Rajat Karol, who is the general manager of GE Healthcare Digital for the Eastern Growth Markets & Africa to find out his taken on whether AI is a magic pill for the challenges we face in healthcare, or if we still have a long way to go before we see any real progress.

How far has AI come in the last decade or so?

As the name implies, AI means that you are trying to get to a decision, or you are trying to add precision to a decision, automatically. AI is a new word, but this is something that a lot of businesses have been doing for a long time. It used to be called Machine Learning; how do you make a machine learn to do things on its own.

The challenge in the past was that while the algorithms existed, for example, IBM's chess-playing computer Deep Blue, they used to fill the size of a room in its entirety. In essence, AI was technologically bound. What has happened now is that with the same algorithms, all the computing power of GPPUs (general purpose processing unit) has taken away a big technological barrier that has existed for the past 20 to 30 years.

This is precisely what happened with computers. You used to have big mainframes that only a select number of people had access to. So even if you had a great idea for an application, you were still constrained by not having access to the mainframe. And as we moved into the microcomputer world, everyone was able to programme. As such, we need to think of AI as a revolution because the restrictive factors that used to exist are being taken away.

What is the philosophy behind AI?

Essentially there are two philosophies of what we are trying to do here. Firstly, we are trying to understand how the human brain works and then we try to replicate this. This has been challenging because, ultimately, we still don't really fully understand how the brain works. The other theory is that by definition, the process is artificial. So, you start as a seed with something small and teach it like it is a child, who then becomes an adolescent and then an adult. A human takes around 20 years to mature, but with computing power at your disposal, you can now greatly accelerate that to just six weeks.

A great example of this is technologies that teach machines how to play a game. In fact, they don't teach, instead, they show someone else playing the game and the technology sees how that works. When the machine sees how the games are played, the AI sometimes plays the game in a very counter-intuitive way because it does not work in the same way that a brain would work when playing the game. Rather, it finds new pathways and it makes moves that a normal player would not make. This is because, as humans, our brains are also inhibited by what we can physically do or by our known and unknown biases. AI doesn't have these limitations and by giving it raw computing power, it allows it to experiment and it iterates, greatly accelerating the process.

What it means for us, in this world, is that we will reach an inflection point where us humans will not even fully understand what AI does and how it does it because it is beyond our comprehension.

What we see today with the likes of Siri and Alexa are just the user interfaces by which they interact with us mere humans. Once AI has reached that level of ascendance, they need to come back down to our level to explain it in our terms. ▶

How does GE Healthcare use AI to make medicine more precise?

Applied Intelligence, which we are already today doing at GE Healthcare, means that we are taking not a general AI approach, but rather, we are taking a very specific problem statement – like solving the needs of a hospital and the patients. For example, as a radiologist, I am looking at an x-ray scan, and I am asking the AI if this particular area of the lung looks normal. So, it is a very specific application for a general intelligence. This allows us to focus our energy and reduce the data to get to that particular outcome.

GE has been in this business for over a hundred years and we have sold a lot of big machines (MRI, CT, for example) that have been used for complex diagnosis and we get a lot of images out of these machines that are being used by doctors and radiologists to understand and diagnose disease. Our main focus is how to help the physician make the right decision and, in our new strategy for 2018, our CEO talks about this as 'Precision Healthcare'; how to make healthcare more precise.

Today, a lot of medicine is like throwing darts at a board and seeing what sticks. The first step is to be more precise in order to avoid the patient having to go through eight therapies, only to find that the ninth therapy is the one that stuck. From a patient perspective, this can be harmful, and, from a hospital perspective, this can lead to unnecessary expense.

For example, at GE we make products with contrast medium. What this means is that let's say you want to do a CT scan of soft tissue. As soft tissue is difficult to see in an x-ray, we will give the patient a contrast medium that goes inside the patient's body, so that when you do the x-ray, the contrast medium scintillates. However, as some of that contrast medium has to be given in very small doses, we are now producing applications that use AI to determine how much of the contrast medium a particular person needs – this means the ideal dose that allows you to diagnose, but causes minimum harm, particularly when it is done on a patient that needs regular monitoring. This is our whole model of Applied Intelligence and we are trying to apply it to make our products work in the best possible way and provide the best possible outcome.

How do you do this?

We are doing this in two different ways. When you talk about medicine there are two different axes. The first axis is the precision of diagnosis and the other is the efficiency in the hospital. For example, Japan and the U.S. have the highest number of radiologists per million people. This means that it takes the least amount of time to make the diagnosis and, therefore, treatment can start sooner. In places where there is a distinct lack of radiologists, even if you have a million-dollar machine, if you have no one to make the diagnosis, you cannot make this work.

Part of the solution to use AI is to ensure that the workflow is fast and efficient, allowing you to give care to the patients who need it first – workflow, then precision in the diagnosis. And this is just the start of what we think we can do.

The scope is immense. We are working on recent partnerships with companies to better understand the diseases that are happening at a tissue or cell level. This means trying to get data from our cells to see what are the biomarkers that either give you a higher or lower chance of getting a disease. In 2001, it cost about $1 million a year to sequence one person's DNA. Today, you can buy a device for $1,000 that can sequence your DNA and give you a huge amount of information. This is the sort of leap of technology that no one could have imagined.

What do you see as the challenges of AI in healthcare?

Radiologists have a tough job as they are measured on productivity and are under pressure to provide an accurate diagnosis. But how do you strike the right balance between clinical outcome and efficiency?

Rajat Karol

Today, this works under the peer review system where a senior radiologist will validate, depending on the complexity of the case, whether the radiologist has given the right diagnosis.

In the future, AI could jump in at various stages and take increasingly more serious roles in this conversation. For example, the Boston Children's Hospital has a global referral centre where a lot of complex paediatric cases get referred to them, but their biggest challenge is what we call 'false positives'. A lot of cases get referred to them that should not have been referred to them in the first place. Because they have limited resources, they want to be able to focus on the cases that they can really help with. GE is working with the Boston Children's Hospital on how to utilise AI to flag and remove the 'false positives' so that they can focus on the 20-30 per cent of cases that they can actually have an impact on.

The other segment that faces a challenge is the hospital operators and CEO's who need to provide quality clinical outcomes, but at the same time, they are competing against other hospitals or insurance companies to provide the most cost-effective solutions.

Perhaps what the real challenge is what we think about in terms of needs vs. wants. I want my phone to have AI, but I need my doctor to have AI. As a human race, we invest so much into things that make us feel happy, but if we could just focus our energy somewhere else, it could have such a big impact for the greater good.

This brings me to the region as I believe that the Middle East has the ability and the thought leadership to become a world leader in the AI space. For example, the UAE is that perfect melting point where people from around the world can come together to design and develop. Here we have the infrastructure and a government that allows for the freedom to experiment and try something new; a balance that every government needs to strike. AH

SMART HEALTHCARE: COMBATTING CHALLENGES FACED BY A TRANSFORMING REGIONAL INDUSTRY

By Fadi Shanaah, Regional Director Business Development, Smart Cities and Healthcare – Middle East & Africa, Orange Business Services

The GCC healthcare sector is continuing to expand to meet rising demand for services from a growing – and aging – population that is facing the challenges of serious chronic lifestyle related medical conditions such as diabetes, obesity and cardiovascular disease. The UAE especially is also a rapidly growing centre for healthcare tourism, with its world-class healthcare facilities; Dubai is ranked 16th overall best destination in the world in the Medical Tourism Index for 2016, and 10th in terms of quality of facilities and services.

Within the industry's changing model of care – with an increasing focus on prevention and wellness, rather than a sickness model, and emphasis on collaboration across the sector, including public-private partnerships – digital technology has a vital role to play in supporting the aim of providing access to high quality, cost effective, sustainable and safe patient care, with improved medical outcomes.

According to Alpen Capital's GCC Healthcare Industry report 2018, "technology will remain the core factor in upgrading the GCC healthcare sector over the coming years. Technologies such as electronic health records, e-visits, telemedicine, connected medical devices, robotic procedures, health monitoring wearables and health analytics are gaining acceptance in the region".

In Dubai, the emerging smartest city in the world, we have the added advantage of access to a digital innovation culture and the enabling technologies that make Dubai – and its healthcare system – the smartest in the region. It's a digital transformation that is happening at every level in the healthcare sector. Thanks to the ubiquitous smartphone, the large population of millennials is increasingly adopting wearables to monitor its own health and self-diagnose, whilst the government is leading on AI, Blockchain and IoT (Internet of things) with electronic medical records and data analytics; and healthcare providers are adopting automation, telemedicine and digital hospital solutions.

This mirrors the worldwide trends in

Fadi Shanaah

which, according to research from Frost & Sullivan, smart healthcare will make up 15 per cent of smart city business by 2020, underlining its position as an industry building a technology-enabled future.

Where do we Find Healthcare Innovation?

Digital innovation is a strong theme across every sector in Dubai, including healthcare, and much of the applied innovation is home-grown, thanks to a strong innovation culture and environment led by the government, and which is attracting innovators from around the world.

Integrating innovation into healthcare is a priority, enabled by the smart city environment and in response to the increasing demand for healthcare services. Technology healthcare start-ups are making Dubai their home of choice: 2017 saw health start-ups from China, Germany, Nigeria, Singapore, the UK and the U.S. pitch new solutions to investors in Dubai, under the umbrella of the Dubai 100 programme, an incubator for start-ups.

Also, the Dubai Health Experience programme is the world's first comprehensive electronic medical tourism portal designed to attract increasing numbers of healthcare tourists. Dubai's ambition is clear: to attract 500,000 medical tourists by 2020.

Which Technologies are Transforming Healthcare?

The youthful population is building its own personal health-management ecosystems: this aligns perfectly with consumer expectations to manage and access services by smartphones, cloud computing and universal connectivity. We all want to shop, bank, and communicate with on the go, on our mobile devices. We now expect health organisations to provide us with similar innovative services and a simple and convenient experience.

Take blockchain for example; a technology that will certainly make an impact on healthcare. It is already becoming embedded in the financial sector, and it is likely that digital healthcare start-ups will now start to leverage blockchain to give patients greater control of their personal medical data. The decentralised nature of blockchain offers an ideal trusted storage mechanism for digital health records, and with more clinical data, genomic data, and data from wearables being generated, this is significant. Dubai aims to be the world's first blockchain-powered government by 2020, and the potential impact on healthcare records is very clear.

Furthermore, telemedicine could transform healthcare in three distinct ways, through increased access to primary care doctors and specialists, by reducing costs and by delivering improved health outcomes. Patient monitoring and data gathering takes place at home. Dubai is already taking a lead on this issue, with the launch of the 24/7 Population Health Management Program in late 2017, plus also the Dubai Health Authority (DHA) 2016-2021 initiative that encompasses 3-D printing, medical informatics and an extensive primary care scheme under its telemedicine programme.

Dubai has a clear healthcare mission and implementing the right digital technologies will help the city to continue to lead the way. AH

SECURING IOT INFRASTRUCTURE IN SEVEN STEPS

By Gamal Emara, Country Manager, UAE at Aruba, a Hewlett Packard Enterprise company

IoT devices may offer extraordinary benefits to healthcare organisations in the Middle East. From improving patient outcomes, staff effectiveness and operational cost savings, it could also bring with them new security risks. Any type of a connected device is a potential risk, even wireless light bulbs, so it's imperative that healthcare institutions do everything they can to stem the flow of malicious attackers. This calls for a multi-layered security approach to mitigate these threats.


Gamal Emara

Step 1: Know Your Network, Inside and Out

To secure the network that your IoT infrastructure connects into, it's important to know exactly what's running on it. As more employees and users become more network savvy, it's hard to keep track of what is being connected to the network because it's no longer just IT professionals who are making the connections.

To combat this threat, a modern network access control solution is a great starting place, with a roles-based management and network segmentation solution. These solutions will enable network and security managers to set policies around 'things' and devices, meaning that not just anyone can connect to the network. On top of this, it's also possible to set permissions on what data and applications they can access, as well as setting rules to who can manage and maintain these networks and devices.

These solutions automatically monitor connections to the network and can isolate without the need for IT staff to action the quarantine. Assigned IT staff will then be notified to act against the suspected malicious incident.

Step 2: Users, Devices and Things Have Roles, Know Them

To ensure the efficient running of the network, it's important to consider the myriad of devices that carry the ability to transmit data, locate them on the network, and consider how they could be used to create an integrated and innovative experience.

In healthcare, patient monitoring within a surgery ward could keep track of vital signs, such as heart rate, without physically attending the bedside. This ability could be critical in detecting a potential issue quicker and acting (for example alerting a nearby nurse) without the need for caregivers to be everywhere at once.

Clearly, this use case is integral to safe and efficient running of healthcare institutions, and it also fits into part of the IoT puzzle within healthcare, helping those running the institutions to better make use of the equipment they already have.

Step 3: Use AI to Monitor Change

By bringing devices together in a single management platform on the network, security staff are better able to take a holistic view of all equipment and begin to build smarter security policies. The unfortunate truth is that, no matter how much planning and patience is put into securing a network, threats will find their way in.

Thankfully, for organisations that want to combat this to their utmost ability, AI-based machine learning is becoming more sophisticated in helping to identify early and mid-threat scenarios. Sophisticated cyberattacks manifest themselves slowly

over several months but through leveraging analytics, this technology can spot changes in behaviour that often indicate that the profile of a user's device is not conforming to usual patterns. In fact, a recent report showed that two thirds of breaches were perpetrated by insider actors, and not internal forces.

The combination of integrating a powerful Access Control solution, along with AI, allows suspicious devices or actors to be temporarily quarantined to support security teams to focus their precious time on analysing only the most pertinent anomalies. The savings associated with this model is allowing IT teams to rebalance their workload to a more proactive security posture.

Step 4: Shape the Network Around Better Security

With the global rise of cyberattacks, there can no longer be a disconnect between network and security teams. Primary security elements must now be embedded into the network to allow more sophisticated security policies to leverage the network to gate or grant access to bandwidth.

The challenge with this is that historically some of these features were not embedded as standard but charged as optional extras. Therefore, devices and applications were able to bypass flaws in the network design, creating exposure to risk. Today, there are far more robust security features that are deeply embedded into the wireless and wired network allowing security teams to build around this in a world where the attack surface has grown exponentially due to mobility and IoT. This requires an inside out view of the security strategy.

Step 5: Don't Just Use Default Settings

It's surprising to find the frequency of breaches that occur as a result of not changing default credentials and passwords. The fact is, most IoT-related breaches to date were as a result of organisations failing to update these details and have suffered as a result.

Vendors are now getting wise to this and have started offering more unique options than the standard 'admin' and 'password' defaults, which, surprisingly, is well documented on the Internet. However, this does not require unique credentials for every connected device. Instead, role-based credentials that adhere to security recommendations for character length and combinations can be supplied to all of the same devices. In healthcare, this could mean that all door locks, or heart monitors that have their set roles, can have unique credentials.

For employees, having the correct login credentials based on their roles can access certain applications depending on the context of their location, device type and organisational governance. This allows security teams to use these parameters to set polices so that when they change a number of actions can be performed; ranging from multi-factor authentication to a security software update or perhaps quarantine for further inspection.

Step 6: People are Usually the Weakest Link in Security

Regardless of the technology in place, or the permission set into practice, individuals using and accessing devices remain critically important to educate, inform and monitor. Traditionally, unsafe practices are usually a result of a poor understanding and therefore, it's key to regularly review and recertify all staff members to understand the protocols in place to keep the organisation safe.

By creating a set of processes and practices with password hygiene and prompts, employees can do their bit in ensuring the network remains safe. Password prompts that are unique to the individual is key to building a strong protective perimeter with everyone owning, and protecting their own credentials, and ultimately the network.

Step 7: Reassess and Revise

No matter how much effort is put into securing the network, the work is never really complete. Instead, organisations should always look to evolve and improve their practices as new technology and recommendations become available. This shouldn't mean that everyone has to become experts in security. Rather, it would mean that organisations look at their vendors and partners for what is new and improving the industry. By taking all these steps security isn't guaranteed but the healthcare organisation that takes its security hygiene seriously will mitigate for the majority of weak links whether that be people, process or technology. AH

GRUPPO OSPEDALIERO
SAN DONATO

www.gsdinternational.com

The future of care

At Ospedale San Raffaele, we bring together pioneering scientific research and first-class care for patients

Ospedale San Raffaele is a **clinical-research-university hospital part of Gruppo ospedaliero San Donato**, the leading hospital group in Italy. It has **more than 50 clinical specialties** and over 1,300 beds, and its emergency department counts 67,000 annual accesses. Research at Ospedale San Raffaele focuses on integrating basic, translational and clinical activities to provide the most advanced treatments to patients. The hospital counts on over 1,800 medical doctors, scientists and technicians and on state-of-the-art facilities and technology platforms. Ospedale San Raffaele is recognized as a **global authority in molecular medicine and gene therapy,** and is at the forefront of research in many other fields, standing out for the **deep interaction between clinical and scientific area** – this makes the transfer of scientific results from the laboratories to the patient's bed easier. Its mission is to improve knowledge of diseases, identify new therapies and encourage young scientists and doctors to grow professionally.

Ospedale San Raffaele is among the few centers in the world which **perform pancreatic islet transplantation** (i.e. the cells in the pancreas that produce insulin) to treat type 1 diabetes patients who do not respond to conventional therapies. The transplant aims at recreating the function of insulin-producing cells in a host organ (e.g. the liver). This technique has made huge progress along the years, but it still has some limits, involving immunosuppressive regimens and rejection risks like all transplants. Our researchers at **San Raffaele Diabetes Research Institute (DRI) are currently studying new treatment perspectives using stem cells**, differentiating insulin-producing from pluripotent stem cells. In the future, this may allow to rely on an endless source of cells that produce insulin and to modify such cells so that the immune system does not recognize and attack them.

Our research stands out to find **treatments for genetic blood diseases**, too. Our Hematology and bone marrow transplantation unit works side by side with the San Raffaele Telethon Institute for Gene Therapy (SR-Tiget) to **find a cure to thalassemia major**, the most serious form of the disease, causing chronic anemia and provoked by a defect in the production of hemoglobin. At the time being, conventional treatment consists in regular transfusions of red blood cells associated to iron chelation therapy. Patients who can rely on a bone marrow donor and are in good condition can undergo transplantation – that is currently the unique curative therapy. Our doctors and researchers are trying to **set up a treatment to correct the defective gene causing the disease** – first, stem cells are extracted from the blood of the patient, then they are provided with the corrected gene and infused back into the patient's bone marrow. The healthy gene is carried into the cells by a genetically engineered virus which is modified so it becomes harmless. Once corrected stem cells are in the bone marrow, they start producing healthy and functional red blood cells. The treatment is currently an experimental protocol involving ten patients which showed encouraging preliminary results.

IN THE KNOW

Identify Colon Cancer at Early Stage with Early Screening

Article provided by RAK Hospital

According to World Health Organization (WHO) colorectal cancer is the second most common tumour among both men and women, after lung tumours.

Colorectal cancer tends to affect men and women equally. However, men tend to develop it at a younger age.

Symptoms

- Cancer colon and rectum symptoms are bleeding per rectum with alternating change in bowel habits, such as diarrhoea, constipation.
- A feeling that you need to have a bowel movement that is not relieved by doing so
- Rectal bleeding
- Dark stools, or blood in the stool
- Cramping or abdominal (belly) pain
- Weakness and fatigue
- Unintended weight loss

Risk factors

- older age
- a diet that is high in animal protein, saturated fats, and calories
- a diet that is low in fibre
- high alcohol consumption
- having had breast, ovary, or uterine cancer
- a family history of colorectal cancer
- overweight and obesity
- smoking
- a lack of physical activity
- The presence of polyps in the colon or rectum, as these may eventually become cancerous.
- Eating red or processed meats may increase the risk
- Family history of bowel cancer is at high risk of developing cancer.
- Having other colon problems can also increase risk. This includes pre-cancerous polyps, ulcerative colitis, Crohn's disease, and hereditary syndromes such as familial adenomatous polyposis (FAP) or hereditary non-polyposis colon cancer (HNPCC), having type 2 diabetes can also increase risk.

Diagnosis

The following are the most common screening and diagnostic procedures for colorectal cancer.

Fecal occult blood test: This checks a sample of the patient's stool (faeces) for the presence of blood. The test is not 100-per cent accurate, because not all cancers cause a loss of blood, or they may not bleed all the time. Blood may also be present because of other illnesses such as haemorrhoids and fissures.

Colonoscopy: A fibre optic camera on a flexible tube passed through the anus. It can provide a visual diagnosis (e.g., ulceration, polyps) and grants the opportunity for biopsy or removal of suspected colorectal cancer lesions.

Barium enema X-ray

CT colonography

Prevention

- Regular screenings: Those who have had colorectal cancer before, who are over 50 years of age, who have a family history of this type of cancer or have Crohn's disease should have regular screenings.
- Nutrition: Follow a diet with plenty of fibre, fruit, vegetables, and good quality carbohydrates and a minimum of red and processed meats. Switch from saturated fats to good quality fats, such as avocado, olive oil, fish oils, and nuts.
- Exercise: Moderate, regular exercise has been shown to have a significant impact on lowering a person's risk of developing colorectal cancer.
- Bodyweight: Being overweight or obese raises the risk of many cancers, including colorectal cancer.
- Vitamin C: Vitamin C impairs cancer cells, suggesting that the power of vitamin C could one day be harnessed to fight colorectal cancer.
- Coffee: Researchers have found that drinking coffee every day, even decaffeinated coffee, may lower the risk of colorectal cancer.

Treatment

It will depend on several factors, including the size, location, and stage of the cancer, whether or not it is recurrent, and the current overall state of health of the patient. Treatment options include chemotherapy, radiotherapy, and surgery.

The department of General, Minimal Access and Laparoscopic surgery of RAK Hospital comprises of a team of highly competent and experienced surgeons and dedicated staff.

The true good surgeon is not only a good "craftsman" but takes charge of the entire plan of care, starting from the correct diagnosis to the right indication, from the right operation at the right time to proper after-care.

We surgeons at RAK Hospital are fully committed and dedicated to these principles and you can be sure that we live this culture day by day.

Our Team Expertise

The advances in so called "Minimal Access Surgery" have been absolutely tremendous and RAK Hospital has since the very beginning been concentrating on this approach and whenever possible we offer our patients a minimal access option.

Our team comprises of surgeons who have extensive experience in this intricate technique, and master also complex procedures.

In selected cases, we even offer "Single Port Surgery", where the entire procedure is done through only one single small incision in the umbilical area.

Routinely we perform the following procedures with the Minimal Access Technique

- Cholecystectomy (removal of Gallbladder)
- Appendectomy (removal of Appendix)
- Repair of hernia (inguinal, umbilical, abdominal and femoral)
- Surgery on the small and large intestine, stomach and liver, including cancer surgery
- Surgery on the kidney (including removal of kidney for cancer)
- Surgery on the uterus and ovaries (including repair of fallopian tube for extra-uterine gravidity, removal of uterus, removal of fibroids)
- Thoracoscopic surgery (surgery for chest)
- Paediatric surgery (hernia, Hirschprung's disease)
- Bariatric surgery (Weight-loss surgery)

OXYCARE Medical Group GmbH
FON +49(0)421 48 99 66 www.oxycare.eu
• GERMANY
• AUSTRIA
• POLAND
• BULGARIA

Asthma Bronchitis COPD Migraine
THERAPY-EQUIPMENT.
Sleep Apnoe Cardiac Insuficiency Sore
Neuromuscular Carcinoma

SECRETOLYSIS & WOUND HEALING

We are looking for distributors

Made in Germany

Made in Germany

VibraVest™

Secretolysis by oscillating of the lung with HFCWO (high frequency chest wall oscillation)
- without compression on the thorax!

Providing advanced mucous clearance for the patient. The VibraVest Airway Clearance System is designed to assist patients in the mobilization of retained secretion.

If the secretion can not be removed, this may lead to increased rates of respiratory infection, hospitalization and reduced lung function.

With battery and hand control perfect for mobility. For unrestricted movement and freedom without any electrical cords and tubes unrestricted movement and freedom.

Available for adults and children in 6 sizes, approved as medical device with CE 0197.

With FDA approval in the USA under the branding name "AffloVest".

There can be a potential therapeutic benefit to patients with the following diagnosis:

- **Cystic fibrosis (CF)**
- **Chronic obstructive pulonary diseases (COPD)**
- **Bronchiectasis**
- **Asthma**
- **Cerebral palsy**
- **Muscular dystrophy (MD)**
- **Amyotrophic lateral sclerosis (ALS)**
- **Post-lung transplantation**
- **Ventilator dependence and a variety of other conditions affecting pulmonary function**

The O_2TopiCare Woundsystem® (wound management system)

New therapy option for chronic wounds

The O2-TopiCare® Wound System provides localised oxygen treatment for arms, legs and feet.

Angiogenesis plays a central role in wound healing. Among many known growth factors, vascular endothelial growth factor (VEGF) is believed to be the most prevalent, efficacious and long-term signal that is known to stimulate effective angiogenesis in wounds.

By placing a sterile bag of the O_2 TopiCare Woundsystem around the leg/wound, the bag can be filled directly with oxygen from a concentrator (or another oxygen source), for example an Everflo. An Everflo creates a pressure system of about 30 mbar that is perfect for allowing the highest amount of oxygen to be absorbed by the blood with topical application.

To stimulate the return of venous blood to the leg, the cuff can be adapted to an A-V Impulse System® that simulates walking, helping the natural transfer of the venous blood.

Very good results with the O_2TopiCare wound management system

Even if all other therapy possibilities have been exhausted, chronic wounds can begin to heal through the oxygen application of the O_2 TopiCare wound management system.

In the case illustrated here all other therapies had failed. Wound healing was stimulated however through the O_2 TopiCare wound management system.

Approved as medical device with CE 0197

Application:

- **diabetic foot lesions**
- **can avoid amputations**
- **ulcus cruris**
- **slow-healing wounds**

Wound condition at therapy commencement

After 10 months TopiCare therapy

LIMBO waterproof protectors

Wide range of adult and child sizes also for hands, foots and much more available.

- Easy to use durable product.
- Enables comfortable bathing or showering

as of 15,55 € *

*prices ex tax, freight costs not included

OXYCARE GmbH · Holzweide 6 · 28307 Bremen / Germany
FON +49(0)421-48 996-6 · FAX +49(0)421-48 996-99 · E-MAIL ocinf@oxycare.eu
www.oxycare.eu www.oxycare-gmbh.de

IN THE KNOW

Improving Care Delivery and Patient Experience for International Medical Travellers

Article provided by Cleveland Clinic

The Importance of Empathy

An increasing number of patients are leaving their local medical communities and crossing national borders in search of high quality, affordable and timely medical care. While these patients (often referred to as medical travellers, medical tourists or international patients) face challenges similar to individuals receiving care in their local communities, unique differences add to the complexity of care and risk of suboptimal outcome. Accordingly, patient experience is a crucial piece of the care cycle for the patient and the healthcare system alike.

While an excellent patient experience has obvious benefits to those receiving medical care, it is also associated with better clinical and business outcomes for hospitals. Among several clinical outcome measures, positive patient experience is associated with lower mortality, lower readmission rate and lower hospital-acquired infection rates. Similarly, positive patient experience is associated with higher financial performance, likely due to patient loyalty and emerging reimbursement models rewarding better clinical outcomes.

Nizar N. Zein, MD, the Endowed Chair in Liver Diseases and Chairman of Global Patient Services at Cleveland Clinic, discussed "Improving Quality, Safety and Patient Experience" during the European Medical Tourism & Global Healthcare Congress in Athens, Greece, in May. He stressed the role of empathy as a universal attribute in achieving an outstanding patient experience. However, reaching a high level of empathy among caregivers for international patients often proves challenging.

"Empathy is the ability to see through the eyes of our patients," Dr. Zein says. Empathy requires effective communication and shared experiences. Language barriers and the need to communicate through an interpreter can hamper effective communication with international patients. Shared experiences are typically lacking, with limited familiarity among healthcare providers of the cultural, spiritual or religious background of patients. People are more likely to feel empathy for a sick neighbour than for patients with dissimilar language, culture or educational background.

Nizar N. Zein

Solutions

Getting beyond these barriers is possible, but it doesn't happen by accident, Dr. Zein says. Having specialised interpreters is a necessity, but it's not enough. Caregivers also need education around cultural issues, he says.

"A simple modification of a regular standard of operation to accommodate somebody's culture or diet or other activities can overcome many barriers," he says.

Cleveland Clinic's Global Patient Services team, which facilitated patient visits from more than 120 countries in 2017, regularly holds educational sessions to teach staff about other cultures and to create familiarity with cultural obstacles to achieving the best patient experience.

Some people may be nervous about caring for people from different cultures, but Dr. Zein notes that human traits are more similar across cultures than people might think. Providing medical care to international patients also gives medical professionals an opportunity to build greater expertise in medical problems and diseases uncommon in their local population.

The Right Services

Dr. Zein also emphasises that an organisation that wants to care for international medical travellers must ensure it is offering services to meet these patients' unique needs. For example, an international patient may need assistance with transportation and help getting a cell phone and exchanging currency. If their care requires them to stay longer than originally expected, their visa may expire, so they will need the services of an immigration lawyer.

Since international patients almost always travel with their families, health systems need to offer supportive services as well. Patients also appreciate maps and information about area museums, sports schedules, salons and spas, restaurants and fun destinations.

"It takes time put all of these pieces together, but it will ultimately be worth it in terms of increased patient satisfaction and enhanced revenue to the health system," Dr. Zein concludes.

New Study Investigates Impact of General Ward Clinical Monitoring

Using Masimo Root®, Radius-7®, and Patient SafetyNet™ on Clinical Workflow and Patient Care

IN THE KNOW

Article provided by Masimo

A recently published study by researchers at Dartmouth-Hitchcock Medical Center investigated the impact of an integrated clinical monitoring system, using various Masimo technologies and devices, on clinical workflow and patient care in the general ward. The researchers sought to "demonstrate the application of systems-level design and analysis to measure the impact of clinical monitoring on key workflow and system characteristics that contribute to early detection of patient deterioration."[1]

To evaluate workflow impact through use of the enhanced monitoring system, Dr. McGrath and colleagues collected data in a study unit consisting of two general wards with 71 beds total for five months prior to and five months after implementation. They also collected the same data for the full 10 months in a control unit consisting of two general wards with 61 beds total, which did not have any system changes. In both the study and control units, prior to implementation, the baseline monitoring system consisted primarily of Masimo Rad-87® Pulse CO-Oximeters®, for continuous and spot-check (vital signs) measurements using Masimo SET® pulse oximetry, and Masimo Patient SafetyNet™, a supplemental remote monitoring and clinician notification system, used for data processing and archiving.

The enhanced monitoring system, implemented in the study unit, added Masimo Root® with Radius-7® wearable Pulse CO-Oximeters. Root is a patient monitoring and connectivity platform that includes features such as built-in blood pressure and temperature measurements, a barcode reader and integration with the hospital's admission-discharge-transfer (ADT) system, and integration with Patient SafetyNet and the hospital's electronic medical record (EMR) system for automated capture of patient monitoring and vital signs data, including from connected third-party devices. Radius-7 is a tetherless, wearable monitor that allows patients to be mobile while still being continuously monitored, with data sent wirelessly via Bluetooth® or WiFi to Root, eliminating the need for nurses to manually place bedside monitors in standby mode and disconnect sensors each time a patient leaves the bed.

Key points of comparison and results included:

Monitoring system utilisation: The researchers noted a significant increase in the number of hours patients were continuously monitored after implementation. Monitored hours per patient day increased from mean 17.26 hours to 19.57 hours ($p < 0.0001$) and monitored hours per month from mean 15,931.25 hours to 19,053.3 hours ($p < 0.0001$).

Vital signs documentation: With the implementation of Root and its ability to automatically upload patient data, including pulse oximetry and blood pressure and temperature measurements, to Patient SafetyNet and the EMR, researchers noted a significant decrease in the time required to obtain and record vital signs: mean assessment time dropped from 178.8 seconds to 128.9 seconds ($p < 0.0001$), representing an average time savings of 3 hours per day in a 36-bed unit.

Patient information: The researchers measured the rate at which certain patient data fields were filled out in the EMR for one month before and after implementation. Patient last name presence increased from 98.92 per cent to 100 per cent presence ($p = 0.0083$). Patient first name and room and bed presence increased from 33.75 per cent and 57.27 per cent, respectively, to 100 per cent ($p < 0.0001$).

Clinical staff satisfaction: Three months after implementation, hospital staff feedback was solicited in a 16-question survey which had a 65 per cent response rate and overall "very high" satisfaction with the enhanced monitoring system.

Alarms: The researchers found that there was a significant increase in the number of clinical alarms per patient day (rate ratio 1.46, $p = 0.0263$) but not per monitored hour (rate ratio 1.34, $p = 0.1090$), which they believe is "logical when considering [the] additional time each patient [was] monitored."

The researchers concluded, "The enhanced monitoring system received high staff satisfaction ratings and significantly improved key clinical elements related to early recognition of changes in patient state, including reducing average vital signs data collection time by 28 per cent, increasing patient monitoring time (rate ratio 1.22), and availability and accuracy of patient information. Impact on clinical alarms was mixed, with no significant increase in clinical alarms per monitored hour."

In previous studies conducted at Dartmouth-Hitchcock, researchers found that continuous monitoring of adult post-surgical patients using Masimo SET®, in conjunction with Masimo Patient SafetyNet, resulted in a 65 per cent reduction in rapid response team activations and a 48 per cent reduction in transfers back to the ICU.2 Over five years, they achieved their goal of zero preventable deaths or brain damage due to opioids,3 and over 10 years, they maintained a 50 per cent reduction in unplanned transfers and a 60 per cent reduction in rescue events, despite increase in patient acuity and occupancy.4

Joe Kiani, Founder and CEO of Masimo, said, "We are incredibly grateful to Dartmouth-Hitchcock for their continued long-term research into the utility of continuous patient monitoring on the general floor and the benefits that holistic, integrated monitoring systems can provide. Continuous monitoring of all patients on opioids is clearly the path forward, with the potential to make significant improvements in patient safety and quality of care. We look forward to continuing to learn from Dartmouth-Hitchcock's data and to improving our technologies and integrated solutions."

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

References

1. McGrath S, Perreard I, Garland M, Converse K, and Mackenzie T. Improving patient safety and clinician workflow in the general care setting with enhanced surveillance monitoring. J Biomed Health Infor. DOI 10.1109/JBHI.2018.2834863.

2. Taenzer A et al. Impact of Pulse Oximetry Surveillance on Rescue Events and Intensive Care Unit Transfers: A Before-And-After Concurrence Study. Anesthesiology. 2010; 112(2):282-287.

3. Taenzer A et al. Postoperative Monitoring – The Dartmouth Experience. Anesthesia Patient Safety Foundation Newsletter. Spring-Summer 2012.

4. McGrath S et al. Surveillance Monitoring Management for General Care Units: Strategy, Design, and Implementation. The Joint Commission Journal on Quality and Patient Safety. 2016 Jul;42(7):293-302.

ARAB HEALTH

28 - 31 January 2019 Dubai World Trade Centre

Where the healthcare world comes to do business.

What to expect in 2019?

84,500+
Healthcare and trade professionals.

4,150+
Exhibiting companies.

160+
Countries represented.

12
Conferences.

Register your free visit:
www.arabhealthonline.com/reg

Platinum partners.

Gold partners.

Silver partners.

Supporting bodies.

Organised by.

XENIOS

XENIOS CONSOLE

ONE INTEGRATED LUNG & HEART THERAPY PLATFORM

UNIVERSAL wide spectrum of extracorporeal support

- Therapies for lung and heart assist on one single platform
- From partial CO_2 removal to full oxygenation

RELIABLE Safe technology Intuitive handling

EFFICIENT Highly sophisticated pump technology

* i-cor ready

XENIOS
LUNG AND HEART THERAPIES

www.xenios-ag.com

XENIOS AG | Im Zukunftspark 1 | 74076 Heilbronn, Germany |
Phone: +49 7131 2706-0 | Email: info@xenios-ag.com

When You Leave the Room, You'll Still Be There™

- Displays near real-time information from any connected Masimo device at a central station
- Allows for alarms and alerts from bedside devices to be sent directly to clinicians
- Simplifies workflows with ADT integration
- Automates data transfer from connected devices directly to EMRs

For more information, visit **www.masimo.co.uk**

*The use of the trademark Patient SafetyNet is under license from University Health System Consortium

For Professional use. See instructions for use for full prescribing information, including indications, contraindications, warnings, and precautions.

PLEASE VISIT US AT ARAB HEALTH 2019
STAND S2.B10

Masimo

PLCO-001620/PLLT-10014D-0218