

Arab Health

The Official Magazine

Together for a healthier world



The rise of eSports medicine *(pg 22)*

Arab Health 2020: Spotlight on sectorisation *(pg 08)*

Sneak peek
into our new
look in 2020
(pg 45)

Omnia Health 
By Informa Markets

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Tech transformation

Welcome to the November/December edition of the Arab Health Magazine! We are now just a couple of weeks from Arab Health 2020 and in this issue, we take a closer look at sectorisation, a new feature at the show that will see it being split into eight sectors according to main product categories (pg 08).

One of the speakers at Arab Health 2020's newly launched Physical Medicine, Rehabilitation & Sports Medicine Conference, Dr. Kirill Micallef Stafrace, gives us an insight into eSports medicine and how healthcare providers need to arm themselves with the knowledge required to manage an eSports athlete and take the opportunity to educate stakeholders on how best to achieve sporting results in a safe and healthy manner (pg22).

This edition also covers the UAE Ministry of Health and Prevention's (MOHAP) Health Technology Assessment Office that recently embarked on a two-site head-to-head comparison between an automated and a traditional outpatient pharmacy to assess possible cost-benefits of extending pharmacy automation across multiple MOHAP outpatient facilities in the UAE. Turn to page 32 to see the results.

We hope you find this issue informative and look forward to welcoming you in the New Year at Arab Health 2020 with a brand-new look as Omnia Health Magazine!

Deepa Narwani



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Spotlight on sectorisation

The Arab Health 2020 exhibition show floor will be split into sectors according to main product categories.

By Arab Health Magazine Staff

Arab Health 2020 will welcome more than 4,250 exhibiting companies and 106,900 professional visits from 159 countries.

Arab Health, the largest gathering of healthcare and trade professionals in the MENA region, is all set to take place between January 27 to 30, 2020, at the Dubai World Trade Centre and Conrad Dubai Hotel. The upcoming edition of the event will welcome more than 4,250 exhibiting companies and 106,900 professional visits from 159 countries.

The Arab Health 2020 exhibition show floor will be split into sectors according to main product categories. This move has been made to increase the traffic within the halls with the relevant audience interested in the product category, increasing quality leads for business. Moreover, close proximity of related exhibitors in a hall will increase the number of visitor meetings that can take place in a time frame, versus walking through more than 64,000 square metres exhibition space. Below is an in-depth look at the different sectors:

Medical equipment and devices

According to a latest Global Medical Device Market Research report for 2018-2022, the global medical device market size is set to achieve an incremental growth of nearly US\$120 billion, registering a compound annual growth rate (CAGR) of more than 5 per cent during the forecast period. A recent report by Dubai Exports further highlighted that the pharmaceuticals and medical equipment sectors are one of the six target sectors of the Dubai Industrial Strategy (DIS) 2030. Reportedly, the domestic market for the sector will alone be worth about AED 5 billion in 2021, while the MENA market will reach almost US\$10 billion by 2021 growing at around 7 per cent per annum.

Disposables and consumer goods

A recent report highlighted that the medical disposables market is anticipated to reach over US\$365.1 billion by 2026. In 2017, drug delivery dominated the worldwide medical disposable industry. Reportedly, Asia-Pacific has been one of the leading contributors to the global market

revenue. The increasing number of technologically advanced products and continuous research and development also continue to drive market growth in this segment.

Imaging and diagnostics

The global medical digital imaging systems market size was valued at US\$14.55 billion in 2017. It is likely to expand at a 7.7 per cent Compound Annual Growth Rate (CAGR) between 2019 to 2025. Plus, the global 3D medical imaging market was valued US\$15.9 billion in 2017 and is expected to reach US\$30.3 billion by 2026, at a CAGR of 8.39 per cent till 2026. Surging demand for effective early diagnostic methods and widening base of the ageing population have been instrumental in driving the market.

Preventive and post-diagnostic treatments

Patients are today increasingly aware that preventive measures allow them to have a better-quality and stress-free life. Along with affordability, easy availability of diagnostic devices capable of early detection of the asymptomatic diseases is expected to fuel growth in this sector. The global preventive healthcare technologies and services market size was valued at US\$139.1 billion in 2015 and is projected to grow at a CAGR of over 12 per cent between 2018 to 2024. This growth can be attributed to the increasing prevalence of lifestyle-associated and other chronic diseases.

Healthcare and general services

Global healthcare expenditures are expected to continue to rise as spending is projected to increase at an annual rate of 5.4 per cent between 2017-2022, from US\$7.724 trillion to US\$10.059 trillion. The emergence of personalised medicine, increased use of technologies, entry of disruptive and non-traditional competitors, the demand for expanded care delivery sites, and revamped payment models are all impacting the financial performance of the healthcare ecosystem.

Healthcare infrastructure and assets

Reportedly, more than US\$200 billion will be injected into the global healthcare infrastructure market over the next five years. In the GCC, in view of the anticipated rise in the number of patients, the region is expected to require 12,358 new hospital beds by 2022, according to an Alpen Capital report. This translates into an estimated annual average growth of 2.2 per cent from 2017 to reach a collective bed capacity of 118,295. The high incidence of chronic cases has led to an increase in demand for beds. Although general hospitals are not running at optimal capacity, the need for beds is rising particularly in areas of specialised care, long-term care and rehabilitation care, among others. The report added that the demand in the UAE is anticipated at more than 2,000 new beds in the coming years.

IT systems and solutions

The global healthcare IT solutions market will be worth US\$228.79 billion by 2020, growing at a CAGR of 13.4 per cent, a recent report found. This growth is attributed to the rising adoption of healthcare IT solutions by healthcare providers to meet regulatory requirements for patient care and safety, increasing need to curtail costs, and growing need to improve healthcare quality while maintaining operational efficiency. The governments and private healthcare providers in the GCC are investing heavily in technology implementation and upgrades. Most of the governments are working on electronic medical records (EMR) to monitor and improve health outcomes.

Orthopaedics and physiotherapy/ rehabilitation

High prevalence of orthopaedic conditions such as degenerative bone disease coupled with early onset of musculoskeletal conditions triggered by obesity and sedentary lifestyle are expected to advance the growth of the market. The rapidly growing lifestyle diseases in the GCC has prompted investments in specialised hospitals and clinics. Such centres are being built with a focus on orthopaedics, for example, and offer state-of-the-art technology, enhanced patient-centric care and high-quality standards. Technological advances in 3D printing, robot-assisted surgical procedures, and smart implants further represent high impact driving factors for the global rehabilitation industry.

At these dedicated halls, dealers and distributors, health managers and hospital administrators among others, from around the

world, will be stopping by to see the latest products being exhibited and make key purchasing decisions on the spot.

From Prevention to Innovation

A new addition to the Arab Health roster, “From Prevention to Innovation” a two-day conference (Jan 27 and 28) is the first SEHA-Mayo collaborative meeting highlighting the relationship between the two institutions. Aligning with the bigger trends in the UAE, this conference will look at covering the prevention of disease to the most recent innovation in the care of the complex patient, with the added value of artificial intelligence and connected care. The conference will include prominent speakers from SEHA who will open up each session and will be followed by specialised talks from Mayo Clinic experts.

Healthcare Investment Forum

The Investment Conference, taking place from 29-30 January, will be held for the first time at Arab Health and will be the place for influential players who are driving a change in healthcare, and investors who are fuelling that change. This forum is the arena to stimulate more investment, more change and learning in the healthcare system in the UAE and the region. With a venue designed for intimate talks, the forum will be the driving force towards understanding healthcare investment in all facets, including investing in health tech, real estate, understanding the current landscape and what the future holds.

Healthcare Infrastructure Forum

The free-to-attend Healthcare Infrastructure Forum is another new introduction to Arab Health, offering updates from key industry leaders in the fields of infrastructure, spanning the lifecycle of a healthcare facility; from vision through to the design and build, management and operation.

Focus on sustainability

Arab Health has a number of opportunities to improve impact environmentally, socially and economically in the region. This year the event is becoming more responsible and playing a role in helping the market improve its own sustainability through connecting people with the networks and knowledge to help solve the big challenges in the healthcare sector.

The Investment Conference will be held for the first time at Arab Health and will be the place for influential players who are driving a change in healthcare, and investors who are fuelling that change.

Healthcare at your fingertips

Medical apps are proving to be a win-win for both patients and doctors.

By Deepa Narwani, Editor

Recently, His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai, declared the Fifty-Year Charter, which includes nine articles that aim to shape the future of Dubai and enhance the city's quality of life. One of these pillars is to have a doctor for every citizen.

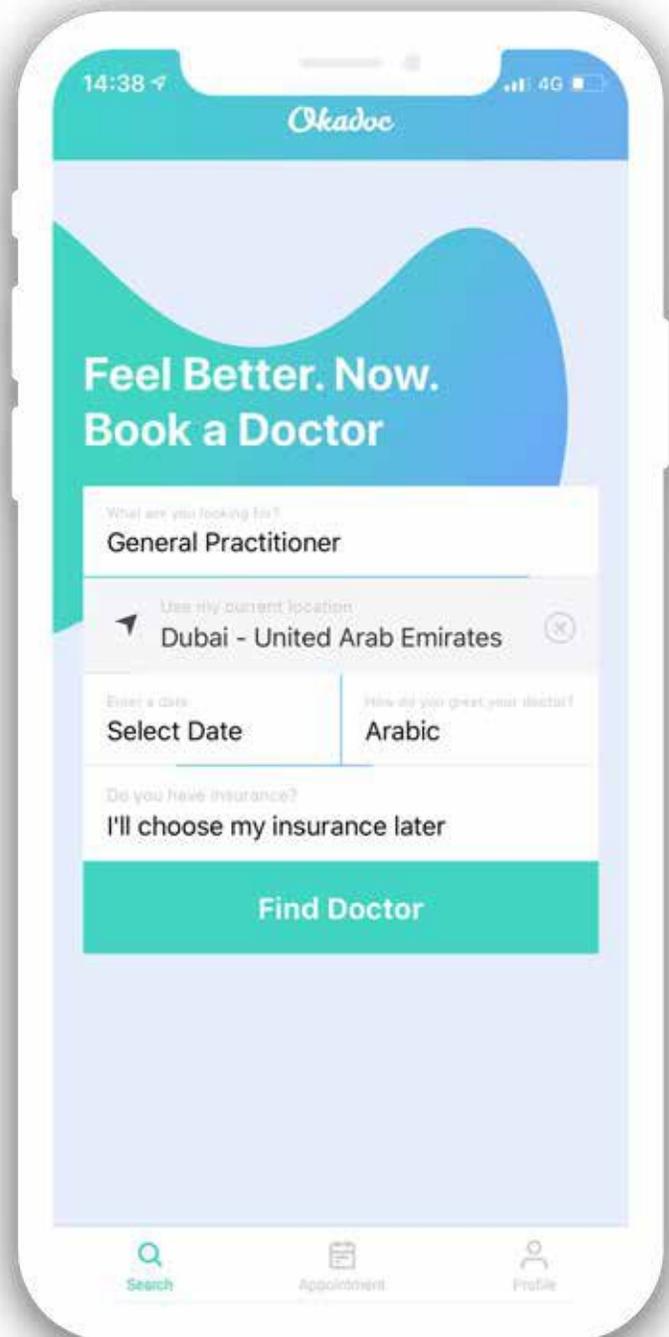
An initiative that could help fulfil this vision is Okadoc, an app that was launched in 2018. It is a 24-hour medical calendar system that helps patients search and select doctors by specialty, location, language and insurance coverage. With the app, patients can instantly book appointments based on availability.

The app is the brainchild of Fodhil Benturquia, Founder & CEO, Okadoc, who was previously the CEO of Noon.com, a founding member of the regional e-commerce site MarkaVIP and former general manager of Souq.com's operations in Saudi Arabia.

Benturquia shares: "The stresses of daily life can lead to falling sick quite often. Once, when I wanted to book an appointment with a doctor, I faced a tough time. I am used to ordering my food or booking my taxi or airline tickets or even a car wash in less than 30 to 60 seconds. But when I was sick and wanted to get a doctor's appointment, it took me 15 minutes and even then, I couldn't get a confirmed appointment. I had to hold the line, listen to recorded music and eventually got told that nobody can pick up and to call back later. I found it extremely shocking, as healthcare is the most important need of life."

The second thing that caught Benturquia's attention was the fact that in e-commerce when somebody calls, the rule is to attend it in 20 seconds. "We know that if you don't pick up the phone in 20 seconds, you lose 50 per cent of clients. In e-commerce, people call for retention purposes – in case there is a delay in delivery or to request for cancellation. But in healthcare, the

No-show is kind of a disease of the clinic or the hospital. Almost 4 out of 10 patients are not turning up.



primary purpose is an acquisition. Somebody is sick and wants to spend in your clinic, but they are kept waiting. For instance, on a Friday, most of the time the phone won't get answered and if you or your child are sick, how do you manage to get an appointment? You end up going to the emergency ward. It costs a lot of money and nobody wants to go there as it's scary, specialists might not be available and you could wait a couple of hours before getting treatment," he explains.

When the CEO did a quick search on the Internet, he found that there were a couple of companies that offered online booking, but soon realised that none of them offered an instant confirmation. With these platforms, you could book a date and time and receive a call from the clinic to confirm the appointment, a few hours later or maybe even the next day. "Also, when a clinic calls, you might not pick up the call," says the CEO. "This is not the experience I am expecting as a patient or a user. I don't need somebody to call me back. When it's booked it should be confirmed, just like any other digital experience," he adds.

However, he also chanced upon websites such as ZocDoc in the U.S. and Doctolib in Europe that offered instant booking solutions. "I found that patients and healthcare providers loved these platforms as they solved so many problems for everybody," he stresses. "That's when I decided it would be a great idea to bring it to the UAE."

Making an appointment with a doctor on Okadoc takes 20-30 seconds. If you are not logged in, it will take 40 seconds. It can be cancelled in 5 seconds, which is two clicks, and rescheduled in 7 seconds, which is three clicks. A user will also get reminders by SMS, push notifications, emails and within the reminders, there is an option to cancel or reschedule.

Problem-solving

Moreover, Okadoc can tackle the discovery issue. This means that the app allows the user to search for doctors by spoken languages, filter by gender, search by availability and insurance policy.

Benturquia highlights that healthcare facilities often have a high no-show, and this is a big problem in the region. In the U.S., the no-show rate is around 23 per cent but in the UAE, it is 37 per cent, while in Saudi Arabia it is 50 per cent.

He says: "No-show is kind of a disease of the clinic or the hospital. Almost 4 out of 10 patients are not turning up. Our research found that the reason for these numbers is because 50 per cent of people forget about their appointment; 40 per cent of the people want to cancel or reschedule

but when they want to do so, it is outside working hours or the waiting time to cancel/reschedule is very long. Then there is 10 per cent of the people who don't care about cancelling or rescheduling. With our platform, we have been able to reduce no-shows by 75 per cent!"

Almost 14,000 doctors in the UAE are listed on the platform, but out of that 1,000 are instantly bookable. Institutions such as Zulekha Hospital and Emirates Speciality Hospital, among others, are already a part of it.

Geographically, it caters to users in Dubai, Sharjah, Abu Dhabi, Ajman, Fujairah and Ras Al Khaimah. The app is also available as a website, on Android and iOS, and as widgets. Also, when a booking is made, the user can request for earlier availability, so if someone cancels, they can be moved to that spot.

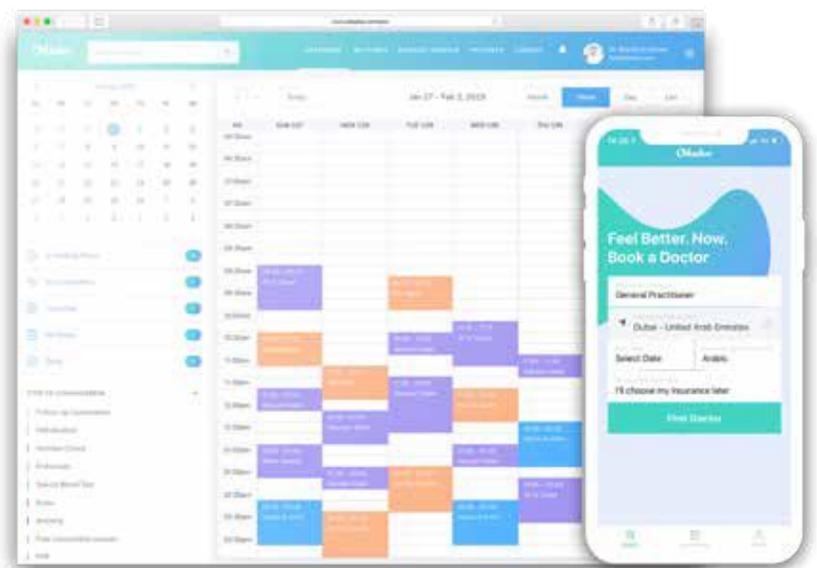
"We are hosted in the UAE and are compliant with every global standard such as the Health Insurance Portability and Accountability Act (HIPAA). We are a step ahead when it comes to security, encryption, and follow best practices. By regulation, the data needs to be hosted in the UAE," he explains.

When asked about future plans, he concludes: "We are currently touching 10 per cent of online bookable doctors. Our goal is for the UAE to become the first country with the highest number of online bookable doctors per capita by 2021.

"We are soon going to launch in Saudi Arabia. It is a great opportunity for us, as the no-show is even bigger there. We are also looking at launching in one more country by the end of the year. Our expansion plans are in the GCC, but also beyond." ✦



Fodhil Benturquia





Trends in KSA healthcare market

By **Sandeep Sinha**, Associate Partner & Vice President, Healthcare & Life Sciences, **Dr. Moumen Suleiman**, Senior Consultant, Healthcare & Life Sciences and **Dr. Ahmed Qannita**, Senior Consulting Analyst, Healthcare & Life Sciences, Frost & Sullivan

The Saudi economy has witnessed dramatic changes especially in the last few years. The new Vision 2030 for Saudi Arabia, announced on April 24, 2016, has enforced various economic reforms to decrease the country's dependence on oil sources. In assembly with that, the healthcare sector in the Kingdom of Saudi Arabia (KSA) has witnessed several transformations, which will redefine the delivery of healthcare in Saudi Arabia.

KSA is considered to be one of the largest countries in the Middle East with an area of 2.15 million sq. m. The country's population was 33.4 million in 2018 of which 62 per cent are nationals and 38 per cent are expats. Over the last 3 years, the country has witnessed a growth rate of 2.2 per cent, typically regarded as high when compared to the average population growth in

the world (1.09 per cent).

A number of significant trends currently drive demand for KSA's healthcare market. This includes a rising ageing population. According to the Ministry of Health, the age bracket of 65 years and above is expected to grow from 1.96 million in mid-2018 to 4.63 million in mid-2030. This is mostly attributed to an improvement in the quality of healthcare coupled with awareness programmes, increased accessibility to healthcare facilities and other governmental initiatives.

Another significant trend driving the healthcare market is the rise in the prevalence of non-communicable diseases (NCDs). According to a report published by the World Health Organization (WHO), the prevalence of obesity is expected to rise to above 45 per cent by 2025. As a result, these factors eventually put the

A number of significant trends currently drive demand for KSA's healthcare market.

Saudi population at higher risk of NCDs such as diabetes, and hypertension, in addition to other diseases pertaining to cardiac, kidneys and other body systems.

Additionally, high injury rates due to road traffic accidents are another key demand driver for the Kingdom's healthcare sector. Despite considerable government efforts in an attempt to decrease accidents, road traffic injury was the second most common cause of death in the Kingdom between 2007 and 2017.

The aforementioned factors are key demand drivers for both primary and preventative services, as well as secondary and tertiary care. More importantly, however, these factors have highlighted a need in the market for specialised extended healthcare services, such as rehabilitation and long-term care.

The need for extended care, which includes comprehensive rehabilitation services, along with home and long-term care is expected to grow significantly. It is estimated that the demand for number of beds for extended care in the top three most populated regions of KSA will reach more than 8,000 beds in 2030, further highlighting a paradigm shift. Care is evolving; shifting from three to four-day in-patient hospital stays on average, to more options in the out-patient care sphere. Examples of this include one day procedures or tailored home care. Further supporting this paradigm shift is the stance of physicians, who are now advocating the practice of "fewer nights in hospitals".

Various studies have showcased a positive direct relationship between patient outcomes and shorter inpatient stay, due to decreased risk of hospital acquired infections and a lower dependency on hospitals, which helps rehabilitate patients faster. Additionally, shorter hospital inpatient stays increase the ability of hospitals to better utilise resources, leading to cheaper overall costs on patients and insurance. Improved resource utilisation combined with a consequent high turnover will eventually lead to higher levels of profitability for healthcare players. Also, the aforementioned results will ultimately have an impact on the wider macroeconomic environment. With an increase in the overall health of individual patients, their levels of productivity and utilisation at work also improve, translating to a positive impact on the overall economy.

It is expected that demand for hospital and specialised beds will increase by an additional ~5,000 beds by 2020, and ~20,000 more by 2035. Coupled with new focus on involving the

private sector in 12 major areas of healthcare including diagnostics and laboratory services, extended and primary care, this creates a good opportunity for entry and expansion in the market.

How is the government creating an attractive ecosystem for investors?

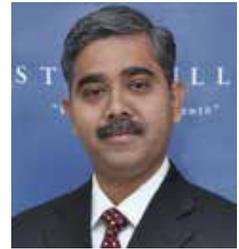
The government in turn has created several initiatives making it more attractive to invest in the Saudi healthcare market. Those include the National Transformation Programme (NTP) as part of the 2030 Saudi Vision. Also, the Saudi Arabian General Investment Authority (SAGIA) has opened the door for 100 per cent ownership of foreign investment in various fields, and healthcare is among them. Increasing the number of internationally accredited hospitals is one of the focus areas of the NTP. Insurance became mandatory for all private sector employees. Also, a national insurance programme is being launched to transform the delivery of healthcare to nationals through private and public hospitals. The Ministry of Health (MOH) has adapted a new partnership with the private sector (Private Sector Participation). "This partnership empowers the private sector to shape its future role in the Saudi economy and enhance its ability to meet short and long-term requirements in achieving the goals of the future vision by participating in the financing, operation and management of service projects, selecting suitable models for its contribution and identifying priority sectors and achieving financial sustainability," a MOH statement said. Those are creating key opportunities for expansion and new entry into KSA's healthcare market.

On a side note, healthcare budget is being expanded, which reflects a strong indication of potentially high demand as the government may be willing to spend and embrace improvement and growth within the sector.

Private investment in healthcare is being guided and governed by SAGIA. More mature models are expected to be formed to guide entrance and investments into KSA's healthcare market.

In the medium to long term, the healthcare market in Saudi Arabia presents itself as a sector with high growth opportunities. To expand or enter the market and achieve long term success, it is important to carefully study the gaps between supply and demand, understand international best practices and embrace digital and technological advances. ✚

References available on request.



Sandeep Sinha



Dr. Moumen Suleiman



Dr. Ahmed Qannita

It is expected that demand for hospital and specialised beds will increase by an additional ~5,000 beds by 2020, and ~20,000 more by 2035.

Experts finalise surgical guidelines in Dubai

By Deepa Narwani, Editor

Failure to improve surgical care will cost the world economy US\$12.3 trillion in lost GDP by 2030.

Recently, University of Birmingham research experts gathered medical professionals from around the world in Dubai to finalise international surgical guidelines that will help to save thousands of lives in Low- and Middle-income Countries (LMIC) countries. In an interview with *Arab Health Magazine*, Professor Dion Morton, Head of Academic Department of Surgery & Barling Professor of Surgery, University of Birmingham, discusses key outcomes from the event. Excerpts.

1. Could you please shed light on the surgical guidelines that were finalised in Dubai recently?

A two-phase Delphi exercise was undertaken with surgeons from 15 Low- and Middle-Income Countries (LMIC's), including Mexico, India, South Africa, Ghana, Nigeria, Rwanda, Benin, Zambia, Philippines, and Pakistan. Questions were based on existing guidance and presented alongside the best evidence. Surgeons judged whether the interpretation of the evidence was appropriate/relevant to LMIC settings.

These guidelines are designed to produce clear evidence-based recommendations that can be applied across a range of surgical settings covering pre-operative preparation and in-theatre interventions to reduce the risk of Surgical Site Infection (SSI). The guidance will be published later this year in a leading medical research journal.

2. How was the response to the event? Why are these guidelines important?

The event followed a University of Birmingham-led conference in Kigali, Rwanda, in November last year, where experts came up with 31 evidence-based recommendations identified from existing High-Income Countries (HIC's) SSI guidelines.

This initial list was reduced and revised down to 19 recommendations, which were put to an online vote by LMIC surgeons. Participants voted based on whether each recommendation was appropriate to their setting, current practice and whether implementation would be easy or difficult.

The surgeons felt that it was important to provide relevant guidance for LMIC surgeons, if the guidelines were going to be implemented effectively, which is why we hosted this event. At the Dubai conference, participants reviewed results of the online voting and decided which of the 19 recommendations were accepted into the final guidelines – classifying each as 'essential' (a reasonable expectation for all hospitals

worldwide) or 'desirable'.

Once published, these guidelines are set to help standardise and improve practice in surgery, and their value will be assessed thoroughly after publication and interpretation by a wider community.

3. What impact are these guidelines set to have in low- and middle-income countries?

SSI is the most common serious complication after surgery and is two times more common in LMIC countries than in HIC's.

In LMICs, 9 out of 10 people lack access to even the most basic surgical services; six million will die each year within 30 days of an operation and failure to improve surgical care will cost the world economy US\$12.3 trillion in lost GDP by 2030.

High-quality research and training are crucial to building sustainable surgical infrastructure and improving care in LMICs. Our aim is to improve surgical outcomes through collaborative research and training in these countries.

These new guidelines will help to change surgical practice and improve patient care around the world – saving thousands of lives and helping to reduce the massive loss to the world economy that would result from failing to improve surgical care.

4. How can hospitals successfully implement these?

Along with our partners, we are currently establishing hubs and/or trial centres in partner countries that perform their own clinical research relevant to local populations, whilst serving global needs.

We have also formed a Policy and Implementation Consortium to work with professional associations, NGOs and government organisations across the world, including the World Health Organisation. This Consortium will use the results of the research as a tool to inform changes in clinical practise and provide evidence to drive policy changes across the globe.

If a specific community feels it is appropriate, we can undertake a prospective global audit of uptake to evaluate acceptability and impact.

5. Why, according to you, do surgical ethics matter?

Most surgical patients are extremely vulnerable and often anaesthetised. Ethical considerations are therefore paramount. ✚



Professor Dion Morton

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The role of supply chain in patient safety

By Deepa Narwani, Editor

The internal supply chain of a healthcare organisation is often a silent service that can be dependent on various clinical departments.

When thinking of ways to reduce costs, improve efficiency and incorporate data into processes, three words come to mind: supply chain management. Healthcare supply chain management involves obtaining resources, managing supplies, and delivering goods and services to providers and patients. In an interview with *Arab Health Magazine*, David Ford, Founder and Director, Ingenica Solutions, highlights that improvement in supply chain processes help healthcare organisations achieve long-term financial and operational efficiencies and contribute to better patient safety. Excerpts from the interview.

Why do organisations undertake healthcare supply chain programmes or initiatives? What are the benefits?

The internal supply chain of a healthcare organisation is often a silent service that can be dependent on various clinical departments manning and managing the processes separately and not in a systematic approach; often it is reliant on certain individuals as an addendum to their other duties.

Supply chain management remains an issue across the healthcare sector and undertaking programmes or initiatives that support transformation provides an opportunity to improve efficiencies at a critical time; helping healthcare organisations cut costs, implement smarter processes and deliver better patient care.

UK hospitals, for instance, are under huge pressure to transform outdated, flawed approaches to managing procurement and supply chain operations, which are often manual approaches that are not fit for today's healthcare environment.

The cost of supplies, for example, is a significant part of expenditure so improving the way in which its inventory is acquired, stored and managed within a supply chain is critical to operational and financial improvement, and sustainability.

Improvement in supply chain processes help healthcare organisations achieve long-

term financial and operational efficiencies and contribute to better patient safety. An example of this is tracking and tracing medical supplies throughout the supply chain, such as high value implants, from point of manufacture to point of care; allowing organisations to build a picture of usage – who, what, where and when products are used on patients.

Benefits are wide and a few examples include:

- Financial benefits
- Reduces stock obsolescence and wastage
- Reduces spend
- Enables patient level costing/service line reporting
- Non-financial benefits
- Enables data driven decision-making
- Greater control and visibility of supply chain
- Improves patient safety
- Identifies expired stock
- Enables product safety recall
- Enables reorganisation of storage space
- Auto-replenishment of stock
- Reduces stock outs

Healthcare organisations are increasingly adopting innovative technology to improve procurement and supply chain processes, options that do not negatively impact clinical staffing levels or quality of care but instead facilitate better ways of working.

Taking our technology as an example, Ingenica Solutions 360 IM is configurable across multiple areas with different processes; the benefit of this is that it allows healthcare organisations to use just one solution to achieve procurement and supply chain excellence.

A best practice example of a healthcare organisation that has adopted an initiative to improve supply chain operations is Royal Cornwall Hospitals NHS Trust (RCHT) in the UK; also, one of our customers. It is one of the six selected as the UK Department of Health's Scan4Safety demonstrator sites for the adoption of GS1 and PEPPOL standards and leads the way in adopting smarter and more effective systems and practices to improve procurement and supply chain processes, and



David Ford

patient safety.

The Trust uses Ingenica Solutions 360 IM for the inventory management element of the Scan4Safety programme; using GS1 barcoding to track and trace products and supplies, from receipt to point of use with patients.

The benefits of a good inventory management system were not widely understood in the NHS, but Scan4Safety is the lever that has enabled RCHT to demonstrate that inventory management is key. For RCHT, the first step in the Scan4Safety programme was to get control of its inventory in order to improve patient safety, data accuracy and operational efficiency.

Today, by using unique identification numbers, RCHT can identify every person, product and place ensuring that staff can match the right patient, the right product, in the right place from delivery of an order to point of care.

What are the challenges to implementation of successful healthcare supply chain initiatives?

The healthcare environment is highly challenging. Broadly speaking, healthcare has fallen behind other industries in terms of supply chain management, and in the UK in particular has used basic, manual and time-consuming technologies or approaches in the past.

To improve its procurement and supply chain practices, data is key. It also poses a key challenge; to improve data quality, access to data and facilitate better data analysis.

In the UK, many NHS trusts do not have access to robust data, as they have no reliable electronic stock or inventory management system; so, data can prove a big challenge to implementation. Outdated systems are unsuitable to meet the challenges and demands of today's modern hospital and lead to significant problems.

Another key challenge is people. Implementation of healthcare supply chain initiatives is fundamentally a change management project, often underpinned by technology, which needs to win hearts and minds. Engagement of people in these programmes can be a challenge.

To what extent is the degree of collaboration among healthcare supply chain participants (manufacturers, suppliers, GPOs, distributors, providers)?

It is really important that all components of the supply chain are aware of their responsibilities and part in the complete supply chain. In the UK, the

main issue that is being addressed in the use of a common data set so that the systems in use across the supply chain can share data and information easily. The GS1 programme in the UK demonstrates that at the end of the point of care, a unique ID across the supply chain is imperative.

The projects that we undertake in the NHS often highlight excellent internal collaboration; demonstrating how different teams work together to choose and manage products cost-effectively in the short and long term. Our projects bring different functions across a healthcare organisation together such as managers, clinicians, ICT, finance, and procurement; successful projects require collaborative engagement across all these departments.

Will blockchain have an impact on healthcare supply chain?

Yes, we believe blockchain has huge potential in the healthcare market. There is a lot of noise about blockchain in healthcare and we can see why as it enables lots of records to be kept and linked but also encrypted. Where we are looking to share patient records and information across systems, blockchain looks like an incredibly powerful enabler – even Amazon updates the products being dispatched for that patient, along with the details of the delivery drone. ✚

To improve healthcare procurement and supply chain practices, data is key.



Engaging, educating and empowering future physicians

The journey of a medical education product – from manufacturing to customer experience.

By Arab Health Magazine Staff

Universities and teaching hospitals have traditionally relied on donated human cadavers to learn anatomy. However, preserved cadavers are not always available and plastinated specimens can be difficult to obtain. Modern 3D printing technology facilitates the availability of anatomically correct, coloured plastic prints of various parts of the body or a full body at a fraction of the cost of an embalmed or plastinated body.

Arab Health Magazine takes a deeper dive into how products for medical education are manufactured, distributed and purchased, and how companies put the right tools in the hands of those who will impact the future of healthcare.

Manufacturer: Driving development

3D printed anatomical models represent the next step in medical education and are quickly becoming a necessity for academic study. For instance, Germany-based manufacturer Erler-Zimmer GmbH & Co's product portfolio includes the full range of anatomical models for medical education. The company was established in 1950 and has emerged as one of the world's leaders in the production of 3D printed models. It utilises a range of production tools right from laser hand-held scanners, MRI imaging, CT scans, segmentation software and 3D printing to ensure the models are anatomically accurate

Andreas Falk, General Manager, Erler-Zimmer GmbH & Co. told *Arab Health Magazine*: "Our anatomical models have stunning depiction and accurately illustrate thousands of intricacies found in the human body. The realistic details of a dissected specimen are captured in ways that traditional moulding and casting techniques cannot. We have partnered with Monash Centre for Human Anatomy Education at Monash University, Australia, for the manufacture of 3D printed models. Currently, there are 55 3D printed models produced by us, all of which are available from our dealer and distributor, Leader Healthcare."

Falk explained that the 3D series includes models that would otherwise be impossible to visualise, such as vasculature of the brain. The anatomical kit is expected to dramatically improve learning and could even contribute to the development of better surgical outcomes for patients.

When asked about the type of quality management system followed by the company, Falk shared: "State-of-the-art production technology, quantitative measurements, repeatability tests, reliability tests, standard quality management plus stringent in-house quality control systems ensure that the models are anatomically accurate and true to the original specimens."

With regards to selecting a distributor, the General Manager said that for manufacturers such as Erler-Zimmer, distributors are a cost-effective solution to penetrate remote markets or markets with barriers to entry. The best distributors have a detailed working knowledge of markets, feet on the road, as well as contacts and relationships, which the manufacturer may not have in specific markets. Having said that, for any manufacturer, the relationship with the distributor will be about looking to maximise sales.

He said: "In the case of Erler Zimmer's relationship with the GCC distributor Leader Healthcare, we knew the company through previous working relationships. The most important criterion for us was finding a specialised distributor who is financially stable and committed to serving regional medical education needs for the long haul.

"The other key element of the relationship is getting feedback from customers to drive new product development. This won't happen if the distributor is not in direct contact with the market, customer and the manufacturer. It is the icing on the cake when the distributor sees this as an integral element of the manufacturer-distributor relationship. For us, Leader Healthcare has ticked all the boxes and we look forward to the fun and action we have on the Leader Healthcare booth at Arab Health every year."

"Our anatomical models have stunning depiction and accurately illustrate thousands of intricacies found in the human body."

Dealer and Distributor: Bringing innovative products to market

Erler-Zimmer's key partnership with its distributor highlights the importance of building a relationship based on trust. *Arab Health Magazine* also spoke to Sukhdeep Sachdev, Global Chief Executive Officer, Leader Healthcare Group, UAE, to understand what goes on behind the scenes.

Leader Healthcare Group has a distribution portfolio of global brands dedicated to patient outcomes and quality of life. The initial business was import and distribution of capital medical equipment. Subsequently, the business has amalgamated expertise in turnkey solutions for simulation-based healthcare education, immersive tactical combat casualty environments, signature aesthetic and wellness centres, life support training centres, sensory environments for special children, to name a few.

Sukhdeep said: "The goal of the company is to support the national and international vision of healthcare excellence, thereby serving every being on this planet. The vision is to build a world where health and wellness is the norm."

He explained that the factors kept in mind while selecting a product to distribute are – the alignment of the solution with regional vision and the commitment of the supplier towards healthcare excellence.

Sukhdeep gave the example of Erler Zimmer's commitment to medical education. He highlighted: "The meticulously handcrafted models and 3D printed didactic models are a labour of love, the ultimate gift to a medical student striving to grasp the intricacies of the human body. Healthcare excellence is possible only when such suppliers continue the good work. Leader Healthcare endeavours to contribute by easing the entry of exceptional products and suppliers within the GCC markets."

Another important factor is to select suppliers who innovate rather than suppliers who seek to follow a short-term trend. For example, when a unique product enters the market, similar products will soon flood the market. Distributors are tempted to cash in on the demand, often overlooking the stability of the suppliers of these 'me too' products.

He added: "The business of healthcare technology can serve the self and national interests only when suppliers and distributors set high standards for themselves. Our decision to work with companies such as Erler Zimmer is a reflection of their commitment to healthcare excellence."

When asked about how the company promotes a particular product, he said: "Leader Healthcare utilises tradeshow platforms such as Arab Health, specialised workshops and product specialists who work closely with key opinion leaders (KOLs) in the region."

In 2019, Leader Healthcare Group completed a decade of growth and market leadership. With 11 corporate offices across 8 countries, and strategic partnerships across MENA, APAC and North America regions, the company is poised for the next decade of disruption and innovation. Through this impressive journey, Arab Health has been a consistent ally and growth partner for Leader Healthcare, he adds.

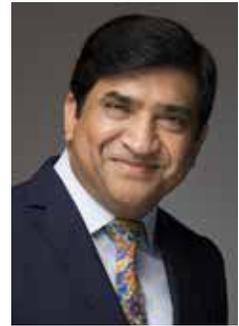
End-user: Making the right choice

In medical education, the right product is one which simplifies the interrelationships between man and medical intervention. These could be anatomical models, immersive experiences or learning software. The Millennials and Generation Z are a part of the education landscape on both sides – teaching and learning. Hence, additional criteria such as user experience and scalability need to be met. Khalifa University, UAE, has chosen Erler-Zimmer's products to provide the perfect solution for their teaching and learning programmes.

A spokesperson from Khalifa University shared that before making a purchase, feedback is collected from faculty, staff and students, as it identifies the gap and the need.

When asked about after-sales support, the spokesperson commented, "In the UAE, after-sales support is legally binding on the seller and buyer of healthcare-related technology. So, in that sense, there isn't much cause for concern. However, certain suppliers and distributors are especially committed to sales support excellence. The turnaround time and level of expertise offered by these suppliers and distributors make the relationship rewarding. Our decision to work with Leader Healthcare emerged partly from credible references in terms of after-sales support.

"Khalifa University has established the first medical college based in Abu Dhabi. Each year, Arab Health has been a platform to connect with exceptional suppliers in healthcare education technologies. Together, we can achieve healthcare excellence and align with the national vision of world-class healthcare in Abu Dhabi, the UAE and the GCC region," the spokesperson concluded. ✚



Sukhdeep Sachdev

"The business of healthcare technology can serve the self and national interests only when suppliers and distributors set high standards for themselves."



Doctors conduct first procedure in UAE using donated amniotic membrane for burn victims

Doctors saved the lives of two burn victims and used donated amniotic membrane from a mother that delivered a baby via C-section. This is the first procedure in the UAE where amniotic membrane from the placenta was used to accelerate wound care and regenerate skin tissue.

By Kamakshi Gupta, Dubai Healthcare Authority (DHA)

Both patients became the first in the UAE to undergo amniotic membrane graft.

Two young Afghani nationals were rushed into Rashid Hospital after a gas cylinder defect left both of them with massive flame burns.

Twenty-seven-year-old Hafizulla had 45 per cent total body surface area affected by second-degree superficial and deep burns. His cousin, 20-year-old Khayal Mohammed had 30 per cent burns. Both were in a critical condition.

A multidisciplinary team of doctors from the hospital and the Burns unit of the hospital carried

out several procedures to stabilise them.

Few days later, both patients became the first in the UAE to undergo amniotic membrane graft that was donated by a mother that delivered her baby via C-section at Latifa Hospital for Women and Children. This is the first procedure in the UAE where amniotic membrane from the placenta is used to accelerate wound care and regenerate skin tissue.

Dr. Fahd Baslaib, CEO of Rashid Hospital at the DHA said, "Advances in patient care and providing

the highest quality of medical services is a priority. The Burns unit at the hospital has continued to expand its specialised services over the last few years and we are proud of this achievement that paves the way for advanced burn and wound care thereby providing patients with better pain management and accelerated recovery.”

Generally, in cases of burns, skin grafting is the procedure performed.

Amniotic membrane graft is gaining popularity in burn and wound care due to the many benefits associated with it.

Only a pregnant woman that undergoes a C-section delivery can donate the amniotic membrane, as it is a sterile environment.

The amniotic membrane surrounds the placenta and protects the developing foetus in utero and separates mother and foetus. At birth, the placenta separates from the wall of the uterus and is expelled from the body. The mother and child no longer require the placenta to facilitate nutrient transport and pregnancy after birth.

Dr. Muna Tahlak, CEO of Latifa Hospital for Women and Children at the DHA said, “Placental tissues are increasingly being used in wound care and management use thanks to its promising results. We are keen to further develop the use of amniotic membrane in burn and wound care.”

While Dr. Marwan Al Zarouni, Head of the Burns and Plastic Surgery Unit at Rashid Hospital, added, “Both the patients were the right candidates for this procedure as they are young, and the wounds were clean. We contacted Latifa Hospital for Women and Children for a donor for the amniotic membrane.”

Doctors from the Burns unit were present in Latifa Hospital for Women and Children and immediately after the birth of the baby; the discarded placenta was used to obtain the amniotic membrane. Doctors disinfected the membrane, which is a thin film and needs precise technique to collect it. The membrane was cut into strips, disinfected and stored in sterile containers and was kept in a medical refrigerator.

Prior to the amniotic membrane graft, doctors from the Burns unit carried out a second round of cleaning and removal of dead skin from the recipient areas.

On June 26, the amniotic membrane graft procedure was conducted on Hafizulla. Both his legs had deep burns and those areas were selected for the graft.

On June 30, the second patient, Khayal Mohammed, underwent the procedure for his chest and upper arms.

Al Zarouni said, “The amniotic membrane was

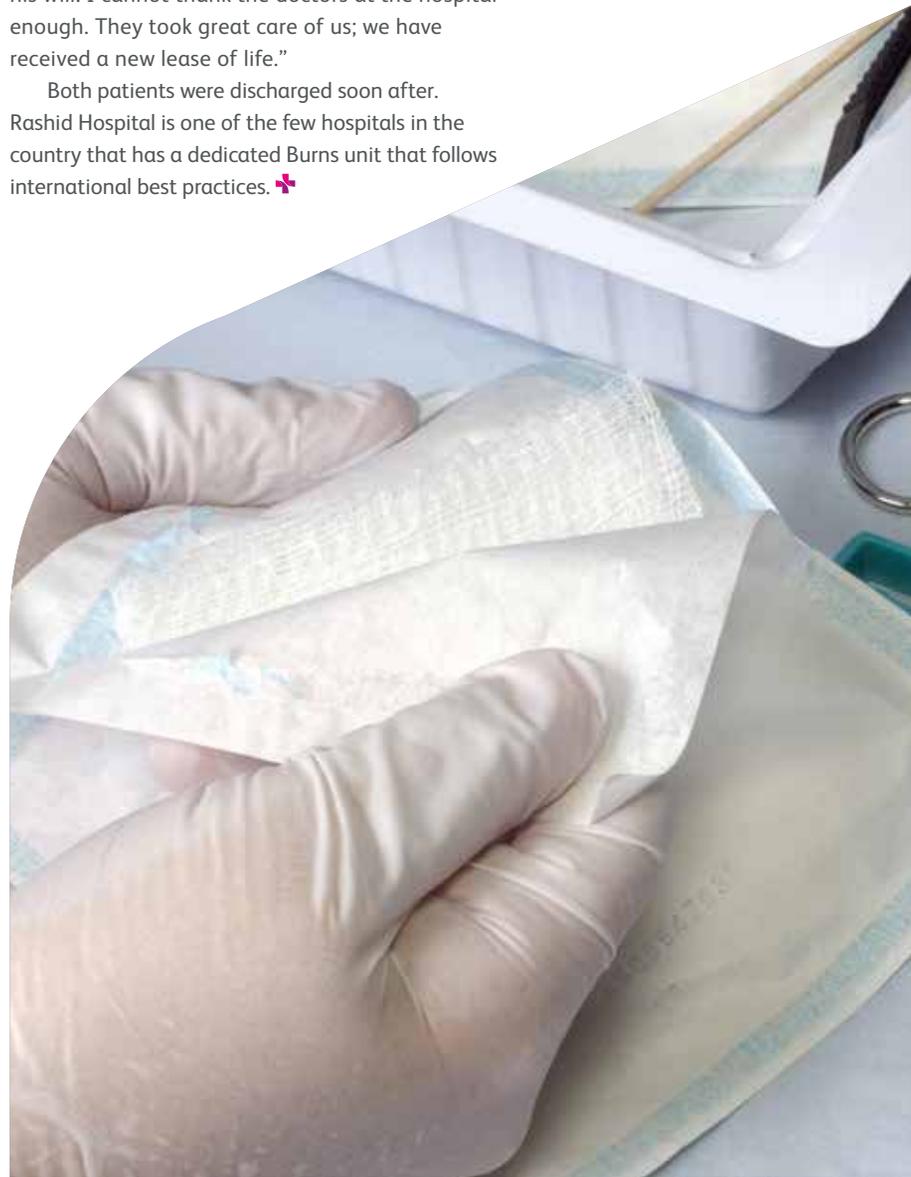
used instead of skin grafting in deep burn areas. We had sufficient membrane to cover these areas for both patients. Since membrane can only be stored for 14 days, we had to discard the rest. The areas where the membrane was grafted showed faster healing.

“There are many benefits of using amniotic membrane. It helps in pain management, which is critical for patients with burns and deep wounds. If it matches genetically, it becomes part of the body or else it does the work of pain management, increases and enhances the wound healing process and then it falls off. The membrane is rich in nutrients, reduces inflammation, has antibacterial properties, is non-immunogenic (will not be seen as foreign material) and it reduces scar tissue formation. All these properties make it ideal to promote wound healing.”

Hafizulla said, “I lost consciousness by the time I was admitted. It was just terrible; we were in so much pain. When I woke up, I realised I was in the hospital. I prayed and left it all to Allah, to his will. I cannot thank the doctors at the hospital enough. They took great care of us; we have received a new lease of life.”

Both patients were discharged soon after. Rashid Hospital is one of the few hospitals in the country that has a dedicated Burns unit that follows international best practices. ✦

There are many benefits of using amniotic membrane. It helps in pain management, which is critical for patients with burns and deep wounds.



The rise of eSports medicine

With the rampant propagation of eSports, the health and fitness of this new brand of athletes cannot be ignored anymore.

By **Dr. Kirill Micallef Stafrace** MD (Melit.), MSc Sports Med. (Lond.), PgDip MSK Ultrasound (UEL) FFSEM (UK), FFSEM (Ire.), FFIMS (Inter.), EFSM(EU), Sports and Exercise Medicine Consultant, Mater Dei Hospital Malta; Chairman Medical Commission Maltese Olympic Committee and **Prof George G. Buttigieg** KM, MD, MRCP(Eng.), MRCS (Lond.), Dip. FP, MA (Melit.), FRCOG, FRCPI, FRCP Ed., Visiting Professor in Obstetrics and Gynaecology, Plovdiv Medical University, Bulgaria, Visiting Professor in Legal Medicine, Department of Biology, School of Pharmacy, University of Rome, Tor Vergata


The global eSport revenue was calculated at US\$906 million with US\$1.4 billion being the projected 2020 figure.

eSport growth has been steady for the past decade with a projected over 200 million enthusiasts for 2019 and an audience of over 650 million projected for 2022. These numbers surpass by far the majority of traditional sports. As always, where there is participation, money follows closely and in 2018 the global eSport revenue was calculated at US\$906 million with US\$1.4 billion being the projected 2020 figure.



But what is eSports?

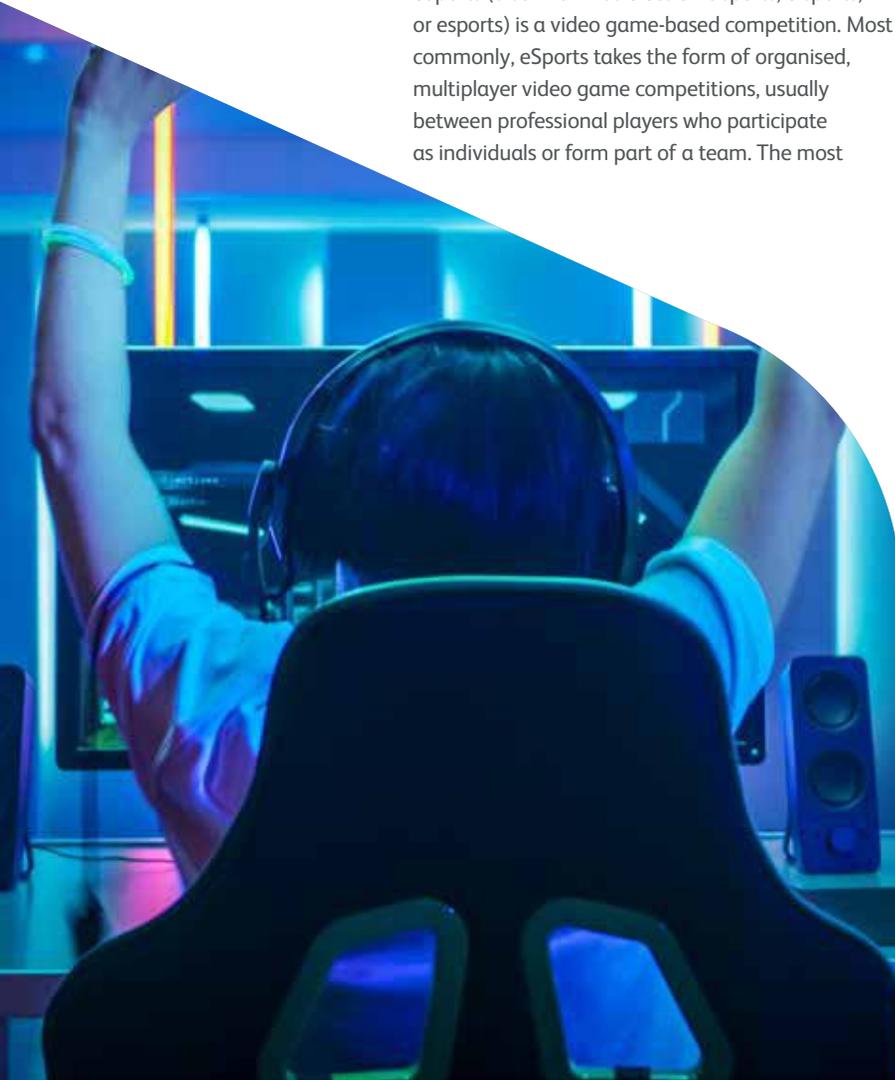
eSports (also known as electronic sports, e-sports, or esports) is a video game-based competition. Most commonly, eSports takes the form of organised, multiplayer video game competitions, usually between professional players who participate as individuals or form part of a team. The most

popular video game genres associated with eSports are first person shooter, multiplayer online battle arena, fighting, digital collectable card games, battle royale games, and real time strategy. Popular eSports games include League of Legends, Counter-Strike, Call of Duty, Rainbow Six Siege, Street Fighter, Fortnite and StarCraft, among many others. Tournaments provide live broadcasts of the competition and prize money to competitors. To give you a perspective of the scope of the phenomenon that is eSports, the teenager that won the 2019 Fortnite World Cup went home with a US\$3 million prize money, which is slightly more than Wimbledon (US\$2.78 million), but significantly more than the Tour de France winner (US\$570,000).

Colleges in the U.S. and South Korea are creating athlete bursaries for eSport practitioners and some even classify them as traditional athletes. Even the International Olympic Committee, on October 28, 2017, accepted that eSport is a sporting activity.

Competitive eSport health issues

Health is at the core of all sports and eSports is no exception. This sport requires a certain type of player with a particular skill set. Professional eSport players can undertake up to 400 movements on the keyboard and mouse per minute (amateur players approx. 40/50) and in league level competitions, the heart rate of a player can be as high as 160-180 bpm. Various authors have quoted that on average an eSport player can practice from 5 to 10 hours a day (although not all of this will be factual game playing since strategy and tactics are also studied) prior to competitions and that the cortisol levels during competition is comparable to that found in automotive race drivers. Obviously, to attain this level of skills, one is at risk of developing health issues. In a very recent and interesting paper by DiFrancesco-Donoghue J et al, among the eSport players surveyed, 70 per cent reported hand pain, 59 per cent back or neck pain, 64 per cent wrist pain and 48 per cent reported eye fatigue. Besides these, one cannot forget



the mental health issues of anxiety, depression and game addiction as well as the abuse of stimulants and energy drinks and the outright poor health lifestyle of many a player.

Before eSports is formally recognised as a sport by the national sporting authorities, and hence subject to certain health and safety regulations, we will be facing a rush of overuse injuries, mental health issues and poor lifestyle choices by all the practitioners. As healthcare providers it is our duty to step in and offer appropriate services to eSport athletes, starting from appropriate health screening prior to competitions, to competition medical cover and the support of a multidisciplinary healthcare team throughout the year.

Way forward

We must accept eSports is here to stay and it is our duty to educate all stakeholders about the health and fitness issues surrounding eSports – it is not only about addiction. In this way we can create health structures to cater for this new sport and the practicing athletes. Figure 1 relates to a multidisciplinary healthcare model of eSports athletes, that is based on the Sports and Exercise Medicine services offered to traditional sports, which has been adapted to cater for the particular issues found in this unique sport, namely general lifestyle, upper limb and trunk overload,

Dr. Micallef Stafrace will be sharing opening remarks, moderate a session and speak on “eSports Medicine” on January 30, day two of the Physical Medicine, Rehabilitation and Sports Medicine Conference, at Arab Health 2020 Exhibition and Congress.

ophthalmic and psychiatric/psychology challenges.

We also have to cater for the particular fitness of the eSport athlete, who must not only be specifically fit for eSports but also healthy.

Hence an eSport athlete health service centre must include the following:

- Nutrition and Dietetics including nutritional ergogenic aids and body composition evaluations
- Exercise testing
- Exercise prescription including eSport performance enhancement
- Injury prevention and management programmes
- Mental and behavioural management
- Physiotherapy and Occupational Therapy services
- General medical evaluations including pre-competition and annual health screening
- Certification/Education for all eSport healthcare providers.

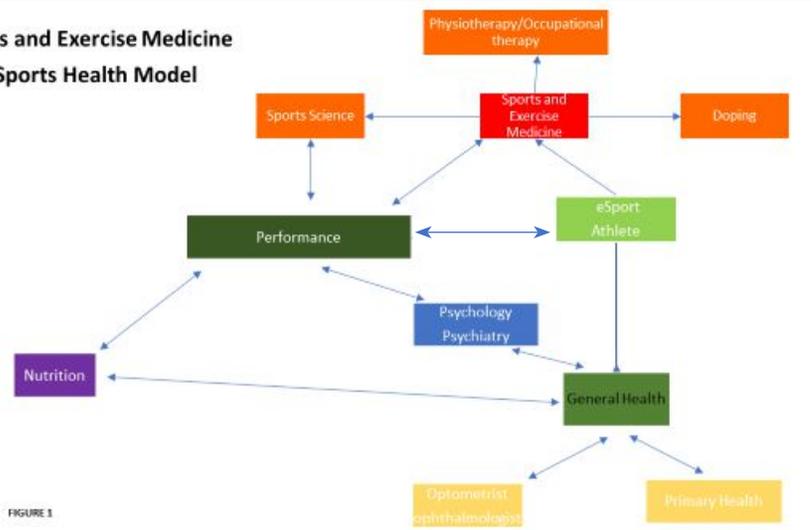
Conclusion

Whatever our personal views on eSports, we have to accept that it is here to stay since the phenomenal commercial and audience growth just cannot be ignored anymore. The time has come that we as healthcare providers arm ourselves with the knowledge required to manage an eSport athlete and take the opportunity to educate the stakeholders on how best to achieve sporting results in a safe and healthy manner. Traditional sports and the concomitant ancillary healthcare services took centuries to develop. To keep up with the rapid growth of eSports we really have to get our act together! ✚

References available on request.

Colleges in the U.S. and South Korea are creating athlete bursaries for eSport practitioners and some even classify them as traditional athletes.

**Sports and Exercise Medicine
eSports Health Model**





Patients in Middle East can participate in clinical trial for brain cancer treatment

Consultant neurosurgeons *Professor Keyoumars Ashkan, Ranj Bhangoo* and consultant neuro-oncologist *Dr. Matthew Williams* at The London Clinic independent hospital and charity, explain why they believe this new treatment technology can extend the lives of people affected with glioblastoma multiforme, an aggressive form of brain cancer with poor survival rates.

The approach has been demonstrated to be effective with breast and colorectal cancers.

The 'INTRAGO 2' phase three clinical trial is taking place in multiple global locations including London with the aim of testing the novel new technology called intra-operative radiotherapy (IORT) for brain cancer.

This offers surgeons the ability to deliver a high and localised dose of radiotherapy to a brain tumour

bed during a patient's surgery. We believe that an IORT boost in addition to standard treatment can improve survival. The approach has been demonstrated to be effective with breast and colorectal cancers and we are optimistic that this new technique can help many people with this aggressive form of brain cancer called glioblastoma multiforme (GBM).

Treating brain cancer

GBM is the most deadly and common type of primary malignant brain tumour.

Life expectancy was nine to 12 months post-diagnosis when we started our careers in the 1990s.

This prognosis has improved but there is still a clear need for new treatments. The problem is that brain cancers are uncommon, accounting for only one to two per cent of all cancers, so funding hasn't been a high priority.

One of the reasons why GBM tumours are so difficult to treat is that they are rapidly growing. Within one to three months, the number of cells in a GBM tumour could have already doubled.

In standard care for GBM outside of this clinical trial, the patient will undergo surgery and then must wait a period of time before starting additional (or adjuvant) therapy such as external beam radiotherapy and chemotherapy.

The delay is because the patient needs time to heal but also time is required to prepare the radiotherapy treatment. During this delay any microscopic remnant disease left behind after surgery will have already started to re-populate. The advantage of IORT is that it may be able to bridge the gap between surgery and standard additional treatment.

IORT works by delivering X-rays through a miniaturised device into the tumour cavity while the patient is still undergoing surgery. The low energy x-rays treat only the tumour bed to sterilise any microscopic tumour cells.

The pragmatic approach of delivering an upfront radiotherapy dose to sterilise the tumour bed avoids all the target delineation and localisation difficulties, which we face on a daily basis using external beam radiotherapy.

It's anticipated that this additional dose of IORT will help delay the tumour growing back (called local recurrence) and extend the life of patients who currently have a poor prognosis. A randomised controlled clinical trial called INTRAGO 2 has been established to answer this question.

Clinical research progress

In this clinical trial, half of the patients will receive standard care and the other half will receive standard care with an additional IORT boost. This is a new technique and there were important questions to answer before launching this clinical trial to prove if an IORT boost offers benefit over standard care.

Namely the question of, if radiotherapy is delivered during surgery, how much should we deliver and what is safe to deliver? In theory we

want to deliver as much dose as possible but there are limiting factors – the impact of the dose to sensitive brain structures and also to avoid tissue necrosis.

For those who do not receive IORT in the clinical trial, an interesting and consistent fact with all clinical trial/studies of brain tumour surgery is that all patients, whether they are in the control set or the treatment set, do better than patients who are not in the study.

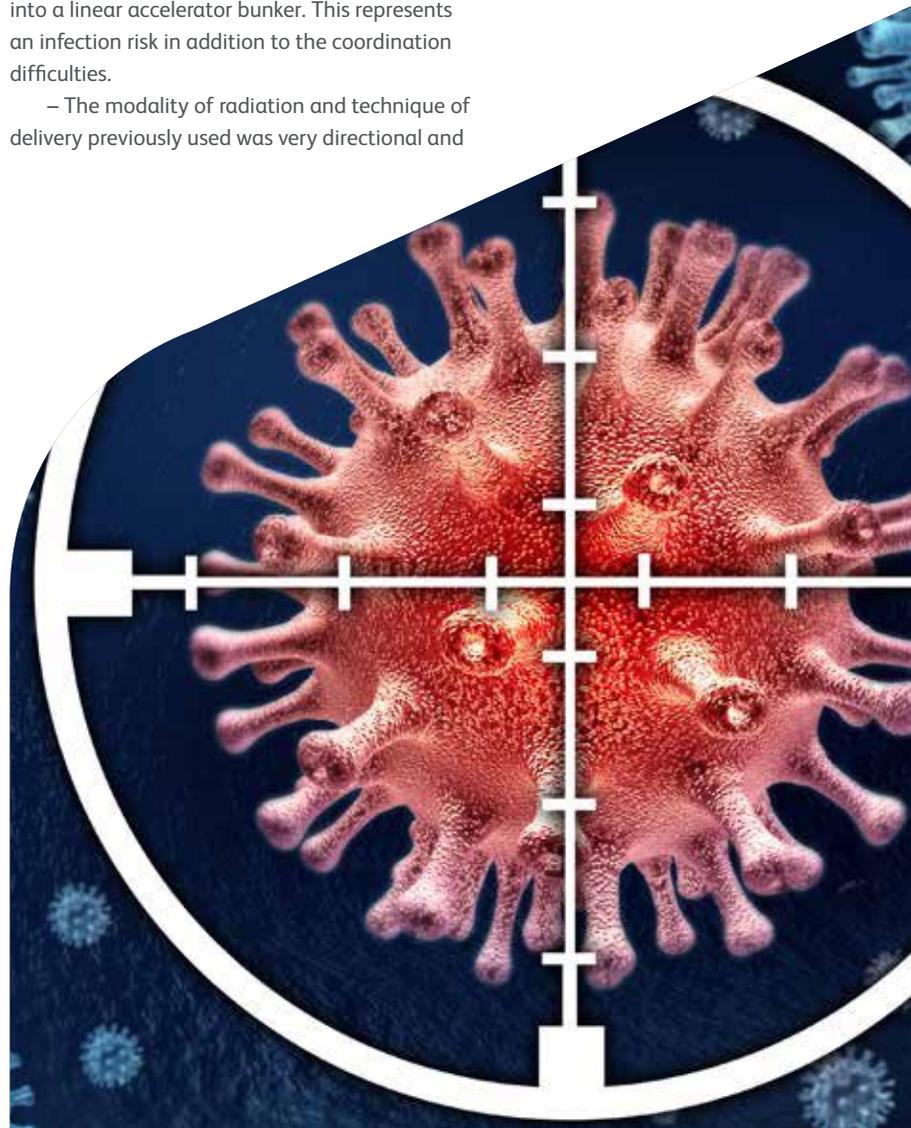
The original INTRAGO study recruited a small cohort of patients to investigate the optimal dose to delivery during surgery. The delivered dose was escalated to three different levels and actually none of the patients reached any pre-defined toxicity levels that were concerning.

There have been attempts to introduce IORT for brain indications dating back into the early 1980s. Results have been encouraging by a number of centres, particularly in Spain and Japan. Despite this both these studies suffered from two major technical challenges:

- To deliver radiotherapy, patients needed to be transferred out of the operating theatre and into a linear accelerator bunker. This represents an infection risk in addition to the coordination difficulties.
- The modality of radiation and technique of delivery previously used was very directional and



Ranj Bhangoo and
Professor Keyoumars
Ashkan



The advantage of IORT is that it may be able to bridge the gap between surgery and standard additional treatment.

resulted in the poor coverage of some tumour sites.

The 'INTRABEAM' system – a mobile miniaturised X-ray therapy unit which is not widely available – addresses these areas and enables the neurosurgeons to successfully deliver IORT during surgery. This was originally developed for treating metastatic brain tumours before it gained fame in a one-shot radiotherapy solution to treat breast cancer.

There is no reason why this system cannot be used from head to toe to treat different cancer. Future technologies such as robotic-assisted surgery, virtual reality and in-room 3D surgical imaging can all be integrated with IORT to provide a versatile treatment to the radiotherapy canon in the fight against cancers.

The original brain technique involved using a single needle shaped applicator instead of spheres and was implanted into a metastatic brain tumour (not GBMs) prior to surgical resection. Although the treatment showed good results, the popularity of stereotactic radiosurgery (performed on linear accelerators) prevented widespread uptake.

The clinical trial is likely to conclude in 2021 and success will be to promote the use of IORT as

a safe and beneficial treatment that could become the gold standard in treatment for GBM.

A call for candidates

The clinical trial requires the patient to have had no previous radiotherapy or chemotherapy to treat their disease. So, it is imperative that if a patient is suspected to have a GBM that they get referred as soon as possible to be eligible for the trial. It is possible that if the patient has already undergone surgery and there is an indication for further surgery (for example, a partial resection was achieved) then, these patients may be eligible. It is imperative that the patients are referred early for treatment without already having any treatment. Early referral will best help the outcome for the patient. ✚

Clinicians who wish to put people forward for the clinical trial can contact enquiries@thelondonclinic.co.uk. Candidates must be aged 18 or older and younger than 80 and must not have had previous cranial radiotherapy.

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Combating document fraud

By Deepa Narwani, Editor



René Seifert

Healthcare fraud and abuse cases cost the industry billions of dollars a year. Without the right processes in place to detect and prevent fraudulent activities, healthcare organisations could face an investigation that could impact revenue as well as reputation.

One of the most common fraud cases is the submission of counterfeit documents. Often, misrepresented information is received from healthcare workers regarding their employment history, especially duration, position and type of institution stated in their work experience, as well as false academic credentials. In the healthcare industry, where ethics, skill and experience are of utmost importance, fraud has a greater impact on the society at large. An unqualified healthcare professional can cost lives, and malpractice may also lead to a loss of credibility for all the parties involved.

A tool that can help combat these issues is TrueProfile.io, a platform that provides document verification for diplomas, employers' references, licenses and other trust-based objects from its issuing source. It puts the individual in control of safeguarding their data and allowing it to be shared in several ways with whomever they choose, says René Seifert, Chief

Digital Officer at The DataFlow Group.

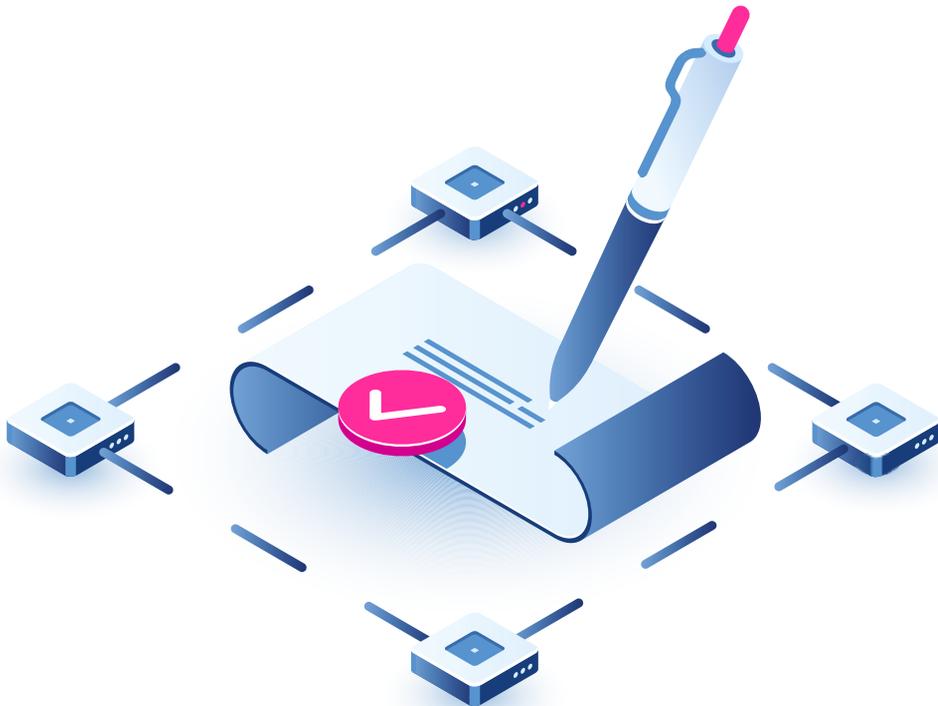
Seifert shares: "The company's goal is to enable people to work in one country but also safeguard the country's communities. With the platform, any individual can buy the verification of their diploma and own it forever. It would empower them to become a trusted candidate when they apply for a job because it will get accepted by any third party and they would immediately see the applicant as a trusted candidate, as the documents are legit."

Majority of the people that are screened are from the healthcare industry, which includes doctors, nurses, laboratory professionals, says Seifert. These individuals are utilising this platform to become credible candidates when it comes to moving to the UAE or any other country in the GCC.

"We realised that TrueProfile.io is also a great tool for companies to have their candidates verified," he says. "The problem in Asia is that people know about document fraud and whenever somebody changes their job, every time the background check kicks in. You have the same documents being verified over and over again. When a document is positively verified, we issue a TrueProof and a person can have multiple of these and carry this as their portfolio throughout their career. Even in a scenario where a company is paying for verification, the applicant is able and allowed to keep the verification of the result."

The platform utilises Ethereum Blockchain and every positively verified document is stored there and will be available for third party checks. Some of the users of the platform include an international NGO that is using this service from the employer side. Moreover, the Missouri State Board of Nursing in the U.S. are utilising this service to screen the pipeline of international nurses coming into the state.

He concludes: "We are also able to connect with LinkedIn. So, if you are a doctor and have a TrueProof you can share a link of it on the professional networking website. Therefore, recruiters viewing a candidate's profile on LinkedIn can verify and compare what is on TrueProof. We recognise the threat and want to offer our unique capabilities to the industry." ✦





Kenya's healthcare system embraces tech

By Tony Wood, Managing Director, MYDAWA

The traditional Kenyan healthcare system as we knew it entailed seeing a traditional healer, herbalist or spiritualist for ailments. If an expectant woman was ready to give birth, then a birth attendant or in modern language a midwife would assist the woman have their baby at home. These people were within reach in the community or villages and would often go to the patient's home to attend to them.

In the 1970s, contemporary western medicine was adopted through the influence of the World Health Organization (WHO) whose objective was to promote accessible primary care by integrating western medicine with the traditional medicine.

Today, the Kenyan Healthcare system operates within three sub-systems namely: the Public Sector that includes public hospitals and clinics in the country, the Commercial Private Sector that includes all private hospitals, clinics and pharmacies

and the Faith Based Organisations (FBOs) that include clinics and hospitals that are sponsored and run by the church.

Situation on-ground

With an increase in population, there is a growing demand and need for quality and affordable healthcare services in the country. There is also a growing concern of an increase in the disease burden especially the Non-Communicable diseases (NCDs), cardiovascular diseases and cancers, which are all attributed to lifestyle changes. In this regard, the government is scaling up efforts to increase coverage in terms of access to healthcare as well as efforts to deal with the diseases through preventative interventions and education. Additionally, the health function has since been devolved and is also part of the President's Big Four Agenda.

Kenya is known as one of the early adopters and front runners of technology and innovative ICT solutions.

With only one out of every five Kenyans having any form of insurance, along with the spiralling costs of healthcare, and the inequality in the healthcare system, the need for solutions that can fix the ailing health sector is nothing short of urgent.

Enter technology

Kenya is known as one of the early adopters and front runners of technology and innovative ICT solutions. With one of the highest mobile Internet penetrations at 91 per cent compared to Africa's 80 per cent penetration and the Internet penetration currently at 84 per cent, Kenya competes very highly with the rest of the world. This is an immense opportunity to leverage in order to create a value-based system that ensures healthcare is affordable, of highest quality, patient-centric and convenient. It is under this backdrop that the first online health platform MYDAWA has been built and is operating on with the main objective being promoting better health outcomes for all.

The company is anchored on four pillars namely; privacy for the customers as products have a tamper proof seal, convenience through its free delivery of medication and other health and wellness products at no extra cost, affordability as a result of cutting the supply chain by purchasing products direct from the manufacturer, which also ensures quality of medication. To also ensure quality, MYDAWA has put in place a unique authentication solution that secures all medicine packs at the production line with tamper-proof seals complete with an authentication code. The customer can scratch off to reveal and send a short code to verify whether the product is genuine.

The MYDAWA solution is beneficial to consumers as they gain the advantage of having increased transparency, convenience and affordability. In addition, it ensures better pharmacovigilance as it tackles the issue of counterfeit drugs/products in the market since the entire supply chain process is tracked and one has the option of authenticating the products.

With the objective of leveraging on technology to accelerate access to Universal Healthcare, MYDAWA has employed the use of Pharmaceutical Technologists (Pharmtechs) who are tasked with delivering medication at the patients' doorstep. The Pharmtechs also provide counselling services and answer any questions the patient may have on their medication or illness. For patients that suffer from chronic illnesses, their prescriptions can be refilled in time every month or quarter also acting as a reminder to the patient. This increases medication adherence levels (taking all medications correctly)

as they are also able to deliver medication that is sorted well, and the patient can get further instruction on how best to take the medication.

To further ease the process for MYDAWA customers, a partnership was formed with an innovative payment processing solutions provider iPay Limited, which allows customers to pay for their prescription, health and wellness products through loyalty points, Mastercard, VISA, MPESA and other mobile money platforms and even directly from your bank account. The partnership with iPay also allows customers to make easy, fast and convenient online and offline payments from one account. This is a move meant to ensure that through leveraging of the fintech solutions, today's tech savvy and sophisticated customer is catered for. It also ensures that the customer gets positive, meaningful and engaging experiences with the platform all at no extra cost. It also greatly impacts accessibility and affordability aspects of healthcare through innovation.

MYDAWA has leveraged on innovative solutions that impact today's value conscious consumer ensuring that all care given is patient-centric, thereby increasing affordability, access and quality of healthcare. Additionally, through the increase in transparency, convenience and affordability, there is better pharmacovigilance as it tackles the issue of counterfeit drugs/products in the market.

The MYDAWA solution fits into the President's Big Four Agenda and the Universal Health Coverage (UHC) agenda to be achieved by 2020.

MYDAWA recently became the first online pharmacy in Africa and part of the top 4 per cent globally to earn the LegitScript certification that verifies Internet operated pharmacies as safe, credible and trustworthy. In 2018, the Kenya Pharmacy and Poisons Board (PPB) granted its parent firm ION Kenya; that operates the MYDAWA brand, the first ever Retail License for an e-retailing pharmacy in Kenya. The company has also just secured a US\$3 million funding from Africa Healthcare Master Fund to fuel its expansion in the country. ✚

Through the increase in transparency, convenience and affordability, there is better pharmacovigilance.



Overcoming roadblocks to digital disruption

By J. Bryan Bennett, Executive Director, Healthcare Center of Excellence

An organisation has to first make sure they use a proper selection process. Not every solution will work for every situation.

Many healthcare organisations are on the journey to digital disruption. Unfortunately, a lot of them will have a difficult time reaching it.

Most organisations are just in the beginning stages, while some are still in the starting blocks. Additionally, there are many internal and external issues that may delay or stall the process. Here, we will discuss some of those 'stumbling blocks' and offer suggestions on how to overcome them.

The three continuum's an organisation needs to address if it is going to digitally transform are: data/technology, people/organisation and process/workflow. If they do, they will have a better chance of success than those addressing this as purely a data or technology issue. In spite of that, there are still some major stumbling blocks that will impact the organisation's success. These will each be addressed by continuum.

Data/Technology

This is the continuum that gets the most attention. Most organisations have installed an Electronic Health Record (EHR) system. For many, the EHR alone has become a stumbling block.

There have been delays on the part of the organisation or the vendor that has cost millions of dollars in implementation costs and/or stimulus

incentive money. Recently, articles have been published that discuss how Chief Information Officers (CIOs) have been terminated for buying a very popular EHR with a good reputation. Unfortunately, the real reason those CIOs were terminated was not because they chose this EHR solution but because they chose the wrong solution for their organisation and/or didn't have the right resources to implement the solution, which led to extensive cost overruns.

To overcome this stumbling block, the organisation has to first make sure they use a proper selection process. Not every solution will work for every situation. Second, they have to make sure they have the right resources to implement the solution. This will mean making a hard assessment of the staff's capabilities to implement and customise the solution and/or determine if staff augmentation needs to be included in the budget. Third, they have to make sure they use proper project management methodologies. Without this, the implementation could spin out of control resulting in missed deadlines and exceeded budgets.

An area that is out of the organisation's control at this time is the lack of mainstream analytical tools. Most healthcare analytical tools are revenue cycle management focused, others are custom made or are being built into various EHR solutions. If your organisation does not have





one of the solutions with built-in analytics or can't afford custom analytics, you could miss out on the real benefits of being data-enabled with the needed real-time decision support tools.

Process/Workflow

This continuum deals with the workflow of how the data is captured and managed. The biggest stumbling block on this continuum is gaining accurate data capture throughout the healthcare organisation network. Some workflows may accurately capture data only some of the time when it needs to be accurately captured 100 per cent of the time. Capture rates can vary by unit, hospital unit or hospital network. Some of this is addressed by the 'People' continuum stumbling block to follow.

This stumbling block is primarily overcome by utilising the best workflow for your organisation. When a software solution is purchased, some will follow your current workflow, some will force a workflow change to fit the solution, while the best will be flexible enough to incorporate your workflows into the industry best practices to maximise efficiencies.

People/Organisation

Although the resistance to using an EHR by many in the provider community has declined, some have found many ways to keep from having to use the technology, including continuing to make verbal or telephone orders for the nurses to enter. To overcome this stumbling block, the organisation has to help the providers embrace the change. This is difficult because we are making a change to an entire industry in a short amount of time. Telling them to embrace change is easy to say but difficult for most people to do.

To overcome this stumbling block, the organisation has to manage the physician staff's expectations. Physicians should be included in the EHR decision making and implementation planning process. The organisation should also identify champions who naturally embrace the change and who will help drive the implementation amongst their peers. When an organisation's physician champion hears a colleague, who is not completely on board complaining about the solution, they could help by providing positive and/or correct information. Lastly, make the physicians part of the ongoing process through recognition for usage and allowable incentives, for instance tracking and reporting on the top users of the solution.

Next steps

To implement these strategies is straightforward but requires a special skillset to manage. You need a good strategist, technologist, project manager, human behaviour specialist and communicator all in one.

First, you will need to perform or have someone perform an assessment of where your organisation is on each continuum. There is more to the continuums than has been covered here. Next, you will need to put a plan in place to advance your organisation along the continuums recognising the fact that there will be stumbling blocks that will need to be addressed. Lastly, follow your implementation plan looking forward to where you need to be while looking back at where you've been with an honest assessment of your capabilities and success.

Digital transformation is a journey. Treat it as such and you'll have a successful and adaptable implementation. ✚

The organisation should also identify champions who embrace the change and who will help drive the implementation amongst their peers.

UAE Ministry of Health: Leading on automation in outpatient medication dispensing

By Dr. Abdalla Ahmed Alnaqbi, MD, UAE, Ministry of Health and Prevention, Dr. Amin El-Shamy PhD researcher in Health Economics, MSc in Health Economics, MPA, B Pharm, Health Technology Assessment Office, UAE, Ministry of Health and Prevention, and James Waterson. RN, M.Med.Ed. Medication Safety Manager, Medical Affairs, Becton Dickinson, Eastern Europe, Middle East and Africa

The automated pharmacy served 9.4 per cent more patients than the traditional pharmacy in this period and dispensed 11.8 per cent more prescriptions.

An article submitted to the American Journal of Hospital Pharmacy long ago in 1967 identified how 'outpatient visits are increasing at a rapid rate and administrative adjustments will be needed to handle larger outpatient prescription volumes. The author laid out how, 'new methods and procedures must be developed to reduce patient waiting time, provide the physician and the pharmacist with information pertinent to drug therapy and increase productivity through the elimination of administrative detail, which can be handled better through automation'.

The situation remains not dissimilar in 2019, some 52 years later. Outpatient visits continue to rise year-on-year, with increasingly complex patients being handled by these departments. Globally there has been a drive towards automation in healthcare to help handle the constantly increasing workload, and to allow for the redeployment of our limited numbers of highly qualified staff away from routine tasks and towards

more constructive engagement with patients.

There is also considerable political and financial pressure on healthcare decision makers to optimise the utilisation of resources and to improve services for patients, whilst ensuring that any automation and technology that is deployed definitively adds quantifiable health-economic value. The size of any initial investment in health technology and automation is inevitably significant and requires substantial decisions to be taken about funding, the need for change, and required re-engineering of a facility's infrastructure and established hospital and department procedures, policies and workflows.

The remit of the of the Health Technology Assessment Office to the UAE Ministry of Health and Prevention (MOHAP) is to act as a guide on the introduction of new Health Technology to MOHAP in an efficient, equitable, transparent and explicit manner. The priority of the office is the welfare of the UAE's population and to act always with the highest economic, ethical, legal, social and organisational standards regarding patient care.

With the above in mind, the Health Technology Assessment Office embarked on a two-site head-to-head comparison between an automated and a 'traditional' outpatient pharmacy to assess possible cost-benefits of extending pharmacy automation across multiple MOHAP outpatient facilities in the UAE. Output from an automated outpatient pharmacy and a conventionally managed outpatient pharmacy was collected over 12 months. During this period 11,646 patients were served by the traditional pharmacy with 33,782 prescriptions and 12,739 patients were served by the automated pharmacy with 37,754 prescriptions (Table 1).

Metrics collected from both pharmacies were average time from prescription order to dispensing, completeness of medications dispensed versus prescriptions, expired inventory, average inventory stock levels, turnaround of unused or uncollected medications into circulation, number of mislabelling or prescription discrepancy events caught, time



taken in completing regular inventory, and percentage of missing medications identified.

The study took place over 12 months in 2018. The automated pharmacy served 9.4 per cent more patients than the traditional pharmacy in this period and dispensed 11.8 per cent more prescriptions. Overall the automated pharmacy showed a 28.8 per cent lead over the traditional unit in correctly dispensed prescriptions. The time to fill a received prescription was also an impressive 95.7 per cent less than in the traditional pharmacy. Maximum turnaround times for dispensed complete prescriptions was also reduced by 81.4 per cent. The improvement in the number of completely filled prescriptions was perhaps partly due to the increased numbers of individual medication types that the automated pharmacy can store. These increased to 114,262 individual medication types, up 1.3 per cent from the 112,814 held in the traditional pharmacy's storage. This is not an uncommon finding in automated pharmacies; robots are simply better than humans at mundane tasks like constantly calculating the optimum way of stacking and placing medications on shelves, this ensures that more items can be stored without increasing the overall volume of stock. Up to 4,000 medication packs/metre of shelving can be stored by advanced robotic systems. Pharmacy robots even use 'down-time', when they are not dispensing or adding stock, making minute adjustments to existing stock on shelves and cleaning the storage area. An increase in line-item storage without a concurrent growth in stock level overall would generally be responsible for less bound capital, the reduction of expired stock loss, and a higher value to the organisation in the stock held as more prescriptions could be serviced and completed.

When adding stock pharmacy robots can also read expiry dates on drug packages, and thereby reduce waste from out of date medications, and also automatically recognise medications that require refrigeration. Some automated pharmacies have internal refrigerated storage units within them and their entire stock area is temperature controlled.



The large increase in speed of dispensing by the automated pharmacy seen in the head-to-head study is probably due to the nature of 'picking' by the pharmacy robot; rapid barcode identification of ordered medications and multi-picking of up to 8 medication packages per move makes for a speedy pick up and conveyor belts and automated gates leading to spiral chutes can deliver these picked medications directly to the patient service point.

Regular inventory is a labour-heavy task in a manual pharmacy. Automated pharmacies can maintain a consistent inventory count as each of the actions, direct loading into the robotic-managed storage with barcode reading for medication stock-up and automatic item deduction from stock level upon dispensing is under its control. This means that the inventory balance is a constant and dynamic process.

From what has been seen in this head-to-head study, the time savings and accuracy of automated dispensing for outpatients are both impressive. Further efficiencies are perhaps also possible if workflow bottlenecks, such as that between prescription and the commencement of dispensing can be resolved. Studies generally seem to indicate that the fuller the integration between systems such as Computerised Practitioner Order Entry, Electronic Medication Administration Record, and the patient's Electronic Medical Record and automated dispensing systems, the greater the gains for the organisation. ✚

Automated pharmacies can maintain a consistent inventory count.

▼ **Table 1:** 2018 results for each pharmacy.

Measure	Traditional Pharmacy	Automated Pharmacy	Metrics
Patients Served	11,646	12,739	↑ 9.4 %
Prescriptions Filled	33,782	37,754	↑ 11.8 %
Number of SKUs Dispenses	112,814	114,262	↑ 1.3 %
Complete Orders Dispensed	67,079	87,514	↑ 28.8 %
Time to Fill Prescription	25 minutes	01:04 minute	↓ 95.7 %
Dispensing exceeding maximum mandated time.	4,952	931	↓ 81.4 %

Building catheterization labs one at a time

By Dr. Mohammed Rahman, PhD, Senior Regional MES Manager, Medtronic META FZ-LLC, Dubai, UAE



Dr. Mohammed Rahman

At Medtronic, I am responsible for setting-up catheterization labs, hospital theatres where cardiac and vascular surgeons perform tedious procedures for repairing hearts and resolving critical vascular complications. The work is part of Medtronic's Integrated Health Solutions (IHS) business, which was launched six years back as part of Medtronic CEO Omar Ishrak's initiatives to drive Value Based Health Care (VBHC). The IHS concept is inspiring and a novel one that is aimed towards helping healthcare providers enhance access, cost and quality care by transitioning hospital cath labs from a CapEx to OpEx model; whilst allowing hospitals to put more focus on clinical priorities, and less on operational tasks.

As a healthcare technology management (HTM) expert, my work at Medtronic IHS is both challenging and rewarding. From technology planning, to procurement, to management, I lead the Managed Equipment Services (MES) division for Central & Eastern Europe, Middle East, Africa (CEMA) region. MES is a one-stop-shop when it comes to cath lab setup. Whether IHS customers need a state-of-the-art robotic imaging system for a hybrid operating room or a defibrillator for cardiac resuscitation, MES creates meaningful partnerships with hospital teams to deliver comprehensive healthcare technology solutions in the most efficient manner.

In this article, I will try to explain Medtronic's IHS business from a healthcare technology management perspective and highlight the opportunities it brings to the healthcare industry.

Technology solution beyond medical devices

Since its founding in 1949, Medtronic's mission has been to contribute to human welfare by the application of biomedical engineering to alleviate pain, restore health, and extend life. Remarkably, this mission has remained unchanged to this day. At its core, Medtronic focuses on developing life-saving devices and therapies from cardiac pacemakers to diabetes insulin pumps. However, with rapid changes to the global healthcare

landscape, disease complexity, and rising costs, Medtronic as one of the world's largest medical device companies sought solutions to address these critical challenges. Keeping these challenges in mind, the IHS business was formed to provide value creation for healthcare providers and at the same time ensure sustainable growth in the long run for the company.

Medtronic's IHS business is built on four main pillars: Turn-key, Managed Services, Optimisation, and Development. While Optimisation and Development pillars focus on efficiency and growth in healthcare settings, the Turn-key and Managed Services pillars focus on engineering and operational aspects including design, equipping, staffing, and maintenance of cath labs and ancillary spaces. Partnership with healthcare institutions typically ranges between five to 10 years, which allows enough time to create a significant impact and value creation to the healthcare system.

Cath labs are resource-intensive departments that require investments in infrastructure, organisation, processes and technologies. Medtronic's IHS offers a complete solution for cath labs and manage the full spectrum of services. These include maintenance, operations, and sourcing and supplying third party items that are not manufactured by Medtronic. In fact, a bulk of the capital resources required for a cath lab setup, such as imaging systems, patient monitors, cabinets and furniture, are non-Medtronic products. As a result, in addition to delivering Medtronic devices, therapies, and training, IHS assumes the role of a technology solution packager through partnerships with equipment manufacturers, construction firms, and suppliers.

Shaping a modern day catheterization lab

With the advent of multi-modal imaging technology and growth of interventional procedures in multiple subspecialties, the cath lab suite has significantly evolved in the last decade. To deliver full cath lab solution in this intricate environment, Medtronic IHS has developed capability centres

Cath labs are resource-intensive departments that require investments in infrastructure, organisation, processes and technologies.

with multi-disciplinary teams of project managers, architects, HTM professionals, inventory specialists, and operations managers. All these capabilities work coherently to ensure solutions are customised according to hospital needs and are executed to the highest standards.

Like any healthcare setting, building a cath lab starts with planning and assessment. IHS subject matter experts (SME) meet with hospital administration, physicians, clinical staffs and engineers to map the entire patient care pathway, which is aligned with the business model. Depending on the type and complexity of procedures, clinical and infrastructural requirements may vary from one cath lab to another. For example, recent trends in cath lab have been evolving toward the concept of 'hybrid suite' and require a much larger space than a conventional cath lab; they also house a conglomeration of highly sophisticated equipment. IHS SMEs take all these aspects into consideration and develop solutions tailored to the specific needs of both the customer and the market.

Healthcare technology management in managed services

Healthcare technology management (HTM) professionals are an integral part of the hospital team for medical equipment and their life-cycle management. At IHS, HTM professionals in MES provide comprehensive healthcare technology solutions in the cath lab space, much like a clinical or biomedical engineering department renders equipment and their maintenance solutions within a hospital. Thus, HTM professionals play a crucial role in managed services in cath labs, from planning and procurement, to the setting up of maintenance strategies and refurbishment.

HTM professionals in MES engage with the hospital clinical team at an early stage to provide guidance on the latest technology in the market and comparative analysis to ensure equipment investments are aligned with clinical objectives and financial investments. Once capital equipment is selected, they provide procurement support for sourcing equipment at competitive market value. Due to purchasing volume and scalability, Medtronic IHS can leverage OEM relationships for additional savings and support, which are in-turn transferred to customers. Leveraging these services and benefits eases a hospital's burden of complex and expensive technologies, whilst allowing them to concentrate their time and efforts where they can generate more value to their business.

Highest standards and benchmarks

The key advantages of solutions like IHS are increasing revenues, containing costs, and improving quality. Healthcare organisations have access to innovative expertise, resources, and technology that may be either unavailable or commercially not viable to develop internally. With over 350 managed service cath labs across Europe, Middle East and Africa (EMEA), Medtronic IHS does continuous benchmarking, make improvements, and disseminate best practices to achieve the highest standards. This allows for IHS customers to connect and operate across a global network and become centres of excellence by adopting best practices.

Benchmarking data is also critical for enhancing business intelligence for capability centres like MES, as they bring significant value to the healthcare industry. For example, HTM professionals can bridge gaps between hospital end-users and technology manufacturers, and consequently provide key feedback and input to improve their technologies and services. Due to accessibility to large data, they are easily able to analyse various information on technology trends, standards, and financial impacts across different geographical boundaries, which can be invaluable information to healthcare policy makers.

In summary, Medtronic IHS is a promising solution, enabling healthcare organisations to deliver advanced therapies in cardiac care through a partnership model, which had not been available in the past. Through managed services solutions like IHS, healthcare technology manufacturers will play a crucial role in shaping future healthcare delivery. Technology will continue to be the main vehicle for care delivery, and subject matter experts like HTM professionals will be vital in connecting healthcare technology and their manufacturers with patients and end-users. ✦

Healthcare technology manufacturers will play a crucial role in shaping future healthcare delivery.



Examples of state-of-the-art cath labs built in partnerships between Medtronic IHS and healthcare organisations across the region.



Why is software not enough to ensure data collection in the OR?

By Shlomo Matityaho, CEO, LogiTag Medical Solutions

 **By 2026, the healthcare information industry is forecasted to grow by 8.2 per cent.**

 **S**o, you've invested in technology, trained the medical staff, upgraded to an Electronic Health Record (EHR) system, updated the hospital Stock Keeping Unit (SKUs) and still the compliance rate of usage reporting inside the operating room (OR) is low, the reports are inaccurate, the charges are missing, and countless coding errors occur. This means that the hospital has trouble meeting U.S. Food and Drug Administration (FDA) requirements regarding digital updates to the patient's file, its inventory isn't efficiently managed, and it is losing money, a lot of money – needlessly so.

Many hospitals attempt to deal with

these challenges by purchasing supply chain management software. By 2026, the healthcare information industry is forecasted to grow by 8.2 per cent. It seems that wherever we turn, we hear terms like Data Mining, Data Analysis, Big Data. Hospitals utilise advanced software solutions to improve processes, streamline workflow, and optimise resources. Yet while these solutions specialise in data management and analysis procurement processes, they are not suited to the specific needs and work conditions in hospitals, resulting in deficient data collection.

Any effective solution must answer the changing and exclusive needs of operating rooms,

which differ greatly from other work areas.

For instance, the process of dispensing of items is carried out in the OR by the medical staff, which does not specialise in supply management. In many ways, this process diverges from that of other logistics systems, in which the dispensing is done in a dedicated area such as the cashier or in the warehouse, against a receipt or a delivery request.

Another distinguishing factor of OR data collection stems from the structure and uniformity of the barcodes. While in other industries the structure and the contents of the barcode are uniform, giving organisations the ability to rely on the barcodes received from the suppliers, in the medical field the reality is completely different. Hospitals cannot rely on the manufacturer's barcode – it is necessary to attach an internal barcode sticker to the items, creating additional work for the OR staff registering the item into the hospital stock. Add to this the fact that hospitals are increasingly moving toward a consignment model, which requires precise charge capture and a shared management system. These factors taken together raise a pressing need to create OR-tailored supply chain management solutions.

Yet first it is crucial to understand why collecting information in the OR is vital. How does it affect supply chain management and the hospital's cash flow? From this understanding, clarified below, the need to improve the ability to collect operational data as part of the medical procedure, with minimal reliance on the human factor in the OR, will come into focus.

The financial dimension – data integrity is worth money

Gathering information in the OR has enormous economic implications. First and foremost, it gives us the ability to know how much surgical procedures cost. Today, hospitals rely on historical diagnosis-related group (DRG) repositories, which in turn rely on statistical past analyses and general cost studies. Times have changed, technologies have changed – there is no reason to make economic forecasts based on old data.

An average hospital consumes about 5,000 implants and medical devices a month. Although hospitals strive to record each item individually, the level of reporting today is below 60 per cent. In other words, the hospital has up-to-date information only on around half of the implants used. Why is the reporting level so low? Take items such as sewing thread or stampers – though they are present in almost every procedure and can run up costs by US\$200 in some cases, they are not reported at all. In addition, items that cannot be tagged (such as sterile orthopaedic implants – screws, plates, etc.), or

bulk items are often not reported.

Add to this the time spent on coding errors and the need to submit applications for reimbursement from insurance companies or Medicare programmes (which often require applications within 72 hours) and you have a full-fledged recipe for inefficient cost retrieval. Today, there is a whole market of companies that offer this service at a fee, and hospitals share with them the money received from the insurance company and government programmes.

The human dimension – why shouldn't hospitals rely on the medical team to collect the data?

Medical teams' function under often stressful circumstances and focus on treating patients rather than on office work. This, alongside documentation that is carried out manually in notebooks or in complicated ERP programmes, is a formula for error.

Research shows that procurement software and hospitals' information management systems (ERPs) that are advanced and designed for health systems in practice slow down nurses' work even more than manual documentation.

Indeed, human error, including coding errors and lack of reporting, is the main reason for the low compliance rate in the OR. Therefore, no matter how advanced the management software is, if it does not have the right tools to collect the information without involving the medical staff it is not an appropriate solution that can achieve 100 per cent reliability and integrity of data.

The cataloguing dimension – the importance of maintaining an updated and complete item master

The medical staff will rightly claim that even if it adheres to report usage of each item and receives training on logistics software, the software sometimes simply does not recognise the item.

The first step in maintaining an updated item master begins with the consumption of the medical device. The medical staff needs to report the item usually through scanning techniques. If the existing software does not identify the scanned item, the incomplete information needs to be completed from other sources.

Most of the hospitals receive medical implants according to the manufacturer's SKU and then give the implants an internal catalogue number. This SKU does not specify an expiration date, production series, and other essential information about the item since that would require much work and the ability to read multiple manufacturers barcodes. The manufacturer's SKU often changes, items



An average hospital consumes about 5,000 implants and medical devices a month. Although hospitals strive to record each item individually, the level of reporting today is below 60 per cent.





We would probably never hear a patient before surgery asking a nurse to check the implant expiry date, even though it could be a life-threatening case. The patient relies on the hospital. The hospital relies on the medical staff.



age, new suppliers are added, and as a result, the maintenance of the item master becomes one of the hospital's biggest problems, with financial and clinical implications.

The clinical dimension – full documentation in the patient's file equals to patient safety

Generally, patients are oblivious to any logistic processes. We would probably never hear a patient before surgery asking a nurse to check the implant expiry date, even though it could be a life-threatening case. The patient relies on the hospital. The hospital relies on the medical staff.

Occasionally there is a recall, which requires the hospitals and the supplier to locate all items and the patients that use the implants. This is an impossible task when there is no complete listing of all items used and full documentation in the patient's medical file. A thorough process would be terribly time consuming.

Although the importance of the integrity of the information and the synchronisation of the data is essential, unfortunately, the consolidation of such information is not the norm.

The regulatory dimension – Medical Device Reporting (MDR)

Medical Device Reporting (MDR) is the FDA regulatory tool for monitoring the performance of medical devices. When suspicion arises as to the safety of a product, medical organisations must provide critical information such as patient information, date, description of the case involving the medical device, brand information – product code, model number, serial number, expiration date, etc.

Yet in reality, without the consolidation of clinical and logistic information and high documentation compliance by the medical staff, hospitals are unable to provide the above information despite their obligation to do so. This is one of the main factors driving hospitals to purchase information management software.

Most of today's tools rely on technologies that have been adapted to work in the operating room but do not fully address the problems mentioned here. In other words, advanced software does not include advanced data collection in the field. The full solution for consumption reporting and charge capture in the operating room has not yet been formulated.

Solution: Meet the sixth dimension – the digital dimension

The digital dimension is primarily based on a change in perception in the OR – the human is no longer part of data-processing. The solution is fully automated: The medical team does not need to enter any information and is uninvolved in documentation and data management.

In the digital dimension, the data is the goal rather than the means. The hospital must strive for 100 per cent documentation in the OR – from medical devices to a single sewing thread. Technologies that can autonomously collect data from the OR, exist in the world of machine learning.

Machine learning is a subset of computer science and Artificial Intelligence (AI) that refers to statistics and optimisation. The main goal is to handle real-world data for solving a particular problem when conventional computer software is insufficient. One of the capabilities is, for example, the solving of an identification problem that a human expert can solve but is unable to produce specific software because the rules of identification change frequently, just like in the operating room.

AI is not uncommon, and we are already enjoying its services. In the near future, AI processing will be increasingly utilised in the field's end devices, introducing new image processing technologies, OCR, ICR, microphones or even sensors. These technologies can collect, process, and manage the information optimally.

The good news is that the future is in many ways already here. Hospitals are already investing money in comprehensive data collection solutions to help complement their existing ERP systems. Software companies and ERP systems, for their part, are also investing money in developing such solutions. This trend is expected to intensify as more hospitals recognise the benefits of automated data collection. ✚



How mobile has changed the way we care

By Kees Van Lede, Chief Executive Officer – CarePay Africa

In 2018, a gathering of senior officials at the World Economic Forum met in Tianjin, China, to discuss the role of technology in achieving universal health cover. Kenya was picked out as a country where mobile tech had the potential to help the country “leapfrog” the Western world towards healthcare inclusion – just like it did with mobile money helping drive financial inclusion.

Mobile penetration in Kenya is closing in on 100 per cent, with subscription figures hitting 95 per cent earlier this year. The Communications Authority of Kenya has reported that 86 per cent of the Kenyan population now has access to the Internet. The country is the global leader in share of Internet traffic coming from mobile (overtaking Nigeria in 2017), at 83 per cent, largely driven by rapidly increasing smartphone penetration (currently nearly 30 per cent). There is no doubt that the mobile is significantly changing the way we live and care.

Improved access

Internet-connected mobiles have improved access to most of what we need in terms of goods, activities and services. In healthcare this is even more pronounced. Mobiles can be used to transparently identify what care can be accessed and at what price. Patients and medical professionals don’t always need to be in the same location – diagnosis and treatment can increasingly be delivered virtually.

Improved engagement

Across industries, mobiles are increasing customer engagement in programmes, platforms and products. They form a direct line of contact between an organisation and an individual. Outreach can be personalised, based on preferences and secure data collection. This has been transformative – mobiles can reduce complexity in disease and medication management. They can also deliver proactive wellness programmes.

New business models

Mobile data from sensors and devices is opening new opportunities in data management and value-creation. For enterprises, this can mean big data services and for the individual it can mean apps to track relevant personal information.

All the big global technology ‘majors’ have chased the idea of personal health records to help individuals make sense of and effectively use the increasing amounts of information being collected from healthcare institutions and wearable devices connected to mobile phones.

Reduced fraud

The advent of big data has opened the door for fraud management systems. Not only can data be collected in real time, but it can also be cross referenced with other data sources. For example, location data can be correlated with financial transactions. The potential in healthcare is enormous.

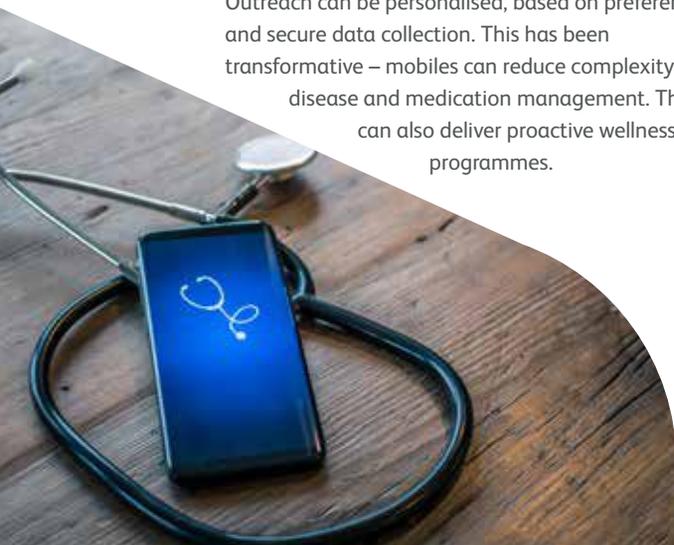
Health insurance penetration across sub-Saharan Africa has remained low, leading to people being forced into poverty through high out of pocket healthcare expenditure. More must be done to offer trusted and transparent products, at a price that individuals can afford. Fraud in the healthcare system must be resolved in order to do this. The mobile offers the ability to be able to tackle this through cross referencing with data sources and validation to prevent fraud.

Improved quality

Information transparency is the key to improving quality. News, reviews and transparent marketplaces, have highlighted quality issues, moved customer sentiment and even resulted in litigation and regulation. Checklists and access to specialist information have changed the way services are delivered.

In healthcare this transformation is of vital importance to patients. Mobiles can help patients find out where they can access quality services. They can help with service safety, such as helping with pill reminders, remote monitoring and sending alerts to healthcare providers. Mobiles are giving a new cadre of healthcare professionals help at the simplest level on treating their patients, but also giving them access to information on some of the most complex healthcare issues. ✚

Patients and medical professionals don’t always need to be in the same location – diagnosis and treatment can increasingly be delivered virtually.



Advancement in instruments and challenges in reprocessing

By S. P. Gaonkar, President – Hospital Sterile Services Association, Mumbai, India and Senior Manager – CSSD, Saifee Hospital, Mumbai, India



Today, the work of the Central Sterile Services Department (CSSD) is a complex operation. Surgical techniques continually evolve, and surgical instruments have kept pace with the age of technology. Surgeons need these kinds of sophisticated instruments to achieve their goal. With the advent and introduction of advanced sterilisers and instruments made out of various materials ranging from the good old stainless steel and titanium to nylon, Teflon, silicon, fibre glass, etc., things have undergone a big change. There is also a constant pressure to speed up the entire process of sterilisation and minimise the amount of turnaround time. This requires highly trained and innovative CSSD professionals who are able to deal with this complex technology and process on a day-to-day scale. Furthermore, with new techniques of surgery evolving, newer surgical instruments also continuously evolve, which requires proper understanding of assembling and subsequently disassembling of these instruments.

Various surgical procedures pertaining to minimally invasive and single incision surgeries have resulted in the introduction of an entirely new breed of surgical instrumentation of different materials as stated above. Surgeons and patients realise the benefits of these advanced surgical procedures such as smaller incisions, which result in smaller scars, reduced tissue trauma, decreased need of blood transfusion, shorter hospitalisation, faster recovery, less post-operative pain, rare occurrence of hernia, and minimise infection rate if these instruments are reprocessed properly.

With this, the entire chain of processing, comprising of handling, disassembling, sorting, transportation, cleaning, lubricating and subsequently assembling and packing, requires a whole new paradigm shift in operations towards final sterilisation and sending it to the operating rooms.

These new breeds of instruments are not only complex by nature but very expensive as well and the hospitals rather than stocking them in multiples prefer a fast turnaround time from the CSSD, which altogether makes things more challenging. The goal of CSSD is to prolong the life of each instrument by proper reprocessing.

This new scenario leads to a highly efficient and coherent way of working from the CSSD professional who not only should have a high degree of understanding of their job but also are quick to adapt and improvise to the newer challenges. It is the duty of the CSSD professionals to ask their workplace about different kinds of instrumentation to adhere and meet the various quality controls, checks and balances and demands from the manufacturers and instruments

and equipment, which come for sterilisation by means of different techniques for e.g., Robotic and Minimal Invasive surgical instruments.

Central sterile professionals, the ultimate experts on instrument reprocessing, need to educate themselves and then teach their customers about the factors that can affect instruments turnaround time. There are two types of factors affecting instrument management. One is direct while the other is indirect. The direct factors are CSSD processes that can be control by CSSD. Indirect factors are under the control of customers and to control it, CSSD staff should work collaboratively with them. These factors are scheduling parallel cases, case preferences, overbooking, low instrument inventory, lack of communication, transportation etc.

Healthcare management need to provide different types of testing devices, material and other equipment, for e.g., lighted magnifying lens for inspection. As these instruments are very delicate, sharp, fragile or insulated, it requires a special kind of container. The instruments need to be processed as early as possible after the procedure. Also, immediately flush narrow lumens after use. Try to keep these instruments in moist condition till processing to avoid drying of protein. Also, protect these instruments in transportation, do not stack instruments, place heavier instrument at the bottom and lighter at top. Keep all scopes and fragile instruments separately and handle carefully. The surgeon should use these instruments for their intended use only.

Failure to process instruments correctly can lead to nosocomial infection or possible patient injuries. These devices create more processing challenges because some of them are fragile like scope, fibre optic cable, and most of them are smaller in size and compact. Some of them are long and narrow lumen.

Devising and constantly changing the process and documenting them in an easily understandable manner should be an ongoing process of updating the SOP (Standard Operating Procedures). The SOP should be dynamic by nature and should be highly standardised.

Today's challenges from users are to do it fast, do it right, keep patient and staff safe. Another challenge is loaner instrument. Most of the time these loaner instruments are received just in time and need immediate processing. To reprocess these devices, high temperature, steam sterilisation as well as low temperature sterilisation is needed in the facility or healthcare centre. Remember no matter how talented the surgeon, surgery cannot be performed without properly cleaned, assembled, tested and functional sterile instruments.

"Man is a tool-using animal... without tools he is nothing, with tools he is all." – Thomas Carlyle (1896) ✚

The goal of CSSD is to prolong the life of each instrument by proper reprocessing.



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Leadership in CSSD unit

By Netra A. Vaidya, Senior Manager, CSSD, P. D. Hinduja National Hospital and Medical Research Centre, Mumbai, India

A leader should constantly upgrade their skills but also train and retrain the staff working in their units.

A leader is one who knows the way, goes the way, and shows the way." A good leader has a futuristic vision and knows how to turn ideas into reality.

The Central Sterile Services Department (CSSD) is considered as the heart of the hospital, as the heart takes impure blood, purifies the same and supplies it to all the organs of the body to function well. CSSD too takes all used material of the patients, sterilises the same, and supply it back to use on another patient. Hence, CSSD is of utmost importance in the hospital set up in controlling Hospital-Acquired Infection (HAI).

The staff working in CSS needs to have a science background that will allow them to understand the principles of killing mechanisms of microbes, the relation between time and temperature that helps sterilise the goods, importance of humidity and many other basic criterion's of sterilisation techniques. Only when a staff understands these sciences and its implications then only can they be performing their job well. A job well done can lead to success that is indicative of no or minimum rates of HAI's.

Therefore, to achieve the best results, CSSD must be led by an efficient leader.

A leader can be efficient only when they possess thorough technical knowledge. As the education qualification of the staff ideally has to be with a science background, it is important that the person leading the department should too possess a degree in science. The leader should have at least 10 to 15 years of experience in the field, as experience is the best teacher.

Manpower challenge

There are many challenges in the field of sterilisation that have to be handled by the leader. The first and foremost challenge is to handle the manpower. Manpower is the biggest source that needs to be handled appropriately, as if not handled well it could cause a lot of problems. No one person can do the job well, it is a team that has to work not just the individual. Therefore, the leader has to keep the team spirit high at all times. This will be done by developing trust amongst teammates. Never compromise your team's trust in you by assigning a job that is well beyond their capability level. If the job is not done well then you will lose trust with the staff

and with customers too, which is very difficult to gain.

Communication is another important aspect of leadership, as one can't expect the team to understand and execute a task without clear communication. To have clear communication, the leader must have a clear vision or goal. That is why it is stated that before you initiate any action you should plan and re-plan. For example, with a surgeon, it is important as a leader to train and educate the staff well to address the request with due dignity to the position.

A leader should constantly upgrade their skills but also train and retrain the staff working in their units. If the employee is deemed to be incompetent, then the manager must work with the employee until they can complete the proper steps.

The leader should ensure the staff's cross-functional training that will help them gain the necessary knowledge on operating procedures with importance on having the right instrument for right procedures. Such training not only improves knowledge but also boosts the confidence of the CSS staff to enhance productivity.

It is equally important to provide sufficient resources to cope with the workload. In case of insufficient resources, there could be challenges in providing the right set of instruments at the right time and that could lead to the use of improper/additional instruments, ending up increasing the workload of the department.

The general tendency of the staff working in CSS is that they feel that they are packers. However, the leader should enforce the importance of cleaning, packing, and labelling, as that involves a lot of quality control measures and this is the job of the CSS personnel.

Another important criterion is that the staff should be given freedom of speech, as only then the manager gets to understand the ground-level situation that further helps to improve the protocols.

Leaders need to generate loyal employees and promote trust throughout with open communication with the team. Leaders should not view themselves as better than or above the rest of the team. Employees appreciate if their opinion is valued and respected by the leader. The same helps in achieving employee satisfaction that aids efficiency and enhances productivity. ✚

Arab Health Magazine to be renamed as Omnia Health Magazine

Here is a sneak peek into our brand-new look in 2020!

At Informa Markets – Healthcare Group, our vision is to become the ‘Global Information Hub’ for the B2B healthcare industry and with more and more people logging in online to consume industry news and developments, we felt it’s time to make a change and embrace the digital future.

From 2020, *Arab Health Magazine*, the GCC’s leading healthcare publication, will be rebranded as *Omnia Health Magazine*. This move has been made to establish the magazine as the official publication for all the events under the Informa Markets – Healthcare Group. The print and digital mediums of the publication will continue reporting the latest advancements transforming the healthcare industry and feature exclusive content around all our international shows such as Arab Health, Medlab Middle East, Africa Health and FIME, among others.

Omnia Health will bring out two print issues with digital extensions and four exclusively digital magazines, along with topical supplements and 12 dedicated e-Newsletters that will be circulated to a global audience. Additionally, the most recent news and developments from across the globe will be reported weekly on news.omnia-health.com and promoted on our social media channels.

Omnia Health Magazine strives to provide commentary and analysis to key decision-makers in the healthcare industry. The B2B publication will cover topics related to the Investment, Management, Economics and Technological aspects of healthcare. Both our print and digital platforms have been designed to deliver the latest news in the industry and will offer a crucial insight into the trade.

The brand-new website (*pictured*) has been designed to focus on the user experience and will offer engaging content and optimised design and text that is user-friendly, to make it more accessible and interactive. The website will also feature embedded videos, webinars and whitepapers to give a more visual and engaging experience. It will host up-to-date analyses and reports on market developments and provide



constant updates on new projects, products and technologies that will make it a must-read for healthcare professionals.

Omnia Health’s online content platform will complement the digital Omnia Health Global Medical Directory that features products from leading medical and healthcare companies from around the world. Omnia Health is on the path to becoming a powerful business intelligence tool that will support all stakeholders in the healthcare industry grow.

Currently, Omnia Health is coming together, evolving, changing and growing, and we hope you’ll be part of our exciting journey! ✦



Omnia Health
By Informa Markets

So, you want to complain?

By **Dr May McCreddie** PhD, MEd, BA, PG Cert PE, RNT, RN., Senior Lecturer, School of Nursing and Midwifery, Royal College of Surgeons' Ireland – Medical University of Bahrain, Kingdom of Bahrain and **Associate Professor Jane Griffiths** RN, COTM, BAN, MHP, Chief Nursing Information Officer, Dubai Health Authority, UAE

Complaints are diverse, relatively unstructured, complex and emotive.

A complaint is an expression of dissatisfaction when there is a gap between expectation and delivery of a product or service. Complaints about healthcare rise year on year. Healthcare complaints are grievances that may be indicative of some system failures or individual failings, or a combination of both. Individual failings may be symptomatic of typical behaviours or atypical e.g a response to an unknown mitigating factor such as workload or resources. Thus, complaints are representative of problems concerning individuals and, or their organisation.

Complaints and complainers

More recently, it has been suggested that complaints are partly indicative of the general public's supposedly unrealistic expectations of healthcare expressed as a general lack of patient-centeredness if not 'clinical heartlessness' (Newdick and Danbury 2015: 956). Nevertheless, complaints are not considered patient safety

red flags per se, but they do point to a broader conceptualisation of 'harm' (McCreddie et al 2018). Moreover, patients' legitimate concerns tend to extend beyond the initial complaint (or complaints) to the process and subsequent outcome (of the complaint).

Complaints are diverse, relatively unstructured, complex and emotive (Reader et al 2014). Many complaints evidence serial failings that subsequently breach a given threshold (McCreddie et al 2018). In short, patients or relatives who complain are unlikely to simply complain about one issue. Understandably, once a transgression has occurred and there is no immediate successful attempt to resolve the grievance, then the healthcare relationship has been breached. Accordingly, this is likely to set off a cascade of additional serial complaints culminating in a formal 'written' complaint. In turn, complainants report psychological distress throughout the whole process; care to complaint – as well as with the subsequent outcome. Table 1 outlines complaint behaviour.



Table 1: Healthcare complaint behaviour based upon UK NHS data

Patients do not complain because:	Patients complain because;	Patients' expectations when making a complaint;
There is a perceived lack of impartiality in the system or transparency in handling complaints.	They perceive themselves to be custodial guardians of the NHS; social conscience for the greater good.	To prevent the same problem happening again and accountability.
They are unlikely to obtain a successful outcome or resolution.	They have high expectations of healthcare. They expect care and compassion as well as clinical treatment.	They want an explanation of what went wrong and why.
Complaining takes too much time and effort.	Their expectations are not met and there is a perception of poor service.	They want an apology.
Fear of repercussions for them or their relative.	There is a perception of harm resulting from maladministration or poor service e.g. 'patient neglect'.	They want recompense.
	Their perception of cumulative unresolved problems and subsequent disempowerment.	

So, what can we do to help?

Service recovery is a term more akin to consumer industries and is a strategic approach to returning aggrieved customers to a state of satisfaction following a breach of expectations (Zemke and Bell 1990). Service recovery follows service failures and is aimed at maintaining the relationship and promoting positive word of mouth through prompt, efficient and successful complaint resolution. Successful complaint resolution is but one aspect of service recovery and enhances the consumer-provider relationship through a resultant perception of quality and value. Conversely, service recovery in healthcare is arguably wholly reliant upon complaint handling as opposed to complaint resolution, with the former reportedly lacking impartiality (Francis 2013), taking too much time and effort making relatives fearful of the implications for future healthcare and, perhaps unsurprisingly in the current context, unlikely to lead to a successful outcome (Wessel 2012).

The Middle East perspective

The Middle East and the UAE in particular is home to rapidly developing healthcare facilities who treat patients from across the region and beyond. It is also a cauldron of diverse nationalities and cultures that may have varying sensitivities and cultures – which in of itself, has the potential for gripes and grievances. Many healthcare facilities currently have patient relations officers and are likely to expend considerable time in addressing grievances. Yet, the Middle East is arguably a non-complaining culture but with a population with increasing

expectations of healthcare and service. Complaints may, therefore, be made informally (via a third party) and may even focus on material aspects such as the type of room or furnishings – in addition to non-health/clinical issues. The large non-Arabic speaking expatriate healthcare workforce who may not be viewed as positively as indigenous or western staff – more akin to maids as opposed to a respected professional grouping – may also be a contributing factor in a perception of disaffection. Moreover, the possibility of litigation and the concept of 'blood money' may potentially create additional pressures for staff who are dependent upon employment to support themselves and their families abroad.

Within the UAE the 'complaints' agenda has largely been addressed through Patient Satisfaction Surveys with the Government requiring the use of a variety of tools. In Dubai, all hospitals must be accredited by an external audit such as Joint Commission International or the Australian Council on Healthcare Standards. A critical standard within these external reviews includes assessment of patient satisfaction and the management of complaints.

The current tools used to assess patient satisfaction and review complaints in the UAE include:

- "Happy faces" – machines located throughout health facilities that allow patients to press a button that reflects their opinion of their experience and
- Formal satisfaction surveys sent to patients on discharge such as Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) and Press Ganey.

Successful complaint resolution is but one aspect of service recovery and enhances the consumer-provider relationship through a resultant perception of quality and value.



Healthcare is a complex, dynamic entity that cannot be distilled into a 'Happy' or 'Sad' face.

Table 2: Common topics covered in such surveys include:

Topic	Example questions
Access to Care	Was there convenient parking available
Quality of Care	Would you recommend this facility/health care provider to others
Coordination of Care	Did all your healthcare providers talk to each other about the care to be provided to you
Confidence in Providers	Did your provider listen to you and address your concerns
Appointment Experience	Ease of scheduling appointments

(Loos, 2013. Hwang, Lipman and Kane. 2015)

Quantitative tools used to assess patient satisfaction and manage complaints should be internationally recognised, be reliable and have both construct and predictive validity. Moreover, if patients and, or, their relatives take the time to either write a complaint, press “a face button” or complete a survey, then organisations must be prepared to reflect, and if appropriate, act. However, table 2 perhaps gives some insight into these narrow but limited approaches. Healthcare is a complex, dynamic entity that cannot be distilled into a ‘Happy’ or ‘Sad’ face.

Conclusion

A review of 60 written complaints in the UK concluded that healthcare staff may benefit from understanding how complaints are

formulated to be able to more appropriately address patients’ grievances from the outset and therefore, reduce the considerable associated harm for all concerned: patients, relatives and healthcare staff (McCreaddie et al 2018). The aforementioned ‘tools’ are laudable, but they arguably lack context, quality and importantly, fail to take account of the diverse cultural context in which healthcare in the Middle East is practiced and consumed. For the UAE to truly become a world leader in healthcare it needs to better understand not just what people complain about but why people complain, how they complain (or not) and their expectations with regard to resolution. ✚

References available on request.



Quality dilemma in healthcare

It's about a patient on the line and not a car on a production line

By Abdul Razaq Amer, Director, Al Kuwait Hospital Dubai

We are in the field where a minute error could result in a catastrophe.

Despite our various attempts to improve medical outcome through exceptional advancement in medical science, technology, pharmaceutical products and more importantly healthcare providers' skills, knowledge and subspecialty fields, the outcomes remain unsatisfactory. It seems medicine will remain an uncertain field as it has ever been. This should not be a surprise because we simply are in the field where a minute error could result in a catastrophe.

Medicine is not like other industries where the product could be anything from a car to a hamburger to an investment. The products in the latter case are well defined with distinct specifications that are easily monitored and assessed. Consequently, the outcome of such products are usually within the organisation's expectation, and for some reason or another if

the plan didn't go as expected, the organisation can redesign or restructure the plan and hope to succeed, or in the worst case scenario it could have some financial implication, but there would be no loss of life or incur a major disability.

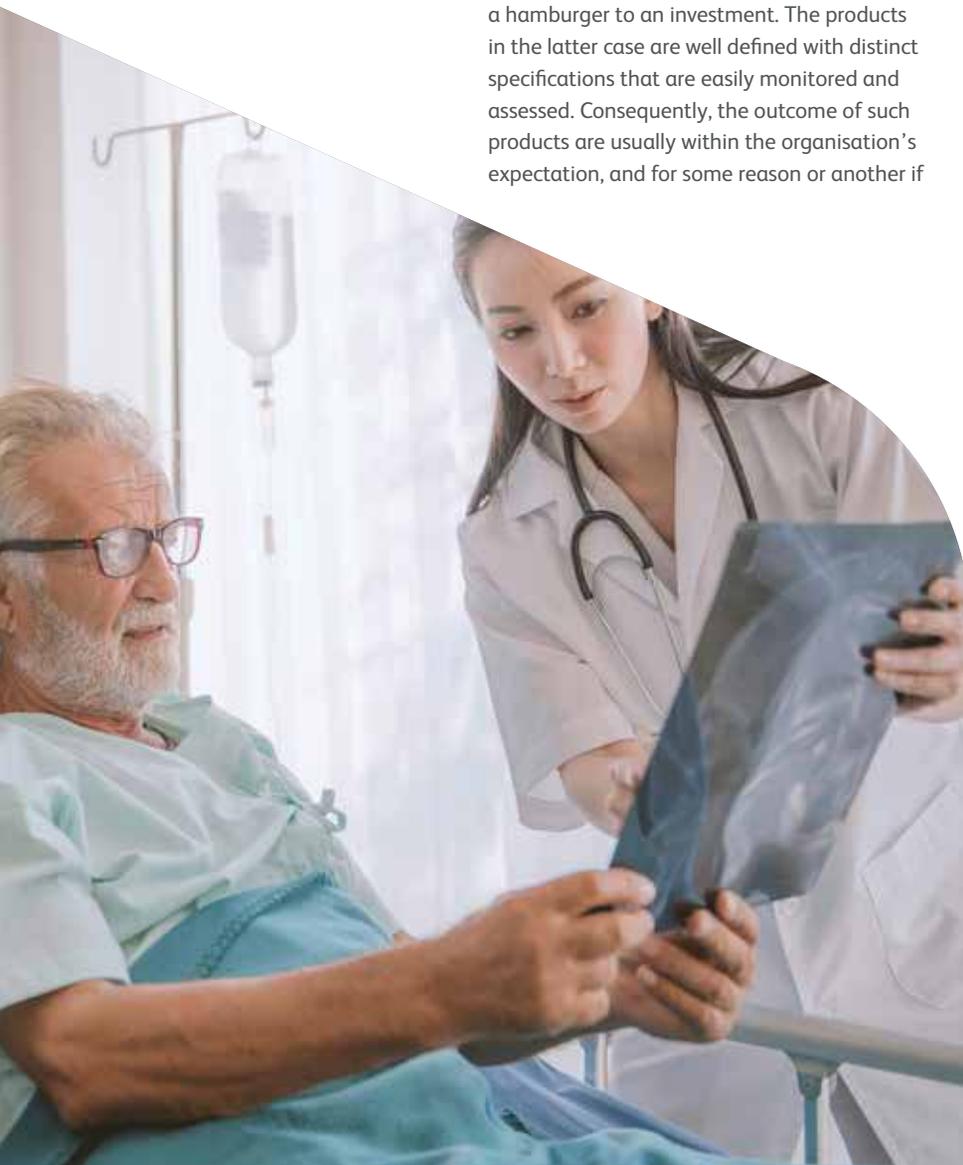
Unfortunately, the number of medical errors has increased at an unprecedented number from around 100,000 in 1998 to 440,000 in 2016 and has become the third leading cause of death in the United States. Moreover, according to three studies conducted in 1998, the researchers found a disturbing outcome; about 40 per cent of autopsies had not improved since 1938.

Consequently, I always believed that we should be extremely careful when comparing the outcome of other industries with those of a patient care and quality measure, as success in non-health based industries is not at par with success in the healthcare industry. On the contrary, some of these measures could have an adverse impact on patient care such as allocating a specific amount of physician time for every patient walking in an outpatient set up, or ascribing the same treatment for all patients with the same medical treatment irrespective of biological diversity among humans.

Nonetheless, there is no doubt that programmes such as quality improvement, clinical auditing and implementing a set of standards and protocols have improved the overall outcome in the medical field. And, learning measures of quality improvement and preventing human error from high reliability organisation (HRO) such as nuclear plant, aviation or automotive industries' safety measures, contributed in the medical outcome. Yet, attempting to fully integrate such programmes in medical practice could add more harm than good.

For instance, in the automotive industry, the implementation of lean sigma by Toyota Company has led to unprecedented level of quality outcome in the history of the industry. However, it would be totally irrational to expect the same outcome in the medical field because it's simply about having a patient's life on the line and not a car on a production line. ✚

References available on request.



In the know

Study demonstrates reduction in mortality using Masimo Noninvasive, Continuous Hemoglobin (SpHb®) and Pleth Variability Index (PVi®) Monitoring

Article provided by Masimo

In a study published in the Journal of Clinical Monitoring and Computing, Masimo recently announced that researchers investigated the effects of implementing a hospital-wide fluid and blood administration protocol using two Masimo measurements: noninvasive, continuous hemoglobin (SpHb®) and pleth variability index (PVi®).¹ To evaluate the impact of the implementation, they collected data on transfusions and mortality 30 and 90 days after surgery and compared the findings between two 11-month periods in 2013 and 2014.

In the study, Dr. Jérôme Cros, Prof. Nathalie Nathan, and colleagues at Hôpital Dupuytren, part of the Centre Hospitalier Universitaire of Limoges, France (CHU Limoges), sought to determine if the use of a goal-directed therapy (GDT) algorithm based on monitoring with SpHb and PVi could decrease blood requirements and reduce mortality in common clinical practice. The researchers divided 18,716 patients into 3 groups: G1 (9285 patients who underwent surgery in 2013, before implementation of the goal-directed therapy algorithm), G2 (5856 patients who underwent surgery in 2014 without use of the algorithm), and G3 (3575 patients who underwent surgery in 2014 with use of the algorithm).

For the 2014 patients, Masimo Radical-7® Pulse CO-Oximeters® equipped with SpHb and PVi were installed in all operating rooms, recovery rooms, and intensive care units. The entire anesthesiology team, including nurses, was trained on use of the monitors and the algorithm, and was free to decide whether or not to use goal-directed therapy for each case. Transfusion and mortality data were recorded for all patients.

Mortality results

Using multivariate analysis and including age, ASA class, surgical severity and emergency as co-variables, the risk of death for G3 patients was 33 % lower at 30 days and 29 % lower at 90 days, compared to G1 patients. By contrast, there was no difference in the risk of death between G2 and G1 patients.

The authors also reported on mortality rate the year after the study ended (2015), when the hospital no longer had access to SpHb and PVi. Comparing 2015 patients to patients in the study, they found that mortality at 30 and 90 days increased again to levels similar to those found in 2013 (before implementation), respectively 2.18 % and 3.09 %.

The authors noted, "Because patients who did not receive GDT based on the PVi had similar mortality rates in 2014 and 2013, a Hawthorne effect-inducing care improvement does not explain the present results. The post-study increase in mortality, at the time when monitors were no longer available, suggests that education of the team to improve fluid management does not explain the present results."

Transfusion Results

After adjusting for surgical severity, age, and ASA class, patients in G3 had reduced odds of being transfused within 48 hours (odds ratio of 0.79, 95 % CI of 0.68 – 0.93, p = 0.004). By contrast, there was no difference in the odds of being transfused between patients in G2 and G1.

The authors noted, "This study shows that using an algorithm based on continuous Hb measurement and fluid responsiveness with PVi in common clinical practice is associated with different transfusion practices and a lower adjusted-mortality at 1 and 3 months. When considering confounding factors such as ASA class, severity of surgery and emergency, the monitor-based algorithm lowers transfusion probability by approximately 30 % during surgery and at 48 h. In non-cardiac surgeries, patients were transfused sooner and more often but with less blood units in the GDT group. In non-cardiac surgery, continuous Hb monitoring alerted anesthesiologist[s] on the anemia risk they might [have] under-

Masimo Root® and Radical-7® with SpHb® and PVi®



evaluated without monitoring. This was the opposite, in cardiac surgery where practitioners behave differently. When using continuous SpHb monitoring, perioperative transfusion was reduced because anesthesiologists probably less feared under-transfusion. The net observed effect was an 11% and 6.5% reduction in blood units transfused in the operating room and at 48 h.”

The researchers concluded, “Monitoring SpHb and PVi integrated in a vascular filling algorithm is associated with earlier transfusion and reduced 30 and 90-day mortality on a whole hospital scale.” They continued, “In conclusion, this integrated comparative effectiveness study shows that using an algorithm of fluid and blood transfusions based on continuous Hb measurement and PVi is associated with reduced mortality.”

Joe Kiani, Founder and CEO of Masimo, commented, “We thank Professor Nathan and her team for this outstanding study. All of the outcome studies to date with continuous SpHb have shown its benefits in transfusion management²⁻⁵ and numerous studies with PVi have demonstrated its role in fluid management,⁶⁻⁷ but this is the first time a study has shown how using goal-directed therapy with SpHb and PVi can have such a big impact on mortality. As is central to our mission, we encourage researchers to continue to study the impact of SpHb and PVi to see if indeed these fantastic results can be repeated in other institutions, for example those with different mortality rates, and if so, help expand their use to improve patient outcomes around the world.”

SpHb is not intended to replace laboratory blood testing. Clinical decisions regarding red blood cell transfusions should be based on the clinician’s judgment considering among other factors: patient condition, continuous SpHb monitoring, and laboratory diagnostic tests using blood samples.

About Masimo

Masimo (NASDAQ: MASI) is a global medical technology company that develops and produces a wide array of industry-leading monitoring technologies, including innovative measurements, sensors, patient monitors, and automation and connectivity solutions. Our mission is to improve patient outcomes and reduce the cost of care. Masimo SET[®] Measure-through Motion and Low Perfusion[™] pulse oximetry, introduced in 1995, has been shown in over 100 independent and objective studies to outperform other pulse oximetry technologies.⁸ Masimo SET[®] has also been shown to help clinicians reduce severe retinopathy of prematurity in neonates,⁹ improve CCHD screening

in newborns,¹⁰ and, when used for continuous monitoring with Masimo Patient SafetyNet[™] in post-surgical wards, reduce rapid response team activations, ICU transfers, and costs.¹¹⁻¹³ Masimo SET[®] is estimated to be used on more than 100 million patients in leading hospitals and other healthcare settings around the world,¹⁴ and is the primary pulse oximetry at 9 of the top 10 hospitals listed in the 2018-19 U.S. News and World Report Best Hospitals Honor Roll.¹⁵ Masimo continues to refine SET[®] and in 2018, announced that SpO₂ accuracy on RD SET[™] sensors during conditions of motion has been significantly improved, providing clinicians with even greater confidence that the SpO₂ values they rely on accurately reflect a patient’s physiological status.

In 2005, Masimo introduced rainbow[®] Pulse CO-Oximetry technology, allowing noninvasive and continuous monitoring of blood constituents that previously could only be measured invasively, including total hemoglobin (SpHb[®]), oxygen content (SpOC[™]), carboxyhemoglobin (SpCO[®]), methemoglobin (SpMet[®]), Pleth Variability Index (PVi[®]), RPVi[™] (rainbow[®] PVi), and Oxygen Reserve Index (ORI[™]). In 2013, Masimo introduced the Root[®] Patient Monitoring and Connectivity Platform, built from the ground up to be as flexible and expandable as possible to facilitate the addition of other Masimo and third-party monitoring technologies; key Masimo additions include Next Generation SedLine[®] Brain Function Monitoring, O3[®] Regional Oximetry, and ISA[™] Capnography with NomoLine[®] sampling lines. Masimo’s family of continuous and spot-check monitoring Pulse CO-Oximeters[®] includes devices designed for use in a variety of clinical and non-clinical scenarios, including tetherless, wearable technology, such as Radius-7[®] and Radius[™] PPG, portable devices like Rad-67[™], fingertip pulse oximeters like MightySat[®] Rx, and devices available for use both in the hospital and at home, such as Rad-97[™]. Masimo hospital automation and connectivity solutions are centered around the Iris[®] platform, and include Iris Gateway[™], Patient SafetyNet, Replica[™], Halo ION[™], UniView[™], and Doctella[™]. Additional information about Masimo and its products may be found at www.masimo.com. Published clinical studies on Masimo products can be found at www.masimo.com/evidence/featured-studies/feature/.

ORI and RPVi have not received FDA 510(k) clearance and are not available for sale in the United States. The use of the trademark Patient SafetyNet is under license from University HealthSystem Consortium.

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In the know

How to treat severe obesity as a chronic disease

Seven tips for better, multidisciplinary obesity care.

Article provided by Cleveland Clinic



Dr Bartolome Burguera

Many patients with severe obesity receive suboptimal care. With a primary focus on managing chronic conditions, clinicians may fail to treat their underlying cause.

Associated with heart disease, cancer and diabetes, severe obesity significantly reduces life expectancy. In the decade between 2000 and 2010, the prevalence of severe obesity increased by 70%. Although medical treatments for severe obesity exist—such as bariatric surgery and pharmacotherapy—even patients who receive regular medical care for chronic conditions are unable to lose weight.

A chronic disease in its own right

“Obesity is responsible for the onset of the majority of chronic conditions that we treat daily in our clinics, but it is also a chronic disease in its own right,” says Bartolome Burguera, MD, PhD, Chairman of Cleveland Clinic’s Endocrinology & Metabolism Institute. “We need to work together with patients to change the old medical paradigm of treating the chronic conditions likely caused by excess weight, but not appropriately addressing obesity.”

Dr. Burguera and his colleagues suggest several steps that physicians can take to help their patients with severe obesity. These include:

– **Addressing the underlying conditions.** Many physiologic, psychiatric and iatrogenic factors can contribute to the development of severe obesity. Additionally, many common medications including antipsychotic agents, insulin, sulfonylureas, β -blockers and corticosteroids cause weight gain. By taking detailed personal, nutritional, weight and health histories, physicians may identify conditions that contribute to weight gain and/or maintenance, develop an optimal treatment plan and make appropriate referrals.

– **Maximizing visit time.** Creating multidisciplinary teams, including dietitians, advanced nurse specialists, exercise physiologists, psychologists and social workers allows the development of personalized treatment plans without overly taxing the healthcare provider.

– **Rethinking outcomes.** Setting small, achievable goals of 3-7% weight loss can improve glycemic control and decrease the risk of Type 2 diabetes while keeping patients motivated.

– Offering intensive behavioral therapy.

Studies show that intensive behavioral therapy can significantly reduce cardiovascular risk factors, hospitalizations and healthcare costs while increasing quality of life.

– **Combining counseling with pharmacotherapy.** The U.S. Food and Drug Administration has approved a handful of effective anti-obesity medications, which, when combined with counseling for obesity can nearly double the weight loss of either medication or counseling alone.

– **Increasing knowledge about bariatric surgery.** Patients, providers and payers often lack sufficient understanding of the efficacy and safety of current bariatric surgery for patients with severe obesity who have not achieved sufficient weight loss with intensive multidisciplinary, nonsurgical interventions.

– **Recognizing biased beliefs about severe obesity.** Physicians should pay close attention to their own potentially biased assumptions about the causes of and treatments for severe obesity, and strive to treat all patients with equal respect.

Listen with empathy

“I’ve worked at medical institutions on both sides of the Atlantic Ocean, and I’ve learned that patients with obesity are discriminated against, both explicitly and implicitly, regardless of where they live,” Dr. Burguera explains. “These patients are often treated with bias by their colleagues and, in many circumstances, by their physicians. I listen to patients with empathy and respect. I need to understand their concerns in order to work with them to develop therapeutic plans

An interdisciplinary approach

Under Dr. Burguera’s leadership, Cleveland Clinic has developed an interdisciplinary approach that is centered on nutrition, physical activity, appetite control and optimization of sleeping habits, as well as psychological support focused on stress reduction and the treatment of anxiety and depression.

“In the next several years, we will continue to find innovative ways to treat patients with a focus on compassion and convenience. We want to create relaxed, supportive, personalized environments for the exchange of information,” Dr. Burguera says.

Video laryngoscopy from Intersurgical – wherever and whenever you intubate

Article provided by Intersurgical

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In the know

Scary but true: Removing part of skull enhances recovery from stroke

Decompressive Craniectomy – a life-saving surgery for stroke when medical therapy fails.

By Dr. Tinku Jose Kurisinkal, Consultant Neurosurgeon, RAK Hospital

It may sound like a horror movie, but cutting out a piece of skull and storing it under the skin of abdomen may help in the recovery or even save lives of many stroke patients.

Five-and-half million people die of stroke annually worldwide. A stroke occurs when the blood flow to a part of the brain is cut off either by clot or breaking of a vessel. Malignant cerebral infarction is a devastating disease occurring in a subgroup of ischemic stroke patients and is characterized by neurological deterioration due to progressive edema, raised intracranial pressure, cerebral herniation and has a mortality rate of around 80% despite maximal medical therapy. In malignant MCA infarct, there is a hypodensity of more than 50-75% of the MCA territory with gross midline shift. The brain swelling that occurs after a stroke is often more deadly than the stroke itself.

Decompressive Craniectomy (DC) is a surgical technique aiming to open the closed box represented by the non-expandable skull in cases of refractory intracranial hypertension. DC proved to be a life-saving surgery for Malala Yousafzai, the 16-year-old Nobel Laureate who was shot in the head. DC has been proved by many randomized controlled trials like DESTINY, DECIMAL and HAMLET to have a life-saving impact in all age groups. In patients 60

years or young, DC within 48 hours of stroke onset significantly reduced the risk of death and major disability compared to medical therapy only. In older patients more than 60 years, DC significantly improved survival but with some disability. Removal of bone flap reduced intracranial pressure (ICP) by 66% from 30 to 10 mmHg followed by a further reduction to 5 mmHg after dural opening.

Surgical technique

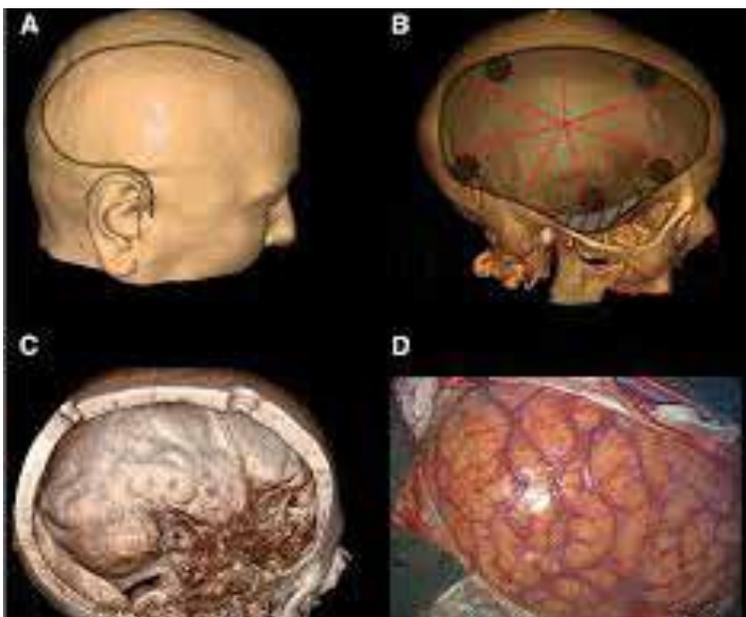
Unlike traumatic brain injury, ischemic stroke usually affects one cerebral hemisphere. The procedure is performed in supine position with head rotated to the contralateral side. A wide curved incision is performed beginning in front of ear. Scalp flap and temporal muscle are reflected to expose the skull. Burr holes are created to achieve a Frontotemporoparietal Craniectomy & Suboccipital decompressive craniectomy of at least 12 cm in diameter, followed by duroplasty. For infratentorial stroke, a suboccipital decompressive craniectomy without bone flap preservation is done.

Storage of bone flap and cranioplasty

After DC, the bone flaps are preserved under sterile conditions either in freezer or in the abdomen in subcutaneous plane. The patient is advised to wear a protective helmet. After a waiting period of 6 to 20 weeks for the brain swelling to subside, the bone flap can be replaced and anchored with miniplates and screws. If the flap has resorbed or is infected, an Alloplastic custom made implant made of PMMA or Titanium can be placed.

The Neuroscience Department of RAK Hospital has been catering to patients with brain and spine problems within and outside the UAE. Many of the challenging neurosurgical operations successfully performed for trauma, stroke, tumors or spine problems have been extensively covered in the print and electronic media.

Both our institutional experience and global statistics show that, if performed at the proper time in a stroke patient with extensive brain swelling that does not respond to medical treatment, Decompressive Craniectomy can significantly reduce mortality by more than 50% and with acceptable morbidity.





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- Epilepsy Monitoring Unit
- Robotic surgery

Heart Center

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- Fetal echocardiography
- 3-D technology
- Surgical repair of the most complex heart defects

Hematology and Oncology Center

- Bone Marrow and Stem Cell Transplant Program
- Investigational MIBG therapy for neuroblastoma

Urology/Genitourinary Institute

- Ambiguous genitalia/ disorders of sex development
- Anorectal malformation
- Bladder exstrophy
- Cloaca
- Hypospadias
- Kidney transplant
- Urogenital sinus

Neurosciences Center

- Deep brain stimulation
- Motion analysis lab for patients with cerebral palsy and movement disorders
- Stroke and Thrombosis program

Orthopedic Surgery

- Amniotic band
- Arthrogryposis
- Hand and foot abnormalities
- Hip dysplasia
- Limb length discrepancy

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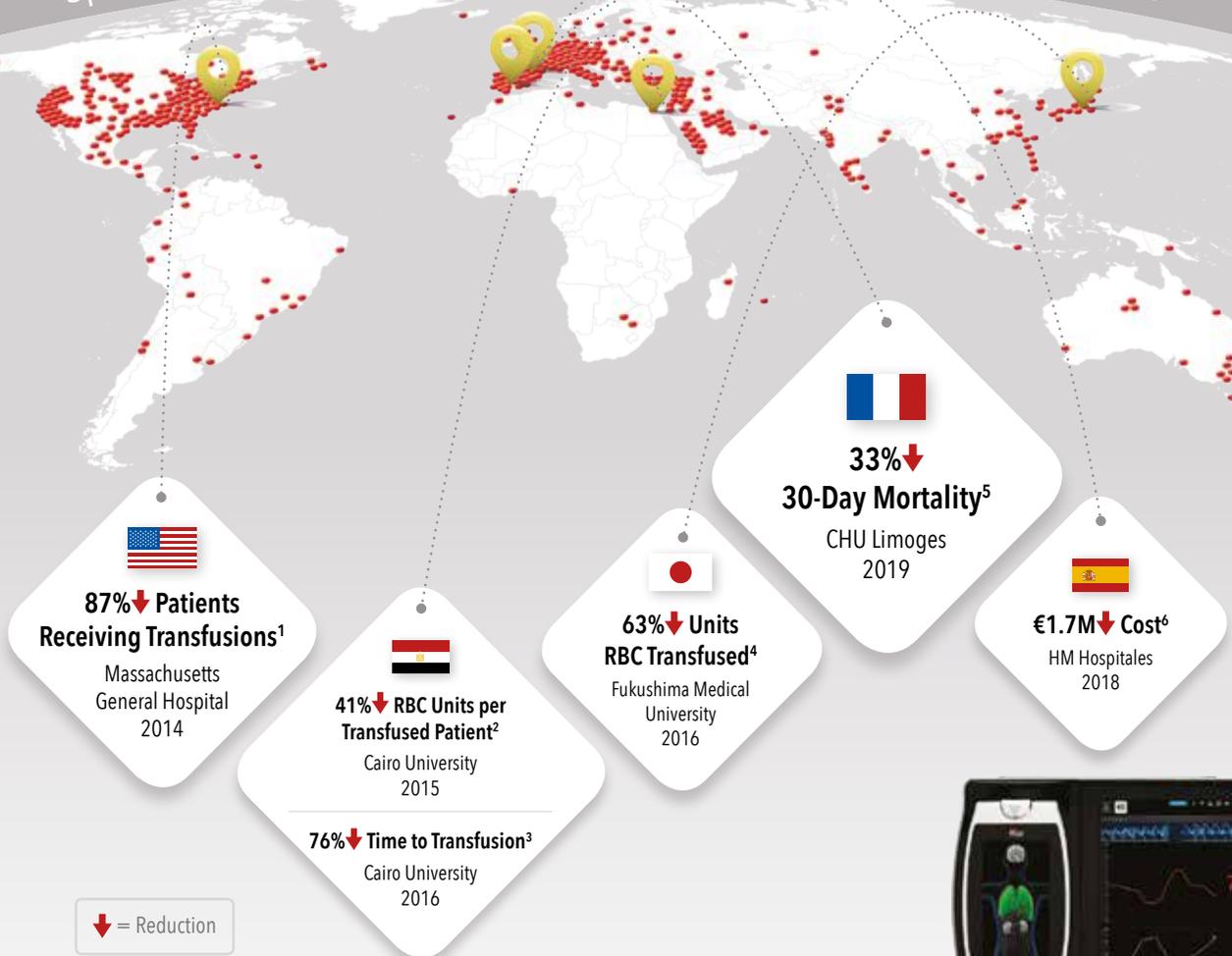


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Clinical decisions regarding red blood cell transfusions should be based on the clinician's judgment considering among other factors: patient condition, continuous SpHb monitoring, and laboratory diagnostic tests using blood samples. SpHb monitoring is not intended to replace laboratory blood testing. Blood samples should be analysed by laboratory instruments prior to clinical decision making.

¹Ehrenfeld et al. *J Blood Disorders Transf.* 2014. 5:9. ²Awada WN et al. *J Clin Monit Comput.* DOI 10.1007/s10877-015-9660-4. Study Protocol: In each group, if researchers noted SpHb trended downward below 10 g/dL, a red blood cell transfusion was started and continued until SpHb trended upward above 10 g/dL. The transfusion threshold of 10 g/dL was predetermined by the study protocol and may not be appropriate for all patients. Blood sampling was the same for the control and test group. Arterial blood was drawn from a 20 gauge radial artery cannula into 2 mL EDTA collection tubes, mixed and sent for analysis by a Coulter GEN-S Hematology Analyzer. ³Kamal A, et al. *Open J of Anesth.* 2016 Mar; 6, 13-19. ⁴Imaizumi et al. *Proceedings from the 16th World Congress of Anaesthesiologists*, Hong Kong. Abstract #PR607. ⁵Cros et al. *J Clin Monit Comput.* Aug 2019: 1-9. Study utilised a goal-directed fluid therapy protocol with PVI* in conjunction with a blood transfusion protocol based on SpHb. ⁶Ribed-Sánchez B, et al. *Sensors (Basel).* 2018 Apr 27;18(5). pii: E1367. Estimated national savings derived from hospital savings extrapolated nationwide. * Data on file.