



SECTOR UPDATES

THE U.A.E. HEALTHCARE SECTOR

JANUARY 2023

BUSINESS COUNCIL REPORT



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

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

is the premier business organization dedicated to advancing bilateral commercial relations. By leveraging its extensive networks in the U.S. and in the region, the U.S.-U.A.E. Business Council provides unparalleled access to senior decision makers in business and government with the aim of deepening bilateral trade and investment.

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

2001 K Street NW
Suite 201 North
Washington D.C.
+202.863.7285
news@usuaebusiness.org

usuaebusiness.org

The cover photo for this publication was provided by Sheikh Shakhbout Medical City (SSMC).



INTRODUCTION

The growth and development of the U.A.E.'s healthcare sector accelerated during the pandemic and has not showed signs of slowing. In the process, several new entities emerged at both the federal and emirate level that have, over the course of the last year, proved themselves as the leading institutions enhancing the quality, efficiency, and innovativeness of the U.A.E.'s overall healthcare ecosystem.

In November 2022, the U.A.E. launched its latest federal government strategy, "We the U.A.E. 2031," which aims to rank the U.A.E. in the top-10 countries globally for quality of healthcare. The Ministry of Health and Prevention (MOHAP) is charged with leading the execution of this vision in the healthcare sector. MOHAP has historically been both the national health regulating authority and services provider, focusing mainly on provision in Sharjah and the northern emirates: Ras Al Khaimah, Ajman, Fujairah, and Um Al Quwain.

In recent years, Emirates Health Services (EHS) has become the federal healthcare provision authority, taking over the responsibility of 17 hospitals and more than 100 clinics from MOHAP. Many of these are in the Northern Emirates, which have historically been less equipped in terms of healthcare professionals and facilities. EHS strives to enhance the quality and accessibility of care especially in these Northern Emirates by strengthening capacity and capability in healthcare facilities and streamlining digital health solutions. EHS has also pioneered national public health initiatives, digital transformation strategies, and medical education programs, often working in partnership with domestic and international healthcare businesses. It has recently signed a number of important partnership agreements with prominent U.S. healthcare institutions.

At the emirate level, the development of Abu Dhabi into a leader in healthcare services provision and a regional hub for research and innovation drove the creation of two key new entities: Pure Health and the new Mubadala Health. Pure Health was created through the merger of Abu Dhabi Health Services Company (SEHA), the National Health Insurance Company PJSC (Daman), and other important Abu Dhabi healthcare institutions to form the largest integrated healthcare system in the U.A.E. Pure Health and its key subsidiary service providers fall under the umbrella of ADQ, an Abu Dhabi sovereign wealth fund and one of the Middle East's largest holding companies. This integrated healthcare ecosystem is designed to streamline the patient experience through the healthcare cycle to improve the delivery of care for Emirati citizens and residents.

The creation of a new Mubadala Health brought together healthcare companies within Mubadala Investment Company, another one of the U.A.E.'s most important sovereign wealth funds, and G42, the country's leading locally-grown artificial intelligence company. The new Mubadala Health is a first-of-its-kind integrated healthcare company merging the two companies' capabilities in research, technology, AI, and genomics to deliver personalized, patient-centric care through its flagship institution: Cleveland Clinic Abu Dhabi.

Dubai's overall healthcare sector strategy continues to differ from that of Abu Dhabi, with more of a focus on medical tourism and international investment. The private sector has historically played a

stronger role in Dubai's healthcare sector, relative to the rest of the country, and free zones are key facilitators of this trend. Dubai Healthcare City is the emirate's premier free zone for businesses in the healthcare sector and is today home to over 400 international and domestic businesses. The emirate's government has placed an emphasis on its digital healthcare transformation to facilitate medical tourism, for which Dubai ranks sixth globally, and the Dubai Health Authority (DHA) has announced many new policies, initiatives, and partnerships related to digital payments, consultations, and patient data management.

In 2021, the government of Dubai announced the creation of the Dubai Academic Health Corporation (DAHC), which put forth a landmark initiative to expand the connection between healthcare provision and medical education in the emirate. Under the direction of the DAHC, all public health institutions in Dubai are being restructured to incorporate medical universities at the center of their operations.

Hospitals across the U.A.E. have continued to expand and grow in the country's efforts to enhance its domestic healthcare capabilities. Cleveland Clinic Abu Dhabi and Sheikh Shakhbout Medical City (in partnership with Mayo Clinic) have continued to mature as institutions, expanding the types of patient care services available in-country. In 2022, Cleveland Clinic Abu Dhabi was named the best hospital and the best smart hospital in the GCC by *US Newsweek*. The facility has reached the final stages of completing its 9-story, 200,000 square foot tower which will serve as a home to its comprehensive and multi-disciplinary cancer center. Two years after its inauguration in 2020, Sheikh Shakhbout Medical City (SSMC) has developed into one of the largest hospitals in the U.A.E. with regional centers of excellence in various specialties including orthopedics, women's health, pediatrics, bariatric surgery, vascular surgery, and rheumatology.

A key focus for U.A.E. authorities at the federal and emirate level has been increasing domestic manufacturing capacity for pharmaceuticals and medical devices. The U.A.E. has historically relied on imports for the majority of its pharmaceutical products. However, the pandemic served as the impetus for the creation of more factories and manufacturing facilities to develop medicines and vaccines – including the Sinopharm COVID-19 vaccine manufactured in the country by Juhphar and exported across the region and, in the future, biopharmaceuticals resulting from the landmark collaboration between Mubadala and U.S.-based Resilience. The "Make it in the Emirates" Initiative, a broad vision to increase local manufacturing across various sectors, places focus on pharmaceutical and biomedical manufacturing, as does Dubai's 2030 Industrial Strategy.

Abu Dhabi's government has demonstrated especially keen interest in working in partnership with U.S. and international companies pioneering advances in medical technology, clinical research, pharmaceuticals, manufacturing, and digital healthcare solutions. Following a trip in June 2022 to the United States by the Department of Health Abu Dhabi (DOH), the emirate-level healthcare regulator signed two landmark agreements with American companies Johnson & Johnson (J&J) and Merck (known as MSD outside the United States). The Declaration of Collaboration between DOH Abu Dhabi and J&J aims to bring innovative treatments and breakthrough solutions to the U.A.E. and the MENA region through clinical research and data generation in Abu Dhabi. The agreement between DOH Abu Dhabi and MSD similarly outlines key areas of collaboration for healthcare innovation in the emirate. Later that year in November 2022, another major agreement for collaboration on research, manufacturing, and

education was signed between DOH Abu Dhabi and AbbVie, a U.S.-based biotechnology company. All three of these agreements, with their focus on advanced technology and innovation in the healthcare sector, are aligned with the Abu Dhabi Healthcare Strategic Plan issued by DOH in 2014 as well as its outline of “Seven Priorities for Healthcare Sector Improvement.”

The U.A.E. continues to assert its regional leadership role in the healthcare space by hosting the region’s most important healthcare events, including the annual Arab Health Conference. Additionally, after a year-long delay due to the pandemic, in 2021 the U.A.E. hosted Expo Dubai 2020 which welcomed over 22 million visitors, a testament to the country’s resilience during the pandemic. Expo 2020 also served as an important forum for international healthcare cooperation during its healthcare-focused week, in which global businesses and governments analyzed global health challenges and discussed avenues for collaboration on innovative and inclusive solutions.

The U.A.E. will host the 28th session of the Conference of the Parties – more commonly known as COP28, the premier climate change conference of the United Nations – in Dubai in November 2023. Vice President of the U.A.E. and Ruler of Dubai H.H. Sheikh Mohammed bin Rashed Al Maktoum declared this event to be the “most important event hosted by the U.A.E. in 2023.”¹ As expected, sustainability will be a key theme across all sectors leading up to the conference. It offers significant opportunities for U.S. companies to collaborate and partner with Emirati companies and institutions and lead efforts to advance sustainability in their respective industries. In the healthcare sector specifically, initiatives to increase sustainability will include efforts to reduce waste and energy use in hospitals by constructing facilities according to Leadership in Energy and Environmental Design (LEED) Certifications, decreasing emissions from production, manufacturing, and supply chains, and increasing reliance on renewable energy. More specifically, companies championing public health initiatives, such as ones tackling air pollution, contagious or vector-borne diseases, mental health, and other climate change and environment-related health risks, will find local partnership opportunities in the sustainability space leading up to COP28.

One of the key lessons learned during the pandemic was the U.A.E.’s need to develop local healthcare capacity to account for supply chain and travel disruptions. While pandemic restrictions have eased and international patient-care programs have resumed, the U.A.E. continues to focus efforts to simultaneously build local capacity alongside partnerships for international patient care. While international patient care remains a key component of the U.S.-U.A.E. bilateral healthcare relationship, U.S. companies and institutions that commit to long-term collaboration to bring in-country value and capacity development will be the most successful in the U.A.E. in the future. As hospitals and specialty care providers in the U.A.E. develop through partnerships with world-leading healthcare institutions, the country is projected to shift from its patient-exporting dependency into a regional hub for cutting-edge treatments and medical tourism.

Building on the Business Council’s previous reports on the U.A.E.’s healthcare sector, this updated edition aims to facilitate the involvement of U.S. companies in the next phase of the U.A.E.’s healthcare development by providing relevant information about the country’s healthcare sector. Firstly, this report gives an overview of the anticipated growth of the U.A.E. healthcare market, the challenges this poses from a regulatory and service provision perspective for the government, and the steps which it is taking

to face these challenges. Secondly, this report dives deeper into the different actors and entities in the U.A.E. healthcare sector – from regulators to providers, insurers to manufacturers, researchers to educators, and many more. Finally, this report provides a snapshot of both challenges and opportunities for businesses in the U.A.E. healthcare market and offers resources which can be used by businesses entering that market.

Throughout the report, case studies of successful U.S.-U.A.E. partnerships are highlighted to demonstrate different ways that U.S. companies can and have become involved in the local ecosystem in mutually-beneficial arrangements.



Table of Contents

INTRODUCTION	3
PART I: GENERAL TRENDS.....	9
A. Growth	9
B. Challenges	10
Strengthening Domestic Capabilities	10
Case Study: Digitization of Mental Health Care	11
C. Government Strategies	11
PART II: SECTOR OVERVIEW	14
A. Regulation	14
Federal Level.....	15
Emirate Level.....	17
B. Provision.....	18
Public Sector	18
Government-Linked Entities.....	23
Private Sector	25
Medical Hubs.....	29
C. Insurance	29
Daman’s Market Importance	30
Heavy Competition.....	31
Restrictions to Entry and Regulations	32
D. Pharmaceuticals	34
Controlling Prices	34
Promoting Manufacturing.....	34
Pharmaceutical Intellectual Property	34
Julphar and U.A.E. Pharmaceutical Manufacturers	35
International Pharmaceutical Companies.....	36
Pharmaceutical Hubs	37
E. Medical Equipment	37
Diagnostic Imaging Equipment.....	38
Cardiovascular Devices	38
Local Manufacturing and 3D Printing	39
F. Information Technology	40

Electronic Health Records and Health Information Exchanges.....	40
Telemedicine.....	43
Smart Technology and Apps	44
Medicine in the Metaverse.....	44
G. Education, Research, and Events	45
Education and Training.....	46
Research.....	49
Exhibitions and Conferences	52
H. Public Health	53
Response to COVID-19.....	53
Cancer Screening.....	53
Anti-Smoking	54
Combating Obesity, Diabetes, and Cardiovascular Disease.....	54
PART III: ENTERING THE MARKET	57
A. Opportunities	57
B. Challenges	58
C. Resources	59
REFERENCES	63

PART I: GENERAL TRENDS

The U.A.E. healthcare sector has expanded to meet both the evolving needs of the U.A.E.'s population and the nation's ambitious economic development plans. The COVID-19 pandemic led the U.A.E. to redouble its commitment to investing in its local healthcare ecosystem, and this focus is evidenced by new institutions, partnerships, and policies enacted throughout the last year in this field. The U.A.E. demonstrated the resilience and effectiveness of its healthcare sector in its swift and adaptive response to the COVID-19 pandemic. As the U.A.E. and the rest of the world comes out of the pandemic, the U.A.E. healthcare sector has not lost momentum in its shift towards a digitized, innovative, and comprehensive ecosystem.

A. Growth

The U.A.E. healthcare market has grown rapidly over the past decade. Per a 2022 report by the U.A.E.'s Federal Competitiveness and Statistics Centre, the number of hospitals in the U.A.E. totaled 162 at the end of 2020, compared to 86 hospitals in 2010, an increase of 88 percent over 10 years. Moreover, the number of physicians working in the public and private sectors in the country increased to 26,151 by the end of 2020, compared to 12,894 in 2010, a rise of 104 percent.²

Population growth has been one driver of this expansion and will continue to be the case in the future. Current UN forecasts predict that the U.A.E. population will continue to grow to about 11.1 million in 2030, 13.2 million in 2050, and 14.8 million in 2100.³

Demographic shifts are also driving the growth of the U.A.E.'s healthcare sector as the U.A.E.'s population begins to age. The estimated share of the U.A.E.'s population above the age of 65, according to the World Bank, will increase from 1.1% at present to 4.4% by 2030. It is likely that the aging population in the U.A.E. will become more diverse with the increase in expatriates settling long-term in the country, and will therefore demand healthcare, especially geriatric care, in both the private and public sectors.

Unhealthy lifestyle habits are other important factors influencing the prevalence of disease and the need for the rapid development of and investment in the U.A.E.'s healthcare sector. Obesity and its comorbidities such as diabetes and cardiovascular diseases account for the majority of mortalities among the U.A.E. population. Cardiovascular disease remains the leading cause of fatalities in the U.A.E., accounting for over two-thirds of all deaths. Around 17% of the population between the ages of 20 and 79 years old suffer from type 2 diabetes, placing the U.A.E. at 10th worldwide in diabetes prevalence.⁴

Health issues stemming from a widespread use of tobacco, especially among youth, are also common. A study published in the Oman Medical Journal estimates the prevalence rates of smoking in the U.A.E. to range from 23.4%–24.7% in men and 0.8% in women – a rate low in comparison to many countries in the Middle East, but high compared to the rate of 12.5% among adults in the U.S.⁵ With the ease of access to non-traditional smoking methods, such as midwakh, sheesha, and electronic vapes, it is expected that these rates will continue to increase.



Cancer accounts for about 15% of deaths in the U.A.E and affects women more than men. Research revealed that 45.4% of all cancer diagnoses in 2017, the most recent data available, were in people between the ages of 20 and 49, which is significantly higher than the rate for the same age groups in the United Kingdom, the U.S., Canada, China, and India. The most common type of cancer diagnosed in the U.A.E. is breast cancer, which accounted for 20.23% of cancer cases in 2017.⁶

A significant driver of U.A.E. healthcare growth is medical tourism. In 2021, Abu Dhabi and Dubai became two of the top 10 medical tourism destinations in the world, according to the Medical Tourism Index.⁷ From specialty surgeries to cosmetic procedures, the costs associated with travel to and healthcare in the U.A.E. is more accessible to people of the MENA, Southeast Asia, and Africa regions in comparison with that of Europe and North America. Both Abu Dhabi and Dubai have their own individual approaches to success in medical tourism, outlined by the Department of Health (DOH) Abu Dhabi as well as Dubai's Medical Tourism Strategy for 2017-2021, put forth by the Dubai Health Authority.

Along these lines, various metrics have shown that the quality of U.A.E. healthcare has improved. In 2021, the Legatum Institute's Legatum Prosperity Index report ranked the U.A.E. 36th globally, and second (after Israel) in the Middle East and North Africa, in terms of healthcare quality.⁸

B. Challenges

The tremendous growth of the U.A.E.'s healthcare market has driven policies and initiatives aimed at mitigating the biggest challenge currently facing the country: recruiting, training, and retaining healthcare professionals.

Strengthening Domestic Capabilities

Over the coming years, the U.A.E. will need an influx of medical personnel to meet its growing demand for high-quality medical services.

The U.A.E. is in particular need of nurses. According to 2021 data, the U.A.E. had 6.05 nurses for every 1,000 people, a figure significantly lower than that of most Western countries.⁹ Increasing its supply of healthcare professionals, especially nurses, will be key to the U.A.E.'s vision of becoming a world-class healthcare hub.

Several factors have complicated the adequate staffing of qualified medical personnel in the U.A.E., and recent government action has aimed at mitigating these challenges.

Shortages of skilled Emirati medical professionals has led the sector to rely heavily on expatriate healthcare workers.¹⁰ There has historically been higher turnover among expatriate medical staff, however this trend is likely to shift because of changes to the U.A.E.'s visa processes and residency system. In October 2021 the U.A.E announced sweeping reforms to its visa process by granting all frontline health workers and their families a 10-year golden visa.¹¹ This initiative, under the direction of U.A.E. President Sheikh Mohammed bin Zayed, serves to provide stability for healthcare workers and their families in the U.A.E., who were also supported throughout the pandemic with schooling cost assistance and free flights home to visit their families. Additionally, Emirates Health Services (EHS) – the federal authority responsible for the provision of care which recently spun off from the federal health regulation authority, the Ministry of Health and Prevention (MOHAP) – has put forth initiatives to attract Emirati professionals and students to healthcare professions, with a specific focus on nursing.

In its efforts to enhance the capabilities of its domestic healthcare sector, the U.A.E. is also developing and investing in general and specialty care facilities.

In Abu Dhabi, institutions such as Cleveland Clinic Abu Dhabi and Sheikh Shakhboub Medical City (SSMC) illustrate progress made in diversifying and strengthening the types of care provided in the country by bringing in international doctors and providers and developing local centres of excellence.

Dubai is home to two of the most important children's and women's hospitals, Al Jalila Children's Specialty Hospital and Medcare Women & Children Hospital. Additionally, Dubai Health Care City (DHCC), the emirate's healthcare free zone, has grown to include nearly 200 hospitals and clinical facilities and is continuously working to attract investment from local and international healthcare businesses, with a specific focus on those providing specialty services.¹²

In mainly Sharjah and the Northern Emirates (and to a lesser extent in Dubai) Emirates Health Services (EHS), has taken on much of the responsibility for building the capacity of the local healthcare sector. EHS has signed many partnership and collaboration agreements with domestic and international hospitals, pharmaceutical companies, and medical technology companies, and has demonstrated a keen interest in engaging U.S. private sector companies in the work to enhance the efficiency and scope of the U.A.E.'s domestic healthcare sector. These partnership opportunities include visiting consultancy programs, shared education and training courses, research and academic cooperation, development of digital solutions, and public health advocacy initiatives.

Case Study: Digitization of Mental Health Care

Mental health care in the U.A.E. is a challenge exacerbated by both limited supply and high costs. According to a survey of prices for mental health services across 50 countries, the U.A.E. was found to be the second most expensive, with an average cost of \$163 for a one-hour therapy session.¹³ Additionally the country faces a shortage of mental health professionals, with 0.77 psychologists per 100,000 people.¹⁴

However, in terms of virtual access to mental health counseling, the U.A.E. is leading in the field of digital mental health infrastructure and services. The market for digital health services in the Emirates, which includes virtual appointments, mHealth, and remote patient monitoring, is projected to reach over \$530 million by 2025 – up from about \$120 million in 2019.¹⁵ Additionally, government organizations at the federal and emirate level have rolled out initiatives for free-of-cost mental health services such as hotlines giving those seeking help quick access to mental health professionals.¹⁶ EHS, for example, operates Al Amal Psychiatric Hospital in Dubai, the largest mental health hospital in the U.A.E., with a combination of in-person and digital services allowing patients across the country to engage and benefit from mental health care services, while simultaneously protecting their privacy.¹⁷

There are still persistent challenges facing the developing mental health care sector such as social stigmas and limited insurance coverage of mental health care services and medications, but recent advancements pioneered by the government in the U.A.E.'s digital infrastructure have made mental health care more accessible.

C. Government Strategies

The U.A.E. federal government – which oversees the country's healthcare sector and funds almost all non-private healthcare in the northern emirates – has developed strategic plans to both respond to the growing demand for healthcare and meet the associated challenges. The 'We the U.A.E. 2031' Vision is

the highest-level federal strategic plan launched in November 2022, which, among other measures, aims to rank the U.A.E. as one of the top 10 countries globally in the quality of healthcare.

This builds on the previous strategic plan, the U.A.E.'s Vision 2021, which made achieving "world-class healthcare" one of its priority goals and is today the leading country in Joint Commission International (JCI) accredited hospitals, after the U.S., with more than 200 accredited health facilities.¹⁸ The 2021 Vision, which coincided with the U.A.E.'s 50th National Day, also sought to reduce the prevalence of diabetes, obesity, and smoking among the population, decrease the number of deaths from cardiovascular diseases and cancer, and increase the supply of nurses and physicians to treat its population.

The federal government also launched the 'Projects of the 50', a series of economic projects that aim to accelerate the development of the U.A.E. into a regional hub and ideal destination across various sectors for talented individuals and investors. One of these projects is the Healthcare Development Programme, which strives to recruit and train 10,000 Emiratis into the U.A.E.'s healthcare sector by 2025. This program falls under the scope of NAFIS, a program focused on attracting Emirati youth to the private sector and will roll out educational programs to train students in collaborations with private sector educators and healthcare facilities.¹⁹

In the spirit of this vision, Abu Dhabi developed its own emirate-level strategic healthcare plan. In December 2014, Sheikh Mohammed bin Zayed Al Nahyan, current President of the U.A.E. and then-Crown Prince of Abu Dhabi, approved the strategy to improve healthcare in the emirate. This strategy included 85 initiatives that aimed to improve the quality of healthcare services in Abu Dhabi by enhancing safety standards and patient experience, attracting and retaining medical professionals, preparing for emergencies, embracing public health methodology, stemming unsustainable health care costs, and integrating IT systems and electronic data into practices.²⁰ This strategy has also evolved to include further integration of the private sector in the Abu Dhabi healthcare environment, with entities like Mubadala and ADQ continuing to play an important role.

Dubai likewise developed strategic plans for its respective healthcare sector in keeping with Vision 2021. In January 2017, Sheikh Mohammed bin Rashid Al Maktoum, U.A.E. Vice President and Prime Minister and Ruler of Dubai, launched Dubai Health Strategy 2021. This strategy aimed to provide high-quality medical care to patients with chronic diseases, as well as to promote a culture of early detection and regular check-ups. It also sought to create a high-quality comprehensive and integrated health service system by improving efficiency in healthcare, utilizing digital infrastructure, and creating a collaborative partnership between the public and private sectors. In 2014, Dubai announced a medical tourism strategy that entailed building 22 hospitals to attract 500,000 medical tourists per year by 2020.²¹ This initiative specifically faced challenges due to the Covid-19 pandemic but is regaining momentum and it is predicted that medical tourism will bring in revenues of up to about \$5 billion (AED 19 billion) in 2023.²²

Other emirates also embarked on long-term plans to meet the anticipated growth in their healthcare sectors. Sharjah, for instance, has made healthcare a focus of its development strategies, beginning with the construction of the Sharjah Healthcare City freezone. While the Sharjah Health Authority is the main entity charged with the regulation and provision of healthcare services in the emirate, Emirates Health Services (EHS) shares some of this responsibility through its affiliation with Al Qassimi Women and Children's Hospital and others. The federal government similarly manages the healthcare sectors of the remaining northern emirates including Ajman, Ras Al Khaimah, Umm Al Quwain, and Fujairah.

His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the U.A.E. and Ruler of Dubai, and His Highness Sheikh Mohamed bin Zayed Al Nahyan, then Crown Prince of Abu Dhabi, announced 2020 to be “the year of preparations for the next 50 years.” In 2021, healthcare-related events were an important feature of Expo 2020 Dubai and the Golden Jubilee. Expo 2020 Dubai was a testament to the strength, resilience, and preparedness of the U.A.E.’s healthcare system, as the country hosted a major international event attended by over 22 million visitors from nearly 200 countries amidst a global pandemic. Health and Wellness was a key theme during Expo Dubai and will continue to be a focus in Expo City Dubai, the sustainable, people-centered city planned for the legacy of the global event.²³

As the U.A.E. redoubles its commitment to developing its healthcare sector, both at the federal and emirate level, the private sector will have an important role to play. Private-sector healthcare spending is forecasted to increase at a cumulative annual growth rate of 9.5% compared to a government contribution growth rate of 4.4%. This growth offers tremendous opportunities for U.S. companies and healthcare institutions to partner with U.A.E. government and private entities and build towards the realization of the U.A.E.’s healthcare objectives.



PART II: SECTOR OVERVIEW

Under the oversight of both federal and emirate-level regulatory authorities, the U.A.E. is witnessing a boom in healthcare provision from both public sector and private sector institutions. Concurrently, the U.A.E. is experiencing a rapid expansion of its pharmaceutical, medical equipment, healthcare IT, and medical education sectors.

A. Regulation

The U.A.E. has a number of healthcare regulators at both the federal and emirate levels, each with its own geographic or functional purview. U.A.E. healthcare regulatory structure is being shaped by two broad trends: (1) an expanding remit for the Ministry of Health and Prevention and (2) increasing coordination among regulatory authorities.

It has also seen several important developments:

- ❖ In July 2019, the U.A.E. updated its 2016 Medical Liability Law that requires all medical malpractice claims to be referred to a new medical liability committee before they are reviewed by U.A.E. judicial authorities.
 - The 2019 update expands and clarifies certain aspects of the 2016 law, with clarifications being on topics such as gross medical errors, insurance, and telehealth.
 - The law also prohibits the arrest, imprisonment, and investigation of doctors until the committee issues a final report. The threat of criminal proceedings for medical treatment complaints had discouraged some foreign medical professionals from working in the U.A.E.
- ❖ The U.A.E. issued Federal Law Number 2 of 2019 (Health Data Law) which regulates the use of information technology and communications (ITC) in the healthcare sector.
 - One of the most notable aspects of the Health Data Law is Article 13, which prohibits the overseas transfer of health data unless an exemption has been granted by one of the U.A.E.'s health authorities. This article has been the subject of debate and consultations between the health authorities and international healthcare providers.
 - On April 28, 2021, the U.A.E. federal government issued Ministerial Decision No. 51 of 2021 clarifying regulations for the storage or transfer of health information outside of the U.A.E. This clarity was welcomed by companies trying to bring digital health applications and artificial intelligence services to the U.A.E.
 - As of January 2023, the U.A.E. was in the process of drafting new data privacy and localization laws and regulations. The U.A.E. published personal and commercial data laws in December 2021 and is now drafting laws applicable to government-restricted data. Healthcare and financial services-specific laws are expected to be updated following the publication of the government data law. The U.S.-U.A.E. Business Council continues to play an active role in consolidating industry feedback to ensure the latest legislation is up to international best practice and standards.
- ❖ In 2016, U.A.E. President His Highness Sheikh Khalifa bin Zayed Al Nahyan issued Federal Decree by Law No. 5, which allows the transplantation of human organs and tissues from both living and deceased donors. The law came into effect in March 2017 and was supplemented by a donor registration program that was rolled out in the summer of 2018.
 - Cleveland Clinic Abu Dhabi, the country's only multi-organ transplant center, performed more than 30 transplant operations by the end of 2018, including the country's first full

heart transplant, the country's first double lung transplant, the country's first deceased donor liver transplant, and the first liver transplant from a living relative. By July 2021, the Cleveland Clinic Abu Dhabi transplant center had performed more than 200 total transplants.

Federal Healthcare Regulations

The U.A.E. federal government has introduced a variety of legislation regulating the healthcare industry. The bedrock of this legislation is Federal Law No. 7 of 1975 concerning the practice of human medicine, which included sections on licensing and registration of physicians; laboratories, clinics, and private hospitals; and duties and responsibilities of a physician.

Since then, additional legislation has been introduced, most notably:

- Federal Law No. 28 of 1981 concerning the detention and treatment of the mentally ill;
- Federal Law No. 4 of 1983 concerning pharmaceutical professions and establishments;
- Federal Law No. 5 of 1984 concerning the practice of some medical professions by persons other than physicians and pharmacists;
- Federal Law No. 20 of 1995 concerning medicines and preparations derived from natural sources;
- Federal Law No. 11 of 2008 concerning licensing of fertilization centers;
- Federal Law No. 14 of 2014 (replacing Federal Law No. 27 of 1981) and Executive Decree No. 6 of 2016 concerning communicable disease prevention;
- Federal Law No. 5 of 2015 (replacing Federal Law No. 2 of 1996) concerning private health facilities;
- Federal Law No. 4 of 2016 (replacing Federal Law No. 10 of 2008) concerning medical liability;
- Federal Law No. 5 of 2016 (replacing Federal Law No. 15 of 1993) concerning organ transplants;
- Federal Law No.8 of 2019 on medical products, the profession of pharmacy, and pharmaceutical entities;
- Federal Law No. 7 of 2019 concerning medically assisted reproduction;
- Federal Law No. 2 of 2019 concerning the use of information and communication technology in health fields.

Federal Level

The most important federal regulatory authority in the U.A.E. healthcare sector is the Ministry of Health and Prevention.

Ministry of Health and Prevention (MOHAP)

The Ministry of Health and Prevention (MOHAP), formerly known as the Ministry of Health, oversees the implementation of government policy in relation to the provision of health care for all U.A.E. citizens and residents.²⁴ Importantly, it also licenses and controls the prices of drugs and medical devices nationwide.²⁵ The current Minister of Health and Prevention is H.E. Abdul Rahman bin Mohammed bin Nasser Al Owais and the Undersecretary is Dr. Mohammad Salim Al Olama.²⁶ For more information, please visit www.mohap.gov.ae



MOHAP is working to achieve the objectives of the U.A.E.'s 'National Strategy for Wellbeing 2031', which aims to make the country a world leader in quality of life for its citizens and residents.

MOHAP Partnerships with U.S. Institutions

- **Viatis** signed a Memorandum of Understanding with MOHAP in September 2022 to support the ministry's efforts, initiatives, campaigns, research, and workshops designed to achieve the objectives of the U.A.E.'s 'National Strategy for Wellbeing 2031'.
- **Janssen Pharmaceutical Companies of Johnson & Johnson**, signed an appendix in February 2022 to their 2018 Memorandum of Understanding with MOHAP and Axios, a healthcare consulting firm, aimed at providing affordable medicines to uninsured and low-income expatriates suffering from pulmonary hypertension, multiple myeloma, ulcerative colitis and/or psoriatic arthritis.
- **Amazon Web Services (AWS)** signed a Memorandum of Understanding in January 2022 with MOHAP for partnership in creating a cloud-based electronic medical records system.



27

The Insurance Authority

The Insurance Authority, which was established under Federal Law No. 6 of 2007, regulates and supervises the insurance sector in the U.A.E.²⁸ H.E. Ebrahim Obaid Al Zaabi serves as its Director General.²⁹ For more information, please visit www.ia.gov.ae.

Emirate Level

While healthcare provision in some emirates is regulated entirely by MOHAP, certain emirates or free zones also have their own regulatory authorities, most notably The Department of Health – Abu Dhabi (DOH) and Dubai Health Authority (DHA).

Department of Health – Abu Dhabi (DOH)

The Department of Health – Abu Dhabi (DOH) regulates the healthcare sector in Abu Dhabi. It defines the strategy of the health system, and it monitors and analyzes both the health status of the population and the performance of the system. Importantly, the International Patient Care (IPC) Office of the DOH refers Emiratis to leading U.S. hospitals for treatment. The Chairman of the DOH is His Excellency Sheikh Abdullah bin Mohammed Al Hamed and its Undersecretary is His Excellency Dr. Jamal Mohammed Al Kaabi.³⁰ For more information, please visit www.doh.gov.ae/en



DOH Partnerships with U.S. Institutions

- **AbbVie Biopharmaceuticals** signed a Declaration of Collaboration with DOH in October 2022 on research and clinical trials, innovation and health technology assessment, manufacturing, and medical education.
- **Johnson & Johnson** signed a Declaration of Collaboration with DOH in June 2022 to bring innovative treatments and breakthrough solutions to the U.A.E. in support of Abu Dhabi's vision in developing a regional hub for clinical research and data generation.
- **Merck (MSD)** signed a Declaration of Collaboration with DOH in June 2022 for collaboration on public health research, healthcare professional education and training programs, and development of technological and digital solutions.

abbvie

Johnson & Johnson



Dubai Health Authority (DHA)

Dubai Health Authority (DHA), which was created by Law No. 13 of 2007, is the main health authority in Dubai. DHA regulates all of Dubai's healthcare sector services through licensing healthcare facilities and professionals and inspecting health facilities. DHA also regulates the cost of healthcare in the emirate and runs special programs such as one meant to encourage young Emiratis to enter medical professions.



His Excellency Awadh Seghayer Al Ketbi is its Director General, with Professor Alawi Alsheikh-Ali as his Deputy Director General.

For more information, please visit www.dha.gov.ae/en

Dubai Healthcare City Authority – Regulatory

Dubai Healthcare City Authority – Regulatory (DHCR), which was established by Law No. 9 of 2011, regulates Dubai's healthcare free zone: Dubai Healthcare City. As such, it is responsible for the licensure of all healthcare professionals and healthcare operators in the free zone. It is also responsible for setting and maintaining international best practices in healthcare delivery and patient care within that zone.³¹

DHCR works closely with the DHA. For instance, in October 2018, Dubai Healthcare City Authority and DHA signed a Memorandum of Understanding to link the licensing data of health professionals using Blockchain. The MoU will allow for health professionals to exchange licensing data to improve services and facilitate licensing and transfer of health professionals' licenses in Dubai.³²

Jamal Abdulsalam is the CEO of Dubai Healthcare City Authority – Regulatory. For more information, please visit www.dhcc.ae

Sharjah Health Authority

Sharjah Health Authority (SHA), which was established by Sharjah Emiri Decree No. 12 of 2010 (amended by Emiri Decree No. 33 of 2016), regulates Sharjah's healthcare system. According to SHA, its prime mission at present is to develop and manage Sharjah Healthcare City. It also manages the Sharjah Health Insurance department.³³ Dr. Abdulaziz Saeed Al Muhairi is Chairman of the Sharjah Health Authority. For more information, please visit www.sha.gov.ae/en

B. Provision

Public sector institutions and government-linked entities play a relatively outsized role in U.A.E. healthcare provision, with the exception of the emirate of Dubai. That said, the private sector is assuming an increasingly prominent role, aligning with a deliberate government strategy to encourage public-private partnerships and private sector investment.

Public Sector

The three public sector institutions which play major roles in U.A.E. healthcare provision are: Abu Dhabi Health Services Company (SEHA), Dubai Health Authority (DHA), and Emirates Health Services (EHS), with the latter being particularly active in the northern emirates.

Abu Dhabi Health Services Company (SEHA) – Now Part of Pure Health

The Abu Dhabi Health Services Company (SEHA), which was established by Abu Dhabi Emiri Decree No. 10 of 2007, has traditionally owned and operated all public hospitals and clinics across Abu Dhabi. In 2022, SEHA became an asset of Pure Health (owned by ADQ) which became the largest consolidated healthcare network in the U.A.E., consisting of 14 hospitals with 3,385 beds, 36 primary healthcare clinics, 10 disease prevention and screening centers, 4 dental centers, 3 mobile clinics, 3 blood banks, 2 baby vaccination centers, 1 home care center, 1 mobile mammography clinic, 1 occupational health center, and 64 ambulances. Its facilities accommodate

PUREHEALTH

SEHA  صحة
شركة أبوظبي للخدمات الصحية
Abu Dhabi Health Services Co. P.J.S.C

100,000 inpatients annually, conduct 43,000 surgeries, and treat more than five million outpatients. SEHA is also a major source of employment and tourism in Abu Dhabi, as it employs more than 20,000 people across the emirate and hosts 20 annual medical conferences.³⁴

SEHA's flagship business entities include Sheikh Khalifa Medical City, Sheikh Shakhbout Medical City (in partnership with Mayo Clinic), Al Rahba Hospital, Corniche Hospital (the U.A.E.'s largest maternity hospital), Al Ain Hospital, Tawam Hospital, and Al Dhafra Hospitals. The Al Dhafra Hospitals business entity notably consists of six hospitals and four primary healthcare centers that serve the more than 200,000 people living in the 60,000-square-kilometer area of Abu Dhabi known as the Western (Al Gharbia) region.

SEHA Partnership with SSMC

- **Sheikh Shakhbout Medical City (SSMC)** opened its doors in January 2020, creating one of the U.A.E.'s largest hospitals providing care for patients with serious and complex medical conditions. A joint venture between SEHA and Mayo Clinic, SSMC completed more than 270,000 outpatient visits, cared for over 17,000 inpatients, and provided emergency care to more than 94,000 patients in its first year alone. SSMC is led by its CEO Dr. Naser Ammash, who is also a Professor of Medicine at Mayo Clinic.



Since opening Sheikh Shakhbout Medical City, SEHA has undertaken several highly publicized expansions of the hospital, including the addition of a dialysis center, a psychiatry center, and a pediatric dialysis unit.³⁵ In addition, over the last several years, SEHA has embarked on the expansion of its health facilities in the Western Region, as well as adding new facilities, such as Al Towayya Children's Specialty Centre in Al Ain.³⁶

The Group Chief Executive Officer of SEHA is Saeed Jaber Al Kuwaiti and its Group Chief Medical Officer is Dr. Anwar Sallam. For more information, please visit www.seha.ae.

SEHA Partnerships with U.S. Institutions

- **Johns Hopkins Medicine International** signed an agreement with SEHA in 2006 to manage the 479-bed Tawam Hospital in Al Ain City, which is a national referral center for oncology services. Two years later, it signed another agreement with SEHA to manage the 173-bed Al Rahba Hospital outside Abu Dhabi City.
- **Cleveland Clinic** signed an agreement with SEHA in 2007 to manage Sheikh Khalifa Medical City, which is located in Abu Dhabi City and describes itself as the “flagship institution” for the public health system in Abu Dhabi. It consists of a 586-bed tertiary hospital, 14 outpatient specialty clinics, and the Abu Dhabi Blood Bank.
- **The New England Center for Children** signed an agreement with SEHA in 2007 to launch a comprehensive education program for children with Autism Spectrum Disorder. The New England Center subsequently opened a facility in Mohammed bin Zayed City.
- **Children’s Hospital of Philadelphia (CHOP)** signed a MoU with SEHA in October 2022 to facilitate enhanced medical research and education in the U.A.E. CHOP has a neuro-science presence at Sheikh Khalifa Medical Center (SKMC). CHOP’s Chief of Neurology and two Epileptologists travel to SKMC to evaluate new and previously seen patients at CHOP with Epilepsy, MS, and neuromuscular disorders. The Chief of Neurosurgery and a neurosurgeon who specializes in epilepsy surgery are onsite to evaluate new patients (refractory epilepsy candidates for surgery) and consult on other neurosurgical conditions. Working alongside SEHA’s physicians in this clinic allows collaboration on patients’ treatment plans and transfer of knowledge of leading research and innovation. This agreement was signed in October 2021.



JOHNS HOPKINS
MEDICINE



Cleveland Clinic

The New England Center
for Children®
Autism Education and Research



مركز نيو إنجلاند
للأطفال
التوحد: تعليم وبحوث



Children's Hospital
of Philadelphia®

Dubai Health Authority (DHA)

In addition to its role as a regulator, the Dubai Health Authority (DHA) operates Dubai’s public healthcare facilities.³⁷ In 2022, the Dubai Health Authority’s Electronic Medical Record (EMR) noted that

it has over 5 million patient medical records on file. Its flagship facilities include Dubai Hospital, Rashid Hospital, Latifa Women and Children Hospital, and Hatta Hospital.

DHA continues to invest in the development of its existing facilities. At the same time, DHA also continues to plan for new lines of medical treatment and services, and expanding its ease of access for patients:

- ❖ In August 2022, Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum, Crown Prince of Dubai, inaugurated a new outpatient building at Dubai Hospital. This followed the 290 million AED (\$79 million) expansion plan approved in 2017, bringing the hospital to include 128 specialized clinics equipped with the latest technology and artificial intelligence solutions.³⁸
- ❖ In November 2020, DHA signed an MoU with the Emirates Islamic Bank to develop a dermatology and cosmetology center at Rashid Hospital in Dubai. The signing of this agreement comes almost two years after DHA announced it would open the first skin bank used in grafting of burn cases and other patient needs, in the Arab region.³⁹
- ❖ In October 2021, DHA announced the expansion of Hatta Hospital by 20% of its bed capacity and a surgery section for general and orthopedic surgeries, with a further extension planned to add modern rooms equipped for obstetrics and gynecology.⁴⁰

Emirates Health Services (EHS)



The Ministry of Health and Prevention (MOHAP) has recently spun-off healthcare provider services as a new entity, Emirates Health Services (EHS). This entity consists of all hospitals, primary care facilities, and public health services previously provided under the MOHAP umbrella, including 17 hospitals and over 100 clinics throughout the U.A.E., especially in the northern emirates.⁴¹

Based in Dubai, the Emirates Health Services (EHS) has the aim of enhancing the efficiency of the federal health sector in the country, by providing healthcare and treatment services, taking preventative measures in combating epidemics and diseases, and achieving sustainable development of health care. It also aims to implement the strategic health-related policies, standards, and preventative care measures set by MOHAP. EHS has integrated the provision of healthcare treatment services, customer and patient experience services, federal medical training and education programs, digital health and information technology initiatives, and public health initiatives under its umbrella. EHS held its first meeting in March 2021, under the chairmanship of Dr. Mohamed Salim Al Olama and in the presence of EHS Director General H.E. Dr. Yousif Mohammed Al-Serkal. In April 2020, H.E. Dr. Al-Serkal was appointed to this role after holding the position of Assistant Undersecretary for the Hospitals Sector at the Ministry of Health and Prevention since 2013.⁴²

Key public health-related initiatives of EHS include strategies to attract citizens and residents to the nursing profession, a mental health support program for healthcare workers, a blood donation campaign, and a digital health and telemedicine promotional campaign.⁴³ EHS has become the forefront organization on Nursing and Midwifery in the U.A.E. and hosted the 3rd Edition of the U.A.E. International Conference on Nursing and Midwifery in November 2022.

More information can be found at <https://www.ehs.gov.ae/en/home>

EHS Partnerships with U.S. Institutions

- **Johnson and Johnson** and EHS signed an MoU in June 2022 to develop health services and collaborate on advanced technology solutions to the U.A.E. healthcare sector. This partnership is set to include a joint launch of the 'Silent Noise Campaign' to raise awareness about and destigmatize mental health conditions.
- **Children's Hospital of Philadelphia (CHOP)** signed an MoU with EHS at Arab Health 2022 to collaborate on enhanced medical services at Al Qassimi Women and Children's Hospital and establish a visiting physician/surgeon program for 7 physicians and 5 surgeons to cover 8 subspecialties in the northern emirates. Through this partnership, knowledge will be shared through scientific education programs, conferences, and the EHS Simulation Center. Also at Arab Health 2022, CHOP was featured at the EHS booth for its innovative research on Autism Spectrum Disorder.

The logo for Johnson & Johnson, featuring the company name in a red, cursive script font.

Ministry of Presidential Affairs

The Medical Office of the Ministry of Presidential Affairs (MOPA) has historically made a major push to expand the quantity and quality of healthcare provision in the U.A.E., particularly in the northern emirates. MOPA funded the 750 million AED [\$204 million] Sheikh Khalifa General Hospital in Umm Al Quwain, which features clinics specializing in pediatrics, gynecology, emergency care, dialysis, and dermatology.⁴⁴ MOPA also funded the 1 billion AED [\$272 million] 248-bed Sheikh Khalifa Specialty Hospital in Ras Al Khaimah (near the border with Umm Al Quwain).⁴⁵

Ministry of Defense

The Ministry of Defense is also a significant provider of healthcare in the U.A.E. Zayed Military Hospital, a part of the Zayed Military City, is a 260-bed facility, including an ICU, Burn ICU, Cardiac Care Unit, medical, surgical, and pediatric beds. The hospital has a psychiatric center located in a separate building, bringing the total aggregate number of beds to 300. The campus includes an ambulatory care component, as well as housing for the Hospital's staff and physicians. The neurology department of the Zayed Military Hospital consists of some of the most innovative and advanced healthcare technologies in the U.A.E., such as Brainsuite ICT, Brainlab, and Haag Streit. The Ministry of Defense has strong relationships with leading U.S. hospitals, including Nationwide Children's Hospital, to supplement its resources and ensure that military members and their families receive world-class care.

Government-Linked Entities

Government-linked entities such as Mubadala Health, a division of the prominent and diverse Abu Dhabi government investment vehicle Mubadala Investment Company, are supporting the development of a world-class, commercially sustainable private healthcare sector in the U.A.E.

Mubadala Health

Mubadala Investment Company, a global sovereign investor established by the Government of Abu Dhabi, announced in early 2021 that it will bring together six of its wholly-owned medical assets in the U.A.E. into an integrated network to serve patients seeking specialized care.



مبادلة للرعاية الصحية
Mubadala Health

In 2022, Mubadala and G42, the U.A.E.'s leading artificial intelligence company, announced the merging of their healthcare businesses to create a new, first-of-its-kind integrated healthcare company. This new entity was formed to revolutionize the region's healthcare landscape and deliver personalized, patient-centric care to patients worldwide through G42 and Mubadala's combined prowess in research, technology, AI, and genomics.

The establishment of Mubadala Health follows the earlier efforts by Mubadala and its prominent international partners to fill gaps in coverage left by public sector providers. Along these lines, Mubadala has:

- ❖ Joined with Cleveland Clinic Foundation to create its flagship project: Cleveland Clinic Abu Dhabi. In December 2017, Cleveland Clinic Abu Dhabi opened a branch in Al Ain. The expansion of the Abu Dhabi campus offers residents of Al Ain and the surrounding area a range of outpatient and advanced imaging services as well as primary healthcare services.⁴⁶
- ❖ Collaborated with institutions such as South Korea's Wooridul Hospital to set up Healthpoint, a specialty hospital. The facility has three centers of excellence: Musculoskeletal (Orthopedic and Sports Medicine and Spine Care), Bariatric and Metabolic Surgery, and Dental.⁴⁷
- ❖ Partnered with Imperial College London to establish the Imperial College London Diabetes Centre (ICLDC), which has three branches in the U.A.E. capital, the newest of which, in Zayed Sports City, broke even within three months of opening.
- ❖ Teamed with Swiss company Medgate to introduce the Abu Dhabi Telemedicine Center, which allows patients to seek a doctor's opinion by phone 24 hours per day 7 days per week.⁴⁸

The CEO of Mubadala Health is Mr. Hasan Jasem Al Nowais. For more information, please visit <https://mubadalahealth.ae/about-us/our-team/>

Mubadala Health Partnerships with U.S. Institutions

- **Resilience**, a technology-focused biomanufacturing company and Mubadala Investment Company signed an agreement to help advance the U.A.E.'s life sciences sector through a biopharma manufacturing collaboration. Under this agreement, a new manufacturing facility in Abu Dhabi will be owned by Mubadala and operated by Resilience. The facility's production will include a range of vaccines and therapeutics for diseases such as cancer, infectious diseases, and inflammatory and autoimmune disorders.
- **Cleveland Clinic Foundation** and Mubadala Investment Company collaborated on the construction of Cleveland Clinic Abu Dhabi, a state-of-the-art medical institution on Al Maryah Island that offers world-class care to patients, closer to home. It boasts 15 institutes, including six centers of excellence in the following areas: Heart & Vascular, Neurological, Digestive Disease, Eye, and Respiratory and Critical Care. The hospital is the designated stroke and chest pain center for Abu Dhabi. The Department of Health has designated Cleveland Clinic Abu Dhabi as a human subject research facility and advanced teaching hospital. The hospital delivered more than 600 academic outcomes in 2021 and has 173 active research studies. In 2021, the hospital had more than 800,000 encounters and performed more than 22,000 surgical cases.
- **Children's National Medical Center** signed a MoU with Healthpoint in May 2017 to collaborate more closely in pediatric subspecialty care. As part of this MoU, Children's National would send visiting physicians to Healthpoint, and it would manage the pediatric department alongside Healthpoint.⁷⁷

[RESILIENCE



Ruling Family Patronage

Members of U.A.E. ruling families have also personally contributed to healthcare in the country. In December 2008, for instance, Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the U.A.E. and Ruler of Dubai, announced the establishment of a dedicated 200-bed 692 million AED [\$188.4 million] children's specialty hospital named after his daughter, Sheikha Al Jalila.⁵⁰

Inaugurated on 1 November 2016, Al Jalila Children's is the first dedicated children's hospital in the U.A.E., and it aims to be a driving force behind tertiary and quaternary care in the region. The hospital has 28 fully operational clinics for pediatric healthcare, two leading educational programs, and several pediatric research studies.⁵¹ It is affiliated with Alder Hey Children's as well as Moorfields Eye Hospital Dubai.⁵² In 2021, Al Jalila announced its plan to introduce the first spinal muscular atrophy (SMA) gene therapy in the U.A.E.

Al Jalila Children's Partnerships with U.S. Institutions

In February 2018, Al Jalila Children's Hospital in Dubai entered into an agreement with **Children's National Medical Center** in Washington, D.C. with a core aim of enabling Children's National to advise Al Jalila Children's on the use of health information technology to deliver quality care for children across the GCC and the region.



Private Sector

The private sector is playing an increasingly significant role in the provision of healthcare in the U.A.E., with companies such as Mediclinic Middle East and Burjeel Holdings all embarking on aggressive expansion plans.

Mediclinic Middle East

Mediclinic Middle East is a branch of Mediclinic International, which consists of 74 hospitals, five sub-acute and specialized hospitals, 21 day case clinics, and 23 outpatient clinics worldwide.⁵³ In the U.A.E., it has seven hospitals with more than 950 inpatient beds as well as 28 clinics.⁵⁴ In September 2018, the group opened its seventh hospital in the UAE, Mediclinic Parkview Hospital, a 182-bed in-and outpatient facility in Dubai which became the largest greenfield construction project by value ever undertaken by Mediclinic International across its entire international portfolio.⁵⁵

The current Mediclinic International operation in the U.A.E. is the result of the reverse takeover by Al Noor Hospitals Group of the Johannesburg-based Mediclinic International Limited.⁵⁶ At the time of this reverse takeover, Mediclinic had an extensive and growing U.A.E. presence. Meanwhile, Al Noor Hospitals Group was the largest private healthcare company in Abu Dhabi with seven facilities in Abu Dhabi city, one in the Western Region, and two in Al Ain.⁵⁷

Aster DM Healthcare

Aster DM Healthcare is a Dubai-based healthcare company with 27 hospitals, 115 clinics, and 223 pharmacies in the Middle East and India.⁵⁸ In the U.A.E., it has eight hospitals under the high-end Medcare or midrange Aster brands.⁵⁹ In October 2022, Aster's Medcare Women & Children Hospital became the first U.A.E. healthcare facility to enter the metaverse.⁶⁰

Burjeel Holdings

Burjeel Holdings is an integrated healthcare services provider which acquired the healthcare brands and assets formerly associated with VPS Healthcare. It is a network of 39 hospitals and medical centers across the Middle East, Europe, and India. It operates hospitals and medical centers under the Burjeel, Medeor, LLH, Lifecare, and Tajmeel brands. In 2022, Abu Dhabi healthcare investor International Holding Company (IHC) acquired a 15% stake in Burjeel Holdings.⁶¹

The Thumbay Group

The Thumbay Group, a Dubai-based business conglomerate, is one of the largest healthcare providers in the region. It operates hospitals in Dubai, Ajman, Fujairah, and a medical and dental specialty center in Sharjah. It also owns a chain of multi-specialty day care hospitals (Thumbay Hospital Day Care), clinics (Thumbay Clinic), and high-end clinics (Thumbay Clinic ELITE). In addition, it runs a chain of diagnostic labs (Thumbay Labs) and pharmacies (Thumbay Pharmacy). Notably, all hospitals and clinics under the group provide teaching and training opportunities for the students of Gulf Medical University (GMU), Ajman, which was the first private medical college in Ajman, established by Thumbay Group's Founder and President, Dr. Thumbay Moideen. The GMU Academic Health System includes the 350-bed Thumbay University Hospital, the 60-chair Thumbay Dental Hospital, and the Thumbay Physical Therapy and Rehabilitation Hospital, all of which are located in Ajman's healthcare hub launched in 2019: the Thumbay Medicity.⁶²

NMC Group

NMC Healthcare was a publicly listed company on the London Stock Exchange and part of the UK's exclusive FTSE 100 index, until a fraud scandal broke in March 2020, and it was forced into administration. In 2022, many NMC companies were able to exit administration thanks to lenders, led by Abu Dhabi Commercial Bank, who agreed to exchanged debt in the company for exit instruments under a new facility.

Following this scandal and the company's exit of administration, the newly formed NMC under the holding group NMC OpCo Ltd. remains the largest integrated private healthcare platform in the U.A.E. It operates 11 hospitals and 54 clinics and specialty care centres, employs 12,000 people, and serves over 5.5 million patients in the U.A.E. and Oman.⁶³

Amanat

Faisal bin Juma Belhouli, who was responsible for the transformation of Belhouli Group Holdings into a modern investment company and is also managing partner at Ithmar Capital, launched Amanat Holdings, which specializes in investments in healthcare and education.⁶⁴ The only publicly listed, Sharia'-compliant healthcare and education investment company in the GCC, Amanat is currently invested in hospitals and care facilities amounting to 418 operational hospital beds total in the U.A.E., Saudi Arabia, and Bahrain.⁶⁵ In 2021, Amanat announced that it had fully acquired the local rehabilitation institute, Cambridge Medical and Rehabilitation Centre (CMRC) for an enterprise total of \$232 million.⁶⁶ In November 2022, the company's earnings statement noted that it has 2.6 billion AED (\$707 million) in assets under management across four education assets, four healthcare assets and one social infrastructure asset.⁶⁷

Gulf Healthcare International

Gulf Healthcare International operates 19 medical and diagnostic centers across the U.A.E. and Kuwait.⁶⁸ In the U.A.E., it runs seven clinics and polyclinics under three brand names: "Amber Clinics," "Al Noor

Polyclinic,” and “Dr. Joseph’s Polyclinic.” It also operates eight diagnostic laboratories under the brand name “Medsol Diagnostics.”⁶⁹

UEMedical

UEMedical, part of United Eastern Group, is a privately owned healthcare development and investment company with a portfolio of healthcare projects including a hospital, six specialty centers, and 14 family clinics.⁷⁰ UEMedical operates the 150-bed Danat Al Emarat Women and Children Hospital in Abu Dhabi, which is managed by leading Singaporean healthcare provider ParkwayHealth.⁷¹

UEMedical also runs the HealthPlus network of premium outpatient centers.⁷² In addition, it has partnered with Moorfields Eye Hospital, one of the oldest ophthalmology hospitals in the world, to launch Moorfields Eye Hospital Centre in Abu Dhabi.⁷³ Notably, Moorfields chose the U.A.E. as the site of its first overseas branch almost a decade earlier when it established Moorfields Eye Hospital Dubai in Dubai Healthcare City in 2006.⁷⁴

Avivo Group

Avivo Group is a U.A.E.-based healthcare firm offering specialized healthcare services in Abu Dhabi, Dubai, Sharjah, and Kuwait.⁷⁵ It currently has 47 healthcare assets, including 2 hospitals, 29 clinics, 10 dental centers, 6 pharmacies, 6 distribution centers, and 2 diagnostic facilities. The vast majority of these assets are in the U.A.E.⁷⁶

Ahalia Medical Group

Ahalia Medical Group, established in the U.A.E. in 1984, currently operates two multi-specialty hospitals.⁷⁷ It also runs 20 satellite medical centers and over three dozen pharmacies throughout the country. In May 2018, Sharjah Healthcare City Authority granted the Ahalia Group permission to set up a \$100 million 120-bed hospital in the emirate. The multi-specialty hospital, which is spread across 538,195 square feet, became the first hospital to set up within the mega healthcare city.⁷⁸

AlSharq Healthcare

AlSharq Healthcare, a wholly owned division of the Fujairah National Group conglomerate, manages several healthcare facilities in the eastern part of the U.A.E. Its flagship facility is the 100-bed Al Sharq Hospital in Fujairah. It also runs 4 medical centers, 4 retail pharmacies, 2 specialized clinics, and a medicine store.⁷⁹

Arabian Healthcare Group

Arabian Healthcare Group is a global healthcare management and consulting firm set up in 2011 by the Government of Ras Al Khaimah (RAK). Comprising a network of hospitals, diagnostic centers, pharmacies, and wellness services, its flagship facility is the 65-bed RAK Hospital, which is managed in cooperation with Sonnenhof Swiss Health.⁸⁰ In 2018, Arabian Healthcare Group began a collaboration with CommonSpirit Health, a U.S.-based healthcare provider, to enhance the emirate’s healthcare sector through training and education programs, digital innovation, and an expansion of RAK Hospital, which will triple its capacity to become a 200-bed facility by 2024.⁸¹

Middle East Healthcare Company (Saudi German Hospitals)

The Middle East Healthcare Company, the largest healthcare provider in Saudi Arabia, owns and operates 18 hospitals in the Middle East and North Africa under the brand name Saudi German

Hospitals.⁸² In March 2012, it opened the 165-bed Saudi German Hospital in Dubai, which is in the process of expanding thanks to a \$100 million loan.⁸³ It recently completed constructing the Saudi German Hospital – Ajman, a 150-bed facility.

Zulekha Healthcare Group

The Zulekha Healthcare Group established Zulekha Hospital in Sharjah in 1992, and it subsequently grew from a 30-bed facility to a 185-bed 290,000 square-foot hospital.⁸⁴ Since then, the Zulekha Healthcare Group has also established a 140-bed hospital in Dubai, a diagnostic center, three medical centers, and three pharmacies.⁸⁵

Capital Health

Capital Health (not to be confused with Mubadala’s Capital Health Screening Center) is an integrated healthcare group launched in November 2017 that operates two facilities in the U.A.E.: Specialized Rehabilitation Hospital and Health Shield Medical Center. Specialized Rehabilitation Hospital provides acute and long-term rehabilitation care along with inpatient, outpatient, and Home Health capabilities. Health Shield Medical Centre, is a multi-specialty healthcare facility with outpatient capabilities located in the Al Qurm district of Abu Dhabi.⁸⁶ In May 2018, Capital Health signed a partnership with Chicago’s Shirley Ryan AbilityLab to bring its renowned model of care to its new Specialist Hospital in Abu Dhabi.⁸⁷

King’s College Hospital

King’s College Hospital, one of London’s largest teaching hospitals, opened a Medical and Surgical Center in Abu Dhabi in November 2014. Then, in November of the next year, it signed an agreement with Al Tayer Group and Dubai Investments to build a \$200 million 100-bed branch of King’s College Hospital in Dubai as well as three other King’s College Hospital clinics. The first of these clinics, a Medical Center in Jumeirah, opened in September 2017.⁸⁸ In September 2018, King’s College opened another medical facility in Dubai.⁸⁹ The late U.A.E. President Sheikh Zayed Al Nahyan once provided a donation to King’s College Hospital to set up its specialist liver research center.⁹⁰

Private Sector Healthcare Partnerships with U.S. Institutions

Mayo Clinic Laboratories and American Hospital Dubai announced a strategic partnership aimed at improving advanced laboratory diagnostics in the Dubai region. Under the agreement, the two organizations began delivering laboratory testing through a collaboration based out of American Hospital Dubai in early 2021. Mayo Clinic Laboratories and American Hospital Dubai are working together to improve access to complex laboratory diagnostics for the region’s providers. By improving access to laboratory testing, health care providers will have the necessary tools to advance patient care.



Medical Hubs

Free zones are becoming increasingly important sites for healthcare provision, as they offer many benefits to businesses such as allowing for 100% foreign ownership of companies, full repatriation of profits, exemption from personal income taxes and corporate taxes, and exemption from customs duties for goods and services.

Dubai Healthcare City

Dubai Healthcare City (DHCC), which was launched in 2002, is a healthcare free zone. DHCC currently has over 150 clinical partners, and it hosts brand-name providers such as Moorfields Eye Hospital and Maghrebi Eye Hospital. It is also home to the Mohammed bin Rashid University of Medicine and Health Sciences, part of the Mohammed bin Rashid Academic Medical Center.⁹² DHCC's ecosystem has more than 400 businesses from a plethora of sectors operating within its borders. As a part of the U.A.E.'s efforts to increase Emirati participation in the workforce, in December 2021 DHCC launched a tailored employment training program for Emirati Nationals called Masari.⁹³



Sharjah Healthcare City

In January 2017, His Highness Sheikh Sultan bin Mohammed Al Qasimi, Supreme Council Member and Ruler of Sharjah, approved the master plan for Sharjah Healthcare City (SHC). SHC is spread over an area of 4.5 million square meters and is conveniently located adjacent to the Sharjah International Airport and between the two main highways of the U.A.E., Sheikh Mohammed Bin Zayed Road and Emirates Road. It operates as a tax-free zone under the Sharjah Health Authority.⁹⁴



C. Insurance

Over the last decade, the U.A.E. has moved toward mandating health insurance for all citizens and residents, greatly expanding the country's health insurance market. However, the large number of domestic and foreign players in this market has led to intense competition and limited profitability. Moreover, there are restrictions on the entry of new foreign companies into the market.

Mandatory Coverage

Abu Dhabi has led the way in implementing mandatory health insurance for citizens and residents. In 2005, Abu Dhabi issued Law No. 23, requiring all employers to provide health insurance to their employees and their employees' dependents.⁹⁵ Then, in 2007, Abu Dhabi issued Resolution 83 directing the then-Health Authority - Abu Dhabi (now Department of Health) to give comprehensive health coverage to all U.A.E. nationals living in that emirate at no cost through the "Thiqa" program.⁹⁶



Dubai subsequently followed Abu Dhabi's lead. In 2013, Dubai introduced Law No. 11, requiring employers to provide basic health insurance coverage for their employees and requiring sponsors to provide health insurance for those unemployed individuals under their sponsorship.⁹⁷ This law was implemented in phases: first for companies with more than 1,000 employees, then for companies with more than 100 employees, and finally for all companies and sponsors.⁹⁸ The law fully came into effect in 2016.⁹⁹

Since then, Dubai has endeavored to increase the scope of mandatory insurance coverage. In November 2017, the Dubai Health Authority launched a new initiative to provide a complete spectrum of care from screening to treatment for three types of cancer under the basic benefit plan of the Dubai Mandatory Health Insurance Scheme. Prior to then, cancer coverage under the scheme was limited to 150,000 AED [\$40,840].¹⁰⁰ In October 2018, it was reported that mandatory health insurance in Dubai will include mental health treatment and rehabilitation of debilitating physical and neurological conditions.¹⁰¹

Sharjah has gradually joined Abu Dhabi and Dubai in moving toward more expansive health insurance as well. The Sharjah government extended health insurance to all Sharjah citizens aged 55 and over in April 2015.¹⁰² Then, in January 2020, it decided to extend the insurance coverage to all citizens of Sharjah.

Daman's Market Importance

The U.A.E. health insurance industry is dominated by the National Health Insurance Company (Daman), which is the largest insurance payer in Abu Dhabi and the third largest in Dubai.¹⁰³ Established by Emiri Decree No. 39 of 2005, Daman is a part of Pure Health, which is, in turn, a part of ADQ.¹⁰⁴ It has over 3 million members and it exclusively manages the aforementioned "Thiqa" program for U.A.E. nationals in Abu Dhabi as well as the Abu Dhabi Basic Plan for low-income expatriates in that emirate.¹⁰⁵



U.A.E. Health Insurance Terminology

- "Thiqa" is a health insurance program for U.A.E. nationals and those of similar status living in Abu Dhabi. It is exclusively managed by Daman on behalf of the Government of Abu Dhabi.
- "Enaya" is the Government of Dubai Employee Healthcare Benefits Scheme. Officially launched in July 2009, it provides a broad range of cover as well as preventive treatment and routine health checkups to more than 90,000 individuals. The third party administrator for this program is Neuron LLC.
- "Saada" is a health insurance program for citizens of Dubai who are not covered by any government health program. It is expected to ultimately reach 130,000 people. The third party administrator for this program is NEXtCARE.
- "Isahd" – Insurance System for Advance Healthcare in Dubai – is a Dubai Health Authority (DHA) initiative to provide healthcare insurance for all nationals and residents in the private sector. The system requires that everyone in the private sector have a minimum level of health insurance in place. Around 50 companies are permitted to sell such policies, while only 14 of them have been selected as Participating Insurers to specially serve the low-income expatriate segment. MetLife is one of the 14 Participating Insurers approved to provide the "Essential Benefits Package" to expatriates who earn less than 4,000 AED [\$1,089] per month.¹⁸⁹

In July 2016, the then-Health Authority – Abu Dhabi (now Department of Health) announced changes to the “Thiqa” program with a view to making the healthcare sector more sustainable. Under these changes, Thiqa cardholders would pay 20% of the cost of hitherto free treatment at private hospitals; treatment at public hospitals would still be free. Thiqa cardholders would also pay 50% (as opposed to 10% formerly) of the cost of treatment outside Abu Dhabi, except in cases where that type of treatment was unavailable inside the emirate.¹⁰⁷

However, the U.A.E. government ultimately walked back these changes given their implications for the healthcare sector. These moves would have posed complications for enrollees already in long-term private care.¹⁰⁸ These changes would have also potentially impacted the viability of some private healthcare institutions and their long-term expansion plans.¹⁰⁹ As such, in April 2017, His Highness Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the U.A.E. Armed Forces, ordered the waiving of the 20% co-payment for Thiqa cardholders when receiving treatment at private healthcare facilities.¹¹⁰

In November 2020, Daman announced that U.A.E. nationals in Abu Dhabi must pay for elective private medical treatment in the other emirates. This followed the phasing out of all direct billing at hospitals in October 2020.

Heavy Competition

The U.A.E. health insurance market reflects the U.A.E. insurance market as a whole. It is generally overcrowded, limiting profitability. There are currently more than 60 players in the U.A.E. insurance market, split between local insurers and the subsidiaries of foreign insurers.

That being said, the playing field of the U.A.E.’s insurance market is constantly changing and shows no sign of slowing down. In late 2021, Gulf Insurance Group (GIG) completed its buyout of the regional division of French multinational AXA, which was one of the largest international health insurance providers operating in the U.A.E.¹¹¹ Additionally, in September 2022 the Central Bank of the UAE and the Saudi Central Bank (also known as Sama) signed a preliminary agreement to establish a general framework for the supervision of the insurance sector in both countries.¹¹² It is yet to be determined if this agreement will pose a significant impact on the U.A.E.’s health insurance sector specifically.

Outside of the aforementioned Daman, three of the most prominent local insurers – both in general and in health insurance – are:

- ❖ **Orient Insurance Company/Allianz:** In 2020, Orient Insurance Company, which began operations in 1982, was the leading insurance company in the U.A.E. by market share. Based in Dubai, it is part of Al Futtaim Group, a major U.A.E. conglomerate. It provides both individual and group medical insurance.¹¹³ Orient Insurance Company is also the regional partner of German multinational insurance and asset management giant Allianz.¹¹⁴
- ❖ **Abu Dhabi National Insurance Company (ADNIC)/MSH International:** ADNIC, which was founded in 1972, is a publicly listed composite insurance provider headquartered in Abu Dhabi that is the second-largest insurance company in the U.A.E. by assets.¹¹⁵ It provides both individual medical insurance and group medical insurance in partnership with French company MSH International.¹¹⁶ It is owned by Abu Dhabi Investment Council, which is an investment arm of the Abu Dhabi government.¹¹⁷
- ❖ **Oman Insurance Company/Bupa Global:** Oman Insurance Company (OIC), which is headquartered in Dubai, is one of the leading insurance companies in the U.A.E. and in the broader MENA region. It

provides both group health insurance and an individual international health insurance plan designed and internationally administered by British healthcare giant Bupa Global.¹¹⁸

In addition to the previously mentioned AXA Gulf (now GIG Gulf), other important international insurers in the U.A.E. are U.S. health insurance companies MetLife, Aetna, and Cigna. Forming partnerships and engaging with local actors is a key method by which U.S. or international insurance companies can stand out in the U.A.E.'s crowded insurance market. In 2021, MetLife and Emirates NBD, Dubai's government-owned bank, announced a partnership to provide insurance to the bank's wealth, retail, and SME customer base in the U.A.E.¹¹⁹ Cigna has made a major push to expand its operations in the U.A.E. with its Cigna HealthGuard plan, approved by the DHA, that is tailored for those residing in Dubai and the northern emirates. Cigna's eighth annual 360° Global Well-Being Survey 2022 highlighted the U.A.E. as the top destination in the Middle East, Africa, and Asia to relocate for expats.¹²⁰

Restrictions to Entry and Regulations

International insurance companies must overcome significant obstacles to entering the U.A.E. market. For one, the U.A.E.'s Insurance Authority, which oversees insurance companies onshore (but not in free zones), has long been hesitant to license new insurers given that the sector is often characterized as overcrowded. In fact, the Insurance Authority has publicly called for consolidation of the sector in order to avoid what it views as unhealthy competition.¹²¹

In addition, insurance companies operating in the U.A.E. must comply with increasingly stringent regulations on their activities meant to strengthen the sector and encourage consolidation. In early 2015, the U.A.E. Insurance Authority announced a series of new regulations including limits on how companies could invest their money and how much exposure they could have to different asset classes.¹²² Companies were given until January 2018 to comply with these regulations.¹²³

U.S. Insurance Companies in the U.A.E.

- **MetLife:** MetLife, Inc., through its subsidiaries and affiliates, is one of the world's leading financial services companies, providing insurance, annuities, employee benefits, and asset management to help its individual and institutional customers navigate their changing world. Founded in 1868, MetLife has operations in more than 40 countries and holds leading market positions in the United States, Japan, Latin America, Asia, Europe, and the Middle East. MetLife is a pioneer of life insurance with a presence of nearly 65 years in the Gulf. Through its branches, MetLife offers life, accident, and health insurance along with retirement and savings products to individuals and corporations. In the U.A.E., MetLife has had operations since 1962 and today is a leading multinational life and medical insurance company across the country.²⁰³
- **Cigna:** In June 2017, Cigna opened an office at the Dubai International Financial Center (DIFC) to serve as its regional headquarters. The next month, Cigna announced the acquisition of Zurich Insurance Middle East, gaining official presence in Lebanon, Oman, the U.A.E., and Kuwait. Then, in October, it launched a much-touted individual insurance and wellness solution specially tailored for residents of Dubai and the northern emirates. Cigna has been growing in experience by entrenching itself in the region and adding local capabilities like its clinical team, culturally relevant resources, and an ever-expanding network of hospitals, clinics, and pharmacies. Prior to its acquisition of Zurich Insurance Middle East, Cigna already had an established presence via a local partner providing health insurance to U.A.E. residents for over 15 years.
- **Aetna International:** Aetna's Dubai office, based in Dubai Media City, is the nerve center for Aetna International's recently merged European and Middle East & Africa divisions. Notably, Aetna International administers health care plans for individuals, families, and corporate groups in the U.A.E. on behalf of RSA Insurance. It also administers Al Ain Ahlia Insurance Company plans within the country.¹⁶³



D. Pharmaceuticals

The U.A.E.'s pharmaceutical market is rapidly growing – it is expected to grow by 27% and reach \$4.7 billion in value by 2025.¹²⁶

Controlling Prices

This growth comes despite U.A.E. government efforts to contain rising drug prices, which are regulated by pharmaceutical pricing legislation.¹²⁷ In July 2011, the U.A.E. began a series of price reduction initiatives aimed at bringing U.A.E. pharmaceutical prices in line with those in neighboring countries.¹²⁸ Through these initiatives, the U.A.E. had, as of December 2017, cut the prices of 8,732 pharmaceutical products.¹²⁹ By January 2021, the U.A.E. had also authorized 6,176 generic drugs which on average cost nearly 60% less than branded medicines. This cost-cutting strategy is pioneered by MOHAP through its 'Reduction in Medicine Prices Initiative' aimed at making U.A.E. drug prices the lowest in the Gulf region.¹³⁰

Promoting Manufacturing

Although the U.A.E. currently imports about 80% of its pharmaceutical products, the U.A.E. has initiated new programs to promote domestic pharmaceutical manufacturing. The number of pharmaceutical manufacturing units in the U.A.E rose to 23 in 2021, and there are more than 2,500 medicines produced locally. This is likely to increase.

This growth is in line with the 'Operation 300b' Initiative to increase the industrial sector's GDP contribution from AED 133 billion to AED 300 billion (about \$36 billion to \$81 billion). This initiative, launched in March 2021 under the Ministry of Industry and Advanced Technology, which is led by Dr. Sultan Al Jaber, focuses on eleven total industrial sectors, three of which are related to medical technology pharmaceuticals.¹³¹

In line with the priority the U.A.E. government is placing on expanding its in-country manufacturing, local pharmaceutical exports are also anticipated to rise by 15%, valuing \$297 million, by 2025.

Most recently, in January 2023, Mubadala Investment Company and U.S.-based National Resilience, Inc., signed a deal to further advance the U.A.E.'s life sciences ecosystem through biopharmaceutical manufacturing. Through a development agreement, Mubadala will establish a new manufacturing facility, in which Resilience will operate and manufacture biopharmaceutical-related products out of the U.A.E. The range of therapeutics will be used to treat complex diseases such as cancer, infectious diseases, and inflammatory and autoimmune disorders. The Abu Dhabi-based facility will be the first Goods Manufacturing Practice biopharmaceutical facility in the U.A.E., as well as the first of its kind in the region to manufacture essential life sciences products for advanced biologics.¹³²

Earlier, the U.A.E became the first country in the MENA region to establish a coronavirus vaccine factory in a joint venture between Sinopharm and G42 Healthcare. The COVID-19 pandemic sharpened the U.A.E.'s focus on investing in life sciences. This focus is subsequently bringing together key investment, technology, and research entities in Abu Dhabi such as G42, Mubadala, and ADQ in the emirate's vision to become a regional hub for innovation in health care.

Pharmaceutical Intellectual Property

The U.A.E. Ministry of Health and Prevention established robust Intellectual Property protection of pharmaceutical products by issuing Decree 321 on September 21, 2020. Decree 321 states that for a

period of eight years from the date of marketing approval of a new drug in the U.A.E., the marketing authorization holder has exclusive rights to the clinical data underlying approval of the pharmaceutical product. The eight-year data exclusivity period provided under Decree 321 is the longest in the region that protects the value of drugs by temporarily blocking regulatory approvals of generic versions.

Unlike the U.S., the U.A.E. does not provide additional incentives for innovation in the form of extensions of the market exclusivity period when companies conduct additional clinical trials to obtain regulatory approval for the broader use of existing drugs, such as for the treatment of pediatric patients or of orphan diseases (diseases for which drugs are undeveloped owing to limited potential for profitability). The U.A.E. also does not provide additional incentives for innovation in the form of longer market exclusivity periods for biologic drugs, which sometimes are more expensive to develop.

Julphar and U.A.E. Pharmaceutical Manufacturers

The U.A.E.'s domestic pharmaceutical manufacturing industry is headlined by Julphar Gulf Pharmaceutical Industries, which is the largest generic pharmaceutical manufacturer in the Middle East and North Africa. Established in 1980 under the guidance of the former Emir of Ras Al Khaimah His Highness Sheikh Saqr bin Mohammed Al Qasimi, Julphar now operates 12 internationally certified manufacturing facilities globally. These factories collectively produce over one million boxes of medicines per day with 80% produced for export. As mentioned above, in 2021, Julphar began manufacturing COVID-19 vaccines in conjunction with G42 Healthcare. In October 2022, Julphar signed an MoU with Pure Health to establish the first factory in the country to produce Glargine, a drug used as an alternative to insulin in the treatment of diabetes.¹³³



The U.A.E. has several other domestic pharmaceutical manufacturers as well:

- ❖ **Neopharma:** Neopharma claims to be Abu Dhabi's premier pharmaceutical manufacturing company. Started in 2003, Neopharma has 10 manufacturing facilities across 3 continents and over 2,000 employees. In October 2018, the U.S. subsidiary of Neopharma acquired an antibiotic manufacturing facility and its related assets in Bristol, Tennessee, but this closed in 2020.¹³⁴ Neopharma has been reportedly impacted by the legal woes of its longtime Executive Vice Chairman and Managing Director, Dr. B.R. Shetty, who was at the center of the NMC Health scandal.
- ❖ **Globalpharma:** Globalpharma, which is based in Dubai Investment Park, is a major U.A.E. pharmaceuticals manufacturer. Established in 1998, its manufacturing facility can produce up to 300 million tablets, 150 million capsules, and over 7 million liters of dry syrup and liquid each year. In 2014, Dubai Investments sold a majority stake in Globalpharma to French firm Sanofi, which subsequently sold its stake in 2018, citing a shift in its focus away from the generics portfolio.¹³⁵
- ❖ **Medpharma (member of Valeant):** Medpharma is one of the leading pharmaceutical branded generic companies in the U.A.E. In September 2014, it was acquired by Lebanon-based Integrated Pharma Solutions and Canada-based Valeant Pharmaceuticals.¹³⁶ At the time, Medpharma had about \$30-\$40 million in sales per year.¹³⁷
- ❖ **LIFEPharma:** Part of the aforementioned VPS Healthcare (now integrated into Burjeel Holdings), LIFEPharma has a facility at Jebel Ali Free Zone Area in Dubai that has the capacity to produce 1 billion tablets, 300 million capsules, and 150 million liters of liquid per year.¹³⁸ It is reportedly planning to build a 547 million AED [\$149 million] cancer drug plant at Khalifa Industrial Zone Park in Abu Dhabi.¹³⁹ In 2020, LIFEPharma signed a multitude of agreements with international firms, pushing the U.A.E.'s pharmaceutical exports into North American and European markets.¹⁴⁰

- ❖ **Pharmax Pharmaceuticals:** Pharmax Pharmaceuticals is the first local company located in Dubai Science Park engaged in the development and commercialization of pharmaceuticals. It was established by one of the U.A.E.'s leading pharmaceutical and healthcare product distributors, Al Ittihad Drug Store (IDS).¹⁴¹ Its facility in the U.A.E. can produce 250 million tablets and 85 million capsules a year, and it focuses on affordable generic medicines. In 2019, Pharmax was awarded its first Good Manufacturing Practice approval by the European Union, becoming one of the few manufacturing facilities in the U.A.E. to achieve this standard.¹⁴²

International Pharmaceutical Companies

As the U.A.E.'s domestic pharmaceutical manufacturing industry has grown, many international pharmaceutical companies have established a presence in the country. There are currently 11 multinational pharmaceutical companies operating in the U.A.E., including Johnson & Johnson, MSD (known as "Merck" in the U.S.), Pfizer, AstraZeneca, GSK, Roche, Novartis, and Sanofi. Some of these companies – such as Organon, Pfizer, Viartis, and Janssen EMEA (the pharmaceutical arm of Johnson & Johnson) – decided to make the U.A.E. the site of their regional headquarters. Moreover, these companies are increasingly not just selling products in the U.A.E., but setting up in-country facilities for research, digital solutions, and advocacy to support the local ecosystem, as mentioned in the section about the Department of Health – Abu Dhabi.¹⁴³

U.S.-U.A.E. Pharmaceutical Partnerships

- **Julphar Gulf Pharmaceutical Industries and MSD:** In April 2014, Julphar entered into an agreement with Merck Sharp & Dohme (MSD), as U.S.-based pharmaceutical giant Merck is known outside the United States, under which Julphar can produce, distribute, and sell select MSD products in the U.A.E., Kuwait, Bahrain, Oman, Qatar, and Iraq.
- **Neopharma and Wyeth:** In May 2014, Neopharma joined with Wyeth, a Pfizer unit, to manufacture selected Pfizer products, starting with cardiovascular medicines related to hypertension and heart diseases.¹⁸⁰

Julphar
الخليج للصناعات الدوائية
Gulf Pharmaceutical Industries



These international pharmaceutical companies are attracted to the U.A.E. for a variety of reasons. In addition to its growing domestic market, the U.A.E. boasts a strategic location and sophisticated logistics infrastructure that make it an ideal hub to access growing regional markets in Africa, Asia, and the Middle East. The U.A.E. has also created business friendly environments in which pharmaceutical companies can operate.

Key to the continued expansion of international pharmaceutical companies in the U.A.E. is the protection of intellectual property. In May 2021, the Office of the United States Trade Representative removed the U.A.E. from its Watch List in its Annual Section 301 Report on Intellectual Property (IP) Protection. This was largely due to the efforts of MOHAP to resolve U.S. concerns surrounding IP protection of pharmaceutical products and was supported by the issuance of Federal Law no. 11 of 2021 concerning the regulation and protection of Industrial Property Rights.

Pharmaceutical Hubs

Several free zones have become hubs for the pharmaceutical industry.

- ❖ **Dubai Healthcare City:** His Highness Sheikh Mohammed bin Rashid Al Maktoum, U.A.E. Vice-President and Prime Minister and Ruler of Dubai, launched Dubai Healthcare City (DHCC) in 2002 with the goal of establishing an internationally recognized location of choice for quality healthcare and an integrated center of excellence for clinical and wellness services, medical education, and research. It is a hub for pharmaceutical companies such as Abbott, Allergan Middle East, AstraZeneca, Baxter, Boehringer Ingelheim, Eli Lilly, Gilead Sciences, Johnson & Johnson, Jolphar, Merck Serono, Merck Sharp and Dohme (MSD), Novartis, Novo Nordisk, Organon, Sanofi, and Viartis.¹⁴⁴



- ❖ **Dubai Science Park:** Dubai Science Park (DSP), which is part of the TECOM Group, is a science-focused business community, dedicated to supporting entrepreneurs, start-ups, SMEs, and MNEs. Since its inception in 2005, the community has grown to more than 350 companies, including Amgen, Bayer, Boston Scientific, Bristol-Myers Squibb, Fresenius Medical Care, Medtronic, Merck Serono, Pfizer, and Zimmer Biomet. In total, the community employs over 3,600 industry professionals.¹⁴⁵



- ❖ **Jebel Ali Free Zone:** In the 34 years since its inception, Jebel Ali Free Zone (Jafza) has become a key contributor to Dubai's economy and a growth engine for trade and commerce in the wider MENA region. Jafza is the leading source of foreign direct investment (FDI) in the U.A.E., accounting for around 32% of all FDI inflow, and has created a business environment that has helped drive forward economic diversification. As a part of its diversification efforts, Jafza has worked towards helping grow Dubai's healthcare and pharmaceutical industry. Currently, there are over 160 companies registered within the free zone from 38 countries, including leading industry players such as Johnson & Johnson, Colgate, Roche, Sanofi, GlaxoSmithKline, and Quest Vitamins. In September 2017, Jafza agreed to work alongside the UAE Ministry of Health and Prevention to increase support for the sector and encourage the establishment and growth of an indigenous pharmaceutical product manufacturing base in Dubai.



E. Medical Equipment

The projected growth of the U.A.E.'s medical equipment market broadly mirrors that of other sectors. Despite ambitions to expand local manufacturing, domestic production of medical equipment remains largely nascent, offering tremendous opportunities for international companies. The pandemic led the U.A.E. to renew its focus on exploring local production of certain medical equipment.

Diagnostic Imaging Equipment

Diagnostic imaging equipment comprises a large percentage of the U.A.E. medical device market. Here, the U.A.E. has a preference for products from brand-named international companies, who have often turned to the U.A.E. as the site of their regional headquarters.



- ❖ **GE Healthcare:** From its regional headquarters in Dubai, GE Healthcare provides transformational medical technologies and services to meet the demand for increased access, enhanced quality, and more affordable healthcare around the world. From medical imaging, software & IT, patient monitoring, and diagnostics to drug discovery, biopharmaceutical manufacturing technologies, and performance improvement solutions, GE Healthcare helps medical professionals deliver great healthcare to their patients.¹⁴⁶
- ❖ **Siemens Healthineers:** Siemens Healthineers, which is the separately managed healthcare business of Siemens and is a leading provider of medical imaging equipment, bases its Middle East regional office in Dubai Healthcare City.¹⁴⁷ In December 2016, Siemens Healthineers partnered with Easa Saleh Al Gurg to set up its first U.A.E. business.¹⁴⁸ Pure Health, part of ADQ, is the authorized distributor for some of the top brands in the Medical and Diagnostic Devices business such as Siemens Healthineers.
- ❖ **Philips Healthcare:** Dubai serves as the Middle East headquarters for Philips Healthcare, which is also a global leader in health technology. This headquarters services 15 markets, including the U.A.E.¹⁴⁹

Cardiovascular Devices

Cardiovascular devices are another important segment of the U.A.E. medical device market, especially given the increasing incidence of cardiovascular disease due to the prevalence of a sedentary lifestyle and obesity among the local population. This market is principally centered on interventional cardiology and cardiac rhythm management.¹⁵⁰

Many key players in this segment also have significant U.A.E. operations.

- ❖ **Abbott:** Dubai serves as a regional headquarters for Abbott, which is one of the world's leading healthcare companies in medical devices as well as nutrition, pharmaceuticals, and diagnostics.¹⁵¹ Abbott's acquisition of St. Jude Medical created a combined company with best-in-class solutions across the areas of cardiovascular and neuromodulation.¹⁵² In December 2022, the U.A.E. became the third country in the world, after the U.S. and Canada, to implant Abbot's leadless pacemaker in a patient. The operation was successfully undergone at Al Qassimi hospital in Sharjah.¹⁵³
- ❖ **Medtronic:** Dubai is the home for Medtronic's headquarters for the Middle East & Africa, Central Asia & Turkey (MEACAT). These markets comprise 1,400 Medtronic professionals and produce approximately \$1 billion in revenue.¹⁵⁴ Medtronic is world renowned for its wide array of cardiac and vascular products.¹⁵⁵
- ❖ **Johnson & Johnson:** Dubai is the home of Johnson & Johnson Middle East FZ-LLC, which oversees the regional production of a broad range of products used primarily by healthcare professionals in the fields of cardiovascular disease as well as orthopedics, neurovascular, surgery, vision care, diabetes care, infection prevention, diagnostics, sports medicine, and aesthetics.¹⁵⁶

Other U.S. medical device and diagnostic companies that have an active presence in the U.A.E. include 3M Healthcare, Baxter, Beckman Coulter Inc., Boston Scientific, and Stryker. Many others are represented through local distributors.

Local Manufacturing and 3D Printing

Although the U.A.E. is still heavily reliant on imports of more sophisticated medical equipment, it has begun to develop a nascent medical products industry, starting with products like medical consumables. For instance, Abu Dhabi National Industrial Projects (ADNIP) partnered with NNE Pharmaplan to launch the Abu Dhabi Medical Devices Company, which manufactures Auto Disable syringes, Single Use syringes, Insulin syringes, and IV Cannula.¹⁵⁷ During the pandemic, 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).



One area in which the U.A.E. is poised to potentially play a leading role in the future is 3D printing. In 2016, His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the U.A.E. and Ruler of Dubai, launched the 'Dubai 3D Printing Strategy' in order to exploit this technology for the "service of humanity" and promote the status of the U.A.E. and Dubai as a leading hub of 3D printing technology by the year 2030. One of the primary focus areas of this strategy is the medical products sector, which could involve developing 3D printed teeth, bones, artificial organs, medical and surgical devices, and hearing aids. As of late 2020, Dubai Health Authority doctors across all DHA hospitals had successfully performed more than 50 surgeries using 3D printing techniques across several medical specialties such including oncology, cardiology and orthopedics.¹⁵⁸ As of July 2022, there was a team of 16 doctors and engineers using six Formlabs 3D printers, working with the Dubai Health Authority and the Dubai 3D Printing Strategic Alliance, which promotes 3D printing within the U.A.E.

U.A.E. Partnerships with U.S. Medical Equipment Companies

- **Abbott** announced in October 2017 the establishment of the Abbott Diabetes Academy. This Academy, which is located in Dubai Healthcare City, is the first dedicated training academy in the U.A.E. for healthcare professionals working with diabetes patients. With its mission to act as a center of excellence and education and training partner for the regional public and private healthcare and diabetes community, the Academy will provide practical tools that can be applied by endocrinologists, diabetologists, and educators to improve the region's management of diabetes. The announcement of this Academy came during the first USA Healthcare Symposium and Showcase on Nutrition, Obesity, and Diabetes, which was held as part of Discover America month at the Mohammed bin Rashid University of Medicine and Health Sciences in Dubai.²⁵⁴



- **GE Healthcare** brings the best of its scale and capabilities to serve as a strategic partner to public and private sector providers across the U.A.E. including the U.A.E. Ministry of Health and Prevention, Dubai Health Authority (DHA), and Abu Dhabi Health Services Company (SEHA).



- **Medtronic** signed a deal with the University of Sharjah in 2015 whereby Medtronic Academy, the educational wing of Medtronic, would collaborate with the University to educate regional physicians on Medtronic products and therapies as well as general cardiac topics.¹⁹⁷



F. Information Technology

The U.A.E.'s Healthcare Information Technology (IT) market is set to grow swiftly in the coming years. This growth is partly driven by government initiatives around the digitization of electronic medical records. The pandemic underscored not just the utility of electronic medical records but the power of telehealth.

Electronic Health Records and Health Information Exchanges

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 reduce duplication, medication errors, and the length of hospital stays; improve patient safety and outcomes; and inform more effective public health policies.

In 2008, the U.A.E. Ministry of Health 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, Oracle Cerner, Gulf Business Machines (the sole distributor of most IBM products and services), and Injazat Data Systems.¹⁵⁹

Emirates Health Services (EHS) has since taken over management of Wareed and other electronic and digital services for healthcare which were formerly under the umbrella of MOHAP. In 2022, EHS announced the Smart Health Services application to provide patients a bundle of health services, including booking a medical appointment, requesting a medical report, home care, and viewing medical records. U.S. companies such as Oracle Cerner and Johnson & Johnson work through partnerships with EHS in their provision of digital health products and services. The efforts of EHS to continuously develop its digital system is in line with its strategy to optimize the use of digital and advanced technologies in an effort to promote healthy lifestyles among all members of the Emirati community, and to drive a shift in the work environment towards sustainable, innovative solutions and integrated, comprehensive services that meet the highest international standards.

Also in 2008, the Abu Dhabi Health Services Company (SEHA) launched its own electronic health records system. In 2008, Tawam Hospital in Al Ain became the first SEHA hospital to successfully implement *Cerner Millennium*® healthcare information technology solutions at its facility.¹⁶⁰

In August 2018, the Department of Health - Abu Dhabi (DOH) signed a strategic partnership agreement with Injazat Data Systems, a G42 company that was then a wholly-owned subsidiary of Mubadala Investment Company, to develop an integrated Health Information Exchange system for the healthcare sector in Abu Dhabi. The system, known as Malaffi and launched in January 2019, became the region’s first health information exchange platform. It enables real-time exchange of patient health information between healthcare providers with the aim of improving healthcare quality and patient outcomes. Malaffi connects more than 2,000 Abu Dhabi healthcare providers from both the public and the private sectors, offering healthcare services to more than 3 million people in the Emirate of Abu Dhabi.¹⁶¹ Its four core areas of functionality are Diagnostic Data Exchange, Provider Portal, Patient Portal, and Public Healthcare Services. As of April 2021, 95% of all hospitals in Abu Dhabi were connected to Malaffi.

Meanwhile, 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 Dubai Health Authority has since extended this electronic health records system to private facilities in the emirate as well through its NABIDH (Network and Analysis Backbone for Integrated Dubai Health) initiative. This initiative enabled the creation of a single unified medical record for each individual in Dubai by linking the information contained in all public and private health care facilities.¹⁶²

U.S.-U.A.E. Electronic Health Record and Health Information Exchange Partnerships

➤ **Oracle Cerner**, which designs health information technology that is employed worldwide, is highly active in the U.A.E., where its clients include the Abu Dhabi Health Services Company (SEHA), Emirates Health Services (EHS), Healthpoint, National Reference Laboratory, King's College Hospital Dubai, Al Jalila Children's Specialty Hospital, American Hospital Dubai, Sheikh Khalifa Medical City Ajman, and Zayed Military Hospital. In 2008, MOHAP began deploying Cerner Millennium as part of its Wareed Project to establish a "One Patient, One Record" system in its hospitals; in November 2016, MOHAP renewed and expanded this partnership with Oracle Cerner. In June 2018, Mubadala Healthcare implemented an integrated electronic health record system from Oracle Cerner. In March 2020, Oracle Cerner worked with MOHAP to develop a new program to keep patients up to date on their refills amidst the COVID-19 pandemic. Oracle Cerner was also instrumental in MOHAP's information-gathering methods to coordinate a national response during the pandemic. In 2021, all Mubadala Health providers were connected to a single laboratory information system in which physicians are able to quickly and easily order from the full range of advanced tests offered by National Reference Library.

The logo for Oracle Cerner, featuring the word "ORACLE" in red and "Cerner" in black.

➤ **Epic Systems**, a Wisconsin-based company with an international office in Dubai, has long been present in the U.A.E. healthcare sector. As early as 2008, it signed a seven-year contract to implement clinical technology at the Mohammed bin Rashid Al Maktoum Academic Medical Center in Dubai Healthcare City. Epic Systems' electronic medical records information system is also used by Cleveland Clinic Abu Dhabi, which was awarded the prestigious HIMSS Stage 7 certification for its improvements using Epic.

The Epic logo, featuring the word "Epic" in a stylized, italicized red font.

➤ **InterSystems**, a global U.S.-based provider of database, integration, and analytics software, has been engaged to deploy its health information systems at a variety of U.A.E. medical institutions, including Mediclinic, Emirates Hospital Group, Neuro Spinal Hospital, and Capital Health's Specialized Rehabilitation Hospital.²⁰⁴ InterSystems IRIS gained recognition as a platform supporting AI models and technology for healthcare.

The InterSystems logo, featuring a stylized blue and green icon followed by the text "InterSystems" in blue and "Health | Business | Government" in a smaller blue font below it.

In December 2021, MOHAP launched Riayati, a national medical records database created to connect 3,000+ U.A.E. public and private sector healthcare providers to effectively share data in real-time throughout the country. Riayati was developed through collaboration across federal and emirate-level governments such as MOHAP, EHS, DOH Abu Dhabi, and DHA. The Riayati platform is also coordinated with DOH Abu Dhabi's Malaffi platform.¹⁶⁴ The launch of Riayati made the U.A.E. the first country in the MENA region to put forth a digital national healthcare platform.

Telemedicine

The U.A.E. is also improving healthcare through the increasing adoption of telemedicine, which has grown increasingly popular especially following the COVID-19 pandemic. Six telemedicine solutions were approved for use by the Telecommunications and Digital Government Regulatory Authority (TDRA) in April 2020: Mind Mina Telemedicine, NextGenGP Telehealth, vSee, OKADOC, DOXY, and GetBEE-licensed telehealth, all of which were supported on all U.A.E. mobile networks in coordination with the country's two telecommunications operators, Etisalat and du.

Telemedicine enables both patients to consult medical professionals and medical professionals to consult each other from a distance. This has reduced hospital visits, limited the movement of patients between hospitals, and extended healthcare services to more remote locations.

In Abu Dhabi, Mubadala Health operates and manages the Abu Dhabi Telemedicine Center, which offers over-the-phone medical consultations in both Arabic and English with medical professionals 24 hours per day, 7 days per week. All services are offered exclusively through Daman to Thiqa and Enhanced cardholders.¹⁶⁵

The Dubai Health Authority (DHA) introduced telemedicine at its facilities through the "Dubai RoboDoc" initiative in 2017. In 2019, this service was reintroduced as the DHA's "Doctor for Every Citizen" telemedicine initiative. Though it was originally only accessible by citizens, whether they be physically present in Dubai or travelling, working, or studying abroad, after the pandemic it became a resource for all residents of Dubai.¹⁶⁶

In addition to the above initiatives, the U.A.E. has embraced teleradiology. For instance, in 2016, GE Healthcare, the Ministry of Health and Prevention, and Abu Dhabi International Medical Services formed an innovative, performance-based public-private-partnership called Unison to create the U.A.E.'s first public sector teleradiology capability.

Finally, several startups have embraced telemedicine concepts. Of the top 10 most funded health technology startups in the MENA region in 2022, four of them are based in the U.A.E. "Altibbi", a remote medical consultations platform with over 10,000 available doctors, has received a total of \$52.5 million in funding and won the World Summit Award for 'Best Digital Health Content'. "GluCare Health" provides in-person and virtual diabetes care and counseling through a mobile application which tracks and monitors patients' glucose, insulin, and diet. "Selfologi" allows patients to book appointments for aesthetic medical treatments such as botox, hair removal, and acne scarring. "Okadoc" is another appointment-booking and virtual consultation application that has gained investment from Abu Dhabi Investment Office (ADIO).¹⁶⁷

Smart Technology and Apps

The U.A.E. has long embraced the power of smart technologies and apps in the medical field. For instance, the Dubai Health Authority (DHA) has introduced smart pharmacies where robots can dispense 12 prescriptions in less than one minute from a store of up to 35,000 medicines.¹⁶⁸ DHA has also released a wide variety of apps that are geared toward various audiences from patients to doctors, students, medical tourists, blood donors, pregnant women, diabetics, investors, and children.

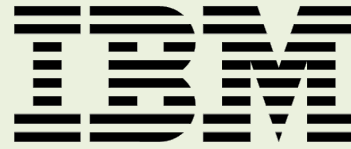
During the pandemic, the U.A.E. Government utilized several smart solutions and apps to detect cases of COVID-19 and control its spread. Most prominent among the smart solutions was the Al Hosn app, the official contact-tracing app of the federal government which held an individual's vaccine information, allowed residents and citizens to see all of their COVID-19 test results and records, and notified individuals if they came in contact or close proximity to someone who was infected with COVID-19. Every user who downloaded the app had a unique QR code containing information about the user's health. The app was encrypted, and the data remained on the user's phone. Through this data, the competent health authorities could identify people who can transmit the virus and who could be at a risk of contracting the virus. They could then communicate with those at risk and re-test them. This app was a joint initiative between Ministry of Health and Prevention, Department of Health - Abu Dhabi (DoH) and Dubai Health Authority. The other prominent digital solution developed by MOHAP in response to the pandemic was the chatbot service called "Virtual Doctor for COVID-19." The chatbot in the Virtual Doctor service asks several vital questions which will help it deduce if a person is at risk of getting COVID-19.

Medicine in the Metaverse

In the past year, the U.A.E. has demonstrated a commitment to exploring and engaging across sectors in the metaverse, the virtual-reality space in which users can interact with a computer-generated environment. The government of Dubai launched the Dubai Metaverse Strategy in July 2022, a plan which strives to increase the metaverse sector's contribution to the emirate's economy to \$4 billion by 2030.¹⁶⁹ Leaders in the health technology field in the U.A.E. are joining the government entities in their race to the metaverse, with Medcare Hospitals & Medical Centres, a subsidiary of Aster DM Healthcare, launching the first medical facility in the metaverse in October 2022.¹⁷⁰ Thumbay Group has also announced its intention to build a virtual hospital in the metaverse and works with Gulf Medical University to supplement medical training with Virtual Reality (VR) technology. VR and Augmented Reality (AR) technology have already proved valuable in medical education worldwide and in the U.A.E., where local doctors at hospitals such as Dubai's Abdul Latif Jameel Health and Abu Dhabi's Burjeel Medical City are using VR and AR models to learn and practice new surgical techniques and analyze real-time simulated patient data.¹⁷¹

Other U.S.-U.A.E. Information Technology Partnerships

- **IBM** partnered with the Mohamed bin Zayed University of Artificial Intelligence (MBZUAI) in May 2022 to enhance and augment care practices and support the U.A.E.'s Artificial Intelligence vision. Commonly referred to as AI, this new generation of technology and systems that it helps power promises to touch every facet of work and life – with the potential to radically transform them for the better. This is because these systems can ingest and understand all forms of data, which is being produced at an unprecedented rate. The purpose of AI and cognitive systems developed and applied by IBM is to augment human intelligence, not replace it. Cognitive systems, like IBM Watson, can reason over this data, forming hypotheses and judgments.
- **Honeywell**, a global leader in connected healthcare, has over 50 years of experience in hospital environments worldwide. The company has a long history in the U.A.E., where it leverages advanced software solutions and Internet of Things (IoT) technology to deliver 'Connected Hospital,' 'Connected Clinician,' and 'Connected Patient' initiatives. Integrating infrastructure and disparate systems to enable better care, Honeywell works with state-of-the-art healthcare facilities across the U.A.E. to ensure the rapid flow of information for more agile operations. Honeywell also specializes in workflow automation and communications to help reduce errors and increase productivity for clinicians, while improving the health of patients through effective monitoring in the hospital and beyond. As part of its commitment to innovation, Honeywell recently implemented an infant tracking solution at a large private hospital in the Middle East. The system provides a special service level to parents who want to track the identity, activity, and movement of their newborn babies, to ensure the highest level of safety and care.²¹⁴



G. Education, Research, and Events

In order to meet its ever-increasing need for qualified medical professionals, the U.A.E. has sought to grow its nascent medical education and training capacity. It has also endeavored to make the country a

regional hub for medical research and events. Leading U.S. hospitals are key partners in cultivating Emirati medical professionals and transferring knowledge.

Education and Training

The U.A.E. is home to a number of medical education institutions, the most notable of which are:

- ❖ **United Arab Emirates University (UAEU):** Opened in 1984, UAEU's College of Medicine and Health Sciences takes pride in being the first and highest-ranked medical school in the U.A.E. It offers a four-year M.D. program, the pre-requisite for which is successful completion of its two-year premed program. It also offers several graduate programs including a Master of Public Health, Master of Medical Sciences, and a Doctor of Pharmacy. Additionally, it offers PhDs in Biomedical Sciences and Public Health and Occupational Health.¹⁷²
- ❖ **Mohammed Bin Rashid University of Medicine (MBRU):** Opened in 2014, Mohammed bin Rashid University of Medicine is located in the Mohammed bin Rashid Academic Medical Center in Dubai Healthcare City. MBRU offers bachelor's and master's degrees through its three colleges: the Hamdan Bin Mohammed College of Dental Medicine, the College of Medicine, and the College of Nursing and Midwifery.¹⁷³
- ❖ **The University of Sharjah:** Opened in 2006, the University of Sharjah's College of Medicine offers a Bachelor of Medicine and Bachelor of Surgery (MBBS) degree; a master's degree in Molecular Medicine; a master's degree in Leadership on Health Professions Education; and a Doctorate degree in Molecular Medicine.¹⁷⁴ The University of Sharjah also has Colleges of Dental Medicine, Pharmacy, and Health Sciences, the latter of which offers a BSc. in Nursing.¹⁷⁵ The University of Sharjah is notably home to the 325-bed University Hospital Sharjah.¹⁷⁶
- ❖ **Higher Colleges of Technology:** The Higher Colleges of Technology's Health Sciences Division offers a broad range of Health Sciences bachelor's degree programs across its 17 campuses, including bachelor's degrees in Emergency Medical Services, Health Information Management, Medical Imaging Science, Medical Laboratory Technology, Nursing, Pharmacy, Social Work, and Veterinary Science.¹⁷⁷
- ❖ **Gulf Medical University:** Based in Ajman, this University, which is associated with the Thumbay Group, offers a MBBS degree as well as bachelor's degrees in Biomedical Sciences, Physiotherapy, Medical Laboratory Sciences, Medical Imaging Sciences, Anesthesia & Surgical Technology, and Nursing. It also offers Doctorate degrees in Dental Medicine and Pharmacy.¹⁷⁸ In August 2018, Gulf Medical University (GMU) expanded its footprint and launched Academic Thumbay University Hospital, two new colleges, and new programs as part of its planned educational strategy. The expansion includes the introduction of a master's degree in Public Health, Environmental Health, and Toxicology, which have been made possible thanks to a partnership between Gulf Medical University and University of Arizona's Mel and Enid Zuckerman College of Public Health.¹⁷⁹

- ❖ **RAK Medical & Health Sciences University:** Fully owned and managed by the government of Ras Al Khaimah, this institution claims to be the first comprehensive health science university in the U.A.E. It offers a MBBS degree as well as bachelor's degrees in Dental Surgery, Pharmacy, and the Science of Nursing. It also offers Master of Science Degrees in Pharmacy and Nursing.¹⁸⁰
- ❖ **Fatima College of Health Sciences:** Established in 2006, this Abu Dhabi-based college began by offering a BSc. in Nursing through a program now operated in collaboration with Griffith University in Australia. It currently offers more than ten degree programs at BSc. and Diploma levels in Health Sciences.¹⁸¹ Notably, it has collaborated with Etihad Airways Medical Center to provide three students per year with an opportunity to pursue a career in nursing with the airline.¹⁸²
- ❖ **Dubai Medical College for Girls:** This all-female institution offers a MBBS degree to women.¹⁸³
- ❖ **Dubai Pharmacy College:** This all-female college provides Bachelor of Pharmacy and Master of Pharmacy degrees.¹⁸⁴
- ❖ **Royal College of Surgeons in Ireland - Dubai:** Established in 2005, this institution offers Master of Science degrees in Healthcare Management as well as Quality & Safety in Healthcare Management.¹⁸⁵



New public and private sector medical education institutions are also emerging in some of the U.A.E.'s most prestigious existing universities. Khalifa University of Science, Technology and Research was founded in 2007 and launched Abu Dhabi's first medical school in September 2018. The Khalifa University College of Medicine and Health Sciences offers a four-year Doctor of Medicine degree program modeled after the North American medical education system.¹⁸⁶ Ajman University, which was founded in 1988 as the first private university in the GCC and later became the first university in the U.A.E. to admit expatriate students, offers degrees in the medical and health sciences in three of its nine colleges.¹⁸⁷ Ajman University offers bachelor's and master's degrees through its College of Medicine, College of Dentistry, and College of Pharmacy and Health Sciences.

In recent years, medical education institutions and partnerships have been a key focus of the U.A.E.'s healthcare leadership. Emirates Health Services (EHS) leads scholarships and education initiatives to increase the number of Emiratis studying and joining the nursing and midwifery professions. In Dubai in 2021, H.H. Sheikh Mohammed Bin Rashid Al Maktoum created the Dubai Academic Health Corporation (DAHC), which serves to integrate all public healthcare provision facilities with medical universities.¹⁸⁸ This initiative aims to both strengthen the emirate's healthcare facilities by creating a pipeline of talented students from universities into the workforce as well as to offer local medical students hands-on experience in their communities.

Other U.S.-U.A.E. Educational Partnerships

- **Children's National Medical Center** provides four training positions to Emirati physicians during their clinical and trial rotations. Each year, it also provides work experience to a number of Emirati students from UAE University, Higher Colleges of Technology, and Khalifa University.



➤ **Cleveland Clinic Abu Dhabi** chose 75 Emirati and expatriate high school students to participate in its prestigious two-week Junior Caregiver Program in the summer of 2018 across 4 of its 15 Institutes. The program was relaunched following the pandemic in August 2022 to host 60 students over the course of 2 weeks. It also formed partnerships with local education establishments such as Fatima College of Health Sciences, a local higher education college, from which it recruited five candidates to join its graduate nursing program. The hospital also sponsored 20 students from the college to continue their studies. Cleveland Clinic Abu Dhabi has been designated an advanced teaching facility by the Abu Dhabi Department of Health. In September 2018, Cleveland Clinic Abu Dhabi welcomed its first eight U.A.E. national resident physicians as part of its ongoing plans to boost the number of Emirati physicians practicing in the country and support a sustainable healthcare sector. By the end of 2021, Cleveland Clinic Abu Dhabi had 39 U.A.E. nationals as active medical residents across seven specialties.



➤ **Boston Children's Hospital** physicians have participated in numerous educational programs in the U.A.E. over many years including Arab Health, SEHA Pediatric Conference, and grand rounds lectures in the public and private sector. In 2021, BCH was the keynote sponsor for the Arab Health Pediatric Focus Day and presented a series of lectures on advances in neurology, surgery, cardiology, and cardiac surgery.²³²



➤ **Cedars-Sinai** and Khalifa University entered an academic collaboration for training and education of third- and fourth-year medical students to observe best medical and research practices as well as consult with host faculty members at Cedars-Sinai. At Cedars-Sinai, the commitment to medical education means consistent delivery of nationally recognized



programs produced by eminent faculty with unrivaled opportunities for clinical and advanced skills learning. Each year, a select group of medical students from Khalifa University will benefit from specialized training experiences in Los Angeles.

- **Children's Hospital of Philadelphia (CHOP)** hosts 4-5 medical students from Mohamed Bin Rashid University for six weeks during the summer in research labs of their choice to gain exposure to clinical research.



Research

U.A.E. universities are increasingly conducting innovative medical research. For instance, Sharjah University created a Research Institute of Medical & Health Sciences, which seeks to help make the university a national and international leader in biomedical and health sciences. Its research focuses on experimental and system biology, experimental genetics, disease states experimental therapeutics, inflammatory diseases, and clinic epidemiology/health policy.¹⁹⁰ Moreover, NYU Abu Dhabi has created a Public Health Research Center (PHRC), which seeks to identify environmental and genetic determinants of health problems in Abu Dhabi and develop and test new public health interventions to promote wellness in the emirate.



Likewise, private sector companies are increasingly conducting research in the U.A.E., using dedicated facilities such as those provided by Dubai Science Park. The community features world-class laboratory space, equipped with air exhaust and ventilation systems, acid resistant draining, and pH neutralization systems amongst other technical features. As a result, the laboratories are home to a wide range of organizations conducting activities including research and product development, testing, diagnostics, manufacturing, and production.¹⁹¹

Several dedicated research centers have emerged in the country, with branches focusing on medical research. Technology Innovation Institute (TII), the applied research arm of Abu Dhabi's Advanced Technology Research Council (ATRC), established its Biotechnology Research Center to support and facilitate domestic research in the emerging fields of Biotechnology, such as bio-medicine, bio-robotics and nanotechnology, environmental biotechnology, molecular biotechnology and genetics, and bio-informatics.¹⁹² TII's researchers work alongside ASPIRE, the technology program development pillar of the ATRC, which follows a mandate to develop a research and development ecosystem in Abu Dhabi. To achieve this mandate, ASPIRE works to develop a globally



competitive research-funding platform through the Ghadan 21 government accelerator programs and collaborate with global partners to find solutions to local and global challenges across a variety of sectors of which biotechnology, health, and food are key focus areas.¹⁹³

In March 2017, the Thumbay Institute of Precision Medicine and Translational Research opened on the site of Gulf Medical University to conduct postgraduate research, particularly on diabetes and cancer. The Thumbay Institute of Population Health, which focuses on research in the fields of public health, epidemiology, evidence based medicine, big data analysis, and global health, and the Thumbay Institute of Healthcare Workforce Development, which focuses on responding to national, regional, and international shortages, are recent additions to Thumbay's commitment to research.¹⁹⁴ Al Jalila Foundation Research Center, another expansion in the research field, is a 200 million AED [\$54 million] institution being built in Dubai Healthcare City to research five major areas: cancer, cardiovascular disease, diabetes, obesity, and mental health.¹⁹⁵

Alongside this growth in local research, Emirati researchers continue to collaborate with researchers in the United States through partnerships with leading medical institutions. For instance, in December 2016, an Emirati researcher, Dr. Humaid Al Shamsi, who is an Assistant Professor at the MD Anderson Cancer Center at the University of Texas, was the primary investigator in the identification of a rare subtype of colon cancer. The discovery was the result of collaboration between the Sheikh Khalifa bin Zayed Al Nahyan Institute for Personalized Cancer Therapy at MD Anderson and the Mayo Clinic, with research support from the Khalifa bin Zayed Al Nahyan Foundation.¹⁹⁶

U.S.-U.A.E. Research Collaborations

- **Illumina**, a California-based biotechnology company, opened its Illumina Solutions Centre in Dubai in November 2022, a 9,100-square-foot laboratory bringing genomics technology and precision medicine to the U.A.E. Illumina strives to use the new center as a regional hub for research and training in diagnostic tests such as prenatal screenings and genomic tests for cancer. Genomics testing technology and precision medicine treatments have historically been more widely available to populations of European descent, because of the concentration of research in this field happening in Europe. However, it is a very important field of medical study to the MENA region, where there is a high incidence of genetic diseases and conditions. Illumina's new Solutions Centre will serve to gather representation of the region's genetic data and educate local scientists on genetic testing techniques and technologies, leading to improved precision medicine therapies and drug development.
- **New York University Abu Dhabi (NYU Abu Dhabi)** announced the launch of the "UAE Healthy Future Study" in early 2017, which is a long-term study of 20,000 Emiratis to better understand the risk factors of obesity, diabetes, and heart disease. The study is being conducted in collaboration with SEHA, Zayed Military Hospital, UAE University, Zayed University, Khalifa University, EBTIC, Healthpoint, Capital Health Screening Center, and Daman. Separately, in November 2018, the Emirates Scientists Council signed a strategic partnership agreement with New York University Abu Dhabi. The MoU grants researchers from various disciplines access to the university's advanced science laboratories and research centers to conduct ground-breaking studies.³⁰⁵
- **The Medtronic Foundation** gave a two-year \$100,000 Health Access Grant to Al Jalila Foundation in February 2017 to fund a local research program focusing on Vitamin D deficiency across the country. The grant will allow Al Jalila Foundation to promote early detection and prevention of the disease.²³⁸

illumina

جامعة نيويورك أبوظبي
NYU | ABU DHABI


Medtronic
FOUNDATION

The U.A.E. has spurred much of the above activity through generous grants. For example, Al Jalila Foundation not only funded the construction of the Al Jalila Foundation Research Center, but it also provided scholarships to U.A.E. medical students and funded U.A.E.-based medical research.²⁰⁰ Al

Jalila Foundation is not alone, as the Sheikh Hamdan bin Rashid Al Maktoum Award for Medical Sciences, which funds medical research, is now in its 22nd year.²⁰¹



“Reaching the Last Mile” Global Health Forum

In November 2017, Abu Dhabi convened key global health stakeholders for the “Reaching the Last Mile” global health forum. This forum, held in partnership with the Bill and Melinda Gates Foundation and the Carter Center, sought to catalyze action to reach the “last mile” of eliminating and eradicating certain preventable diseases.

During this forum, His Highness Sheikh Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the U.A.E. Armed Forces, and Bill Gates each pledged \$20 million towards a 10-year, \$100 million fund to tackle diseases including river blindness and lymphatic filariasis (elephantiasis), guinea worm disease, malaria, and polio. The conference also led to the establishment of a new research institute based in Abu Dhabi that will develop policies to combat infectious disease.

In November 2019, global leaders once again convened in Abu Dhabi at the Reaching the Last Mile Forum. This time, they affirmed their commitment to eradicating polio and pledged \$2.6 billion as part of the first phase of the funding needed to implement the Global Polio Eradication Initiative’s Polio Endgame Strategy 2019-2023. [Pledges](#) came from a diverse array of donors, including: \$160 million from His Highness Sheikh Mohamed bin Zayed Al Nahyan, \$215.92 million from the United States, and \$1.08 billion from the Bill & Melinda Gates Foundation.

This forum built on previous partnerships between the U.A.E. and both the Bill and Melinda Gates Foundation and the Carter Center. In 2013, Abu Dhabi, in partnership with the Bill and Melinda Gates Foundation, convened the Global Vaccine Summit, which raised \$4 billion in commitments to polio eradication. More than 30 years ago, the late U.A.E. President His Highness Sheikh Zayed bin Sultan Al Nahyan forged a partnership with the Carter Center around Guinea worm disease eradication that continues to this day.

202

Exhibitions and Conferences

Over the last decade, the U.A.E. has become a regional hub for healthcare exhibitions and conferences. Every January, the U.A.E. hosts “Arab Health”, the largest gathering of healthcare and trade professionals in the Middle East. Arab Health 2022 hosted over 2,800 exhibitors, 40,000 in-person visitors, 400 speakers, represented 184 countries, and generated \$781 million dollars of business.²⁰⁴ For more information about Arab Health 2023, please visit www.arabhealthonline.com. Kallman Worldwide is the official USA representative of Arab Health and organizer of the USA Partnership Pavilion since 1996.²⁰⁵

The U.A.E. also hosts a variety of more specialized annual events. One of which is DUPHAT, the largest pharmaceutical exhibition in the MENA region, which, in January 2023, featured more than 1,100 companies from 82 countries and a record total attendance of 26,000 visitors.²⁰⁶ For more information about DUPHAT, please visit <https://duphat.ae/>. Another such event is MEDLAB, which is the largest attended laboratory expo worldwide with approximately 600 exhibitors and more than 25,000 attendees.²⁰⁷ For more information about MEDLAB, please visit www.medlabme.com.

H. Public Health

In line with the U.A.E.'s Vision 2021, the U.A.E. has recently made a major push to reduce the incidence of chronic diseases by adopting relevant legislation and launching public health campaigns.

Response to COVID-19

The U.A.E. government quickly took precautionary health measures after its first recorded case of COVID-19 on the 29th of January 2020, setting the stage for the U.A.E. to be recognized as a global leader in its COVID-19 response. The U.A.E. banned large gatherings, limited international travel, required mandatory quarantines for travelers and those potentially exposed to the virus, encouraged telework, and began an unparalleled effort of mass testing. These efforts by the U.A.E.'s leadership allowed the U.A.E. to be globally ranked as one of the top countries, and the highest in the Arab world, in terms of its COVID-19 response.

The U.A.E. government also quickly charted the path to post-pandemic recovery by prioritizing vaccinations for its people. It began administering its first vaccine authorized for emergency use, China's Sinopharm vaccine, in December 2020, quickly followed by the American Pfizer-BioNTech vaccine. Four main groups were targeted for inoculation, with the first group including Emiratis and residents aged 60 and older, people with chronic health conditions, and the disabled. The second group was frontline health workers, the third other essential workers, and the fourth members of the general public who wanted to be vaccinated. Vaccines were available at mass vaccination sites organized by the Dubai Health Authority, the Abu Dhabi Department of Health, and other health entities within the Emirates.

Another key development was the ability of the U.A.E. to domestically manufacture key tools in the fight against the pandemic. Honeywell signed an agreement with Mubadala Investment Company to produce N95 face masks within the U.A.E., with an annual output capacity of nearly 30 million masks per year. This venture allowed the U.A.E. to not only meet its national requirements, but also export this critical product to frontlines around the world. Meanwhile, Group 42 (G42) entered into an agreement with the Chinese pharmaceutical entity Sinopharm CNBG to manufacture COVID-19 vaccines in the U.A.E.

The U.A.E.'s public health efforts were not limited to its own borders and citizens. Recognizing the global nature of COVID-19, the U.A.E. launched two entities to support global vaccine distribution efforts. Abu Dhabi's HOPE Consortium and the Dubai Vaccine Logistics Alliance were formed to utilize the U.A.E.'s strategic geographic location and its world-class logistical capabilities in the race to vaccinate the world.

Cancer Screening

The U.A.E. government has made concerted efforts to promote early cancer detection through screening. The Ministry of Health and Prevention has been particularly forward-leaning in terms of raising awareness about cancer and the importance of early detection through regular medical check-ups, as well as offering free breast cancer screenings across the U.A.E.

These initiatives complement the longstanding efforts of the Friends of Cancer Patients. Founded by Sheikha Jawaher bint Mohammed Al Qasimi, this group has organized the high-profile “Pink Caravan” every year since 2011 to raise awareness about breast cancer early detection and screening.²⁰⁸ In its first eight editions, the caravan travelled 1,700 kilometers across the seven emirates with 490 riders and 700 volunteers, providing free medical tests and screenings to 56,000 men and women, leading to the diagnosis of 61 breast cancer cases.²⁰⁹

U.S.-U.A.E. Cancer Partnerships

- **The Susan G. Komen Foundation** has partnered with the U.A.E. to raise awareness of breast cancer and facilitate more effective outcomes in its prevention and treatment. The U.A.E. Embassy in Washington, D.C. regularly participates in the Susan G. Komen Race for the Cure as an official sponsor.
- **The American Cancer Society (ACS)** has partnered with Friends of Cancer Patients in the U.A.E. since 2014 to launch the U.A.E.’s first Relay for Life Race and translate the ACS’s Cancer Atlas into Arabic. This Atlas provides a comprehensive guide to the global cancer landscape and is used to promote cancer prevention and control worldwide.²⁴⁸



Anti-Smoking

The U.A.E. has also focused on combating smoking. In January 2014, the U.A.E. announced the implementation of Federal Law No. 15 of 2009 that, among other things, made it illegal to smoke in houses of worship, universities, and schools; prohibited smoking in a vehicle when a child under 12-years-old was present; forbid the sale of cigarettes to individuals under the age of 18; banned all tobacco advertising and promotion; and mandated a large warning label on the packaging of tobacco products.²¹⁰ Building on this legislation, in November 2014, the then-U.A.E. Ministry of Health announced a nationwide ban on smoking in all enclosed public spaces.²¹¹ Two years later, in 2017, the U.A.E. introduced an excise tax of 100% on tobacco products.²¹² In early 2021, U.A.E. health authorities opened smoking cessation clinics at various locations across the country to support individuals who sought to quit smoking. In 2022, MOHAP marked the global celebration of the World No Tobacco Day, under the slogan "Tobacco. Threat to our environment," reiterating its commitment to educating and warning the public about the health consequences of consuming tobacco products, including e-cigarettes, and raise awareness about the economic development burdens it places on governments and societies.

Combating Obesity, Diabetes, and Cardiovascular Disease

In addition to its efforts to combat cancer and smoking, the U.A.E. has tried to fight growing rates of obesity and associated ailments through regulation and taxation of the food and beverage industry. In December 2013, the U.A.E. cabinet announced that it would require calorie counts to be printed on food products, limit the size of soft drinks that can be sold, regulate advertising of fast food, and enforce

healthy food standards at school cafeterias.²¹³ In 2017, the U.A.E. introduced an excise tax of 50% on carbonated drinks.²¹⁴ In 2019, it expanded this 50% excise tax to beverages with added sugars and sweeteners.

In recent years, educational campaigns about the danger of cardiovascular diseases have also increased in the U.A.E. In December 2018, Amgen lit up Burj Khalifa in Dubai, the world's tallest building, as part of its "See The Emergency In Cholesterol" campaign.²¹⁵ In 2019, MOHAP launched the "Keep on Beating" campaign in collaboration with Pfizer, aimed at increasing awareness of the lifestyle and genetic risk factors of cardiovascular diseases such as smoking, poor nutrition, physical inactivity, and family history.²¹⁶

The U.A.E. has sought to combat these chronic ailments by promoting exercise and healthy lifestyles. In 2017, His Highness Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum, Crown Prince of Dubai and Chairman of the Executive Council of the Dubai Government, launched the Dubai Fitness Challenge, which challenged Dubai to be active for 30 minutes every day for 30 days. Sheikh Abdullah bin Zayed, Minister of Foreign Affairs and International Cooperation, was among the many U.A.E. officials who publicly embraced this challenge. A number of companies, such as Emirates, also accepted Sheikh Hamdan's challenge.²¹⁷ Sheikh Hamdan repeated the Dubai Fitness Challenge in 2018, and it has become a recurring yearly challenge.

MOHAP launched its own media campaign aimed at encouraging Emirati society to exercise in December 2021 called MA'KOM.²¹⁸ This initiative was launched with an organized one-kilometer run/walk event branded as "the world's shortest marathon," emphasizing the point that a simple healthy lifestyle can be achieved through incorporating small exercise activities into your daily routine.

In 2022, the National UAE Taskforce on Obesity discussed developing a joint roadmap to steer efforts and find effective ways to address obesity, in line with the National Strategy for Wellbeing 2031 and the aspirations of the UAE to become one of the best countries in the world in terms of quality of life. The Taskforce comprises representatives from the Ministry of Health and Prevention (MOHAP), Dubai Health Authority, Department of Health, and Abu Dhabi Public Health Centre. It is mandated to combat obesity in children from 5 to 17 years, according to Emirati government directions, and based on the recommendations of the World Health Organization (WHO), which outlined six key elements to treat this disease. These elements are healthy eating, weight management, pre- and post-conception care, healthy eating and physical activity in early childhood, and healthy nutrition for school students. The Taskforce is also entrusted with multi-sectoral coordination to oversee obesity-related activities to ensure a comprehensive and integrated approach, based on a clear-phased action plan.

Finally, the U.A.E. has endeavored to detect chronic ailments at an early stage so they can be effectively managed and treated. For instance, the then-Health Authority – Abu Dhabi (now Department of Health) launched the "Weqaya" program, which screens individuals for cardiovascular disease, diabetes, and the risk factors associated with these two ailments.²¹⁹ U.A.E. nationals must undergo Weqaya screening in order to qualify for the elite "Thiqa" health insurance program.²²⁰

U.S.-U.A.E. Fitness Partnerships

- **New York Road Runners** partners with the U.A.E. Embassy in Washington, D.C. on its annual U.A.E. Healthy Kidney 10K, which benefits the National Kidney Foundation.³²⁸
- **Cleveland Clinic Abu Dhabi** organized and took part in several community events to raise awareness of chronic or prevailing illnesses in the U.A.E. while also encouraging healthier and more active lifestyles. In 2022, the hospital organized the “Ramadan Night Run” to raise awareness for Parkinson’s disease during the month of Ramadan. The event saw participation of over 500 patients, patient families, and individuals from the community.



PART III: ENTERING THE MARKET

The U.A.E. healthcare market offers enormous opportunities for U.S. companies to expand their presence and forge meaningful partnerships. However, it also poses certain challenges. Fortunately, there are a wide range of resources that companies can draw on to help them navigate risks and overcome challenges.

A. Opportunities

As previously noted, the U.A.E.'s increasing population, demographic shifts, high prevalence of chronic diseases, wealth, ambitions to become a regional medical tourism hub, and broader economic diversification plans are all driving the expansion of the country's healthcare market.

While it has a thriving healthcare market in its own right, the U.A.E. is also an ideal regional hub from which to provide medical goods and services. The country is centrally located at the crossroads of Africa, Europe, and Asia, and it boasts advanced transportation and logistics infrastructure. This strategic geographical location and world-renowned logistical capabilities allowed the U.A.E. to become a global center for COVID-19 vaccine distribution worldwide.



Moreover, the U.A.E. enjoys relative security, political stability, and favorable business regulations. The U.A.E. has recently accelerated the pace of economic reforms meant to solidify its standing as the place to do business in the region. The 'Projects of the 50' initiative, an ambitious fifty-year set of projects to guide the country's development over the next five decades, will surely increase the U.A.E.'s standing as a global business hub for American and international companies.

Within this context, the U.A.E. provides attractive opportunities for U.S. companies in the field of healthcare provision, where there is a high demand for U.S. expertise, particularly in more specialized domains. American healthcare providers could replicate institutions in the U.A.E. as Cleveland Clinic has done. Alternately, they could manage U.A.E. hospitals in the same fashion as Johns Hopkins Medicine International and Mayo Clinic. They can also provide value through consultations and training partnerships.

The U.A.E. also offers opportunities in the pharmaceutical, medical equipment, and healthcare IT sectors. U.S. companies will not only find the U.A.E. a ripe market for pharmaceutical exports, but they may also find it a suitable platform for the manufacture of drugs, perhaps following the lead of Merck and Pfizer in agreeing to local production arrangements. U.S. companies will find in the U.A.E. a growing market for medical and diagnostic equipment sales and one in which they can potentially sign agreements to install and service their own medical devices, as have GE Healthcare, Honeywell, Medtronic, and Illumina. At the same time, U.S. companies will find clients that are eagerly pursuing the latest innovations in healthcare information technology, as Amazon, IBM and Oracle Cerner can attest. The COVID-19 pandemic has also showcased the U.A.E.'s demand for state-of-the-art testing equipment, which companies like Abbott provided to the U.A.E.'s airports for high-quality passenger screening.

The U.A.E. presents opportunities in meeting an ever-increasing demand for medical professionals as well. Along these lines, U.S. doctors and nurses may find beneficial employment opportunities in the U.A.E. In addition, world-class medical institutions will find local counterparts that are eager to partner

with them to provide the best education and training to future generations of local medical professionals, as Children's National Medical Center, Children's Hospital of Philadelphia, and others know well.

Public health and sustainability advocacy and initiatives are also welcome contributions to the U.A.E.'s health sector. Organon, a women's-health-focused pharmaceutical company formed out of a spin-off from Merck, has engaged female leaders in the U.A.E. such as Dr. Asma Al Mannaei, Executive Director of Research and Innovation at DOH Abu Dhabi, through panel discussions, events, and advocacy campaigns about gender equity and women's health. Especially with the country's hosting of COP28 in November 2023, there is ample opportunity for partnerships for U.S. companies that are pioneering environmental sustainability in the health care industry and practice. Cleveland Clinic Abu Dhabi, for example, was awarded the Ashikaga-Nikken Excellence Award for Green Hospitals by the International Hospital Federation for its commitment to environmental sustainability.²²³

The above is far from an exhaustive list of opportunities available for U.S. companies in the U.A.E. healthcare market, and less obvious opportunities exist as well. For instance, Leo A Daly has helped design and build medical facilities in the U.A.E., such as the Zayed Military Hospital Campus, the Al Ain Fertility Clinic, and the Abu Dhabi Policy Clinic and Hospital Complex. Additionally, U.S. venture capital and private equity firms may find promising investment opportunities in the U.A.E. healthcare space, which includes a wide array of innovative healthcare startups.

Regardless of the opportunity U.S. companies are pursuing, one of the keys to success will be an on-the-ground commitment. Fortunately, there are numerous business-friendly environments in which U.S. companies can establish themselves, including free zones like Dubai Healthcare City and Dubai Science Park. The U.S.-U.A.E. Business Council's guide to ["Doing Business in the United Arab Emirates"](#) provides U.S. company executives the essential information they need when considering operations in the U.A.E.

B. Challenges

While there are abundant opportunities for U.S. businesses in the U.A.E. healthcare industry, these opportunities are somewhat limited by the size of the market. The U.A.E.'s relatively small population of 10 million people limits the size of local demand making it critical that large healthcare enterprises rely on the U.A.E.'s connections to the wider region or the U.A.E.'s booming medical tourism market.

Limits to local demand are further exacerbated by the large number of domestic firms established in the market and the increase in international competitors entering the fray. Asian firms, mainly from China and South Korea, have invested heavily in the U.A.E., and China in particular is continuously looking for ways to expand, as evidenced by Sinopharm's expansion in the U.A.E. in recent years. Following the historic Abraham Accords in 2020, Israeli healthcare firms have also begun moving in to the U.A.E.

Another potential challenge for U.S. companies operating in the U.A.E. healthcare market is tightening budgets. In an environment of global inflation and increasing healthcare costs, the U.A.E. government is taking firmer stances regarding controlling prices throughout the healthcare industry. Moreover, there have been efforts to achieve greater efficiencies and cost savings.

C. Resources

American companies that are looking to capture the myriad of opportunities in the U.A.E. healthcare market and forge fruitful partnerships with local counterparts can draw on a variety of resources and services, both in the United States and U.A.E.

They can rely on the assistance of U.S. government institutions, located in both the U.A.E. and Washington, D.C.

U.S. Government Contacts in the U.A.E.

Senior Commercial Officer: Thomas Bruns
U.S. Embassy in Abu Dhabi, Commercial Section
P.O. Box 4009, Abu Dhabi, U.A.E.
Tel: +971-2-414-2665
E-mail: thomas.bruns@trade.gov
Website: <https://www.trade.gov/knowledge-product/united-arab-emirates-market-overview?section-nav=2758>

Healthcare Commercial Specialist in Dubai: Vandana Nair
U.S. Consulate General in Dubai
P.O. Box 121777, Dubai, U.A.E.
Tel: +971-4-309-4963
E-mail: Vandana.nair@trade.gov
Website: <https://www.trade.gov/knowledge-product/united-arab-emirates-market-overview?section-nav=2758>

U.S. Government Contacts in Washington, D.C.

U.A.E. Desk Officer: Naomi Wiegler
U.S. Department of Commerce
U.S. and Foreign Commercial Service
International Trade Administration
14th St. & Constitution Avenue, N.W.
Washington, D.C. 20230
Tel: (202) 482-0879
Email: naomi.wiegler@trade.gov

In addition, U.S. companies can turn to U.A.E. government institutions in both the United States and the U.A.E.

U.A.E. Government Contacts in the U.S.

U.A.E. Commercial Counselor: Saud Al Nowais
U.A.E. Embassy, Trade & Commercial Office
3522 International Court, NW
Washington, DC 20008
Tel: (202) 243-2425
Email: trade@uaeembassy-usa.org
Website: <https://www.uae-embassy.org/services-resources/doing-business>

U.A.E. Consulate in Los Angeles
1999 Avenue of the Stars, Suite 1250
Los Angeles, CA 90067
Tel: (310) 551-6534
Email: protocol.la@mofa.gov.ae

U.A.E. Consulate in New York
535 5th Ave., 32nd Floor
New York, N.Y. 10017
Tel: (212) 419-7670
Email: nycon@mofa.gov.ae

U.A.E. Consulate in Houston
7505 South Main Street, Suite 510
Houston, TX 77030
Tel: (832) 956-6666
Email: houstoncon@mofa.gov.ae

U.A.E. Government Contacts in the U.A.E.

Ministry of Health and Prevention
P.O. Box 848, Abu Dhabi, U.A.E.
Tel: +971-2-652-0590
P.O. Box 1853, Dubai, U.A.E.
Tel: +971-4-230-1000
Website: www.mohap.gov.ae

Emirates Health Services
DSO Digital Park Building A8
Dubai, U.A.E.
Tel: +971-4-665-0000
Website: www.ehs.gov.ae

Department of Health – Abu Dhabi
P.O. Box 5674, Abu Dhabi, U.A.E.
Tel: +971-2-449-3333
Website: www.doh.gov.ae

Abu Dhabi Health Services Company (SEHA)
P.O. Box 109090, Abu Dhabi, U.A.E.
Tel: +971-2-410-2000
Website: www.seha.ae

Dubai Health Authority (DHA)
Dubai Health Authority Building, Al Maktoum Bridge Street, Bur Dubai Area 4545, U.A.E.
Tel: +971-800-342
Email: wasselsotak@dha.gov.ae
Website: www.dha.gov.ae

Finally, U.S. companies can count on major U.S. trade associations and chambers of commerce and their counterparts in the U.A.E.

U.S. Trade Associations/Chambers of Commerce

U.S.-U.A.E. Business Council
2001 K Street, NW, Suite 201 North
Washington, D.C. 20006
Tel: +1 202 863 7285
Email: news@usuaebusiness.org
Website: www.usuaebusiness.org

U.A.E. Trade Associations/Chambers of Commerce

Federation of U.A.E. Chambers of Commerce & Industry
P.O. Box 3014, Abu Dhabi, U.A.E.
Tel: +971-2-621-4144
Email: info@fccuae.ae
Website: www.fccuae.ae

Abu Dhabi Chamber of Commerce & Industry
P.O. Box 662, Abu Dhabi, U.A.E.
Tel: +971-2-621-4000
Email: contact.us@adcci.gov.ae
Website: www.abudhabichamber.ae

Dubai Chamber of Commerce & Industry
P.O. Box 1457, Dubai, U.A.E.
Tel: +971-4-228-0000
Email: customercare@dubaichamber.com
Website: www.dubaichamber.com/

Sharjah Chamber of Commerce & Industry
P.O. Box 580, Sharjah, U.A.E.
Tel: +971-6-530-2222
Email: scci@sharjah.gov.ae
Website: www.sharjah.gov.ae

Ajman Chamber of Commerce & Industry
P.O. Box 662, Ajman, U.A.E.
Tel: +971-600-595-959
Email: info@ajmanchamber.ae
Website: www.ajmanchamber.ae

Fujairah Chamber of Commerce & Industry
P.O. Box 738, Fujairah, U.A.E.
Tel: +971-9-223-0000

Email: chamber@fujcci.ae

Website: www.fujcci.ae

Ras Al Khaimah Chamber of Commerce & Industry

P.O. Box 87, Ras Al Khaimah, U.A.E.

Tel: +971-7-207-0222

Email: info@rakchamber.ae

Website: www.rakchamber.ae

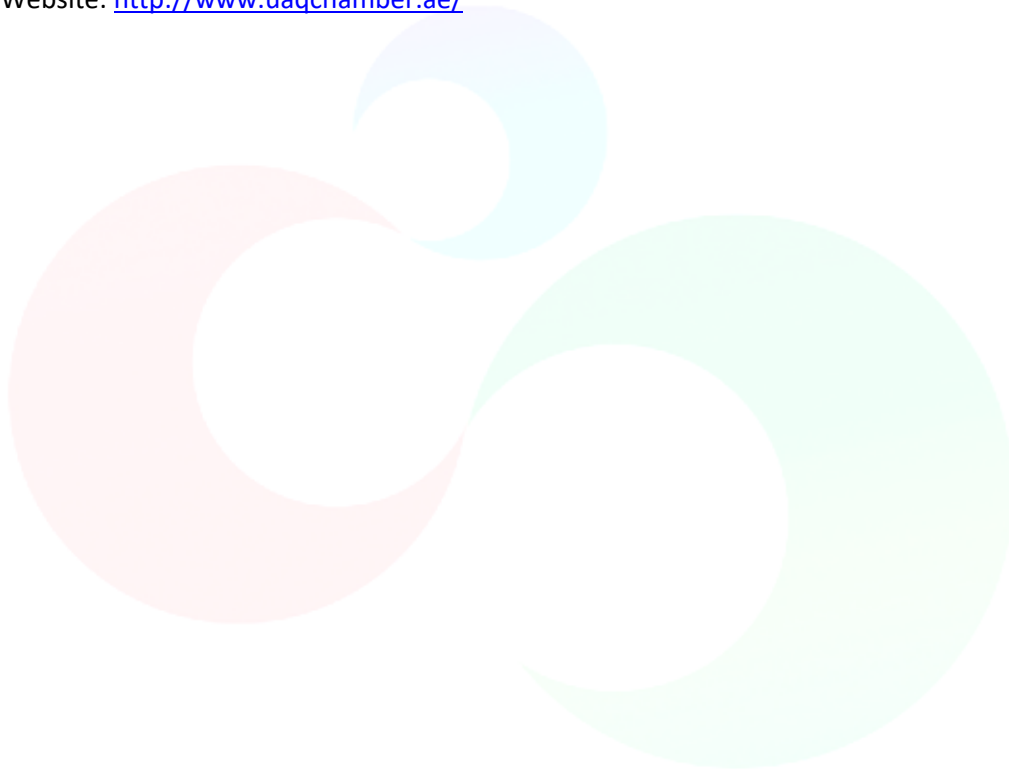
Umm Al Quwain Chamber of Commerce & Industry

P.O. Box 436, Umm Al Quwain, U.A.E.

Tel: +971-6-765-1111

Email: uaqcci1@eim.ae

Website: <http://www.uaqchamber.ae/>



REFERENCES

- ¹ <https://www.mofaic.gov.ae/en/mediahub/news/2022/11/23/23-11-2022-uae-cop28>
- ² <https://www.wam.ae/en/details/1395303015848>
- ³ <https://www.thenationalnews.com/uae/2022/01/23/dubai-population-to-surge-to-nearly-6m-in-20-years-amid-urban-transformation/>
- ⁴ <https://12ft.io/proxy?q=https%3A%2F%2Fgulfnews.com%2Fspecial-reports%2Fsilent-pandemic-one-in-five-in-the-uae-has-diabetes-which-is-3-times-deadlier-than-covid-19-1.1606991073666>
- ⁵ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7462068/>
- ⁶ [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8870909/#:~:text=Cancer%20is%20the%20third%20leading,developed%20countries%20\(approximately%200.38\).](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8870909/#:~:text=Cancer%20is%20the%20third%20leading,developed%20countries%20(approximately%200.38).)
- ⁷ <https://www.medicaltourism.com/mti/home>
- ⁸ <http://gulfnews.com/news/uae/society/uae-on-track-with-its-national-health-agenda-1.1955749;>
<http://www.prosperity.com/rankings>
- ⁹ <https://www.vision2021.ae/en/national-agenda-2021/list/world-class-circle>
- ¹⁰ <http://www.thenational.ae/uae/health/lack-of-emirati-doctors-is-worrying-problem-middle-east-health-leaders-told;>
<http://www.thenational.ae/uae/health/shortage-of-healthcare-professionals-in-gcc-as-demand-set-to-soar-240-in-20-years>
- ¹¹ <https://www.thenationalnews.com/uae/2021/10/31/frontline-workers-to-get-golden-visas-sheikh-mohamed-bin-zayed-says/>
- ¹² <https://gulfnews.com/uae/dubai-healthcare-city-boosts-phase-2-expansion-plans-to-cater-to-growing-healthcare-needs-of-dubai-1.92919644>
- ¹³ <https://www.thenationalnews.com/uae/health/2022/03/24/high-costs-a-barrier-to-mental-health-support-in-uae-report-finds/>
- ¹⁴ <https://www.thenationalnews.com/uae/health/2022/03/24/high-costs-a-barrier-to-mental-health-support-in-uae-report-finds/>
- ¹⁵ <http://www.healthhq.world/issue-sections/country-report/uae/government-led-digital-health-initiatives-drive-adoption-of-telehealth-in-the-uae-and-ksa-says-frost-sullivan/>
- ¹⁶ <https://www.thenationalnews.com/uae/education/2022/10/10/world-mental-health-day-a-guide-on-how-to-access-mental-health-support-in-the-uae/>
- ¹⁷ <https://gulfnews.com/uae/health/emirates-health-services-provides-mental-health-support-on-digital-channels-1.89834964>
- ¹⁸ <https://gulfbusiness.com/special-report-why-uae-has-taken-centre-stage-in-the-healthcare-space/>
- ¹⁹ <https://u.ae/en/about-the-uae/initiatives-of-the-next-50/projects-of-the-50/second-set-of-projects-of-the-50>
- ²⁰ <https://www.khaleejtimes.com/government/abu-dhabi-executive-council-approves-healthcare-strategy>
- ²¹ <https://www.thenational.ae/business/travel-and-tourism/dubai-reveals-master-plan-for-500-000-medical-tourists-a-year-1.470337>
- ²² https://www.zawya.com/mena/en/story/Dubai_medical_tourism_revenues_hit_380million_in_2016-WAM20170606144038382/
- ²³ <https://gulfbusiness.com/special-report-why-uae-has-taken-centre-stage-in-the-healthcare-space/>
- ²⁴ <https://agsiw.org/the-legacy-of-expo-2020-dubai/>
- ²⁵ <http://www.uaeinteract.com/society/health.asp>
- ²⁶ <https://www.eiuperspectives.economist.com/sites/default/files/Investing%20in%20quality%20WEB%20English.pdf;>
http://export.gov/industry/health/healthcareresourceguide/eg_main_092312.asp;
<http://www.thenational.ae/uae/health/ministry-of-health-cuts-prices-on-142-medicines;>
<http://www.thenational.ae/uae/health/uae-slashes-cost-of-diabetes-drugs-by-more-than-80;>
<http://www.thenational.ae/uae/health/ministry-of-health-bolsters-uaes-medicine-stockpiles;>
<http://www.thenational.ae/uae/health/uae-fast-tracking-new-drugs-in-bid-to-tackle-growing-health-issues>
- ²⁷ <http://www.moh.gov.ae/en/About/Pages/OrganizationStructure.aspx>
- ²⁸ <https://www.wam.ae/en/details/1395303087473;> <https://www.wam.ae/en/details/1395303022446;>
https://tradedarabia.com/news/HEAL_392330.html
- ²⁹ <http://www.oxfordbusinessgroup.com/overview/double-digit-growth-projected-continue-2015>
- ³⁰ <http://www.ia.gov.ae/EN/About/Pages/default.aspx>
- ³¹ <https://www.abudhabi.ae/portal/public/en/departments/doh>
- ³² <https://www.dhcc.ae/>
- ³³ https://www.zawya.com/mena/en/companies/story/Dubai_Health_Authority_and_Dubai_Healthcare_City_Authority_sign_MoU_to_link_license_data_of_health_professionals_using_blockchain-ZAWYA20181016101829/
- ³⁴ <http://sha.gov.ae/en/>
- ³⁵ <https://www.seha.ae/facts-and-figures/>
- ³⁶ <http://www.khaleejtimes.com/nation/uae-health/four-hospitals-two-clinics-to-be-set-up-in-al-gharbia;>
<http://www.thenational.ae/uae/health/construction-complete-at-sheikh-khalifa-medical-city-dialysis-centre;>

<http://www.thenational.ae/uae/health/20150609/abu-dhabis-new-centre-to-support-women-with-mental-health-issues>;
<http://www.thenational.ae/uae/health/seha-opens-new-paediatric-dialysis-unit>
³⁶ <http://www.thenational.ae/uae/health/al-towayya-childrens-speciality-centre-opens-its-doors>
³⁷ <https://www.dha.gov.ae/en/MediaCenter/Pages/News.aspx#>
³⁸ <https://www.thenationalnews.com/uae/health/2022/08/14/sheikh-hamdan-opens-dubai-hospitals-new-dh177-million-outpatient-building/>
³⁹ <https://www.gccbusinessnews.com/dubai-health-authority-emirates-islamic-bank-join-to-boost-healthcare-facilities-at-rashid-hospital/>; <https://www.khaleejtimes.com/news/uae-health/dubai-to-open-first-skin-bank-in-arab-region->
⁴⁰ <https://www.dha.gov.ae/en/media/news/733>
⁴¹ <https://www.ehs.gov.ae/en/services/health-care-facilities>
⁴² <https://www.wam.ae/en/details/1395302835242>
⁴³ <https://www.ehs.gov.ae/en/about-us/initiatives>
⁴⁴ <http://nmc.ae/hospitals/umm-al-quwain/sheikh-khalifa-general-hospital-1/>; <http://www.thenational.ae/uae/health/dh750-million-hospital-boosts-health-care-in-umm-al-quwain>; <http://www.thenational.ae/uae/health/dh750m-sheikh-khalifa-hospital-opens-in-umm-al-quwain>; http://www.tradearabia.com/news/HEAL_329367.html
⁴⁵ <http://www.thenational.ae/uae/government/rak-ruler-sheikh-saud-opens-sheikh-khalifa-speciality-hospital---in-pictures>;
<http://www.thenational.ae/uae/health/raks-flagship-hospital-to-be-managed-by-leading-korean-medical-institute>;
<http://www.sksh.ae/about-us/>; <http://www.thenational.ae/news/uae-news/health/raks-flagship-hospital-will-meet-medical-needs-head-on>
⁴⁶ <https://www.clevelandclinicabudhabi.ae/en/media-center/news/pages/cleveland-clinic-abu-dhabi-enhances-service-offering-to-patients-in-al-ain.aspx>
<https://www.clevelandclinicabudhabi.ae/en/media-center/news/pages/patient-benefit-from-increased-primary-healthcare-options-in-al-ain.aspx>
⁴⁷ <http://www.mubadala.com/en/what-we-do/healthcare/healthpoint>; <http://www.mubadala.com/en/news/mubadala-healthcare-and-wooridul-agree-establish-spine-centre-abu-dhabi>
⁴⁸ <http://www.thenational.ae/uae/health/medical-advice-being-just-phone-call-away-puts-abu-dhabi-patients-at-ease>
⁴⁹ <https://www.clevelandclinicabudhabi.ae/en/about-us/pages/who-we-are.aspx>;
<http://www.thenational.ae/uae/health/sheikh-mohammed-and-moroccan-king-inaugurate-cleveland-clinic-abu-dhabi>;
<https://www.thenational.ae/uae/health/cleveland-clinic-abu-dhabi-continues-expansion-as-it-treats-more-than-337-000-patients-1.613332>; http://www.tradearabia.com/news/HEAL_325323.html; <https://www.thenational.ae/uae/abu-dhabi-hospital-carries-out-country-s-first-full-heart-transplant-1.684400>; <http://www.gulftoday.ae/portal/60e61fe9-2c7e-4d2a-98ca-d334281cc03d.aspx>
⁵⁰ <http://aljalilahospital.com/about-aljalila.aspx>; <http://www.thenational.ae/uae/health/dh700-million-childrens-hospital-set-to-open-in-dubai-by-years-end>
⁵¹ <https://www.arabianbusiness.com/culture-society/407463-al-jalila-childrens-hospital-performs-dubais-first-paediatric-kidney-transplant>
⁵² <http://www.aljalilachildrens.ae/about-us>
⁵³ <http://www.mediclinic.com>
⁵⁴ <https://www.mediclinic.com/en/operating-divisions/mediclinic-middle-east.html>
⁵⁵ <https://www.fin24.com/Companies/Health/mediclinic-parkview-hospital-opens-in-dubai-20180923>
⁵⁶ <http://www.mediclinic.com/About-Us>; <http://www.thenational.ae/business/economy/abu-dhabis-nmc-health-vows-to-fight-on-for-al-noor-merger>
⁵⁷ <http://www.alnoorhospital.com/>
⁵⁸ <http://www.asterdmhealthcare.com>
⁵⁹ <http://www.asterdmhealthcare.com/global-network/?id=fe#aster-middle-east>
⁶⁰ <https://www.asterdmhealthcare.com/newsroom/detail/medcare-women-children-hospital-enters-metaverse>
⁶¹ <https://burjeelholdings.com/investor-relations/>
⁶² <https://thumbay.com/about-us/history/>
⁶³ <https://nmc.ae/aboutus>
⁶⁴ <https://www.thenational.ae/business/markets/belhoul-the-moderniser-returns-to-uae-roots-with-ipo-for-healthcare-and-education-group-amanat-1.261068>
⁶⁵ <https://amanat.com/healthcare-platform#tab-others>
⁶⁶ <https://www.bloomberg.com/news/articles/2021-03-01/uae-s-amanat-buys-cambridge-medical-in-232-million-deal>
⁶⁷ https://amanat.com/wp-content/uploads/2022/11/AMANAT_IRP_9M_2022.pdf
⁶⁸ http://www.gulf-healthcare.com/about_us.php
⁶⁹ http://gulf-healthcare.com/about_us.php; <http://www.amberclinics.com/about-us-overview>; <http://medsoldiagnostics.com>
⁷⁰ <http://www.uems.ae/en/AboutUs.aspx>
⁷¹ <http://www.uems.ae/en/Projects/DanatAlEmaratHospital.aspx>; <http://www.danataleamarat.ae/>;
<http://www.danataleamarat.ae/about-us/who-we-are/>; <http://www.thenational.ae/uae/health/abu-dhabis-danat-al-emarkat-hospital-opens>

⁷² <http://www.uems.ae/en/Projects/HealthPlus.aspx>; <http://www.hplus.ae/en/home.aspx>
⁷³ <http://www.moorfields.nhs.uk/news/moorfields-launches-eye-centre-abu-dhabi>;
<http://www.thenational.ae/uae/health/british-eye-hospital-launches-centre-in-abu-dhabi>;
<http://www.thenational.ae/uae/health/kings-college-hospital-london-opens-abu-dhabi-clinic>
⁷⁴ <http://www.moorfields.ae/dubai/about-moorfields/>
⁷⁵ <http://www.avivo-group.com/who-we-are.aspx>
⁷⁶ <http://www.avivo-group.com>
⁷⁷ <http://ahaliagroup.com/about-us/>
⁷⁸ <https://www.arabianbusiness.com/healthcare/397177-sharjah-gives-nod-to-plan-for-100m-120-bed-hospital>
⁷⁹ <http://www.fng.ae/about-us>; <http://www.fng.ae/alsharq-healthcare>; <http://www.fng.ae/al-sharq-hospital>
⁸⁰ <http://www.arabianhealthcaregroup.com/content.php?pid=53>;
<http://www.arabianhealthcaregroup.com/content.php?pid=59?pid=50>;
http://www.rakhospital.com/node/151/About#.V7yxY_krLIU; <http://www.slh.ch/en/mitglieder/RAK-Hospital-.php>
⁸¹ <http://wam.ae/en/details/1395303015048>
⁸² <http://www.sghgroup.com.sa/index.php/en/about-us>;
https://www.zawya.com/mena/en/story/Dubais_Saudi_German_Hospital_obtains_1008million_Islamic_loan-TR20170910nD5N1FR023X3/
⁸³ <http://www.sghdubai.com>
⁸⁴ <https://www.zulekha-hospitals.com/about>
⁸⁵ <http://zulekha-hospitals.com/about>; <http://www.thenational.ae/business/the-life/day-in-the-life-zulekha-hospitals-executive-driven-by-best-healthcare-practice>
⁸⁶ <https://srh.ae/about-us/>
⁸⁷ <http://wam.ae/en/details/1395302688032>
⁸⁸ <https://www.thenational.ae/uae/new-cost-controls-to-clean-up-wild-west-uae-healthcare-market-1.628527>
⁸⁹ <https://gulfnews.com/news/uae/health/king-s-college-opens-new-medical-facility-in-dubai-1.2274177>
⁹⁰ <http://www.thenational.ae/business/economy/kings-college-hospital-agrees-deal-for-100-bed-dubai-facility-and-network-of-clinics>; <https://www.kch.nhs.uk/news/media/press-releases/view/15643>; <https://www.kchclinics.com/why-kings/kings-dubai/>;
<https://www.kchclinics.com/>
⁹¹ <http://www.prnewswire.com/news-releases/american-hospital-dubai-joins-mayo-clinic-care-network-582079311.html>;
<http://www.emirates247.com/business/corporate/valiant-clinic-to-open-at-city-walk-dubai-this-year-2016-01-18-1.617722>;
<http://gulfnews.com/business/sectors/general/emaar-healthcare-group-ends-partnership-1.671004>
⁹² <http://www.dhcc.ae/Portal/en/about-us/overview.aspx>; <http://www.dhcc.ae/Portal/en/investments/faqs.aspx?page=1>;
<http://www.dhcc.ae/Portal/en/education/medical-education-projects.aspx>;
<http://www.thenational.ae/business/economy/staff-and-facilities-growing-fast-at-dubai-healthcare-city>
⁹³ <https://www.dhcc.ae/news/dubai-healthcare-city-authority-launches-masari-programme-to-empower-emirati-workforce>
⁹⁴ <http://www.sharjahupdate.com/2017/01/master-plan-for-sharjah-healthcare-city-approved/>
⁹⁵ <https://www.hg.org/article.asp?id=36394>; <http://www.haad.ae/HAAD/LinkClick.aspx?fileticket=5exKFrTZQps%3D&tabid=136>
⁹⁶ <https://www.thiqa.ae/opencms/opencms/Thiqa/en/about-us/about-us/>
⁹⁷ <https://www.hg.org/article.asp?id=36394>; <http://www.tamimi.com/en/section/global/law-no-11-of-2013-concerning-health-insurance-in-the-emirate-of-dubai>
⁹⁸ <http://www.thenational.ae/uae/uae-news-in-review-2015-strides-towards-compulsory-health-insurance-for-all>
⁹⁹ <http://www.thenational.ae/uae/health/mandatory-insurance-deadline-extended-in-dubai>;
<http://www.thenational.ae/uae/health/dubais-mandatory-health-insurance-law-comes-into-force>;
<http://www.arabianbusiness.com/dha-may-issue-fines-if-firms-miss-out-on-health-insurance-renewal-674959.html>;
<http://gulfnews.com/news/uae/health/where-to-get-insurance-cover-for-domestic-workers-1.1950911>
¹⁰⁰ <http://www.arabianbusiness.com/industries/healthcare/385432-wkd-dubai-adds-cancer-treatment-to-basic-health-insurance-plan>
¹⁰¹ <https://gulfnews.com/news/uae/health/insurance-to-cover-mental-health-in-dubai-1.2295306>
¹⁰² <http://www.thenational.ae/uae/health/sharjah-citizens-aged-55-and-over-eligible-for-health-insurance>
¹⁰³ <https://damanhealth.ae/en/about-daman/our-values>
¹⁰⁴ http://www.haad.ae/haad/Portals/0/Health%20Regulation%20Laws/Book1_En/index.html#/2/
¹⁰⁵ <https://damanhealth.ae/en/about-daman/>
¹⁰⁶ <https://www.thiqa.ae/opencms/opencms/Thiqa/en/home/>; <https://www.dha.gov.ae/en/HealthFunding/Pages/Enaya.aspx>;
<http://www.dubai.ae/en/Lists/Articles/DispForm.aspx?ID=83&category=Citizens>; <http://www.saada.ae/About?Lang=1>;
<http://www.thenational.ae/uae/health/health-insurance-scheme-to-benefit-uae-nationals-with-no-other-cover>;
<http://www.isahd.ae/Home/About>; <http://www.thenational.ae/business/personal-finance/a-guide-to-dubais-mandatory-health-insurance-law>; <http://www.arabianbusiness.com/dubai-s-poorer-workers-get-more-choice-on-health-insurance-665197.html>
¹⁰⁷ <http://www.thenational.ae/uae/emiratis-and-expats-to-pay-more-for-health-care-as-cover-is-reduced#full>
¹⁰⁸ <http://www.thenational.ae/uae/shock-at-insurance-coverage-cuts-for-most-vulnerable-emirati-patients>

¹⁰⁹ <http://www.thenational.ae/uae/health/layoffs-at-abu-dhabi-private-health-centres-as-industry-manages-effects-of-new-copay>

¹¹⁰ <http://www.gulfoday.ae/portal/79651cad-6338-4ba1-8a0f-4226c829bb7e.aspx>

¹¹¹ <https://www.insurancebusinessmag.com/asia/news/breaking-news/gulf-insurance-group-completes-buyout-of-axas-gulf-region-business-309256.aspx>

¹¹² <https://www.thenationalnews.com/business/economy/2022/09/20/uae-central-bank-and-sama-sign-preliminary-deal-to-supervise-insurance-sector/>

¹¹³ <http://www.oxfordbusinessgroup.com/overview/double-digit-growth-projected-continue-2015>

¹¹⁴ <http://www.allianzworldwidecare.com/uae-plans>

¹¹⁵ <https://www.statista.com/statistics/1040805/uae-insurance-market-share-by-insurance-company/>

¹¹⁶ <http://www.adnic.ae/en/products/individual/medical-insurance/>; <http://www.adnic.ae/en/products/corporate/corporate-medical-insurance/>

¹¹⁷ <https://www.reuters.com/article/adnic-allianz-ma/abu-dhabi-weighing-sale-of-24-pct-stake-in-insurance-firm-adnic-sources-idUSL4N1LL36X>

¹¹⁸ <http://www.arabianbusiness.com/photos/revealed-uae-s-top-50-companies-539053.html?img=3#.V2Q-PbsrLcs>; <http://www.oxfordbusinessgroup.com/overview/double-digit-growth-projected-continue-2015>; <http://www.tameen.ae/en/about-us/corporate-profile>; <http://www.tameen.ae/en/for-individuals/health-insurance/international-health-insurance>; <http://www.tameen.ae/en/for-businesses/group-health-insurance/group-health-insurance-product>; <http://www.thenational.ae/business/economy/competition-and-regulations-to-rein-in-profit-growth-at-oman-insurance>

¹¹⁹ <https://www.thenationalnews.com/business/economy/2022/09/20/uae-central-bank-and-sama-sign-preliminary-deal-to-supervise-insurance-sector/>

¹²⁰ <https://www.cigna-me.com/en/blog/cigna-360-wellbeing-survey-2022>

¹²¹ <http://www.thenational.ae/business/industry-insights/economics/regulator-calls-for-mergers-in-uae-insurance-industry>

¹²² <http://www.thenational.ae/business/economy/20150706/uae-insurance-authoritys-new-regulations-to-streamline-sector>

¹²³ <http://www.oxfordbusinessgroup.com/analysis/new-era-recent-regulations-are-likely-lead-consolidation>; <http://www.thenational.ae/business/economy/new-uae-insurance-rules-may-lead-to-mergers-and-consolidations>

¹²⁴ <https://www.metlife.ae/individuals/>; <https://www.metlife.ae/businesses/>; <https://www.metlife-gulf.com/>

¹²⁵ <http://gulfnews.com/business/sectors/banking/metlife-alico-sees-opportunities-1.707795>; <http://www.wsj.com/articles/SB10001424052748704706304575107830470736008>; <http://www.wsj.com/articles/SB10001424052748704320104575014834281436288>; <https://www.aetnainternational.com/en/individuals/make-most-of-plan/contact-us.html>; <http://www.aetnainternational.com/aiweb/contentMgt/assets/documents/middleeastafrika/IHP-Individual-Presale-Brochure-UAE-RSA.pdf>; <http://www.cignaglobalhealth.com/products/middle-east.html>; http://www.aetnainternational.com/aiweb/contentMgt/assets/documents/middleeastafrika/HEA_Product-Brochure-UAEOnly.pdf; <https://www.thenational.ae/business/money/half-of-uae-residents-cannot-afford-future-health-bills-cigna-survey-reveals-1.667623>; <https://www.thenational.ae/business/zurich-middle-east-to-focus-on-insurance-ceo-says-1.561022>; <http://gulfnews.com/business/sectors/insurance/cigna-launches-insurance-specially-tailored-for-uae-residents-1.2109163>; http://www.dubaicityinfo.com/cityguide/press_news_32566.aspx; <http://www.dubaiprnetwork.com/pr.asp?pr=112917>; https://www.zawya.com/mena/en/story/Aetna_International_appoints_David_Healy_as_CEO_for_newly_formed_EMEA_region-ZAWYA20171115064845/; <https://gulfnews.com/uae/health/intersystems-data-platforms-that-power-ai-with-healthy-data-1.1664445724619>

¹²⁶ <https://www.thenationalnews.com/business/2022/02/23/uae-pharma-market-to-be-valued-at-47bn-by-2025-as-it-boosts-local-manufacturing/#:~:text=The%20country%20has%203%20pharmaceutical,medicines%20locally%2C%20ADQ%20report%20say&text=The%20UAE's%20pharmaceutical%20market%20is,ADQ%20said%20in%20a%20report.>

¹²⁷ <https://www.lexology.com/library/detail.aspx?g=d18ead6b-0f1e-405e-aef2-e62cbf44a2ac>

¹²⁸ <https://www.ihs.com/country-industry-forecasting.html?ID=1065975936>

¹²⁹ <http://www.arabianbusiness.com/-72m-medicine-cost-cuts-benefit-uae-patients-with-chronic-illnesses-643708.html>; <https://www.khaleejtimes.com/news/uae-health/UAE-cuts-prices-by-24-on-select-medicines-12>

¹³⁰ <https://fwd.adq.ae/healthcare-and-life-sciences>

¹³¹ <https://fwd.adq.ae/healthcare-and-life-sciences>

¹³² <https://www.thenationalnews.com/business/economy/2023/01/10/mubadala-and-us-based-resilience-link-up-on-biopharma-manufacturing-in-uae/>

¹³³ <https://wam.ae/en/details/1395303093884>

¹³⁴ <https://gulfnews.com/business/neopharma-acquires-antibiotic-facility-in-the-us-1.2286971>

¹³⁵ <http://www.thenational.ae/business/industry-insights/economics/pharmaceutical-sector-in-the-uae-is-in-good-health>; <https://www.globalpharma-sanofi.com/our-company.html>;

<https://12ft.io/proxy?q=https%3A%2F%2Fgulfnews.com%2Fbusiness%2Fwith-sanofi-agreement-uae-investments-in-healthcare-go-deep-into-the-nature-of-cure-itself-1.91969143>

¹³⁶ http://www.ips-me.com/en/news/ips_announces_acquisition_in_medpharma_-_dubl

¹³⁷ <http://business.financialpost.com/investing/valeant-pharmaceuticals-international-inc-expands-in-middle-east-with-800-million-purchase-of-amoun>

¹³⁸ <http://www.lifepharmafze.com/about-us/facilities/jebel-ali-dubai/>

¹³⁹ <http://www.thenational.ae/business/economy/life-pharma-prepares-to-make-oncology-drugs-in-abu-dhabi-next-year>

¹⁴⁰ https://trade-arabia.com/news/IND_363425.html

¹⁴¹ <http://www.pharmax.ae/about-us.html>

¹⁴² <http://gulfbusiness.com/uae-pharma-firm-begins-manufacturing-affordable-generic-medicines-dubai/>;
<https://fwd.adq.ae/healthcare-and-life-sciences>

¹⁴³ <http://gulfnews.com/news/uae/society/more-pharma-companies-coming-to-uae-1.2118265>;
<http://www.arabianbusiness.com/building-healthcare-hub-jane-griffiths-615035.html>;
<http://wam.ae/en/details/1395228901434>

¹⁴⁴ <http://www.dhcc.ae/Portal/en/directory/pharmaceutical.aspx>

¹⁴⁵ <http://www.dsp.ae/community/business-partners/>; <http://www.arabianbusiness.com/tecom-creates-new-dubai-science-park-after-merger--609328.html#.V2KXsLsrLcs>; <http://www.dsp.ae/community/business-partners/>;
<http://www.prnewswire.com/news-releases/uae-pharmaceutical-market-at-37b-by-2020-healthcare-industry-in-united-arab-emirates-forecast-to-show-significant-growth-potential-274356961.html>

¹⁴⁶ <http://www.ge.com/ae/b2b/healthcare>

¹⁴⁷ <https://www.healthcare.siemens.com/how-can-we-help-you/asia-pacific/contact-united-arab-emirates>

¹⁴⁸ <http://www.arabianbusiness.com/global-medical-tech-firm-signs-partnership-set-up-uae-business-655441.html>

¹⁴⁹ <http://www.mea.philips.com/a-w/about-philips/company-profile/businesses/healthcare.html>

¹⁵⁰ <https://www.marketresearch.com/product/sample-8292131.pdf>

¹⁵¹ <http://www.abbott.com/contact.United%20Arab%20Emirates.html>

¹⁵² <http://www.abbott.com/abbott-stjudemedical-en.html>

¹⁵³ <https://www.thenationalnews.com/uae/2022/12/09/uae-becomes-third-country-in-world-to-use-leadless-abbott-pacemaker/>

¹⁵⁴ <http://tecomdirectory.com/company.php?company=001D0000017JxdzIAC>;
<https://www.thenational.ae/uae/health/medical-giant-medtronic-shifts-regional-hq-to-dubai-1.250226>;
<https://www.abraaj.com/abraajweek2016/majid-kaddoumi/>

¹⁵⁵ <http://www.medtronic.com/us-en/healthcare-professionals/products/cardiovascular.html>

¹⁵⁶ <http://www.careers.jnj.com/middle-east-countries/overview>

¹⁵⁷ <http://www.admd.ae/home.html>

¹⁵⁸ https://www.zawya.com/mena/en/press-releases/story/Dubai_Health_Authority_highlights_3D_printing_technology_at_GITEX_2020-ZAWYA20201210134933/

¹⁵⁹ <https://www.thenational.ae/uae/health/medical-database-to-reorganise-health-care-1.501052>

¹⁶⁰ <https://www.businesswire.com/news/home/20080512005559/en/Cerner-Millennium-Health-Information-Technology-Implemented-Abu>; <http://www.arabianbusiness.com/abu-dhabi-s-seha-continues-cerner-hit-roll-out-18417.html>

¹⁶¹ <https://www.mubadala.com/en/news/doh-partners-injazat-data-systems-implement-health-information-exchange-system-emirate-abu>

¹⁶² <http://gulfnews.com/news/uae/health/integrated-health-record-system-launched-1.1676908>;
<http://gulfnews.com/news/uae/health/dha-launches-information-security-project-1.2066242>

¹⁶³ http://www.cerner.com/About_Cerner/;
https://www.cerner.com/uploadedFiles/Content/About_Cerner/uae_sheikh_Khalifa_Hospital.pdf;
<http://www.cerner.com/newsroom.aspx?id=2147485254&blogid=2147483710&langType=14337>;
<http://www.khaleejtimes.com/nation/uae-health/wareed-links-14-hospitals-25-clinics-across-the-country>;
<https://www.epic.com/Contact>; <http://www.healthcareitnews.com/news/epic-systems-wins-contract-university-hospital-dubai>; <http://www.fdbhealth.com/~media/downloads/form%20not%20required/ae/cleveland%20clinic%20case%20study.ashx>;
<https://globenewswire.com/news-release/2016/11/21/891682/0/en/UAE-Ministry-of-Health-and-Prevention-Renews-Relationship-with-Cerner-to-Provide-Electronic-Health-Record.html>; <https://globenewswire.com/news-release/2017/01/31/912229/0/en/King-s-College-Hospital-London-Selects-Cerner-s-Clinical-and-Financial-Management-System.html>; <https://globenewswire.com/news-release/2017/06/06/1008637/0/en/Cerner-Middle-East-Africa-Strengthens-Client-Alignment-with-the-Appointment-of-New-Leadership-Roles.html>; <https://www.epic.com/epic/post/2570>;
<https://www.healthcareitnews.com/news/uae-based-mubadala-healthcare-launches-cerner-integrated-information-system>

¹⁶⁴ <https://www.thenationalnews.com/health/2021/12/04/uae-launches-riayati-national-medical-records-database/>

¹⁶⁵ <https://www.mubadala.com/en/what-we-do/healthcare/abu-dhabi-telemedicine-centre>

¹⁶⁶ <https://u.ae/en/information-and-services/health-and-fitness/telemedicine>

¹⁶⁷ <https://www.arabnews.com/node/2164561/business-economy>

168 <http://www.emirates247.com/news/emirates/dha-launches-second-smart-pharmacy-with-a-dispensing-robot-at-dubai-hospital-2017-08-03-1.657028>

169 <https://agsiw.org/a-race-to-the-future-the-uae-in-the-metaverse/>

170 <https://www.khaleejtimes.com/uae/gitex-2022-medcare-emerges-as-uaes-first-metaverse-hospital>

171 <https://www.pymnts.com/metaverse/2022/the-uae-metaverse-healthcare-projects-pushing-medical-frontiers/>

172 <http://www.cmhs.uaeu.ac.ae/>

173 <https://www.mbru.ac.ae/about-mbru/>

174 <http://www.sharjah.ac.ae/en/academics/Colleges/Medicine/Pages/default.aspx>;
<http://www.sharjah.ac.ae/en/academics/Colleges/Medicine/Pages/dw.aspx>

175 <http://www.sharjah.ac.ae/en/academics/degree-program/Pages/UnderGraduate.aspx>;
<http://www.sharjah.ac.ae/en/academics/Colleges/healthsciences/dept/nu/Pages/default.aspx>;
http://www.sharjah.ac.ae/en/Media/Publications/Documents/UOS%20Catalog/pdf/Health_Sc_English.pdf#Nursing

176 <http://www.uhs.ae/>

177 <http://www.hct.ac.ae/en/programmes/health-sciences/>

178 <http://www.gmu.ac.ae/aboutgmu/>; <https://gmu.ac.ae/academics/>

179 <https://gulfnews.com/uae/health/gulf-medical-university-announces-academic-expansion-1.2263391>

180 <http://www.rakmhsu.com/about-rakmhsu>; <http://www.rakmhsu.com/medical-courses-in-uae>;
<http://www.rakmhsu.com/top-medical-school-college-in-uae-FAQ>

181 <http://www.fchs.ac.ae/En/AboutUs/Pages/default.aspx>

182 <http://www.thenational.ae/uae/health/training-programme-to-encourage-uae-students-to-pursue-nursing>

183 <http://www.dmcg.edu/home.php?navmenu=5>

184 <http://www.dpc.edu/#>

185 <https://www.rcsi.ie/dubai>; <http://www.rcsileadership.org/index.jsp?p=0&n=304>;
<https://mbruniversity.ac.ae/en/Colleges/College-Of-Medicine/Bachelor-of-Medicine-and-Bachelor-of-Surgery.aspx>

186 <https://www.ku.ac.ae/academics/college-of-medicine-and-health-sciences>

187 <https://www.ajman.ac.ae/en/about/our-story-ajman-university>

188 https://www.tamimi.com/news/introducing-the-concept-of-an-academic-health-center-in-dubai/?utm_source=vuture&utm_medium=email&utm_campaign=the%20dubai%20academic%20health%20corporation%20-%20introducing%20the%20concept%20of%20an%20academic%20health%20center%20in%20dubai

189 <https://www.uae-embassy.org/news-media/uae-embassy-increases-cooperation-children%E2%80%99s-national-medical-center>; <http://www.thenational.ae/uae/hospitals/kbzf-enters-into-partnership-with-two-hospitals-to-develop-emirati-doctors>;
<http://www.thenational.ae/uae/health/emirati-students-pursue-the-latest-medical-technologies-in-us-internship>;
<http://www.thenational.ae/uae/health/khalifa-university-students-selected-for-us-paediatric-summer-programme>;
https://www.zawya.com/mena/en/story/Emirati_doctors_to_receive_training_in_USbased_hospitals-WAM20171210103124539/; <http://gulfnews.com/news/uae/health/uae-physician-identifies-a-unique-subtype-of-colon-cancer-1.1948059>; <http://www.arabianbusiness.com/interviews/healthcare/377539-abe-1828-home-away-from-home>;
<http://gulfnews.com/news/uae/health/cleveland-clinic-abu-dhabi-welcomes-40-interns-1.2063572>;
<https://www.khaleejtimes.com/nation/abu-dhabi/hospitals-need-more-emirati-doctors>; <http://www.jhsph.edu/news/news-releases/2008/abu-dhabi-agreement.html>; <http://www.haad.ae/haad/tabid/58/ctl/Details/Mid/417/ItemID/40/Default.aspx>;
<http://www.thenational.ae/uae/health/cleveland-clinic-abu-dhabi-and-nyu-abu-dhabi-agree-on-collaboration>;
<https://www.chop.edu/news/childrens-hospital-philadelphia-and-united-arab-emirates-sign-medical-services-agreement>

190 <http://www.sharjah.ac.ae/en/Research/SIMHR/Pages/Overview.aspx>

191 <http://www.dsp.ae/offer/nucleotide-lab-complex/>

192 <https://www.tii.ae/biotech>

193 <https://www.aspireuae.ae/programs>

194 <http://gmu.ac.ae/innovation-centre/>

195 <http://www.aljalilafoundation.ae/what-we-do/research/research-centre/>

196 <http://gulfnews.com/news/uae/health/uae-physician-identifies-a-unique-subtype-of-colon-cancer-1.1948059>

197 <https://www.illumina.com/company/news-center/feature-articles/increasing-genomic-capability-in-the-united-arab-emirates.html>; <https://www.thenationalnews.com/uae/2022/11/12/new-dubai-centre-aims-to-shed-light-on-genetic-aspects-of-disease-in-the-middle-east/>

198 <http://childrensnational.org/news-and-events/photo-gallery/arab-health-2016>; <http://www.emirates247.com/news/app-to-detect-birth-defects-in-uae-infants-2016-01-27-1.618859>; <http://childrensnational.org/research-and-education/sheikh-zayed/about-the-institute>; <http://www.dhfmr.hms.harvard.edu/about-the-foundation/overview/>;
<http://hms.harvard.edu/news/harvard-medical-school-center-global-health-delivery%E2%80%94dubai>; <http://ghd-dubai.hms.harvard.edu/about>; <http://nyuad.nyu.edu/en/research/nyuad-institute/institute-research/public-health-research-center.html>; <https://www.thenational.ae/uae/health/biomarkers-could-help-emiratis-discover-if-they-are-susceptible-to-diabetes-study-indicates-1.625484>; <http://wam.ae/en/details/1395302598499>;
https://www.zawya.com/mena/en/companies/story/Emirates_Scientists_Council_signs_strategic_partnership_agreement_wit_h_New_York_University_Abu_Dhabi-ZAWYA20181105121956/

¹⁹⁹ <http://www.aljalilafoundation.ae/al-jalila-foundation-receives-a-usd100000-health-access-grant-from-the-medtronic-foundation/>

²⁰⁰ <http://www.aljalilafoundation.ae/who-we-are/about-us/>

²⁰¹ <http://hmaward.org.ae/#>

²⁰² <https://www.reachingthelastmile.com/>

²⁰³ <https://www.thenational.ae/uae/bill-gates-surprised-and-honoured-by-medal-from-sheikh-mohammed-1.676208;>
<https://www.thenational.ae/uae/two-million-children-die-from-preventable-diseases-each-year-abu-dhabi-health-conference-hears-1.676108;>
[https://site.reachingthelastmile.com/#about_the_event_place;](https://site.reachingthelastmile.com/#about_the_event_place)
<https://www.thenational.ae/uae/health/reaching-the-last-mile-new-100m-fund-announced-in-abu-dhabi-1.675855;>
<https://www.thenational.ae/uae/sheikh-mohammed-donates-more-than-dh18m-towards-global-vaccine-initiative-1.621971>

²⁰⁴ <https://www.arabhealthonline.com/content/dam/Informa/arabhealthonline/en/2023/AH22%20Post%20Show%20Report.pdf>

²⁰⁵ <https://kallman.com/shows/arab-health-2023>

²⁰⁶ http://www.tradearabia.com/news/HEAL_405101.html

²⁰⁷ <https://www.medlabme.com/en/overview/show-information.html>

²⁰⁸ <http://focp.ae/pc/about-us.php#page=ABOUT-PINKCARAVAN>

²⁰⁹ <http://www.gulfoday.ae/portal/035c3dfd-8fb7-40f1-903a-968fe2ab75f1.aspx>

²¹⁰ <http://www.thenational.ae/uae/health/tough-anti-tobacco-laws-come-into-force-across-the-uae;>
<http://www.emirates247.com/news/emirates/uae-anti-tobacco-law-in-effect-rules-and-fines-2014-01-21-1.535551>

²¹¹ <http://www.thenational.ae/uae/health/uae-wide-smoking-ban-in-enclosed-public-spaces-next-year;>
<http://www.thenational.ae/uae/health/six-antismoking-clinics-to-open-across-the-uae>

²¹² [http://www.bna.bh/portal/en/news/695252;](http://www.bna.bh/portal/en/news/695252) <http://www.khaleejtimes.com/nation/uae-health/will-a-100-rise-in-tobacco-taxation-help-quit-smoking>

²¹³ <http://www.thenational.ae/uae/health/school-canteens-banned-from-junk-and-fast-food-advertising-to-be-controlled-in-uae>

²¹⁴ [http://www.arabianbusiness.com/gulf-states-set-for-100-tax-on-energy-drinks-tobacco-618052.html#.V4T6OvkrLct;](http://www.arabianbusiness.com/gulf-states-set-for-100-tax-on-energy-drinks-tobacco-618052.html#.V4T6OvkrLct)
<http://www.arabnews.com/economy/news/863486>

²¹⁵ <https://www.amgen.com/media/featured-news/2018/12/amgen-lights-up-burj-khalifa-with-see-the-emergency-in-cholesterol-campaign/>

²¹⁶ <https://www.zawya.com/en/press-release/ministry-of-health-amp-prevention-launches-keep-on-beating-campaign-to-reduce-cardiovascular-disease-related-enkkjabp>

²¹⁷ <https://www.thenational.ae/uae/dubai-fitness-challenge-a-success-as-participants-hail-healthy-month-1.677050;>
<https://www.thenational.ae/uae/sheikh-hamdan-calls-on-emirates-to-take-dubai-fitness-challenge-1.665064>

²¹⁸ <https://mohap.gov.ae/en/media-center/news/18/2/2019/under-the-slogan-dream-small-it-adds-up-ministry-of-health-and-prevention-launches-its-media>

²¹⁹ <http://www.thenational.ae/uae/health/experts-tell-gulf-countries-to-do-more-in-fight-against-diabetes-epidemic;>
<http://www.haad.ae/haad/tabid/912/Default.aspx>

²²⁰ https://www.abudhabi.ae/portal/public/en/citizens/health/health_insurance/gen_info44?docName=ADEGP_DF_133720_EN&_adf.ctrl-state=12k1riuet1_4&_afLoop=598030364750707#!

²²¹ <https://www.thenational.ae/uae/health/thousands-turn-out-for-new-york-run-in-honour-of-sheikh-zayed-as-course-record-broken-1.725898>

²²² [https://www.clevelandclinicabudhabi.ae/en/about-us/pages/cycle-for-health.aspx;](https://www.clevelandclinicabudhabi.ae/en/about-us/pages/cycle-for-health.aspx) [https://yasisland.ae/events/walk-2017/;](https://yasisland.ae/events/walk-2017/)
<https://www.thenational.ae/uae/health/thousands-turn-out-for-new-york-run-in-honour-of-sheikh-zayed-as-course-record-broken-1.725898#5>

²²³ <http://wam.ae/en/details/1395303100900>