

## The promise of the services sector: A United Arab Emirates perspective- case study

<sup>1</sup>Professor Khalid Alrawi and <sup>2</sup>Dr. Ahmad Hussain

<sup>1</sup>American University in the Emirates,

<sup>2</sup>Twam Hospital, Al-Ain' United Arab Emirates

### ABSTRACT

United Arab Emirates (UAE) in the Gulf Region value their health care system above any other social program. The UAE's system of health care faces significant financial and population pressures, relating to cost, access, quality, accountability, and the integration of information and communication technologies (ICTs). The privatization of many Governmental hospitals by foreign specialized Institutions in the UAE may play an increasingly significant role in these initiatives, as the management of health information becomes a more crucial factor in the successful delivery of health care services in the new millennium. The new corporate body 'John Hopkins Health System' is developing a pan-UAE electronic health solution. The Ministry of Health and privatization initiatives will play an increasingly significant role in these initiatives, as the management of health information becomes a more crucial factor in the successful delivery of health care services in the present time. The major objectives of the paper was to analyze the changing social contexts and factors influencing the transformation from a real community to a virtual community by the adoption of e-Health, and to propose actions needed to create an enabling environment for e-health services growth and utilization in the UAE. This paper places access and authorization issues in an overall policy context through describing current UAE initiatives.

**Keywords:** e-Health, Healthcare, ICT, John Hopkins System, UAE

### INTRODUCTION

Challenges to the development of appropriate yet adaptable policy and tools for security of the individual patient electronic health (e-health) are proving to be significant. The term e-health is used in line with other "e-words" such as e-commerce, e-business, e-solutions, and so on, in an attempt to convey the promises, principles, excitement around e-commerce (electronic commerce) to the health arena, and to give an account of the new possibilities the Internet is opening up to the area of health care. Intel, for example, referred to e-health as "a concerted effort undertaken by leaders in health care and hi-tech industries to fully harness the benefits available through convergence of the Internet and health care (Mieczkowska, Hinton, and Barnes, 2004).

The term may be define as follows : e-health is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related

technologies. In a broader sense, the term characterizes not only a technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology (Eysenbach, 2001). This definition is broad enough to apply to a dynamic environment such as the Internet and at the same time acknowledges that e-health encompasses more than just "Internet and Medicine", and seems quite clear that e-health encompasses more than a mere technological development.

The multiple-step interactive processes of innovation and adoption require constantly changing resources and skills, involving a wide range of actors and interests operating under different goals, incentives, and timelines. Those processes exhibit dead ends, feedback loops, multi-directional interactions, parallel developmental paths, and unintended consequences (Hendy, et.al, 2005).

Technological innovation and adoption – characterized by uncertainty, search, exploration,

financial risk, experiment, and discovery – take place in an established social and cultural environment. Besides issues of technology access, effectiveness, and appropriateness, there are questions related to the social, ethical, and economic impact of technological innovation, including class, educational, and cultural divides.

The national ICT plan includes a long-term vision. The long-term vision is “to transform the country to an information society, so as to increase effectiveness and efficiency, and provide e-services for all sectors of the society, and build a solid ICT industry to become a major source of income for the nation”. The objectives seek to bridge the digital divide by enabling all societal sectors to reach and access ICT services easily and utilize them effectively. Other objectives include creating job opportunities, raising the efficiency of education and training through ICT plus the preparation of qualified manpower (Amir, Morad, and Craig, 2009).

A global network would allow organizations in the health industry in the UAE to increase existing knowledge, and thus total productivity, while also supporting an environment where the generation of new ideas is unrestricted. The authority of e-health tools in the UAE may benefit from the development of a European service industry in the health sector, which has enabled them to build a strong base from which they can tackle this issue efficiently.

E-health is breaking down barriers, enabling health service providers (public authorities, hospitals) to work more closely together. The introduction of e-Health services is facilitating access to healthcare, whatever the geographical location.

Probably the most serious negative impact of the introduction of technological innovations in the health sector is the focus of attention on technology without proper assessment of its effectiveness and its role and impact in the relationship between patient, communities, and care providers (Benjamin, et.al, 2010).

In knowledge based economy, e-Health Care will create greater opportunities for citizens to access learning on line, and for knowledge providers to make knowledge content available (courses, seminars, conferences). The Government plan in the UAE includes projects that cover the main aspects of ICT usage such as e- Government, e-Commerce, telework, and telemedicine, e-learning. Further, they cover the regulatory activities such as issuing

licenses for new voice and data operators, and regulating the ICT market (Williams, et.al, 2003).

The study highlights some of the expecting developments that will cause in the Health Sector in the UAE due to Internet usage like e-health, and computer supported social networks. This research is an overview of the healthcare services in the UAE. It further suggests how the remote areas healthcare service delivery could be improved through the use of (ICT).

**The State of Emirates Profile:** The United Arab Emirates (UAE) is a federation of seven states formed in 1971. Since then, it has grown to one of the Middle East's most important economic centers. In 2009, the UAE was estimated at 6 million and area of 77,700 Sq. Km. Although each Emirate maintains a large degree of independence; the UAE is governed by a Supreme Council of Rulers made up of the seven emirs, who appoint the prime minister and the cabinet. The capital of UAE is Abu Dhabi. The largest emirate, Abu Dhabi, accounts for 87% of the UAE's total area (67,340 square kilometers). The 15–65 age groups have a male/female sex ratio of 2.743. The UAE's gender imbalance is only surpassed by other Arab countries in the Persian Gulf region. The most populated city is Dubai, with approximately 1.6 million people. Other major cities include Abu Dhabi, Al-Ain, Sharjah, and Fujairah. About 88% of the population of the United Arab Emirates is urban. The remaining inhabitants live in tiny towns scattered throughout the country or in one of the many desert oilfield camps in the nation. The average life expectancy is 75 years, higher than any other Arab country (UN, 2009).

**The Johns Hopkins Hospital and Health System :** Johns Hopkins HealthCare LLC (JHHC), jointly owned by the Johns Hopkins Health System and the Johns Hopkins University School of Medicine, develops contracts and administers services and support for three health plans: Priority Partners Managed Care Organization, Johns Hopkins Employer Health Programs (EHP) and Johns Hopkins US Family Health Plan (USFHP), and have been servicing Maryland since 1983.

For more than a century, Johns Hopkins has been recognized as a leader in patient care, medical research and teaching. Today, Johns Hopkins Medicine is known for its excellent faculty, nurses and staff specializing in every aspect of medical care. The Johns Hopkins Health System includes three acute-care hospitals and programs for local, national and international patient activities (Wikipedia, 2010).

Johns Hopkins Medicine International brings world-class health care to more than 25 strategic projects in Europe, Asia, the Middle East and Latin America. They are working now in the UAE in the Health Sector Supervising and managing some hospitals in the Emirates.

**E-Health challenges** : The promise of e-Health lies in the manner and degree to which it can mitigate or resolve these challenges to the health system and build on advancements in ICTs supporting the development of a health infrastructure. These solutions, while exciting and promising, also present new challenges, particularly in regard to acceptable standards, choice of technologies, overcoming traditional jurisdictional boundaries, up-front investment, and privacy and confidentiality. The healthcare sector in the remote areas of the UAE has the following challenges:

- a) Healthcare Access
- b) Healthcare Quality
- c) Healthcare Cost
- a) Healthcare access

There is a real danger that the government might step in unquestioned and prematurely pick winning technologies (and in the process, losers) since the government's role in e-health is not challenged as much as in other sectors. The UAE faces a number of challenges in the development of effective e-Health solutions. Despite the increasing global interest in information technology among health care institutions, little has been discussed about its importance for the effectiveness of knowledge management for the UAE. The health care institutions would benefit from developing global problem-solving collaboration, which allows practitioners to exchange knowledge unrestricted by time and geographical barriers (Tobias, and Peter, 2009).

The big difference ( what's really new ) between yesterday's and today's knowledge management efforts in Health Care, and that of tomorrow, is the fundamental premise that people do not and will not truly share knowledge where there is not some interest for them as stakeholders. The reality is that especially in Health Care organizations, knowledge is power and the tendency to hold onto what you know, hoarding, is deeply ingrained. The new thinking and new platform accepts that reality as a fundamental fact of life, and creates an on-line virtual community environment the e-knowledge, where people will

have a greater ability, reason, and incentive to want to share, trade, and exchange knowledge (Tan, et.al, 2006).

Moreover, markets tend to breed innovation. If the community want knowledge based innovation in e-Health Care, then the e-knowledge platform, is the preferred choice for getting the society there. The political structure of funding of health services in the Emirates is a unique factor and a matter currently of intense scrutiny and considerable differences. The division of both initiatives, managerial and fiscal accountability across the Emirates and The Government lines has created tensions particularly around the question of the current level, and most appropriate future level of funding. The data protection of health records against intrusion, unauthorized use, data corruption, intentional or unintentional damage, theft, and fraud is a universal concern and a high priority issue in most countries. Given the sensitive nature of healthcare information and the high degree of dependence on trustworthy records, issues of reliability, security, and privacy are of particular significance. There is, however, ambivalence about privacy because of the potential benefits of community access to personal information (Connell, and Young, 2007). Unfortunately, since regulation and legislation often lag behind technology, privacy is generally addressed in reactive rather than proactive mode. The health sector has not taken advantage of the range of ICT opportunities as effectively as other social sectors, and has been conspicuously underrepresented in national technology development policies and plans. Public health authorities invariably declare the criticality of information for decision-making and informed action, but repeatedly fail to follow up with commitment, resources, and sustainable engagement.

The lack of involvement of public sector stakeholders in the use of ICT gives cause for concern. There is a clear danger that by failing to adopt ICT solutions the public sector may become incapable of competing with the private operators, and may hasten the reduction and even the demise of public services. In this respect, competition among private firms that develop downstream, innovative, proprietary technologies relying upon basic ICT standards should be fostered (Kaplan, 2001).

Policy development is often a long evolutionary process. Developing countries may require direct assistance in the definition of policies and strategies

as well as with the establishment of the appropriate regulatory environment (Safran, et.al, 1998).

Lack of information about projects, methodologies, technical solutions and their impact is a major problem. Demonstrating cost-effectiveness of new technologies is especially challenging, since well-designed and randomized controlled trials are not feasible. There have been only sporadic attempts to collect project information through limited surveys or case studies. The World Health Organization recently established a Global Observatory for e-Health (for example in Latin America and the Caribbean - OSILAC), but nothing about the UAE or the Gulf Region.

Geography has a significant place in the current critique and future development of the health system. The population of the UAE has a skewed sex distribution consisting of more than twice as many males as females. The UAE is a country of only 6 million people spread unevenly across 77,700 square kilometers of the earth's surface it shares a 530-kilometer border with Saudi Arabia on the west, south, and southeast, and a 450-kilometer border with Oman on the southeast and northeast. While the majority is concentrated in a few urban areas a significant proportion is scattered across the landscape in hundreds of geographically isolated communities, many in areas of extreme climatic conditions. The climate of the U.A.E generally is hot and dry. The hottest months are July and August, when average maximum temperatures reach above 48 °C (118.4 °F) on the coastal plain. These factors pose serious challenges to the provision of equitable, accessible, and high quality care (UN, 2009).

There are important reasons for government regulators to be actively engaged in issues such as the management of private patient information including the setting of minimum criteria for privacy of healthcare records in order to cultivate patient trust. Nevertheless, the ICT private sectors who are the domain specialists in this arena must be allowed to work together to jointly develop standards within private standards-setting organizations (Wootton, Swinfen, and Swinfen 2007).

The quality of healthcare in the remote and urban areas also differs. While the urban localities have healthcare options from five star medical colleges to small private dispensaries run by trained doctors, the remote areas often are left with the only option of untrained well private practitioners. The United Arab

Emirates is divided into seven emirates, with Abu Dhabi the largest of all seven emirates with an area of 67,340 square kilometers, equivalent to 86.7 per cent of the country's total area, excluding the islands. The division of political, managerial and fiscal accountability across provincial and federal lines may raise the question of the current level, and most appropriate future level of funding, and work efficiency (UN, 2009).

The demographic and human resource picture illustrates other challenges to health care. The 15–65 age groups have a male/female sex ratio of 2.743. Seniors constitute one of the fastest growing groups in UAE society. The average life expectancy is 75 years, higher than any other Arab country. This growing portion of the population will inevitably require, it is assumed, the devotion of a larger proportion of expensive health resources (UN, 2009).

The UAE is a country of cultural diversity, which has created some unique health challenges. The country's net migration rate stands at 22.98, the worlds highest. 23% of the populations are non-Emirates Arabs and Persians and the majority of the population, about 50%, is from South Asia and fewer than 20% were UAE nationals or Emirates. Approximately 1.75 million Indian nationals reside in the UAE, making them the single largest expatriate community in the country. Other major groups include 1.25 million Pakistanis, and 600,000 Bangladeshis. Those from other parts of Asia (including the Philippines, Iran or Sri Lanka) comprised up to 1 million people. The rest of the population was from other Arab states. Thousands of Palestinians, who came as either political refugees or temporary employment, also live in the United Arab Emirates. There is also a sizable population of people from Egypt, Somalia and Sudan who migrated to the UAE before its formation. The UAE has also attracted a small number of expatriates from developed countries in Europe, North America, Asia, and Oceania. More than 100,000 British nationals live in the country. Such diversification directly impacts government planning, fiscal considerations and distribution of services (which may overlap in kind, but differ in language) (UN, 2009).

Standards of healthcare are considered to be generally high in the United Arab Emirates, resulting from increased government spending during strong economic years. According to the UAE government, total expenditures on healthcare from 1996 to 2003 were US\$436 million. According to the World Health

Organization, in 2006 total expenditures on health care constituted 2.6 percent of gross domestic product (GDP), and the per capita expenditure for health care was US\$673. General government expenditure on health as percentage of total government expenditure is 8.7% and Health care currently is free only for UAE citizens. Arguments abound about it being less or more than it was or should be, and whether it must increase or decrease. Is the growth sustainable? Are the private/public and federal/provincial funding proportions appropriate? There are many questions being considered. Alternative funding and management models are being actively explored and implemented at all levels of government (UN, 2009).

According to World Health Organization statistics, the UAE is ranked forty-fourth in the world in terms of health care (Lubitz, and Wickramasinghe, 2006). But the history of the health sector privatization, UAE geography, political structure, demography and finances are exerting pressures for change on the delivery of health care. In this context, advancements in ICTs, and the subsequent interest in e-Health holds much promise in mitigating if not eliminating, a number of the challenges faced by our current and much valued health-care system (UN, 2009).

**Strategic Directions and Promise of e-Health:** A Hospital Management Information System (HMIS) is currently being implemented in some hospitals and clinics across the country. Telemedicine has been used with great success in "Twam Hospital" (in Al-Ain/ Abu Dhabi Emirates) managed by John Hopkins Institution, as well as a cluster of military hospitals. Other hospitals are connected for voice and video conferencing services as well as remote diagnostics. The system links UAE hospitals to medical facilities abroad for lectures and video consultations as well as live casting of operations. Ministry of Health has also embarked on a program to link additional hospitals in major cities and important rural areas in its efforts to further telemedicine services and infrastructure as well as provide international connectivity to these sites.

The Health Authority in the UAE initiatives is replacing fragmented and poorly organized implementation of information and communication technologies in the healthcare sector by consistent, rational and coordinated activities and technical solutions in order to enable electronic exchange of medical data. The Government National e-Health System efforts scope contained the design and

development of a National e-Health System Core and implementation of the pilot version of the System.

The e-Health system, when developed, has to secure the following functionality and comply with following main requirements:

- Information exchange between the systems performing e-Health functions and between the participants of the e-Health system (e.g. health care institutions);
- Nationwide functionality of accessibility to registries;
- Implementation of the following unified principles and procedures for full functionality of the e-Health system: access to private, medical, administrative and other System information; nationwide identification of patients, health care specialists and administrative staff; and system interfaces and internal information exchange and information exchange with external objects; and
- Support of the development, implementation and usage of the standards and regulations relevant to e-Health System (Loane, and Wootton, 2002). This is a challenging time for the public health in the UAE, and particularly for the fragile health of populations in developing countries. However, the increasing resources for international health aid and growing demand to improve health systems offer an opportunity to foster health equity in countries most in need. Many of the solutions to health problems of the poor exist. But are not applied, leading to what is called the "know-do" gap: the gap between what is known and what is done in practice. The mission of WHO Knowledge Management (KM) is to help bridge the "Know-do gap" in global health by fostering an environment that encourages the creation, sharing, and effective application of knowledge to improve health. Information and communication technologies offer great potential to improve health services and systems. As well as incorporating ICT in its technical work, WHO is supporting country health systems through advocating evidence based policies, monitoring e-Health trends, identifying good practice, facilitating networks of expertise, and promoting norms, standards, and the integration of ICT into health workforce training and practice (WHO, 2006).

The main objective of privatization the health sector in the UAE is to improve the quality of healthcare services' delivery by implementing a National e-Health System. The System would: provide access to commonly used, structural and standardized healthcare information; improve the coordination of healthcare delivery at different levels in order to ensure the continuity of health care; collect and evaluate information required for the implementation

of the health system reform, management and planning purposes; and ensure access for doctors to the latest information and medical evidence (Gaynor, et.al., 2009).

The following results of the health services privatization were requested by the Ministry for Health in Abu Dhabi and agreed in the contract between the Ministry and John Hopkins Institutions: analysis of the Lithuanian, EU and international legal background, standards and best practice concerning National e-Health system core; analysis of situation, relevant processes, information flows and applied standards in Lithuanian healthcare sector; preparation of the detailed information security and confidentiality principles; preparation of the principles of necessary registries; preparation of the detailed principles of Interfaces / interoperability / messaging with e-Health functional modules and other systems; and preparation of the patient's emergency information storage principles.

Given the sensitive nature of healthcare information and the high degree of dependence on trustworthy records, issues of reliability, security, and privacy are of particular significance. Policy development is often a long evolutionary process. Developing countries may require direct assistance in the definition of policies and strategies as well as with the establishment of the appropriate regulatory environment.

Resistance to change has become rooted in certain professional roles – the introduction of ICT in healthcare disrupts traditional structures and hierarchies. Frequently, professionals are unwilling to collaborate in recording and exchanging patient data, with concomitant distrust for off-site data storage and access control (Christopher, and Craig, 2009).

There is a clear danger that by failing to adopt ICT solutions the public sector may become incapable of competing with the private operators, and may hasten the reduction and even the demise of public services (Tuan, 2008).

The John Hopkins co-operation and multilateral agencies must join national and international authorities to call for the financing of long-term projects by multilateral institutions. Consistent with these objectives, those agencies should promote and support technical co-operation between the different areas in the UAE, and foster the use of appropriate technology and knowledge assets.

Of all the services that government engages itself in, public healthcare is the most sensitive domain as its quality and access has always been a major concern. The main reason for such a concern is that in case of public healthcare delivery, if right information is not delivered to the right people at the right place and at the right time, many lives would be lost (Ghani, et.al, 2008).

**Challenges in the Health Sector:** E-Health is in place in most developed countries, and is being explored in many developing, even least developed, countries. Many practical issues will arise as global e-health becomes a reality, but of these the most critical may be policy. Policy determines the rate and direction of development of healthcare initiatives, yet the vast majority of the world's countries have no legislation, e-Health Policy, or even guidelines. Therefore, the following may be cited as some of the goals for e-Health tools to tackle healthcare:

a) Identification of gaps between the healthcare delivery setups and the vulnerable population with the help of information superhighways (Weerasinghe, et. al., 2007).

b) Availability of information systems which nurture knowledge (Scott *et al.*, 2004).

The promise of intergovernmental cooperation and partnership is being realized across all of the provinces and territories. Widespread implementation of e-Health will enable more "patient-friendly" healthcare services to be developed. This will offer healthcare providers a chance to become more flexible and better able to address the differing needs of individual patients. Whilst today patients have to go to the doctor (or the doctor come to them), on-line and mobile tools are already opening up the possibility of remote diagnosis. Information technology (IT) is now viewed globally as a catalyst for change "not only to improve the automated processes but also to improve the way work is performed". In 1997, the World Health Assembly identified fostering the use of, and innovation in, science and technology for health as one of the essential functions of sustainable health systems. The general orientation then was that the ongoing information and technology revolution (including cellular phones and the Internet boom will introduce greater fluidity, allowing virtual teams to come together and disband as needed (Ginter, et.al, 1998).

The required systems and architecture may lead to the restructuring of health systems organization and support greater external linkages, including strategic

alliances or other partnering activities. In 2000, the United Nations General Assembly, in its Millennium Development Declaration, called upon all Member countries to cooperate with the private sector to "make available the benefits of new technologies, especially information and communication". In May 2005, the 58<sup>th</sup> World Health Assembly adopted a resolution on e-health calling on all the 192 WHO Member States to leverage the use of e-health in the pursuit of health-for-all vision. The actors involved in the implementation of e-Health are healthcare organizations, physicians, policy makers, health management personnel, clinicians, paramedical personnel, pharmacists, application developers and citizens (WHO, 2007). These actors use the tools identified by the World Health Organization (WHO) such as, Telemedicine, Patient's Information System, Decision Support System, Electronic Health Records, etc. to form the basis of their public healthcare setup. These e-Health tools further use existing ICT applications such as Internet, email and video conferencing services as a backbone infrastructure to reach to the healthcare requiring public (WHO, 2005).

The ideal is that in the future, Emirates patients will be able to go to any member state and not sense any difference in the quality of health care they receive. Doctors and health bodies will be able to access information on residence patients just as easily as they do for local ones, and patient records will be accessible at any time from anywhere not only for professionals with the necessary access right but also for the patients themselves. Limits on resources – both in budgetary and staffing terms – weigh constantly on healthcare providers. E-Health tools and services enable more efficient organization of resources and care provision leading to greater productivity. Electronic records make it easier to schedule appointments for patients, keep track of follow-ups, and ensure patients' general practitioners are informed of the results of their referrals. When it comes to preventive healthcare, e-Health tools can help achieve much higher coverage, for example, ensuring that children receive the full program of vaccinations at the correct ages. Healthcare providers can better address increasing demand for healthcare, and cover the costs of new, advanced treatments. E-Health services promise to raise the quality of care in remoter and rural areas, thanks to modern communications infrastructure (Ilioudi, and Lazakidou, 2007).

The Government of the UAE and large national agencies are not the only driving forces in e-Health.

Private companies, hospitals and nursing Schools are actively and creatively involved in e-Health initiatives. Numerous private companies in the UAE have developed and are promoting the development of electronic health records, systems for health care transaction, and clinical automation systems in networks of clinics, private Hospitals and local hospitals and specialists. Large hospital facilities and multi-site hospital corporations are developing mechanisms to share data, records and other information within and between sites and departments. Patients have responded positively to many of the new technologies and their application.

Internationally, a number of policies and strategies are available to support UAE's development towards realizing sustainable e-health usage. Governments as policy-making organizations play a pivotal role in formulating regulations in the health sector. The contribution of the government is particularly important in developing countries, where the public health system is usually the major provider of services. Government policies often have a significant impact on governing, financing and regulating the health sector in developing countries.

The Health Authority in the UAE has already alluded to the recent resolution of the World Health Assembly and the health-for-all policy for the 21<sup>st</sup> century that underscores the potential role of ICT in health. The regional development and political forums such as the "Arab Health Ministries Board (AHMB)", sub-regional economic communities, regional development banks and the United Nations Economic have elements in their policies and/or strategies encompassing ICT development. The ICT and Internet connectivity, a growing realization among bilateral and multilateral donor agencies and Internet connectivity in developing countries are regarded as an essential strategy for economic growth (Mohsin, 2004).

Researchers found that a majority of Doctors agree that ICT improves the quality of healthcare services that they provide. Doctors not using ICT cite a lack of training and technical support as major barriers. To spread e-health, they ask for more ICT in medical education, more training and better electronic networking among healthcare practitioners wanting to share clinical information. ICT is concerned with the storage, retrieval, manipulation, transmission or receipt of digital data. Importantly, it is also concerned with the way these different uses can work with each other. E-Health means Information and Communication Technologies tools and services for

health. Whether e-Health tools are used behind the scenes by healthcare professionals, or directly by patients, they play a significant role in improving the health of the citizens (Wickramasinghe, Rajeev, and Geisler, 2007). The IT companies and educational institutions should respond to the social cause through developing rural friendly communication kiosks and rendering technology education in rural areas. The Public Health Network through technology should include these actors who are working at the very local level. Linking them with qualified medical practitioners could bring change in overall health condition of the poor in rural areas. ICT could be also used in facilitating a continuing medical education to the practitioners in the rural localities. They are an important part of the 'rural healthcare system'. However, the practices need to be standardized through adequate trainings and regulation (Berlinguer, 1999).

Many of the healthcare services like Health Centers of sub-centers in remote areas are not equipped and staffed to provide quality healthcare to the patients. The new developments in healthcare have not percolated to the rural areas and this is a matter of great concern. While public healthcare system in UAE has the best professionals and one of the best systems there is a need to explore the ways and means to bring equity in access to health professionals and institutions (Lin, and Chang-tseh, 2006).

Information and communication technology has a very important role to play in facilitating quality healthcare to the remote areas in a cost effective manner. In an age of high-tech medical care, those excluded from the mainstream healthcare service could be provided with the benefits of medical professionals through the use of an appropriate ICT network. This needs a joint commitment from both private and public sector.

Tele-clinic initiated by some Indian Hospitals is one of the innovative mixtures of technology and health protection supplement. It is an attempt to introduce ICT in healthcare to improve the access to specialty care to those living in remote rural areas. The communication between a doctor and a patient is enabled through the use of a telephone. This mentioned project is innovative and is a first with this unique combination in the whole world, especially in India. It is a combination of financial protection and healthcare access (Scott, et.al, 2002).

ICT - Not the complete answer – need for location specific supplements. ICT is not sufficient to ensure improvement in the well-being. Application of ICT should be supplemented with appropriate social protection policies which would enable the poor to actually benefit from information/knowledge. Practicing information is not just a function of availability of options but depends on the supplementary policies that enable practicing in real life situations. Social orientation of private sector not only the government, the private sector should also be socially responsible. Counteracting to the complexities of epidemiological world, ICTs today are offering solutions that enable access to knowledge warehouse in the least time possible and dynamic communication networks, surpassing national and international limits (Metaxiotis, 2005).

E-Health programs benefit little from knowledge transfer and more efforts needed a long way to go before a cost benefit analysis, as thorough as in the developed countries' example, can be applied to all of the steps of e-Health. International agencies such as the World Health Organization (WHO), the United Nations (UN), have recognized the value of ICT in development. In fact the WHO has been instrumental in promoting e-health in a number of ways. Some of these organizations have been involved in e-health projects in different parts of the world. Communication among IT specialists internationally has not led to a true transfer of knowledge and experience among the key programs (Powell, et.al, 2005). The variation in size of budget and cost per inhabitant in e-Health programs confirms that the programs are quite different in scope and definition. International organization(s) initiating e-health projects in developing countries often have very limited understanding of the local situation. They may also have limited authority and recognition. There is the necessity to understand the specific needs of the locality and to find appropriate solutions to address those needs (Christopher, and Craig, 2009).

## CONCLUSIONS

United Arab Emirates is faced with challenges to the continued success of its health care system. Some of these challenges are uniquely Emirates, while others are common to many other countries in the Gulf Region or the Middle East. These challenges include geographic considerations, cost, demographics, service access, quality, accountability, and the integration of ICTs. E-health offers unprecedented opportunities for improving equity in access to health-enhancing global public goods and health



interventions. However, the Gulf Region's transition to e-health faces a number of challenges: high adult illiteracy rates, tertiary institutions enrolment rates, dearth of ICT technical know-how, lack of ICT infrastructure. This calls for concerted domestic, complemented with external, investments in secular education, ICT equipment and infrastructure, e-health-related human resource capacities and Internet connectivity.

Governments must address in a comprehensive manner many national and transnational issues. A major hindrance is that the current health sector organizational structure and national regulatory framework in developing countries are not adapted to problem-oriented, interdisciplinary, rapid-response collaborative technical work, and the concomitant political, regulatory, and managerial tasks. In order to improve access to health care, especially for the majority of Emirates living in remote rural areas, there is urgent need to boost the availability and utilization of e-health services. Thus, universal access to e-health ought to be a vision for all countries in the Gulf Region. The UAE is making significant strides in the development, implementation and ongoing management of ICTs within the context of an integrated e-Health component to the provision and management of health care. Each country ought to develop a clear road map in a strategic e-health plan that will, over time, enable its citizens to realize that vision.

E-Health is the natural culmination of the UAE Government cumulative e-health efforts, and will bring tremendous change to our world through increasing access, and equity of access, to healthcare for most of the world population. This in turn requires that issues pertaining to policy and procedure be addressed 'locally' and in a manner that effectively accomplishes knowledge transfer from the theory to a policy practice.

Success in the deployment of e-health applications depends on the right mix of skills and commitment to data management responsibilities in all functions at all levels, creating an additional burden to the already demanding professional workload.

In conclusion, global collaboration and co-ordination would reduce the transaction costs inherent in knowledge administration and allow a more effective total use of scarce health-care resources. In order to improve access to health care, there is need to boost the availability and utilization of e-health services. Thus, universal access to e-health ought to be a

vision for all countries in the Gulf Region. Each country ought to develop a road map in a strategic e-health plan that will, over time, enable its citizens to realize that vision.

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