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SECTOR UPDATES

U.A.E. MEDTECH SECTOR

BUSINESS COUNCIL REPORT

Authors

U.S.-U.A.E. Business Council

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The U.A.E.'s MedTech Sector

The U.A.E.'s healthcare sector is being transformed by new medical technologies that have taken on increased importance as a result of the Covid-19 pandemic. This study, which is part of a larger series of reports about the impact of technology on the U.A.E.'s economy, outlines how the U.A.E.'s focus on expanding its healthcare system, adopting innovative new technologies, and forging partnerships with leading U.S. hospitals and medical technology companies has led to a flourishing of the U.A.E.'s medtech sector. It also demonstrates how the U.A.E. has accelerated the pace at which it is adopting new medical technologies as a result of the pandemic.

Drivers of Change

The development of a world-class healthcare system is of critical importance to the U.A.E. and is one of the six pillars of its national agenda, or Vision 2021. Moreover, the sector has rapidly expanded to meet the evolving needs of a growing population, the high prevalence of chronic diseases, and the country's ambition to become a regional medical tourism hub. At the same time, the U.A.E. has developed more specialized healthcare capabilities so that it can reduce the number of patients it sends abroad for complex and costly treatment.

As part of the growth and increased sophistication of the U.A.E.'s healthcare sector, the U.A.E. has implemented new, best-in-class medtech solutions revolving, for instance, around telemedicine, digitization of health records, connected medical devices, and 3D printing. In many cases, this was done in partnership with leading U.S. companies. The pandemic has only sharpened the U.A.E.'s focus on these areas, creating new opportunities for partnerships between the U.S. and U.A.E.

Best-in-Class MedTech Solutions

Telemedicine | Electronic Medical Records | Laboratory Technologies

Medical Devices & Equipment | 3D Printing

NATIONAL PRIORITIES

World-Class Healthcare

Competitive Knowledge Economy

Safe Public & Fair Judiciary

Cohesive Society & Preserved Identity

First-Rate Education System

Sustainable Environment & Infrastructure

Telemedicine

The U.A.E. has long recognized the power of telehealth to facilitate patient care in the country. Notably, the Abu Dhabi Telemedicine Centre, which is a joint venture between Mubadala and Medgate, offers convenient and high-quality medical consultations over the phone, in both Arabic and English, 24 hours a day and 7 days per week.

مركز أبوظبي للتطبيب عن بعد
Abu Dhabi Telemedicine Centre
A Mubadala Company

Telehealth was also seen as a way for patients to connect with providers abroad, thus reducing the need for patients to travel to the United States or other countries for complex care or enabling patients to easily follow up on care received abroad. For example, Cleveland Clinic Abu Dhabi, part of Mubadala's network, uses telehealth to care for patients in the U.A.E., including by involving their doctors and experts at their flagship hospital in Cleveland, Ohio.

The Covid-19 pandemic has accelerated the adoption of telehealth as healthcare providers have increasingly offered virtual visits to minimize exposure and risk to patients. At one point, Cleveland Clinic Abu Dhabi reported using telehealth for 50% of consultations through its 'Virtual Visits' service. More broadly, Mubadala Healthcare Network assets Abu Dhabi Telemedicine Centre, Healthpoint, Imperial College London Diabetes Centre, and Cleveland Clinic Abu Dhabi have deployed teleconsultations to curb infection rates and protect at-risk populations. Healthpoint physiotherapists as well have been using video calls for therapy sessions.

As part of this integrated approach, Mubadala has partnered with Aramex to provide door-to-door delivery of critical medical supplies to patients across the U.A.E. In line with the Healthcare Programme for Senior Citizens and Individuals with Chronic Illnesses run by the Department of Health - Abu Dhabi and Abu Dhabi Public Health Centre, Mubadala's Imperial College London Diabetes Centre and Amana Heathcare have collaborated to provide homecare phlebotomy to further safeguard vulnerable patients. Mubadala Healthcare is also working in partnership with the Abu Dhabi Center for Public Health to allow non-critical Covid-19 patients to be monitored at home through the Department of Health - Abu Dhabi's "Remote Healthcare" digital platform. The initiative uses the Department of Health's Remote Care app, supported by Mubadala's Injazat Data Systems, to facilitate remote care for these patients.

Notably, in an April 2020 webinar organized by the Business Council, the Deputy Group CEO and Chief Executive Officer for Alternative Investments & Infrastructure at Mubadala, H.E. Waleed Al Mokarrab Al Muhairi, said that the number of telemedicine appointments by Mubadala entities increased by 2,000% in just the initial stage of the pandemic.

The U.A.E. is keen to ensure the requisite regulatory infrastructure for the further adoption of telemedicine. American law firm Morgan Lewis points out that as a regional leader in innovation, the U.A.E. has focused its regulation around six key areas in telehealth: teleconsultation, telediagnosis, telemonitoring (remote patient monitoring), Mhealth (mobile health), telerobotics and robot-assisted services, and telepharmacy.

Cigna MetLife

At the same time, leading international health insurance providers, such as Cigna and MetLife, are working on facilitating the coverage of such services,

Abu Dhabi Telemedicine Center offers **24/7 medical consultations** over the phone, in both **Arabic & English**

Cleveland Clinic Abu Dhabi uses telehealth by **involving their doctors and experts at their flagship hospital in Cleveland, Ohio**

50%

At the height of the pandemic, **50% of CCAD consultations were using telehealth**

2,000%

increase in telemedicine appointments by Mubadala entities

now and in future. Additionally, the Cigna Wellbeing App provides access to specialist doctors who are trained to triage, identify and manage suspected COVID-19 symptoms. This application also offers 24/7/365 access from the customer's mobile device to clinical and well-being services and tools to access care (global network of providers), understand more about one's own health, and change lifestyle behaviors when needed.

Health Data and Electronic Medical Records

For the past decade, the U.A.E. has been gradually implementing electronic health record (EHR) and health information exchange (HIE) systems throughout the country that promise to help the country reduce duplication, medication errors, and the length of hospital stays; improve patient safety and outcomes; and inform more effective public health policies.

Over a decade ago, in 2008, the U.A.E. Ministry of Health & Prevention launched the "Wareed" project to establish a 'one patient, one record' electronic health record system by linking all of its facilities in Dubai and the Northern Emirates. This project, which involved deploying Cerner Millennium® systems in all Ministry hospitals and clinics, was managed by Dubai-based Hybrid Health Solutions and implemented by a consortium including iCapital, Cerner Corporation, Gulf Business Machines (the sole distributor of most IBM products and services), and Injazat Data Systems. In 2014, the U.A.E. Ministry of Health & Prevention decided to drive the maturity of the Wareed project by collaborating with Cerner to support the clinical, operations, infrastructure, and IT support services to further align with industry best practices and creating a reporting strategy which helps with population management.

دائـــرة الـصـحـــة
DEPARTMENT OF HEALTH

injazat
A Mubadala Company

At the same time, in Dubai, the Dubai Health Authority (DHA) embarked on an electronic health records system known as "Salama." This system, which was announced in February 2016, has created one electronic record for each resident who uses a public hospital in that emirate.

The ultimate goal of all of the above initiatives is a unified national database of patients' medical records. In May 2015, the U.A.E. Cabinet backed the establishment of such a database, which it envisaged would take four years.

The pace of this digitization was increased during the pandemic. During a May 2020 webinar hosted by the Business Council, Malaffi CEO Atif Al Braiki said the company accelerated the rollout of its platform, especially in labs, and is now working to improve gaps in data quality and interoperability. Indeed, Malaffi was an instrumental part of the Emirate of Abu Dhabi's Covid-19 response. Having already begun with the onboarding of healthcare providers, Malaffi was prepared when the pandemic struck to accelerate, and immediately centralize, Covid-19 laboratory test results from all testing sites in Abu Dhabi. This enabled the creation of a real-time database of laboratory results that helped the Department of Health – Abu Dhabi strengthen its Covid-19 response by assessing the effectiveness of the preventive measures and allowed the efficient allocation of resources, better capacity utilization, and coordination of care across the Emirate.

MALAFFI
CONNECTING HEALTHCARE

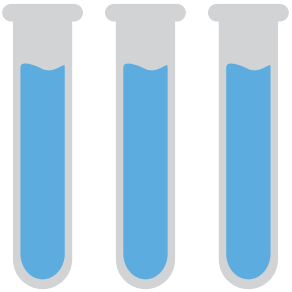
Malaffi (Arabic for "my file") is the region's first Health Information Exchange (HIE) platform that will safely and securely connect all public and private healthcare providers in the Emirate of Abu Dhabi. The platform enables the real-time exchange of important patient health information between healthcare providers, creating a centralized database of unified patient records that will improve healthcare quality and patient outcomes. Malaffi is operated by Abu Dhabi Health Data Services, a special project company established as a Public Private Partnership between the Department of Health – Abu Dhabi (DOH) and Injazat, a subsidiary ultimately owned by Mubadala Investment Company.

One year after going live in August 2020, Malaffi is recognized as one of the fastest HIE implementations globally. Malaffi has already connected 600 Abu Dhabi healthcare facilities, including more than 60% of all hospitals in the Emirate, providing access to 26,000 users and 107 million clinical records, for 4 million patients. Abu Dhabi residents will soon even be able to access medical records via their smartphones. Malaffi's mobile telephone application will enable patients to view their medical history and other important information such as treatment plans, medication, and test results.

It will connect more than 2,000 Abu Dhabi healthcare providers

Laboratory Technologies

The U.A.E. sought to build up its laboratory testing capabilities well before the pandemic, with the National Reference Laboratory (NRL), part of Mubadala Healthcare's network, a case in point. The National Reference Laboratory offers more than 4,700 sophisticated and specialized medical diagnostic tests to regional healthcare providers and serves healthcare facilities in the Emirates of Abu Dhabi and Dubai as well as the Northern Emirates. As one of the few Biosafety Level 3 labs in the U.A.E., The National Reference Laboratory is well-positioned to provide fast and accurate results with its fully automated laboratory testing system, which eliminates human contamination of samples. It was created in partnership with, and is managed by, Laboratory Corporation of America (LabCorp), one of the world's largest and most experienced clinical laboratory operators.



The NRL offers more than

4,700

sophisticated tests

المختبر المرجعي الوطني
National Reference Laboratory
Managed by LabCorp
A Mubadala Company

LabCorp

During the pandemic, the U.A.E. moved quickly to vastly expand its Covid-19 testing capabilities. As of mid-September, the country had conducted over 8 million such tests. As a result, the U.A.E. ranked among the top countries in the world in terms of the percentage of its population tested for the virus.

Relatedly, in June 2020, Group 42, a U.A.E.-based artificial intelligence and cloud computing company, announced the development of a new population scale technology that can detect Covid-19. Moreover, they announced that this solution, partly based on the loop-mediated isothermal amplification technique, is being incorporated into the U.A.E.'s national testing strategy and is expected to scale to hundreds of thousands of samples daily.

As of mid-September, the country had conducted over 8 million tests

Medical Devices & Equipment

U.A.E. hospitals and clinics boast world-class medical devices and equipment, often procured from leading U.S. companies. GE Healthcare, for instance, has deep relationships in the U.A.E., and its MRI scanners proliferate throughout the country. Medical devices and equipment from Abbott, Medtronic, and Johnson and Johnson are also omnipresent.

GE Healthcare

Abbott

Groundbreaking technologies, such as robotic-assisted surgery equipment, are also present in the U.A.E. Robotic-assisted surgeries allow surgeons to perform surgical procedures with greater precision and control than conventional techniques. This cutting-edge technology enables surgeons to have better visualization through a magnified, high-resolution image of the operating procedure leading to a more precise surgery. In turn, this usually results in less pain, shorter recovery times, and a reduced risk of infections or other complications for patients. This pioneering medical advancement is employed by Cleveland Clinic Abu Dhabi as well as the American Hospital in Dubai and Sheikh Khalifa Medical City in Abu Dhabi. The most common robotics-assisted procedures at Cleveland Clinic Abu Dhabi are cardiac, digestive diseases, urological, and gynecological procedures. In 2020, teams at the hospital performed the first robotic "whipple" procedures to treat pancreatic and duodenal tumors in the U.A.E.

During the pandemic, the U.A.E. has leveraged its relationships with leading companies to acquire new types of innovative medical technologies. In April 2020, the American conglomerate GE Healthcare delivered CT scanners fitted in shipping containers to hospitals in Abu Dhabi and Al Ain to enable safe, critical diagnosis of viral pneumonia attributable to Covid-19. These state-of-the-art units are sited in temporary tactical areas outside the main hospital facility, thus reducing the risk of infection, and are fitted with a filtration system that keeps out 90% of potential contaminants. They allow physicians to complete patient lung screenings in under a minute and can serve over 100 people a day.

كليفلاند كلينك أبوظبي
Cleveland Clinic Abu Dhabi
A Mubadala Company

المستشفى الأمريكي
AMERICAN HOSPITAL
DUBAI

Sheikh KHALIFA MEDICAL CITY

At the same time, the U.A.E. has sought to increase its domestic production of medical equipment using cutting-edge technologies. Notably, Mubadala subsidiary Strata partnered with Honeywell International to set up a production line in Al Ain capable of producing over 30 million N95 masks per year, transforming the U.A.E. from a net importer to a net exporter of this critical personal protective equipment (PPE).

This development may be part of a larger trend of localizing production of certain medical equipment in the U.A.E. In July 2020, Abu Dhabi's Department of Economic Development outlined investment opportunities in 27 fields to boost local manufacturing of basic consumer and industrial products in a push towards self-sufficiency. One of the four areas in which the government is aiming to attract private sector investment is in medical supplies.

3D Printing

The U.A.E. has truly embraced the power of 3D printing, as evidenced by its national 3D printing strategy. This strategy aims to turn the U.A.E. into a global 3D printing center. It calls for Emirati government entities and universities to partner with businesses from around the globe to produce a wide variety of 3D printed goods, including for the health and science sectors.

جامعة نيويورك ابوظبي
NYU | ABU DHABI

In keeping with the above, Dubai Healthcare Authority (DHA) has its own 3D printing strategy. They partnered with an additive manufacturing healthcare specialist firm to open an innovation center in January 2020 that, among other things, prints prosthetics limbs and teeth. This center also provides medical professional at DHA hospitals with patient specific anatomical models, allowing them to conduct detailed pre-operative analysis, reduce surgery times, and thus save costs.

هيئة الصحة بدبي
DUBAI HEALTH AUTHORITY

During the pandemic, 3D printing took on new applications focused on increasing the production of medical equipment and supplies to support frontline workers battling Covid-19. For instance, in May 2020, NYU Abu Dhabi started collaborating with Mubadala Healthcare to create 3D printed N-95 masks that are more environmentally friendly while still providing the same level of protection against Covid-19 and other diseases.

Returning to Normal through Honeywell Healthy Buildings Solutions

During the pandemic, the U.A.E. has turned to leading U.S. companies such as Honeywell to provide the technologies that enable them to return to a semblance of normal. In response to the global pandemic, Honeywell has launched an integrated set of solutions to help building owners improve the health of their building environments, operate more cleanly and safely, comply with social distancing policies, and help reassure occupants returning to the workplace. By integrating air quality, safety, and security technologies along with advanced analytics, Honeywell's Healthy Buildings solutions are designed to help building owners minimize potential risks of contamination and create business continuity by monitoring both the building environment and building occupants' behaviors. Honeywell Healthy Buildings solutions can increasingly be found throughout the U.A.E.

The Internet of Medical Things

The U.A.E. has also long recognized the promise of the Internet of Medical Things (IoMT), a system of interrelated health services and medical devices as well as software applications that do not require human-to-computer or human-to-human interaction. This is especially the case as this technology can improve the management of chronic diseases, which are very prevalent in the U.A.E.

Again, the pandemic has only further demonstrated the utility of the Internet of Medical Things, as remote monitoring devices have helped monitor patients in a non-hospital setting. U.A.E. health authorities are also using smart wristbands to track and monitor patients with mild symptoms as they self-quarantine at home.

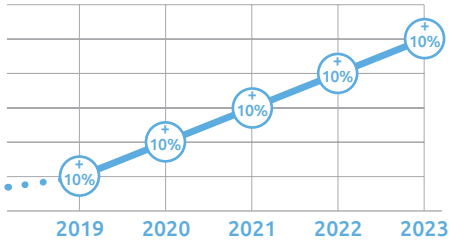
Case Study – Mubadala Investments in Healthcare Technology

The U.A.E. is not only trying to bring high-quality healthcare technology to its shores but entities such as Mubadala are investing in innovative healthcare technology abroad. Mubadala has redoubled its commitment to investing in healthcare as a result of the Covid-19 pandemic, creating a dedicated fund for this purpose. The fund would accelerate the growth of innovative life sciences and healthcare companies over the coming decade with a focus on next-generation therapeutics, digital health, preventative healthcare as well as clinical and non-clinical workflow optimization. One of Mubadala's key contributions to the U.A.E.'s agile response to the Covid-19 pandemic is launching the #WeAreDedicated campaign, through which Mubadala has been collaborating with multiple front-line public and private sector players to coordinate national efforts to tackle the pandemic and mitigate its impact. In line with its drive to strengthen the U.A.E.'s leading role in the fight against the Covid-19 pandemic on an international scale, Mubadala Healthcare is partly-funding the trial of an immune-dampening drug in the United Kingdom that will help patients with diabetes overcome the effects of the virus.

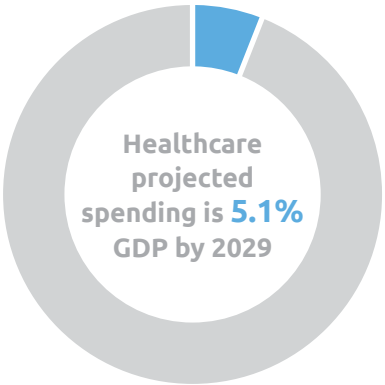
Looking Ahead

According to the research firm Research and Markets, the U.A.E. healthcare sector is predicted to grow at a compound annual growth rate of around 10% from 2019 to 2023. Moreover, overall healthcare spending is projected to account for 5.1% of the country's GDP by 2029 (up from 3.7% in 2019). This bodes well for the continued growth and expansion of the medtech sector in the U.A.E., especially as the U.A.E. seeks to harness this technology to reduce healthcare costs through more preventative medicine and eliminating unnecessary tests.

Annual Growth of the Healthcare Sector



Moreover, the country's experience with managing Covid-19 will likely permanently change the way healthcare is conceived and will further accelerate the pace of adoption and investment of the U.A.E. in new medical technologies. The U.A.E. has now experienced the benefits of telemedicine and electronic medical records, and new systems are in place that will enable these benefits to be realized in future. At the same time, the U.A.E. will likely continue to increase its local testing capacity and ability to domestically produce vital medical equipment so as to be as prepared as possible for future health crises.



To further bolster the medtech sector and ensure the business vertical's continued growth in the U.A.E., the country should ensure data privacy laws continue to encourage international investment and involvement in healthcare. In addition, healthcare and medtech should be a main topic of discussion during the annual U.S.-U.A.E. economic policy dialogue, as the U.S. and U.A.E. broker new and expanded partnerships to bring best-in-class medical technology to the U.A.E.

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