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MEDIWORLD

Middle East

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Healthcare destination

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Editorial

Flattening the Curve

In the past few months, the use of medical technology in the UAE has become so important in responding and battling as well as mitigating the spread of Covid-19. Pioneering scientists in Abu Dhabi have unveiled new cutting-edge technology which provides vital support to patients battling Covid-19.

The Abu Dhabi Stem Cell Centre (ADSCC) has invested Dh3.6 million on a Helios Mass Cytometer, a state-of-the-art tool which experts say help bolster the body's defense against the virus. The cytometer, the only one of its kind in the Middle East, enables scientists at the center to quickly and accurately profile individual human cells, allowing them to study and monitor a patient's immune response to the virus.

The DigniCap Scalp Cooling System consists of a computerized cooling unit managed through a touch screen display and an attached cooling cap. Temperature regulated coolant continuously circulates through specially designed channels in the cooling cap. The ability to maintain continuous, direct contact between the cooling cap and scalp for a consistent treatment temperature is a key factor in the effectiveness of DigniCap. In our this month's cover story we feature Melissa Bourestom who explains to us how DigniCap offers patients the ability to reduce hair loss from certain chemotherapy treatments and is FDA cleared for patients with solid tumors.

In recent years, healthcare workers have been quick to realize the benefits of AR technologies. Education is an obvious application of augmented reality in the healthcare field. Healthcare workers have to learn a huge amount of information about anatomy and the way the body functions. AR applications give learners the ability to visualize and interact with three-dimensional representations of bodies. Many industries are expected to turn to AR as the primary source of multisensory instruction and of standard operating procedures for workforce safety. Medical education and staff training is bound to remain the principal use of AR in health care. Today, surgeons use several techniques to visualize the area on which they are to operate, but augmented reality, which can project three dimensional representations of the patient's anatomy into the surgeon's field of view, is likely to improve accuracy and outcomes for patients.

xvision system, the first augmented reality guidance system for surgery allows surgeons to 'see' the patient's anatomy through skin and tissue as if they have 'x-ray vision,' and to accurately navigate instruments and implants during spine procedures.

Tourism hot spots around the world are gradually reopening after the great lockdown, but they don't look very alluring. If there's one destination in particular that might turn into an ideal getaway from COVID-19, it's Iceland. The tiny island nation has long been known for its stunning landscapes, views of the Northern Lights, lava caves and other vistas featured in shows like Game of Thrones. Recently it has gained plaudits as a coronavirus case study, having kept its outbreak under control without imposing lockdown. We talk about Iceland's medical sector as our featured medical destination.

Don't forget to subscribe to our newsletter which talks about the latest breakthrough in the medical technology industry and also give a thumb's up on all our social media channels. Our active channels include Facebook, Twitter, LinkedIn and Instagram. We look forward to your wonderful comments on how we can make our magazine better. If you would like to be featured as our cover story, do get in touch with me at ayesha@7dimensionsmedia.com for further details.

As always the team of Mediworldme would like to inform everyone in self isolation to #StayHomeStaySafe and also quarantine and chill.

Sincerely,

Ayesha Rashid
Editor, MediWorld ME



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DigniCap

Reducing hair loss during Chemotherapy



“DigniCap offers the chance to minimize chemotherapy induced hair loss for men and women with solid tumor undergoing chemotherapy. Most patients who use DigniCap will see a significant reduction in the amount of hair loss from chemotherapy. However, shedding should be expected and is normal for patients using scalp cooling. The amount of shedding experienced will vary from patient to patient”

Melissa Bourestom

Chemotherapy is a common treatment advised to patients when their cells reproduce in an uncontrollable manner leading to cancer. It is a drug treatment that uses powerful chemicals to kill rapidly growing cells in the body.

Though chemo is an effective way to treat many types of cancer, it also carries a risk of side effects. Some chemotherapy side effects are mild and treatable, while others can cause serious complications. Among the risk factors include hair loss. For many hair loss is a symbol to the world that you have cancer. Hair loss occurs because of the strong drugs in the therapy that rapidly attack the cells and at the same time also attack other rapidly growing cells in the body such as hairs.

Chemo therapy may cause hair loss all over the body (eye brows, eye lashes, body hair) etc., and not just on the scalp and different doses can cause anything from thinning to complete baldness.

Dignitana, a Swedish medical technology company recently developed, produced and marketed the DigniCap cooling system, a patented medical cooling device that offers cancer patients the ability to minimize hair loss during chemotherapy to improve well-being and quality of life. Melissa Bourestom, VP Marketing of Dignitana explains to us how their DigniCap cooling system is a proven approach to a reduce hair loss from certain chemotherapy treatments.



Melissa Bourestom
VP Marketing of Dignitana

What is a scalp cooling system? Can you tell us in detail about its treatment?

Scalp cooling is a proven way to reduce hair loss from chemotherapy that has been used successfully by thousands of patients worldwide for several decades. In this treatment, the scalp is cooled while cytostatic drugs are being administered. Two reactions occur during scalp cooling:

Reduced blood flow

Vasoconstriction (caused by cooling) in the scalp area limits the amount of chemotherapy agent delivered to the hair follicles.

Reduced Absorption

When the scalp temperature is lowered, the follicles absorb less of the drugs.

Tell us in detail about Dignicap? How does it promote hair regrowth?

The DigniCap Scalp Cooling System consists of a computerized cooling unit managed through a touch screen display and an attached cooling cap. Temperature regulated coolant continuously circulates through specially designed channels in the cooling cap. The



DigniCap Delta



DigniCap C3

ability to maintain continuous, direct contact between the cooling cap and scalp for a consistent treatment temperature is a key factor in the effectiveness of DigniCap.

There are 2 models of The DigniCap Scalp Cooling System, the NEW DigniCap Delta and DigniCap C3. Both systems provide effective scalp cooling, but the machine, caps and business models are different.

Who is DigniCap scalp cooling for?

Cancer patients undergoing chemotherapy for solid tumors, upon recommendation of physician. The DigniCap Scalp Cooling System is used during each cycle of chemotherapy administration. Scalp cooling should begin with the first infusion of any chemotherapy that causes hair loss.

Most patients tolerate scalp cooling with The DigniCap Scalp Cooling System very well. Common side effects include a feeling of coldness, headache, scalp pain and/or light-headedness. Your doctor can provide a pain

reliever if you develop a headache. A warm drink and blanket can also help during treatments.

Scalp cooling is a proven approach to reduce chemotherapy-induced alopecia that has been used successfully by thousands of patients worldwide with a variety of cancers and chemotherapy regimens. Dignitana's multi-site scalp cooling study proved that scalp cooling is a safe and effective method for reducing the risk of chemotherapy-induced hair loss in women with breast cancer. However, almost everyone can expect to experience some degree of hair loss during chemotherapy.

Outcomes are dependent on several factors including the chemotherapy regimen, dose, duration of drug infusion, chemotherapy drug metabolism and concomitant comorbidities.



How does Dignicap offer patients to maintain privacy and self-esteem throughout chemo?

Keeping your hair helps many cancer patients feel that they have a sense of control over their cancer. For many, hair is a big part of their identity, so they feel that being able to keep their hair, helps them feel more like themselves—and helps them not LOOK sick, which is important to some mothers with small children and also to some people who are still going to work during their treatments—they feel more confident, some say, at work.

How does DigniCap encourage a positive attitude towards the treatment?

DigniCap offers the chance to minimize chemotherapy induced hair loss for men and women with solid tumor undergoing chemotherapy. Most patients who use DigniCap will see a significant reduction in the amount of hair loss from chemotherapy. However, shedding should be expected and is normal for patients using scalp cooling. The amount of shedding experienced will vary from patient to patient.

Chemotherapy may cause scalp irritation, make the hair dry, brittle, and more difficult to manage. Handling your hair gently during treatment and for several months after

you complete your chemotherapy regimen may help reduce the amount of shedding and maintain your hair quality.

Describe its technological advancements?

DigniCap is the only scalp cooling system with patented dual sensors in the cooling compartments for consistent cooling and temperature management, plus a built-in safety sensor to ensure scalp temperature always stays above 32°F / 0°C. Patients in a multi-center study filled out an Alopecia Self-Report questionnaire. Results clearly showed that 101 patients who had an average of 3.6 cycles of chemotherapy and used The DigniCap Scalp Cooling System were satisfied with the decision to use scalp cooling and expressed higher satisfaction with their hair quantity as compared to controls. In contrast, the 16 patients in the control group had an average of 1.5 cycles before discontinuing reporting due to hair loss.

Women with breast cancer receiving scalp cooling using DigniCap versus the control in a multi-center clinical trial answered a Patient Satisfaction with Scalp Cooling survey were:

- **Significantly less likely to lose ≥ 50% of their hair**
- **Felt significantly more physically attractive**
- **Significantly less dissatisfied with their appearance when dressed**
- **Regarded importance of hair significantly more**

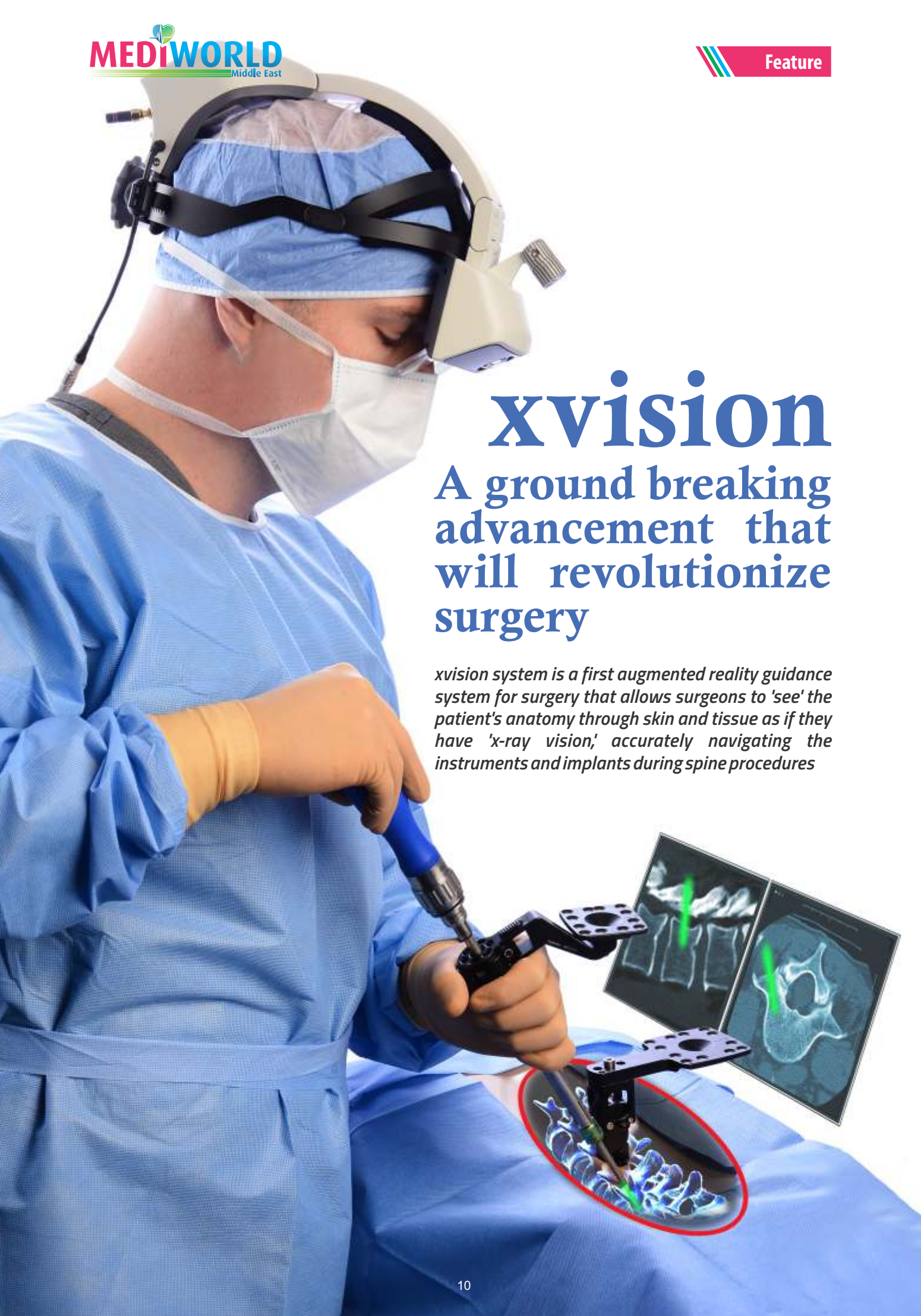
In your opinion why does hair loss occur during chemo and how does Dignicap help?

Alopecia is a common side effect of the cytostatic drugs given during chemotherapy. Cytostatics work by actively targeting rapidly dividing cells, and hair follicles are some of the fastest growing cells in the body. Because chemotherapy cannot distinguish between normal rapidly dividing cells and cancerous cells, the hair follicles are often affected.

Chemotherapy affects cells that are in the phase of division or growth. All the cells in the body may be affected by chemotherapy, not just the cancer cells. This means that even healthy cells, especially cells with a high growth rate, such as your hair, are likely to be affected by the chemotherapy.

In your opinion is chemo the only process where hair loss occurs? Are there other ways where hair loss also takes place? Can Dignicap solve those as well?

DigniCap clearance is for use during chemotherapy when a drug is introduced into the system over a short period of time. The mechanism of the cooling for hair preservation would therefore not apply to other forms of alopecia



xvision

A ground breaking advancement that will revolutionize surgery

xvision system is a first augmented reality guidance system for surgery that allows surgeons to 'see' the patient's anatomy through skin and tissue as if they have 'x-ray vision,' accurately navigating the instruments and implants during spine procedures



Nissan Elimelech
CEO, Founder of Augmedics

Known to be the most promising digital health technologies at present and in the future, Augmented Reality has the potential to change healthcare, according to experts.

Commonly known to us as AR, the technology is used in our everyday technology such as cameras to overlay digital transformations on to the real world. In contrast with VR (Virtual Reality) which creates an entirely new world. AR allows us to bring the most useful information from the digital realm into our perception of the environment around us. In the healthcare industry, the technology is used in many surgical systems. Today there are many nurses and doctors interacting with AR applications every day to improve patient education and its outcomes.

The global Augmented Reality (AR) & Virtual Reality (VR) in healthcare market size was valued at USD 568.7 million in 2016 and is projected to grow at a CAGR of 29.1% during the forecast period. The growing integration of technology & digitalization in healthcare, increasing healthcare expenditure & focus on delivery of efficient health services, and its significance in training healthcare professionals are some of the key factors driving the increasing adoption of AR and VR technologies, according to grandviewresearch.com.



However, many healthcare technology companies are now hard at work in laying the foundation of AR revolution. One such company is Augmedics, a Chicago-based company, aiming to improve healthcare by augmenting surgery with cutting edge technologies that solve unmet clinical needs and instill technological confidence in the surgical workflow. Its pioneering xvision system, the first augmented reality guidance system for surgery, allows surgeons to 'see' the patient's anatomy through skin and tissue as if they have 'x-ray vision,' and to accurately navigate instruments and implants during spine procedures.

Nissan Elimelech, CEO, Founder of Augmedics explains to Ayesha Rashid, Editor at **Mediworldme**, why xvision is a ground breaking advancement that will revolutionize surgery?

Tell us in detail about your xvision?

The xvision system is the first augmented reality guidance system for surgery. Although there are currently other augmented reality devices used in medicine today, as well as other image guidance systems, this is the first of its kind to combine these two tools to be used during surgery. Other image guidance systems have a separate 2D screen, where the surgeon needs to look away from the patient to see the data, along with bulky equipment that takes up valuable OR space. The xvision headset allows a surgeon to visualize the 3D anatomy of the patient's spine, through their skin, by looking directly at the patient, as if they had 'x-ray' vision. This helps them to accurately place screws and other instrumentation within the spine. The system is contained in a lightweight headset and uses reference markers placed on the patient and instruments.

How does it allow surgeons to see the patient's anatomy through skin and tissue?

The patient will have a registration marker rigidly attached to their spine, and 3D intraoperative imaging will be done. Our software determines where the anatomy is in relation to the registration marker and this information is then transferred wirelessly to the headset. The patient's anatomy is projected from the transparent augmented reality lenses on the headset to the surgeon's retina, so they can see the data while looking at the patient.

Describe how does it accurately guide instruments and implants during spine procedures?

In addition to knowing the patient's anatomy in relation to the registration marker, the system can also identify instrumentation with reference markers in the surgical field. Unlike other image guidance systems, we have been able to put this technology into a lightweight headset. Because this is a wearable technology, it allows for a smaller footprint in the OR while still demonstrating 98.9% overall accuracy during percutaneous cadaveric testing. This is so important for spine surgery where the correct placement of pedicle screws is crucial.

Why did you choose Augmented Reality?

To solve the pitfall of attention shift with current image guidance systems, we wanted to bring the surgeon's focus back to the patient. Augmented Reality allows the patient's anatomical information to be displayed in the surgical field on the patient, and not on a distant screen. We want to give

surgeons the best data available for them to perform a surgery, while keeping the surgeon as connected to the patient as possible.

Why was it necessary to come up with a guidance system?

Computer assisted guidance systems give such crucial information to surgeons. It was frustrating to see that the technology was available, but because of the pit falls with the previously existing systems, such as line of site issues, bulky OR equipment, a sizable monetary investment, and the steep learning curve, many surgeons are not utilizing the technology. We wanted to design something new that could solve these issues while giving them an improved experience and the accuracy and information they need.

Describe its designing process?

The initial idea was to give surgeons a superpower, as if they had 'x-ray vision'. We wanted to find a better way for surgeons to use computer assisted technology to help them guide their screws into the correct position, since current technologies are not used as often as they could be during surgery. We wanted to solve some of the current problems with traditional navigation so we decided early on to develop our own optical tracker in a headset to avoid the typical line-of-sight issues, while providing surgical accuracy in open and percutaneous procedures. We also knew we wanted to use augmented reality, so the surgeon still sees reality, but with the virtual spine for image guidance. We found that the best visualization of the patient's data was having a central augmented reality region with a well-defined border. Achieving surgical accuracy every time between the real surgical instrument and the virtual spine required that we added tracking of the surgical instruments.

After we established our technical solutions, we spent time refining and developing a product which included markers, the mechanical design of the headset, and attachment fixtures to the surgical instruments, patient reference fixtures to attach to the spine, electronics, the graphical user interface and software. We were able to gain a lot of feedback during our various stages from multiple tradeshow, key opinion leaders, conferences and other demonstrations. We have tested the system in multiple cadaver trials, and during R&D bench testing, and are continuously improving.

Do you think every surgeon should own a device like this for better surgical performance? Why?

I do believe that surgeons should have access to computer assisted technology and image guidance because it provides such critical information for surgery. This is the reason we created the device; we want it to be accessible. Being able to see the anatomical structures in a 3D view along with the 2D axial and sagittal views allows a surgeon to accurately place their instrumentation. This is also a great training tool for residents and fellows for their future surgical performance.

Describe its wearable guidance technology?

The xvision spine system is contained within a lightweight headset. The system is completely wireless, and the headset



contains a data processor with an NVIDIA video card, a headlight, IR tracking system and transparent augmented reality lenses that will project images directly onto the surgeon's retina. Each headset is fitted and customized to the surgeon's interpupillary distance and calibrated to their eyes.

How is it different from a traditional guidance system in the market?

The xvision spine system is the first augmented reality guidance system for surgery. Although there are currently other augmented reality devices used in medicine today, as well as other image guidance systems, this is the first of its kind to combine these two tools to be used during surgery. Other image guidance systems have a separate 2D screen, where the surgeon needs to look away from the patient to see the data, and bulky equipment which takes up valuable OR space. In combination with the 2D axial and sagittal views, xvision helps in accurately placing screws and other instrumentation within the spine and the whole system is contained in a lightweight headset.

How the device small foot print, economical cost and compatibility is allow easy integration into any surgical facility nationwide?

We wanted to make our system as easy to incorporate into a facility as possible. By not taking up a lot of room in the OR, we free up space for personnel and other necessary equipment for surgery. We also do not want to make it difficult to incorporate our system into current workflows, so our system is agnostic to any spine pedicle screw implant system and many intraoperative 3D scanners. Our system will also be provided at a fraction of the cost of traditional navigation and robotics.

In your opinion which technology will most likely rule the healthcare industry Virtual Reality or Augmented Reality?

Virtual Reality and Augmented Reality have different applications within the healthcare industry. Our Augmented Reality technology is ideal for surgical applications because it displays reconstructed anatomical data directly on the patient, so the patient is still in view and the surgeon is not working in a virtual space. Virtual Reality is typically an application utilized in training or demonstrations outside of surgery.

Advancements in Nuclear medicine



The global nuclear medicine market size was valued at \$6.1 billion in 2019 and is estimated to witness a CAGR of 9.5% during the forecast period. Rising incidence of cancer is one of the major factors expected to boost the market for nuclear medicine. For instance, according to WHO, in 2018, globally there were an estimated 9.6 million deaths due to cancer

According to the Center for Nuclear Science and Technology Information, about one-third of all procedures used in modern hospitals involve radiation or radioactivity. The procedures offered are effective, safe, and painless and they do not need anesthesia.

Nuclear medicine imaging uses small amounts of radioactive material to diagnose, evaluate or treat a variety of diseases. These include many types of cancers, heart disease, gastrointestinal, endocrine or neurological disorders and other abnormalities. Because nuclear medicine exams can pinpoint molecular activity, they have the potential to identify disease in its earliest stages. They can also show whether a patient is responding to treatment.

The global nuclear medicine market size was valued at \$6.1 billion in 2019 and is estimated to witness a CAGR of 9.5% during the forecast period. Rising incidence of cancer is one of the major factors expected to boost the market for nuclear medicine. For instance, according to WHO, in 2018, globally there were an estimated 9.6 million deaths due to cancer.

Moreover, increasing prevalence of cardiovascular diseases is contributing to the growth of the market for nuclear medicine. For instance, according to WHO, cardiovascular diseases accounted for more than 17.9 million deaths worldwide every year. The number is expected to reach over 23.6 million by 2030.

The nuclear medicine market is expected to reach USD 5.2 billion by 2024 from an estimated USD 4.1 billion in 2019, growing at a CAGR of 4.7% during the forecast period. Growth in the nuclear medicine market can primarily be attributed to factors such as the increasing incidence and prevalence of cancer and cardiac ailments and initiatives to lessen the demand-supply gap of Mo-99. However, the short half-life of radiopharmaceuticals reduces their potential adoption, while hospital budget cuts and high equipment prices are expected to limit market growth to a certain extent, according to marketsandmarkets.com.

Eissa Mahmoud Eissa Khalifa, Manager, medical and nuclear medicine department UAE and Oman from Al Zahrawi Medical Supplies tells us in detail about the advancements in nuclear medicine.

Diagnosis

Nuclear medicine imaging procedures are noninvasive. With the exception of intravenous injections, they are usually painless. These tests use radioactive materials called radiopharmaceuticals or radiotracers to help doctors diagnose and evaluate medical conditions.

"Unlike conventional imaging (X-ray, CT and MRI) that gives physician info about how does the organ look like, In nuclear medicine the physician gets a valuable information about how does the organ function/malfunction"

Radiotracers are molecules linked to, or "labeled" with, a small amount of radioactive material that can be detected on the PET scan. Radiotracers accumulate in tumors or regions of inflammation. They can also bind to specific proteins in the body. The most commonly used radiotracer is F-18 fluorodeoxyglucose, or FDG, a molecule similar to glucose. Cancer cells are more metabolically active and may absorb glucose at a higher rate. This higher rate can be seen on PET scans. This allows your doctor to identify disease before it may be seen on other imaging tests. FDG is just one of many radiotracers in use or in development.

Depending on the type of exam, the radiotracer is injected, swallowed or inhaled as a gas. It eventually accumulates in the area of the body under examination. A special camera or imaging device detects radioactive emissions from the radiotracer. The camera or device produces pictures and provides molecular information.

Nuclear medicine technology

Many centers superimpose nuclear medicine images with computed tomography (CT) or magnetic resonance imaging (MRI) to produce special views. This is known as image fusion or co-registration. These views allow the doctor to correlate and interpret information from two different exams on one image. This leads to more precise information and accurate diagnoses.

"Single photon emission computed tomography/computed tomography (SPECT/CT) and positron emission tomography/computed tomography (PET/CT) units can perform both exams at the same time. PET/MRI is an emerging imaging technology".

Nuclear medicine also offers therapeutic procedures, such as

radioactive iodine (I-131) therapy that use small amounts of radioactive material to treat cancer and other medical conditions affecting the thyroid gland, as well as treatments for other cancers and medical conditions.

According to Mahmoud, technology plays an important role in transforming the healthcare scene. People might not need to go to the hospital after 10 to 15 years from now. Smart inhalers, Robotic Surgeries, Wireless brain sensors, 3-D Printing, Artificial organs, Tele-health, Virtual and Augmented reality are just few examples.

Imaging techniques

Nuclear medicine imaging techniques combine the use of radioactive substances, detectors, and computers to provide physicians with a way to see inside the human body. Specific techniques include positron emission tomography (PET) and single photon emission computed tomography (SPECT). Nuclear medicine imaging is useful for detecting tumors, irregular or inadequate blood flow to various tissues, blood cell disorders, and inadequate functioning of organs. During diagnostic procedures, the patient experiences little or no discomfort, and the radiation dose is small.

"Radiotracers work as drivers to take the radio isotope to the concerned organ/tumor of study. The success of the diagnostic protocol depends significantly on the accuracy of the binding process. When we look at the newly coming diseases which are resistant or minimal responsive to the available medicine options, researchers are assuring us that nuclear medicine is definitely going to complement with such upcoming challenges.

"In my opinion, Nuclear medicine has been proved to be a valuable branch of medicine. The evolution of PET/CT devices have demonstrated a significant improvement in special resolution. Now physician can understand/simulate how organs and tumors work on a molecular level. Also Theranostics are becoming very promising," Mahmoud excludes our interview.

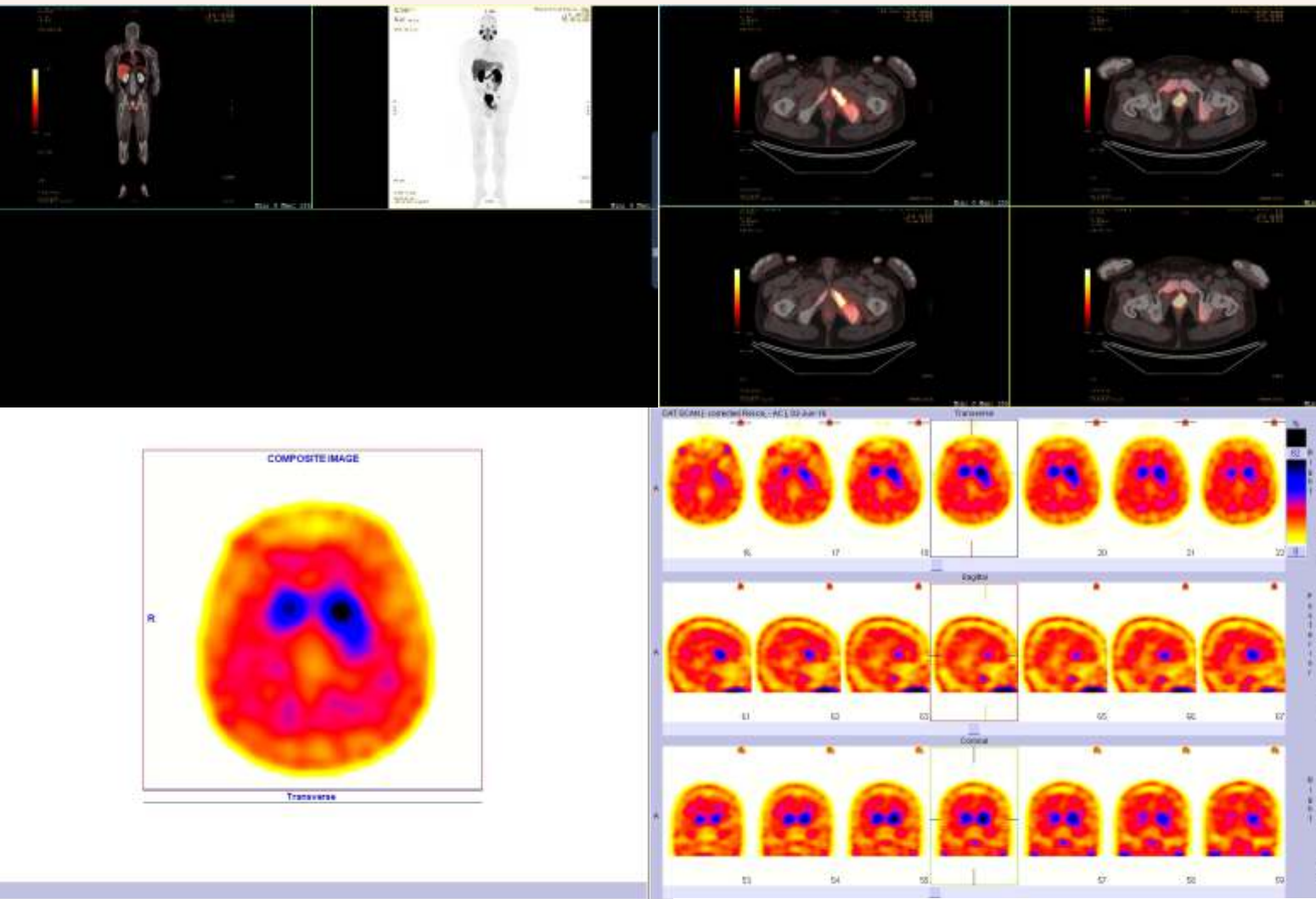
Nuclear medicine treatments

Abu Dhabi Health Services Company, SEHA, is offering nuclear medicine treatment services at Sheikh Khalifa Medical City, Mafraq Hospital in Abu Dhabi, and Tawam Hospital in Al Ain.

In her statement to the Emirates News Agency, WAM, Dr. Raqwana Baharoon, Nuclear Medicine Consultant at Sheikh Zayed Medical City, said that nuclear medicine is one of the most cutting-edge categories of medical technology and can detect many health issues, such as kidney disease, heart disease, arthritis, osteomyelitis, central nervous system inflammation, liver and spleen diseases, and lung and respiratory diseases.

Nuclear medicine analyses the functions of the body and the progress of diseases through imaging, which differs from radiology-based imaging, such as standard radiation, CT scans and magnetic resonance that examines the condition of organs and changes in anatomy, she adds.

SEHA has prioritized the use of nuclear medicine, due to its positive outcomes in many cases over recent years, she stresses.



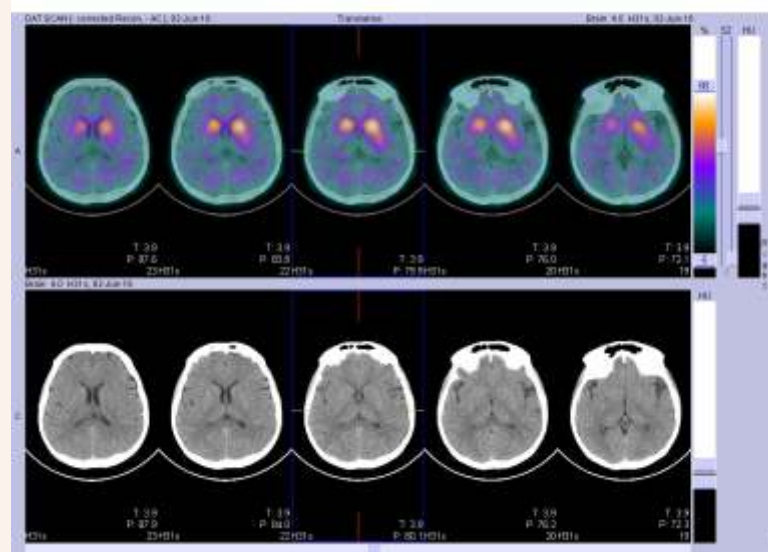
Al Mafrq Hospital began using nuclear medicine in various diagnostic studies, such as examining myocardial perfusion to assess cardiac function and ischemia, kidney examinations to assess kidney function, and bone examinations to assess the spread of bone cancer and osteoarthritis.

The hospital also treated many thyroid cancer patients with nuclear medicine, and five patients suffering from hyperthyroidism were cured in 2018. It has treated 20,597 patients from 2011 to the first half of 2019.

Mafrq Hospital provides various nuclear medicine treatments to patients, such as bone density and skeletal examinations, bone density axial examinations, endometriosis examinations, bone marrow examinations, orthopaedic limited imaging in multiple areas, whole-body bone imaging, whole-body bone marrow imaging, and brain imaging.

Tawam Hospital began using nuclear medicine in 1979, with the establishment of the Radioactive Materials Laboratory, which is equipped with one atomic scanning device and another device for Bone density scanning.

Tawam Hospital's nuclear medicine services have advanced over the years, making it one of the largest advanced nuclear medicine departments in the region, equipped with three atomic emission tomography CT scanners and one CT emission tomography scanner, as well as two suites with



high-precision radioisotope treatment equipment, two highly qualified nuclear medicine consultants and five supporting medical staff who specialize in nuclear medicine

The Department of Nuclear Medicine at Tawam Hospital provides various services related to tumors, heart disease, endocrinology, thyroid disease, benign active thyroid disease and Parkinson's disease.

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Iceland's advancing medical sector

Iceland has a universal healthcare. The healthcare system is largely paid for by taxes (85%) and to some extent by service fees (15%) and is administrated by the Ministry of Welfare. A considerable portion of government spending is assigned to health care. There is almost no private health insurance in Iceland and no private hospitals



Iceland is a Nordic island country in the North Atlantic, with a population of 364,134 and an area of 103,000 km² (40,000 sq. mi), making it the most sparsely populated country in Europe. The capital and largest city is Reykjavík. Reykjavik and the surrounding areas in the southwest of the country are home to over two-thirds of the population. Iceland is volcanically and geologically active. The interior consists of a plateau characterized by sand and lava fields, mountains, and glaciers, and many glacial rivers flow to the sea through the lowlands. Iceland is warmed by the Gulf Stream and has a temperate climate, despite a high latitude just outside the Arctic Circle. Its high latitude and marine influence keep summers chilly, with most of the archipelago having a polar climate.

According to the ancient manuscript Landnámabók, the settlement of Iceland began in 874 AD when the Norwegian chieftain Ingólfr Arnarson became the first permanent settler on the island.[11] In the following centuries, Norwegians, and to a lesser extent other Scandinavians, emigrated to Iceland, bringing with them thralls (i.e., slaves or serfs) of Gaelic origin.



Healthcare sector

Iceland has a large number of glaciers, and there are bays and fjords along the coastline. There is also an abundance of geysers on the Iceland. The geographical position of Iceland is such that the island nation is relatively warmer than other countries that lie in the same latitude. Although Iceland is located near the Arctic Circle, the winters here are not that harsh and severe. The presence of the North Atlantic current lowers the intensity of the cold winter winds. Overall, the climate of Iceland is predominantly temperate in nature.

Iceland has universal healthcare. The healthcare system is largely paid for by taxes (85%) and to some extent by service fees (15%) and is administrated by the Ministry of Welfare. A considerable portion of government spending is assigned to health care. There is almost no private health insurance in Iceland and no private hospitals.

Healthcare providers in Iceland fall into one of the following legally defined categories of healthcare providers: Healthcare Clinics, Health Institutions, University Hospitals and Teaching Hospitals.

The Icelandic health service is well organized, medical facilities are good and the doctor to patient ratio is much higher than in any other country at 3.7 doctors per 1,000 patients. All employers must pay taxes based on a percentage of wages to the State Treasury for every employee working for them.

Healthcard holders

Citizens of the European Economic Area (EEA) and European Health Insurance Card (EHIC) holders, who certify to the Social Security Institute (SSI) of Iceland that they have made contributions in their home country, are entitled to free or

reduced cost medical treatment from the national healthcare in Iceland. All registered foreign nationals, who have been residents in the country for six months are automatically entitled to healthcare coverage from the public healthcare system.

State health insurance in Iceland entitles citizens to hospital treatment and care, emergency medical care, prescription medicine, physiotherapy, ambulance transportation, surgical aids and other medical equipment, dental treatment and maternity care. The private health sector is not very common in Iceland. There are a limited number of private healthcare providers in the country, mainly operating within healthcare centers in more populated areas of Iceland. Specialist private healthcare operators are also available at a fee-for service for those who are not entitled or do not seek medical treatment from public healthcare.

The Ministry of Health (MOH) of Iceland is responsible for healthcare administration and it formulates policy on health related issues. By law, the MOH is required to carry out certain functions to ensure the stability of healthcare in Iceland. A few categories under MOH of Iceland include public health, patient rights, operation of hospitals, health centers and other health service centers (both public and private) and promotion of information technology in the health services of Iceland.

Iceland is divided into seven healthcare regions and each region has its own treatment facilities. Some of these centers have close connections with the local community hospitals; jointly they are responsible for general treatment and care, examination, home care, preventative medicine and child healthcare. Opticians, gynecologists, ear nose and throat specialists and pediatricians visit all healthcare centers on a regular basis. Each citizen is required to register with a GP in a region close by to where he lives. In each area, there is a doctor on-call 24 hours a day. Doctors are salaried workers normally paid by the Government. Inpatient treatment is free of charge, and payments are required for treatment at the health centers and hospital outpatient wards.

Hospitals in Iceland are located in all the major towns of the country and normally one will find the most highly qualified medical professionals practicing there. There are three types of hospitals in Iceland, namely specialized teaching hospitals, general hospitals and community hospitals. The specialized hospitals perform most operations and procedures in all specialist medical fields. One must receive a referral from a doctor in order to visit any hospital in Iceland unless it is in the case of an emergency. Medical tourism is booming in Iceland and the Government is building two private hospitals in Reykjanesbaer and Mosfellsbaer to address the need. A private dental clinic will also open soon. Both hospitals will offer specialized surgery and treatment, joint replacement and many other services. The dental clinic will offer a new method of teeth implantation.

The healthcare system in Iceland is very well established; perhaps a minor imperfection is that there is limited access to healthcare services in the less urbanized areas of the country. If you are planning to stay in Iceland for less than six months, you are required to pay for any out-of-pocket medical costs and these are typically expensive. It is therefore highly recommended to purchase a travel policy while making a trip to Iceland. As is the case with any universal healthcare system, there are always long queuing times that can be a hassle during your trip. Should you desire to receive immediate treatment at a doctor or clinic of your choice, an expat medical insurance plan will be the optimal solution for you. This will give you a peace-of-mind knowing that medical costs will be covered quickly and efficiently in case of an accident or illness for yourself and your family while traveling to the country.



Medical technology sector

Being a small country, Iceland has no medical technology of its own. The country relies mostly on other Scandinavian countries, US, and England. About one third of Icelandic physicians are abroad. Because of Iceland's, excellent population records, which goes back 150 years, medical research often relies on those and clinical population studies than on elaborate laboratories with expensive technologies.

The Icelandic healthcare technology sector – focuses specifically on information technologies and medical devices and has seen a paralleled boom in recent years to fit this innovation demand. The organization of the Icelandic sector follows a similar categorization as observed in other global healthcare technology sectors such as Clinical Admin & Patient Safety, Medical devices, TeleHealth, HER/EMR, Population Health Management, Online Health Communities, Patient Engagement, Genomics, Big Data & Analytics and so on.

Iceland has a solid infrastructure within bio- and health technology. The Icelandic population is well educated, open-minded and willing to embrace new technologies. Strong educational and research institutions and companies with qualified workforce and international connections have now opened up new fields offering more diverse and extensive educational possibilities in health-, biomedical and biotechnology, ICT, engineering and business. Most Icelandic scientists today have gained their graduate qualifications abroad. Among the main strengths of the Icelandic scientific community is the extensive net of international connections, arising from, and maintained by researchers who have completed advanced research degrees in other countries.

As Iceland has a small home market, innovation efforts need to have a global perspective from the get go. Therefore, Icelandic bio- and health products and solutions are tailored to a global market from the initial phases of development. Active cooperation has led to remarkable progress and many Icelandic companies in bio- and health technology are already servicing the global market.

QuantLase Imaging Lab develops AI powered equipment for faster mass screenings



QuantLase Imaging Lab, the medical-research arm of the Abu Dhabi Stock Exchange-listed International Holdings Company, IHC, announced that it has developed novel equipment which enables for much faster mass screenings, with test results available in seconds and allowing testing on a wider scale.

The technology will reinforce the UAE's position as a hub of research and innovation, as scientists around the world scramble to devise a faster method of testing for patients suspected to have been infected with the coronavirus and potentially identifying carriers before they become infectious. This break-through will enable 'Mass-scale screening', changing the whole dimension of tracing and the speed with which workforces can be approached.

Abdul Rahman bin Mohammad bin Nasser Al Owais, Minister of Health and Prevention, expressed hope over the discovery saying: "We are always following innovations related to the early and rapid detection of Covid-19. The government is keen on supporting initiatives that help the healthcare system in the UAE. Health officials have been closely monitoring the progress of trials with QuantLase in order to test this equipment. We are proud to see a technology that works and that will help to protect our people better."

"The equipment, which uses a CMOS detector, will enable mass-scale screening with results made available in seconds," said Dr. Pramod Kumar, who leads the team of researchers at the lab which has been studying the change in cell structure of the virus-infected blood.

"In fact, our laser-based DPI (Diffractive Phase Interferometry) technique, based on optical-phase modulation, is able to give a signature of infection within a few seconds. What's more, it is user-friendly, non-invasive and low-cost. The device is suitable for use not only in hospitals and public places like cinemas and shopping malls, but with a 'little hands-on training' it can be used for in-house

testing and monitoring. We believe it will be a game-changer in tackling the spread of the coronavirus."

Explaining the critical role of artificial intelligence, AI, in the diagnostic system, Dr Kumar said that an advanced AI image-analysis model predicts the outcome of each image with precision, speed and scale. This is especially critical in large-scale testing programs, where a massive number of images needs to be analyzed with accuracy and efficiency. The lab is using G42, a leading AI and Cloud Computing company, to further enhance the laser program.

Commenting on the invention, Nader Ahmed Al Hammadi, member of the Board of Directors at IHC: "IHC is proud to play a role in contributing to the robust efforts made by the UAE leadership in fighting the Covid-19 outbreak, especially with regards to testing and raising awareness."

"With the first 1,000 tests, we refined our experiment and then applied it to the rest of the trials," Dr. Kumar said. "The process passed through several stages, and most recently was being trialed on a large scale, in line with current testing procedures."

The lab hopes to be able to roll out the product in the market in a few months, Dr. Kumar added. So far, the machine has produced results with high accuracy in optimal control setup, according to Dr. Kumar. "As far as early stage detection is concerned, our DPI technique is capable to detect as soon as the blood cell gets infected. Our aim is to eventually reach the maximum level of accuracy."

Achieving scientific breakthroughs that focus on the welfare of people is one of the pillars of the National Strategy for Advanced Innovation announced by the UAE government in February 2018. The new strategy also calls for collaboration with leading international institutions and companies specialized in the field of innovation.

Cleveland Clinic Abu Dhabi joins hands with US-based Cleveland Clinic to share expertise and best practice for COVID-19 patients



Cleveland Clinic Abu Dhabi, part of the Mubadala network of healthcare assets, is joining hands with the US-based Cleveland Clinic to share expertise and best practice around treating COVID-19 patients, as part of a global knowledge exchange.

A team of 40 frontline medical staff from the US, including nurses, physicians, and allied health professionals, has arrived in Abu Dhabi to spend six weeks with the multidisciplinary team at Cleveland Clinic Abu Dhabi.

While providing care for the most seriously ill COVID-19 patients, the caregivers will also share some of the key learnings from managing the disease in the USA, as well as receiving updates on the remarkable progress in testing and treatment being made in the UAE.

"This international health crisis requires a collaborative effort to share best practice and find the most effective treatments for COVID-19 patients. We are proud to be working with experts in the Department of Health – Abu Dhabi, SEHA and Mubadala in treating the disease in the UAE and we are grateful to be able to share some key learnings with colleagues from the global Cleveland Clinic network," says Dr. Rakesh Suri, Chief Executive Officer at Cleveland Clinic Abu Dhabi.

Cleveland Clinic Abu Dhabi has been designated as a tier three hospital by the Department of Health – Abu Dhabi, to care for patients with the most severe symptoms.

Herb Wiedemann, Chief of Staff at Cleveland Clinic in the US, says, "I want to thank these remarkable physicians, who are willing to cross oceans to assist people. By working together, hospitals around the world will be able to better understand this disease and the most effective ways to treat it. We are grateful to the authorities and people of Abu Dhabi for their warm welcome and willingness to share their insights with us."

Aster steps up its fights against Covid-19 with new critical care hospital in Muhaisnah

After bringing in healthcare professionals from India, Aster DM Health Care has stepped up its battle against coronavirus by setting up a 50-bed critical care hospital in Muhaisnah to cater to workers staying in the area.

With this new facility, Aster Hospitals now offer a combined bed capacity of 310 across four locations in the UAE.

The new facility will provide treatment to Covid-19 patients, in addition to other Aster and Medcare Hospitals in the UAE. Aster Hospital Al Qusais and Medcare Multi-Specialty Hospital, Al Safa are designated centers by Dubai Health Authority for Covid-19 treatment. With this new facility, Aster DM Healthcare strengthens its presence in UAE, with four Aster Hospitals and four Medcare Hospitals.

The hospital was inaugurated by Dr Amer Ahmad Sharif, Chairman of the COVID-19 Command and Control Centre and Vice Chancellor of the Mohammed Bin Rashid University of



Medicine and Health Sciences (MBRU), and Dr Muna Tahlak, CEO of Latifa Hospital.

Humaid Al Qutami, Director-General of Dubai Health Authority (DHA) said, "The public and private healthcare sector in Dubai have shown exemplary partnership especially for managing the Covid-19 pandemic and operating round-the-clock to provide optimum care to all patients. We are thankful to Aster for the continued commitment to undertake all possible measures to control the pandemic as well as add capacity to treat critical care cases at Muhaisnah. This hospital will provide accessible care to the people in the area."

Dr Azad Moopen, Founder Chairman and Managing Director, Aster DM Healthcare said, "The 50-bed Aster Hospital in Muhaisnah has all the facilities available to be a secondary/tertiary care hospital manned by our experienced medical professionals. It is all the more important at the present juncture as it can take care of the requirement of COVID-19 patients who need advanced care including ventilators. It will also address the requirement of screening and testing of residents of Muhaisnah to contain the infection. We are thankful to the UAE Government, DHA and other government officials who supported in the development of the facility and we remain committed to provide our best to UAE's fight against COVID-19."

SEHA develops 'Ambulance Sterilization System' to improve response time between trips

Abu Dhabi Health Services Company (SEHA), the UAE's largest health care provider, announced the launch of its 'Ambulance Sterilization System'. Created specifically for transporting COVID-19 patients, the latest innovation completes the full sterilization of a single ambulance within 20-30 seconds. As part of SEHA's continuous efforts to deliver world-class healthcare, the system is aimed at improving the response time required between trips with the same ambulance. This also enhances the capacity, allowing more patients to be transported within a single day, improving the overall efficiency in treatment delivery. The Ambulance Sterilization System also eliminates the need for human intervention in the sterilization process and minimizes the possibility of contamination or even secondary infection.

Dr. Marwan Al Kaabi, Group Deputy Chief Operating Officer, SEHA, said, 'The launch of the Ambulance Sterilization System underpins SEHA's commitment to ensuring its entire network is equipped with the most advanced technology, and capabilities. Combined with the skill of our employees, SEHA is positioned to pave the way in reimagining the delivery of care. Despite the challenges introduced by the COVID-19 outbreak, we are more focused on providing solutions which protect the health and well-being of the UAE community, in addition to limiting the spread of the virus.'

'The Ambulance Sterilization System was designed and created by an Emirati member of our team. SEHA invests heavily into the development and use of the latest technological advancements, whilst empowering employees to innovate new business and medical solutions, ultimately benefitting from the Fourth Industrial Revolution (4IR). Leveraging the power of Artificial Intelligence (AI), the vehicle and its contents undergo a sterilization process using targeted cold-fogging disinfection, which is commonly used for air purification, as well as in hospital quarantines. The push-button system is activated as soon as COVID-19 patients leave the ambulance for treatment, requiring only 20-30 seconds at most to complete the process. As a result, the system minimizes the need for longer lead times when preparing ambulances or waiting time needed by third-party contracting services," he added.

Ahmed Turki Al Mansoori, General Services Manager, Ambulatory Healthcare Services (AHS), SEHA commented, 'In our mission to swiftly and effectively respond to implications brought by COVID-19, we recognized that ambulances play a pivotal role in helping manage the treatment of cases, as well as delivery of care. Demand for Ambulances has undoubtedly increased, and thanks to the support of the UAE's leadership, we have been able to not only empower SEHA's employees to innovate and create, but also invest in new technologies which will deliver long-term results.



'Previously, ambulances and emergency equipment underwent professional medical sterilization, which needed relatively longer periods of time. With this innovative technology, an automated pump pulls the sterilizer from a tank connected to each ambulance. Afterwards, the system sterilizes the equipment and other items within the ambulance using a combination of UVC heat, high concentrations of medical-grade disinfectants and water in the form of a fine mist to ensure all visible or hard to reach surfaces become sterilized. The system has allowed for a cost-effective, speedy, precise and accurate sterilization process for one of our most important assets in our fight against COVID-19," added Ahmed.

Abdullah Mohammed, General Manager, The Best Color Company the company responsible for executing the system stated, 'The Ambulance Sterilization System is time-efficient, sustainable and economic, as it utilizes half a gallon of medical-grade disinfectant for every hour of use. In addition, the cold-fogging disinfection feature can spray with a force of up to 80 bars and a flow rate of nine metric liters per minute. Each spray droplet's size measures 7.3 micrometers or microns in diameter.

'The pump pulls the components of the sterilizers from a built-in tank located in all ambulances, according to the best quality controls and assurance, to ensure that the disinfectants are stored under the optimum temperature. For every round of sterilization, the tank automatically mixes the disinfectants to maintain the concentration of the components. Once this phase is complete, the disinfectants are sprayed using the cloud-fogging mechanism through a precise and sophisticated process to ensure all visible and hidden surfaces, as well as equipment are completely sterilized," added Abdullah.

In partnership with Abu Dhabi Police, SEHA has adapted its ambulances as part of its readiness and preparedness strategy for combating epidemics, including the ongoing COVID-19 pandemic. Furthermore, SEHA is working on ensuring that all regular services such as emergency medical response and management emergency (operating 24/7) do not get disrupted, by equipping all its facilities with the most advanced technologies to deal with all injuries, especially those most prevalent in Abu Dhabi. Immediate response teams have also introduced stricter infection control measures when responding to emergencies to prevent potential infections to patients.

Etihad develops 3D-printed face shields for UAE medical staff to mark Zayed Humanitarian Day



Etihad Airways has developed 3D-printed face shields made from 100 percent recycled materials for medical staff in the UAE to mark Zayed Humanitarian Day.

Etihad Airways Medical Centre (EAMC) collaborated with Etihad Engineering to develop 1,000 of these shields.

"As part of our CSR efforts, as an organization we challenged ourselves to determine what we could do to help combat the effects of this global pandemic. With high demand for PPE in the UAE, our innovative design team at Etihad Engineering successfully developed 1,000 face shields for us to distribute locally," said Dr. Nadia Al Bastaki, vice president medical services at Etihad Aviation Group, on Tuesday.

"With the logistical support of Emirates Red Crescent, we'll start distributing the face shields to medical professionals at EAMC and SEHA this week," added Al Bastaki.

A press statement on its website stated that the face shields were designed and manufactured using Etihad Engineering's latest 3D printing technology certified by the highest aviation standards.

The shields were validated by EAMC's medical team to ensure they deliver the necessary protection.

It features a reusable plastic band which requires standard disinfection (similar to a mobile phone) and a disposable plastic shield which can be replaced with sheets found at any stationery store.

The airline said that additional plastic sheets will be distributed along with the face shields. In collaboration with the United Nations Refugee Agency (UNHCR) and with Emirates Red Crescent, through Etihad Guest miles donation drives, Etihad Airways has provided ventilators, masks, gloves and soap to refugees and other displaced people.

The airline is also donating over 1000 units of essential supplies to SEHA, Emirates Foundation, ADNEC Field Hospital and Trade Centre Field Hospital with bags containing children's activity packs and essential bathroom amenities.

Uber offers discounted trips to healthcare worker in Dubai and Abu Dhabi



Ride-hailing giant Uber unveiled a new service for offering UAE healthcare workers discounted trips to and from their workplaces in Dubai and Abu Dhabi.

The service called Uber Medics is part of the company's global program to help healthcare workers and communities cope during the Covid-19 outbreak.

"We want to do our part and support those who have played a key role in protecting us during this pandemic," said Rifad Mahasneh, Uber general manager in the UAE.

"We are excited to launch Uber Medics in the UAE and look forward to working with more partners and to help more healthcare workers in these uncertain times."

The service was first launched in the UK last month where the company offers a 25 percent discount to medical staff. However, Uber did not disclose the value of discount offered in the Emirates.

In the UAE, Uber Medics will go live with a number of partners – such as Amana Healthcare, part of Mubadala's network of healthcare providers – to help thousands of health workers.

"Amana Healthcare will be utilizing Uber Medics through an Uber for Business solution, for transporting their caregivers to and from the patient's home," the company said.

Other healthcare providers whose medical staff will use the service include Saudi German Hospital and Zulekha Hospital in Dubai.

"These are challenging times, the spread of coronavirus has brought a lot of change to the way we live and work ... we have been looking at how we can support and bring a positive impact to our communities," added Mr. Mahasneh.

Uber is also spending Dh183.5 million on safety supplies, such as masks and sanitizers, which it will provide to its drivers.

Fidget spinners to detect utis via urine samples



More than half of all women experience at least one episode of urinary tract infection (UTI) in their lifetime, with men also facing increasing risks of infection as they age. Current detection of UTIs rely on patients reporting symptoms followed by a lab culture of the urine for known bacterial culprits, which typically takes a few days. However, doctors tend to prescribe antibiotics to suppress any suspect cases of UTI before they get the test results, contributing to the increasing problem of antibiotic resistance. Dipstick tests that reduce the time taken for diagnoses come with a high chance for false positives.

A multidisciplinary and international team of Korean and Indian researchers have recently developed a fidget

spinner-based device to detect UTIs from urine samples. In a paper published in *Nature Biomedical Engineering*, the team describe the development and testing of the rectangular device which takes as little as 1 ml of urine. With one or two nudges, the device spins for a long time pushing any bacteria onto a membrane. This is then dyed, with a color change visible to the naked eye in less than one hour, which indicates the amount of bacterial load.

The device was field tested on 39 patients in Tiruchirappalli, India who would have all been given antibiotics based on their symptoms alone. 59% of the patients were found to be over/under-treated with antibiotics, something that can be rectified using this novel device.

Another test gave a preliminary indication of the presence of antibiotic resistance. By testing the spun samples treated with different drugs and comparing them to untreated samples, the team was able to quickly make a decision on which antibiotic might work best to treat the UTI. While this does not compare to lab based tests for microbial resistance, it is still a useful add-on for resource-poor settings that do not typically test for resistance.

The team also reported that the test can be performed by novices and that there's no extensive training that is required to learn how to spin the device and read the results. The ease-of-use, low price point, availability of quick results, and immediate benefits such as a reduction in the prescription of antibiotics, makes the new spinner an attractive alternative for diagnosing UTIs.

Magnetic tracking system for surgical robots to operate with dexterity within the body

Researchers at the University of California San Diego have developed a magnetic tracking system for surgical robots to operate with dexterity within the body. The technology does not require patient or clinician exposure to radiation and is much less expensive than pre-existing monitoring techniques. A magnet is embedded in the tip of the robot and a series of sensors can track its location, while a neural network improves the accuracy of the tracking system.

"Continuum medical robots work really well in highly constrained environments inside the body," said Tania Morimoto, a researcher involved in the study. "They're inherently safer and more compliant than rigid tools. But it becomes a lot harder to track their location and their shape inside the body. And so if we are able to track them more easily that would be a great benefit both to patients and surgeons."

Current techniques to track such robots can involve X-ray exposure for medical staff and patients and can be expensive. This new approach developed by Morimoto and her colleagues is much less expensive, clocking in at approximately \$100 for the required components, and does not require radiation. The system relies on the magnetic field produced by a magnet embedded in the tip of a flexible surgical robot.

Four sensors can detect this magnetic field when they are placed at specific locations near where the robot is operating, and a computer model then predicts the location of the robot based on this sensor data. The computer system development involved using a neural network to determine the difference between the actual and theoretical sensor values, which helped the researchers to improve the accuracy of their system.

So far, the research team has tested the system using a specific type of soft robot that can navigate delicate areas in the body as it is flexible and applies very little pressure to the structures it encounters. "We worked with a growing robot, which is a robot made of very thin nylon that we invert, almost like a sock, and pressurize with a fluid which causes the robot to grow," said Connor Watson, another researcher involved in the project. "Because the robot is soft and moves by growing, it has very little impact on its surroundings, making it ideal for use in medical settings."

30-minute urine test to measure levels of substances that can contribute to kidney stones



Researchers from Penn State and Stanford University have developed a 30-minute urine test to measure levels of substances that can contribute to kidney stone formation. The test could help patients to find out if they are prone to developing kidney stones or to monitor their progress in avoiding kidney stone formation through treatment or dietary changes.

Kidney stones are accumulations of crystallized substances such as minerals and salts, and the stones can cause pain and blockages in the urinary system. Certain people are prone to developing the stones, and assessing urinary levels of these substances is key in monitoring their risk of stones in the future.

However, the current urinary test for these substances is cumbersome and time consuming. Patients must collect a significant quantity of urine over a 24-hour period, and then send the large urine sample off to a laboratory with expensive specialized testing equipment, before receiving the results about a week later.

"The lengthy process, cumbersome collection procedure and delay in obtaining the results render 24-hour urine testing to be underutilized in clinical practice despite guideline recommendations," said Pak Kin Wong, a researcher involved in the study.

To address this, this group of researchers has developed a rapid test that takes only 30 minutes and can be performed in a doctor's office, or even at home, without any specialized equipment. The test uses bioinspired low-friction surfaces, similar to those seen in carnivorous plants that cause insects to slip to their death. The aim is to improve liquid movement through a small plastic device, leading to its name, slippery liquid-infused porous surface (SLIPS)-LAB.

A small urine sample is added to the device and surface tension draws droplets of the sample through the plastic channels, which are low-friction and allow the droplets to move easily. The droplets combine with specific reactants within the device and the results can be assessed using a cell phone camera.

"We demonstrated that SLIPS-LAB enables the reagent and sample to move themselves and perform the reactions for us," said Wong. "It means the technology doesn't require a technician to run any test machinery, so it is possible to do the test in non-traditional settings, like a physician's office or even the patient's home."

Smartphone pictures of inner eyelid reveal accurate results of blood hemoglobin levels



Anemia is properly diagnosed using a blood test that measures hemoglobin, but simply looking behind a patient's eyelid can be a pretty good alternative if you know how red the tissue is supposed to be. Now, a team at Purdue University has developed a technology that lets a clinician use smartphone pictures of the inner eyelid to automatically obtain surprisingly accurate results of blood hemoglobin levels. This capability is expected to soon be fully integrated into an app that will perform the necessary image analysis.

Unlike blood tests, smartphone apps are incredibly easy to roll out and put to use in even some of the most remote and resource poor areas of the world. Even in countries where blood testing is readily available, a quick point-of-care test that provides pretty accurate estimates of hemoglobin levels can be incredibly useful in a variety of cases. "This technology won't replace a conventional blood test, but it gives a comparable hemoglobin count right away and is noninvasive and real-time," said Young Kim, an associate professor of biomedical engineering at Purdue and lead author of the study appearing in journal *Optica*. "Depending on the hospital setting, it can take a few hours to get results from a blood test. Some situations also may require multiple blood tests, which lead to more blood loss."

The new technique relies on super-resolution spectroscopy to convert smartphone photos into high-resolution spectral maps. An additional algorithm then reads these spectral signals and turns them into hemoglobin counts. This algorithm was created by training it using eyelid photos and hemoglobin counts of dozens of individual patients presenting at a hospital in Kenya.

"The idea is to get a spectrum of colors using a simple photo. Even if we had several photos with very similar redness, we can't clearly see the difference. A spectrum gives us multiple data points, which increases chances of finding meaningful information highly correlated to blood hemoglobin level," said Sang Mok Park, a Purdue Ph.D. candidate in biomedical engineering, and another researcher involved in the study.

Surgical Suction Units by Inspital Medical Technology GmbH



INSPIRAL Surgical Suction Units are ideal solutions for any hospital and are designed for the suction of surgical fluids, gases and other wastes in operation area during and after the surgery. Device creates stable vacuum performance at adjusted vacuum level thanks to its maintenance free oil-less vacuum pump. Wide range of accessories makes the device very suitable for many different departments in the hospital.

For more information please contact: www.nextvpu.com

Pulmonary Function Testing - Quark PFT



Quark PFT is a modular and compact Pulmonary Function Testing system that allows accurate, repeatable, low cost tests over time. It has been designed to meet any physician's configuration requirement, whether a full-featured PFT system or a basic configuration to start a private practice is needed. Quark PFT is powered by OMNIA, the new software platform, entirely designed and developed by COSMED. OMNIA provides an innovative and user-friendly interface (touch-screen ready) that allows operators to navigate and access features and testing with a minimal amount of training. OMNIA is available in a multi-language environment either as a stand-alone or as a client in a small or large network environment. All Quark PFT modules comply with the latest published ATS/ERS statements.

For more information please contact:
www.cosmed.com/en/products/pulmonary-function/quark-pft

Auto maker Ferrari develops pulmonary ventilator



Synonymous the world over with fast and ferocious cars auto giant Ferrari has come out with a pulmonary ventilator which uses easily available materials making it cheaper than most currently available machines

Scuderia Ferrari Mission Winnow and the Italian Institute of Technology have joined hands to come up with a pulmonary ventilator that can be used by hospitals as a vital tool when dealing with emergencies such as the current global pandemic. The project is codenamed F15: the letters being the initials of the Maranello brand and the research institute based in Genoa respectively, while the number indicates the number of weeks required to produce a fully functioning prototype, starting from a clean sheet. F15 is just one in a series of initiatives set up by Ferrari and IIT. Over the past few weeks, Ferrari has launched various corona virus health care

projects, including direct financial support for the Modena area, as well as the production of valves for pulmonary respirators and fittings for protective masks. For more information please contact: www.fia.com



Skintified: Skincare that works

Treat your skin with a delightful mix of skin care essentials with a newly launched skincare routine design service called 'Skintified'.

Ideal for both men and women, it is an ingredient-based regimen with products proven to work from some of the best brands in the world. Think of them as your personal skin care shopper who knows the difference between marketing hype and what truly works for different skin types and issues.

Skintified prefers brands like CeraVe, The Ordinary, The Inkey List, Paula's Choice, Purito, Cosrx which are more focused on ingredients than just packaging. Most products are rich in antioxidants and vitamins such as A, B and C in the right formulation proven to show results.

For more information please contact: www.skintified.in

Infrared Forehead Thermometer by Prestige Medical

To defeat Covid 19 epidemic which is affecting the world what doctors need is fast and accurate temperature reading and forehead thermometers go a long way in providing first line to check against this epidemic. Ideal for measuring body, surface and ambient temperatures it measures readings in both Fahrenheit and Celsius. If the temperature is high there is a high temperature alarm. Its backlit digital LCD display screen helps you to read the temperature both during night and day. It comes with two AAA batteries with one year warranty.

For more information please contact: www.prestigemedical.com



Fine Guard Face Masks Eliminate Coronavirus 229e on Contact

Fine Hygienic Holding (FHH), one of the world's leading wellness groups and manufacturer of hygienic paper products, has released the results of scientific testing conducted by the University of Arizona which confirms Livinguard technology incorporated in its Fine Guard masks effectively neutralizes pathogens of all kinds upon contact, including Human coronavirus 229e.

These masks are reusable face masks with N95 filtration, embedded with bacteria and virus-neutralizing LIVINGUARD® technology. Available in MENA markets including UAE, Saudi Arabia, and Jordan. The mask can be reusable for up to two years and can be washed up to 30 times with hand soap and warm water, offering a more sustainable alternative than disposable masks.

For more information please contact: www.fineguard.me



UPCOMING EVENTS



**World Diabetes
& Endocrinology
Summit**

24-25 June
Dubai



**Ark World Congress
on Neonatology and
Pediatrics**

16-17 July
Dubai



**International
Nursing
Research
Congress**

23-27 July
Abu Dhabi



**International
Growth &
Development
Conference**

02-04 September
Dubai



**Emirates
Derma**

03-05 September
Dubai



**United Experts
Meet on Nursing
Education and
Nursing Practices**

17-18 September
Abu Dhabi



**MENA
International
Orthopaedics
Congress**

17-18 September
Dubai



**Annual GCC
Healthcare
5.0 Congress**

21-22 September
Dubai



**Head and Neck
Conference: The
Multidisciplinary
Approach**

26-27 October
Dubai



**International
Conference on
Nephrology**

26-27 October
Dubai



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Active Cooling Equipment

- Owned and managed rollerbed reefer trucks 4x Q7 Positions (or equivalent) with Real Time Temperature Monitoring & GPS tracking. Cooling range -18°C to +25°C
- 10Ft (or 2 LD3) ULD dollies. Cooling range -18°C/ +25°C
- Bulk trailers 2500Kg / 14m³ capacity. Cooling range 0°C/ +18°C





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ANY OTHER, WE CARRY ALL YOUR HEALTH AND WELLNESS NEEDS,
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