

Population Health Management and the Second Golden Age of Arab Medicine

Promoting Health,
Localizing Knowledge Industries,
and Diversifying Economies
in the GCC Countries

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Preface

AFTER HAVING SUCCESSFULLY controlled communicable diseases and made advanced acute care accessible locally, the Gulf Cooperation Council (GCC) countries now face the challenge of orienting their health care systems toward prevention and treatment of chronic diseases, which their populations experience at higher rates than in nearly any other part of the world. The countries find themselves at a crossroads—they can emulate the models of Western countries, with their well-known limitations, or embark on an ambitious endeavor to create an innovative and sustainable model. In this report, we argue that the GCC countries should choose the second option and design and implement a health care system based on population health management principles and sophisticated health information technology. Taking this path can yield a triple dividend for GCC countries: Health care will help provide meaningful employment to highly educated citizens, diversify the GCC economies, and provide a model that incorporates Islamic principles as a source of emulation for other Islamic countries and the world.

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Executive Summary

THE 20TH CENTURY discovery of oil and natural gas has driven rapid economic growth in the countries that form the Gulf Cooperation Council (GCC): the Kingdom of Bahrain, the State of Kuwait, the Sultanate of Oman, the State of Qatar, the Kingdom of Saudi Arabia, and the United Arab Emirates (UAE). After having successfully controlled communicable diseases and made advanced acute care accessible locally, the GCC countries now face the challenge of orienting their health care systems toward prevention and treatment of chronic diseases, which their populations experience at higher rates than in nearly any other part of the world. The countries find themselves at a crossroads—they can emulate the models of Western countries, with their well-known limitations, or embark on an ambitious endeavor to create an innovative and sustainable model. In this report, we argue that the GCC countries should choose the second option and design and implement a health care system based on population health management (PHM) principles and sophisticated health information technology (IT). Taking this path can yield a triple dividend for GCC countries: Health care will help provide meaningful employment to highly educated citizens, diversify the GCC economies, and provide a model that incorporates Islamic principles as a source of emulation for other Islamic countries and the world.

The Increase of Lifestyle-Related Diseases Is Overwhelming the Health Care Systems of GCC Countries

Economic growth like the kind experienced in the GCC countries is typically accompanied by what health researchers call the epidemiological transition from acute to chronic disease: Better living conditions and improved access to medical care allow people to survive infectious diseases and age into chronic diseases, such as cancer and cardiovascular disease. The GCC countries, however, present a demographic and epidemiological paradox in that their populations are developing chronic diseases prior to undergoing the typical shift in age structure. Perhaps the most well-known and troubling health issue is diabetes: GCC countries have among the highest prevalence of diabetes in the world. High rates of diabetes and subsequent cardiovascular disease among GCC populations are driven in part

by higher genetic risk, as well as a high prevalence of several metabolic risk factors. Obesity is the most important of these factors, which can be explained by major shifts in health behaviors, particularly changes in diet.

Unfortunately, the higher burden of disease and disability has not yet been matched by increased health system capacity. To address this mismatch, GCC countries will need to repeat their successes in achieving high standards in combating infectious diseases, improving maternal and child health, and making acute care accessible locally. But reaching similar standards in chronic care will require a transformational approach rather than an incremental one. The growth in chronic disease prevalence is on a path to overwhelm the health care system in its current form. Without such transformation, the GCC countries will face sicker populations, threatening not only civic contentment but also economic development.

The Economic Opportunity in Health Care Transformation

In this report, we argue that the GCC countries have a unique opportunity to design and implement a health care system that meets the needs of the 21st century—one that is built on evidence and operated with industrial principles of process optimization and use of advanced IT. Legacy infrastructure and entrenched interests are holding back health care transformation in Western countries; GCC countries are less encumbered by these and can adapt an innovative model for health care delivery that is purposefully designed for the 21st century, rather than emulating inefficient models that exist elsewhere. This novel type of health care system could avoid past mistakes and enable the GCC countries to focus on what has been referred to as the three-part aim: better care, better health, and lower cost.

Transforming health care has the potential to provide meaningful employment to highly educated citizens, advancing stated GCC policies of workforce localization. Investment in health care can also enable economic diversification and transition toward knowledge-based industries. Opportunities include not just health care provision but also innovative technologies, such as mobile health, big data analytics, and care management services. In addition, implementing a model of health care that responds to the needs of GCC populations could lead the way toward principled care for the rest of the Islamic community and world.

Population Health Management as the Pioneering Model for World-Class Health Care

We argue that the GCC countries' future health care systems should follow two design principles. First, to cope with the relative shortage of health care professionals, GCC countries need to leverage highly skilled workers through sophisticated health IT and by

shifting tasks to less-trained workers. Second, the countries should adopt a PHM model, which unites the public health perspective of improving health at the population level and the medical care perspective of individual care delivery.

The PHM model is characterized by three key principles: a focus on the health outcomes of the entire population; coordination of health and medical services through the continuum of care needs, from prevention and health promotion to curative care, disease management, and palliative care; and proactive management of care needs. PHM addresses health care needs from health and wellness to coping with the end of life, and encompasses all dimensions of health, including physical, mental, and social well-being (Figure S.1). Our proposed PHM blueprint for the GCC countries' future health care systems has six interrelated components (Figure S.2):

Figure S.1 • Health Needs and the Full Continuum of Care

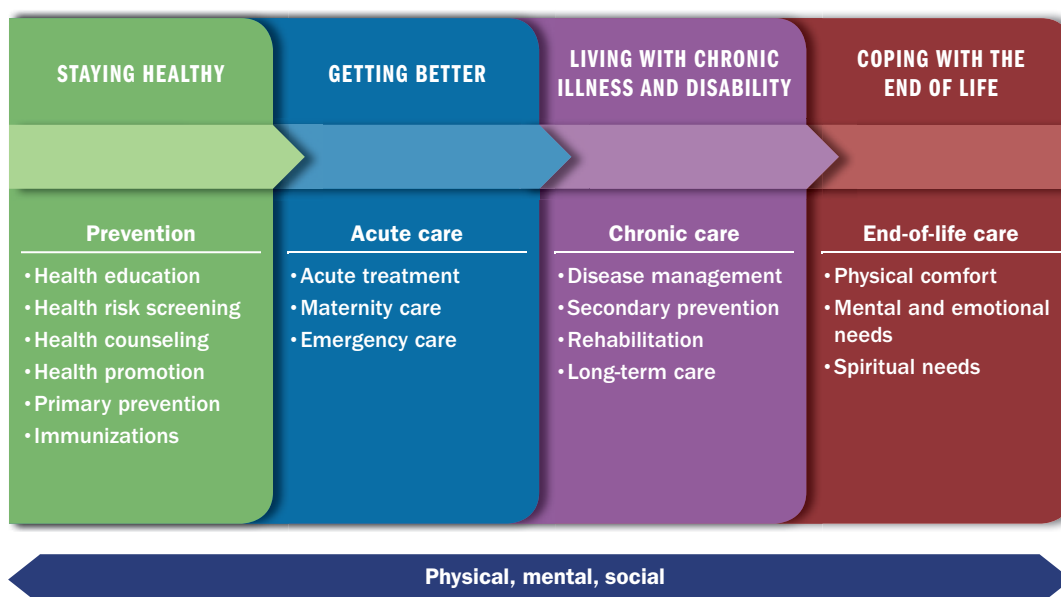


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- **A sophisticated IT infrastructure** will serve as the central cog for the model, as its data and decision support will drive the other components.
- **Data-driven optimization of care processes** will allow evidence-based care delivery and will perform gap analysis to identify future research needs.
- **Performance monitoring at all levels of accountability** will permit benchmarking, investigation of root causes for underperformance and remediation, and identification of best and worst performers to identify best practices.

- **Effective deployment of health professionals** will maximize the productivity of highly skilled professionals by task-shifting, allowing paraprofessionals to perform tasks requiring less skill and training while the country begins to develop the needed health care workforce. Assisting effective deployment will be care team formation and use of a model featuring health navigators, specialized paraprofessionals who guide patients through the system.
- **Alignment of incentives with policy goals**—namely, better health processes and outcomes and lower cost—will require several considerations. Payment cannot be tied to care settings, but must follow patients. The payment system must be based on value, not volume.
- **Consumer engagement and education** means patients must have some accountability for their care: They must be informed of their choices as well as the consequences of those choices.

Figure S.2 • The Interdependent Components of the PHM Model



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Conclusion

The GCC countries' economic progress and epidemiologic transition over the past 50 years have outpaced their health care systems. The health of the populations is being influenced simultaneously by their greater reliance on food of poor nutritional value, low physical activity, growing wealth, and migration from rural to urban living. The result is a large and expanding burden of chronic disease—especially diabetes—and disability, even

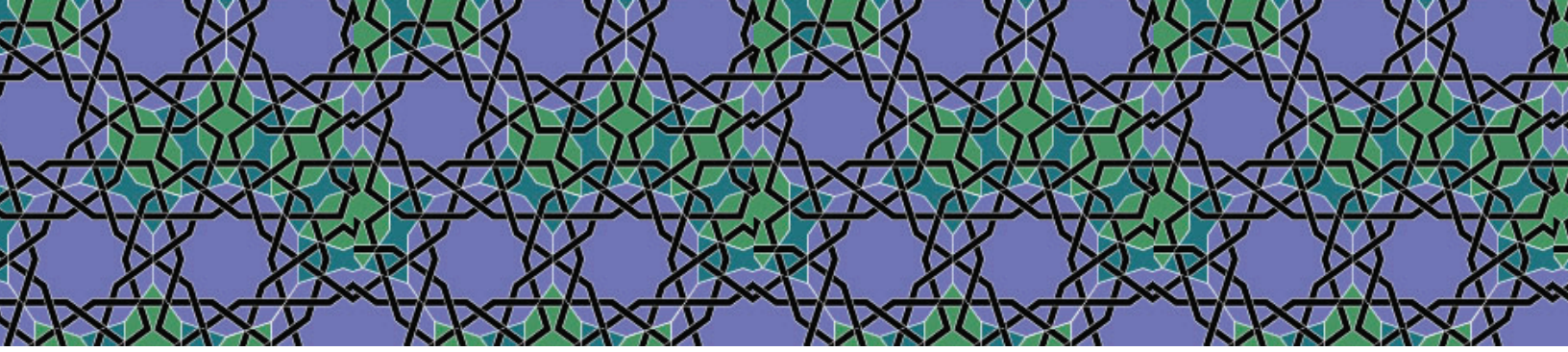
as mortality due to acute illness wanes. To handle the new challenge, the GCC countries' health systems must undergo a transformation.

Their current delivery systems are handicapped by underinvestment, a severe workforce shortage (especially of nurses), a hospital bed shortage, and lack of robust, interoperable IT. A large, well-integrated primary care delivery system is also lacking. At the same time, the GCC countries have the unique opportunity to leapfrog other countries: Their relative freedom from legacy infrastructure and entrenched interests mean they can adapt an innovative model for health care delivery that is purposefully designed for the 21st century, rather than emulating inefficient models that exist elsewhere.

Visionary leaders who embark on this ambitious agenda will be remembered for three accomplishments: first, for implementing a high-performing health care system that is centered on the needs of citizens and offers continuous support at all stages of health, thereby promoting civic contentment; second, for promoting economic diversification into knowledge industries; and third, for providing inspiration to the *Ummah* and the rest of the world and for restoring the leadership role of Arab medicine.

Abbreviations

ACO	accountable care organization
AMI	acute myocardial infarction
BMI	body mass index
BQS	Federal Office for Quality Assurance
CHIA	Cooperative Health Insurance Act
EHR	electronic health record
GCC	Gulf Cooperation Council
GDP	gross domestic product
GP	general practitioner
HMC	Hamad Medical Corporation
IT	information technology
KHAC	Kuwait Health Assurance Company
MOH	Ministry of Health
OECD	Organisation for Economic Co-operation and Development
PHC	primary health care
PHICKN	Private Health Insurance Company for Kuwaiti Nationals
PHM	population health management
UAE	United Arab Emirates
WHO	World Health Organization



المقدمة

Introduction

THE 20TH CENTURY discovery of oil and natural gas has driven rapid economic growth in the countries that form the Gulf Cooperation Council (GCC): the Kingdom of Bahrain, the State of Kuwait, the Sultanate of Oman, the State of Qatar, the Kingdom of Saudi Arabia, and the United Arab Emirates (UAE).¹ At the same time, these countries have experienced a dramatic increase in the prevalence of chronic disease, most prominently diabetes. In fact, the GCC countries have some of the highest rates of diabetes in the world.

While they have successfully controlled communicable diseases and made advanced acute care accessible locally, the GCC countries now face the challenge of orienting their health care systems toward prevention and treatment of chronic diseases. In this report, we argue that this challenge presents GCC countries with a historic opportunity to reestablish the thought leadership role that Arab medicine had in the Islamic Golden Age, a period of remarkable progress in anatomy, physiology, and medical and surgical treatment. We propose that GCC countries could apply their considerable wealth to design and implement innovative health care systems based on population health management (PHM) principles and sophisticated health information technology (IT). Taking this path will not only improve prevention and management of chronic disease but also contribute to the diversification of their economies and localization of knowledge industries.

Health care represents one of the largest components of public budgets in the GCC and worldwide—and usually one of the fastest growing. Health is something that directly touches our lives and the lives of the people we care about, which makes it an area of great

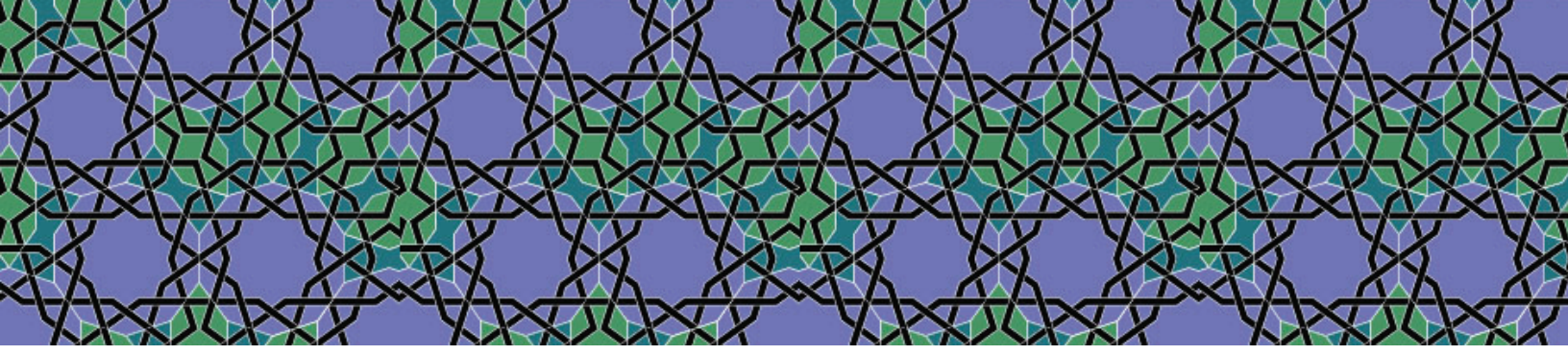
¹ This organization is now named the Cooperation Council for the Arab States of the Gulf, but is still commonly referred to as the GCC.

concern and importance to everyone, including both GCC nationals and non-national residents. Good health contributes to reduced disability and improved workforce productivity. For all these reasons, health is a critical area for policy reform.

1.1. Research Approach

Our research is based on a review and synthesis of the peer-reviewed and gray literature² along with analysis of publicly available data sources. We examined information on population trends and the burden of disease, as well as data on GCC countries' health care delivery infrastructure and workforce. We reviewed policy documents and position statements by officials in the GCC countries, international organizations, and nongovernmental experts. Based on the findings of our review, we identified seminal publications to guide the development of our recommendations for GCC countries' future health care systems.

² "Gray literature" refers to literature that is published outside of peer-reviewed, scholarly publications. Government reports and industry reports are common types of gray literature.



دول مجلس التعاون الخليجي ونظم الرعاية الصحية لها

The GCC Countries and Their Health Care Systems

THE GCC COUNTRIES border the Persian Gulf (see map in Figure 2.1). All are monarchies, with varying degrees of constitutional limitations. The UAE is a federated monarchy—each of its seven constituent emirates is led by an emir, and one of these emirs is selected to serve as president of the UAE. Several GCC countries have popularly elected legislatures. Together, the countries formed the GCC in 1981 in an effort to facilitate economic cooperation.

Figure 2.1 • Map of the GCC Countries



SOURCE: Alwan et al., 2011.
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2.1. Economy

The GCC countries contain about 36 percent of the world's total crude oil reserve. In all of the GCC countries, oil and natural gas are a major revenue source. Indeed, several of the countries' governments depend almost entirely on oil and natural gas: 95 percent of the Kuwaiti government's income, 87 percent of the Bahraini government's income, and 80 percent of the Saudi government's income is from petroleum production and refining (CIA, 2010). All GCC countries have undertaken efforts to diversify their economies, with limited success (Beidas-Strom et al., 2011). The UAE has engaged in perhaps the most prominent diversification effort, having made a significant investment in modern infrastructure and the creation of a "business-friendly environment" (IMF, 2014). GCC governments continue to prioritize diversification in their strategic plans.

2.2. Non-National Residents

Any discussion of the GCC countries, including their health care systems, must consider the large share of non-national residents in the population. Rapid economic growth has driven an influx of workers from other parts of the world, most prominently South Asia and Southeast Asia. Though the proportion of non-national residents varies by GCC country (from 30 percent in Saudi Arabia to 81 percent in the UAE), they are large enough to affect economic, demographic, and epidemiological trends. Table 2.1 summarizes each country's proportion of national residents.

Table 2.1 • Proportion of Residents That Are National

Country	% National
Bahrain	49
Kuwait	32
Oman	57
Qatar	14
Saudi Arabia	68
UAE	12

SOURCE: GLMM, 2014.

Unsurprisingly, most non-nationals are working-age.¹ They include unskilled workers, primarily in construction, resource extraction, and domestic services, and skilled workers, mostly in finance and other service industries.

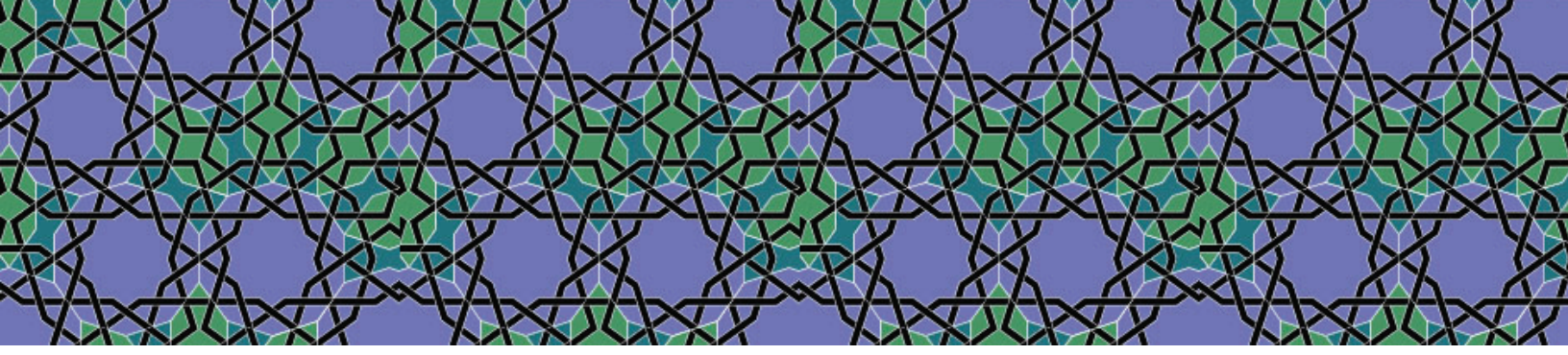
¹ In fact, 0 percent of the non-national population is 65 years of age or older in all countries but Saudi Arabia and Kuwait, where 1 percent of the population is 65 years of age or older (Economist Intelligence Unit of Great Britain, 2009).

2.3. Health Care Systems

GCC governments finance and provide most health care for their citizens, while non-nationals have to carry insurance or pay for health care services. All countries but Oman have or are in the process of developing insurance schemes, most of which require employers to purchase health insurance for their employees, including non-nationals. GCC countries' investment in health care is relatively low; in each of the countries, the proportion of gross domestic product (GDP) dedicated to health care is about a quarter that of the OECD countries.² Most GCC countries are seeking to expand private-sector provision of care. The appendix provides more detailed information on each GCC country's health care system.



² The Organisation for Economic Co-operation and Development, which is often used as an indicator for developed countries.



زيادة الأمراض المرتبطة بنمط الحياة تغتمر نظم الرعاية الصحية لدول مجلس التعاون الخليجي

The Increase of Lifestyle-Related Diseases Is Overwhelming the Health Care Systems of GCC Countries

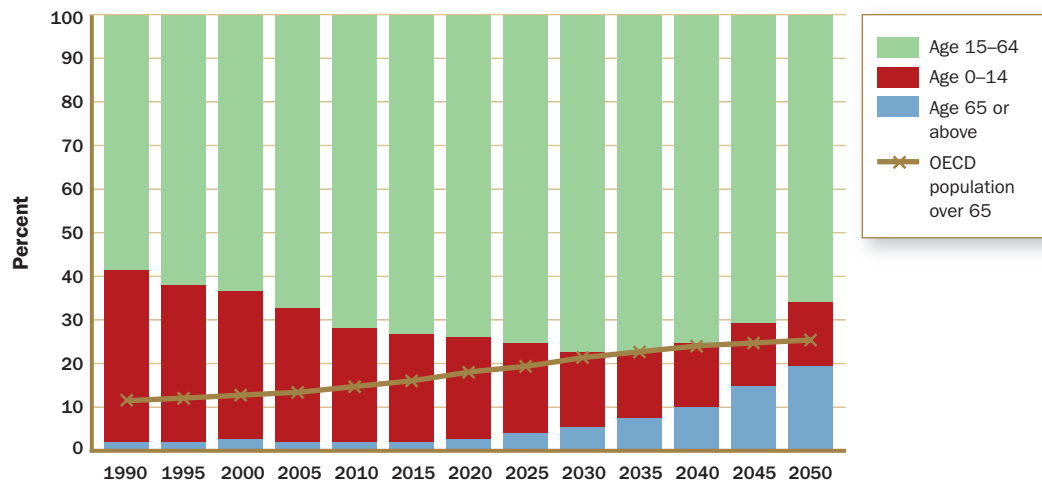
ECONOMIC GROWTH LIKE the kind experienced in the GCC countries is typically accompanied by what health researchers call the epidemiological transition from acute to chronic disease: Better living conditions and improved access to medical care allow people to survive infectious diseases and to age into chronic diseases such as cancer and cardiovascular disease. The GCC countries, however, present a demographic and epidemiological paradox in that their populations are developing chronic diseases prior to undergoing the typical shift in age structure.

3.1. Young Populations with High Rates of Chronic Diseases: An Epidemiological Paradox

While the burden of chronic disease in all GCC countries is rising rapidly, the average age has not increased, as Figure 3.1 shows. The proportion of the population over 65 years of age in the GCC countries has stayed constant at around 2.5 percent for over two decades (UN DESA, 2013). By contrast, the proportion of the OECD population over 65 years of age has steadily risen from 11.7 percent in 1990 to 14.8 percent in 2010 (OECD, 2009).

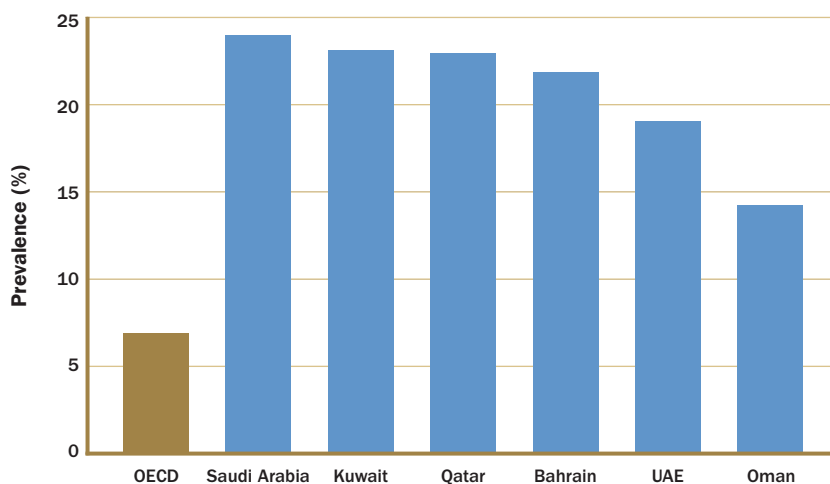
The large share of non-nationals does skew the age data; as discussed in Chapter Two, almost all non-nationals are working-age, falling into the 15–64 bracket in Figure 2.1. However, even when non-nationals are excluded, the population in the GCC region remains young (Economist Intelligence Unit, 2009; GLMM, most recent national data). While the population is projected to age slowly over the next 40 years, not nearing the OECD average until 2050, it is already experiencing a burden of chronic disease similar to many countries in Europe and Asia that have aged populations.

Figure 3.1 • Age Distribution of the Population in the GCC Region
(Weighted Average), 1990–2050



SOURCES: OECD, 2009; United Nations Department of Economic and Social Affairs, 2013.
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Figure 3.2 • Diabetes Prevalence in GCC Countries, 2013



SOURCE: International Diabetes Federation, 2013.
NOTE: The GCC data are the “comparative prevalence.” According to the International Diabetes Federation website, this number is calculated to adjust for the differences in the proportion of young and old people in different countries. Comparative prevalence modifies the national prevalence of diabetes to estimate what the relative prevalence would be for that country based on a universal distribution of the population at different ages developed by the World Health Organization (WHO) (International Diabetes Federation, 2013).

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Perhaps the most well-known and troubling health issue in the region is the high and rising prevalence of diabetes.¹ In each of the GCC countries, the prevalence of diabetes is more than double the OECD average of 6.9 percent (Figure 3.2). Excluding the Pacific

¹ People with diabetes either lack insulin altogether (type 1) or have too little insulin or are unable to use it effectively (type 2). Globally, more than 90 percent of diabetes cases are type 2.

and Caribbean islands, the GCC countries evidence the first-, second-, third-, fourth-, fifth-, and 12th-highest prevalence of diabetes in the world (Saudi Arabia, Kuwait, Qatar, Bahrain, UAE, and Oman, respectively).

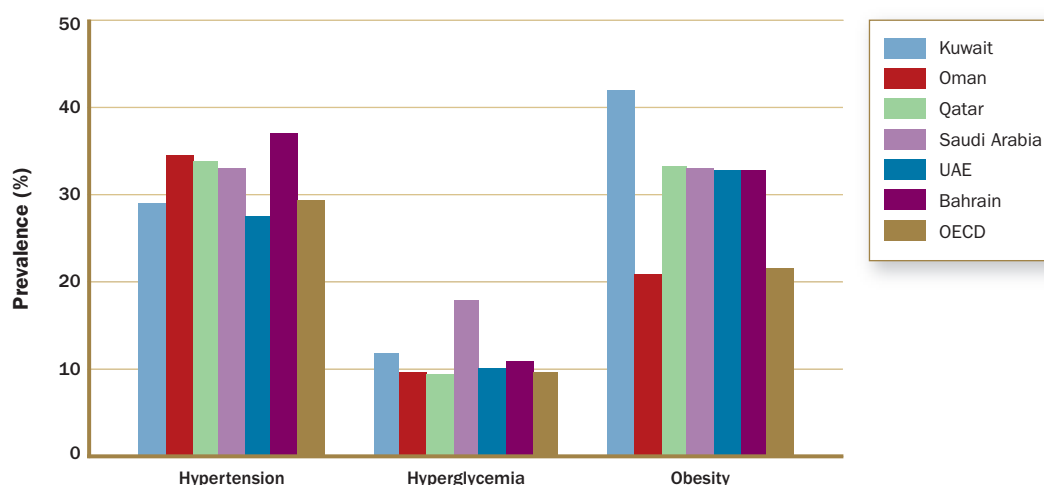
When non-nationals are excluded, the prevalence of diabetes is even higher (Ali et al., 2014; Hajat et al., 2012; Malik et al., 2005). For example, one study found an age-adjusted diabetes prevalence of 25 percent among UAE nationals, whereas the prevalence among non-national groups ranged from 16 to 21 percent, depending on the country of origin (Malik et al., 2005). Across the GCC region, diabetes rates are especially high among the vulnerable populations of individuals with lower socioeconomic status, women, and the elderly (Bener et al., 2014). Diabetes rates are expected to continue to rise in the GCC countries over the next two decades, including among children and adolescents (Moussa et al., 2008; Wild et al., 2004).

Metabolic Risk Factors Lead to High Chronic Disease Rates

High rates of diabetes and subsequent cardiovascular disease among GCC populations are driven in part by higher genetic risk (Meyer et al., 2009), as well as a high prevalence of several metabolic risk factors (Figure 3.3).

The most important factor is obesity. Obesity is a major problem in GCC countries, with Kuwait, Qatar, Saudi Arabia, and Bahrain in the top 20 countries with the highest rates of obesity (CIA, 2009).² All GCC countries but Oman have obesity rates that are

Figure 3.3 • Metabolic Risk Factors in GCC Countries, 2008



SOURCE: Alwan et al., 2011.

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² Note that *obesity* and *overweight* refer to ranges of weight that are greater than what is considered healthy for a specific height. Adults with a body mass index (BMI) of 25 to 29.9 are overweight. Adults with a BMI of 30 or higher are obese (Centers for Disease Control and Prevention, 2012).



higher than the OECD average of 22 percent, and that are close to or exceed that of the United States, which has the highest rate in the OECD, at 33 percent. In GCC countries, obesity rates are higher for nationals than non-nationals; in Qatar, for example, a study showed that 42 percent of nationals and 29 percent of non-nationals were obese (Ali et al., 2014).

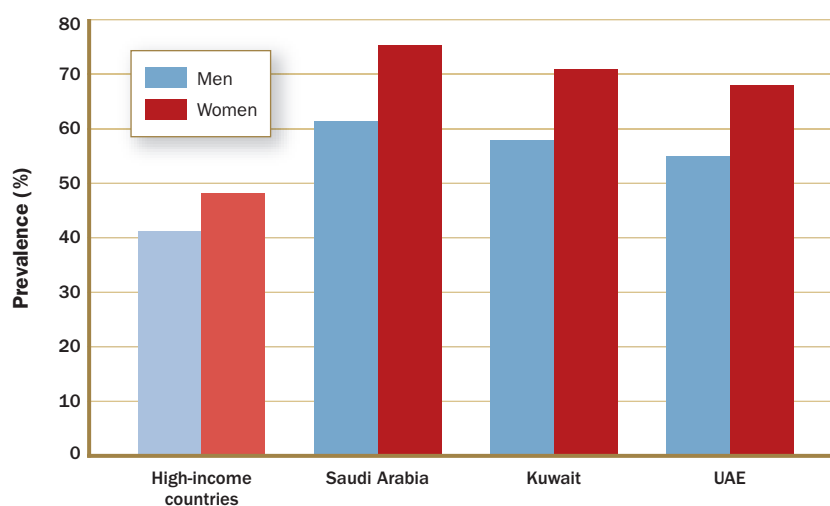
Especially alarming is the high prevalence of obesity in younger age cohorts. In Kuwait, 21 percent of men and 18 percent of women age 10–19 are obese (Kuwait MOH, 2004). Furthermore, obesity rates have risen quickly. In Saudi Arabia, for example, the prevalence of obesity in adults age 30–60 increased each year from 1992 to 2005 by an average of 1.5 percent for women and 4.1 percent for men (Ng et al., 2011).

In all six GCC countries, the prevalence of hypertension, another risk factor for chronic disease, hovers around the OECD average of 29.3 percent. This risk factor, typically present in adults only, is actually present in younger age cohorts in GCC countries as well; in a sample of children and adolescents in Abu Dhabi, for example, 15.4 percent of boys and 17.8 percent of girls were found to have hypertension (Abdulle et al., 2014). Hyperglycemia is also common, with almost twice the OECD rate in Saudi Arabia.

The Root Cause: Lifestyle Changes

The presence of metabolic risk factors in large swaths of the population can be explained by major shifts in health behaviors. Historically, the dietary regime in the GCC countries consisted of fresh fruits and vegetables, fish, whole wheat bread, milk, and dates

Figure 3.4 • Physical Inactivity in GCC Countries, 2008



SOURCE: Alwan et al., 2011.

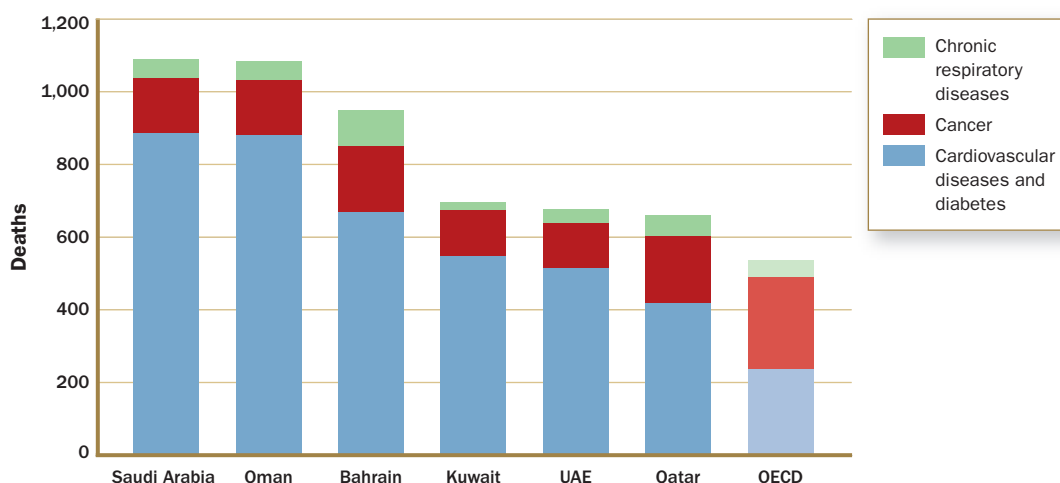
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(Badran and Laher, 2012). This and similar diets are found to be associated with positive health outcomes, such as low rates of chronic diseases and long life expectancy. However, the unprecedented growth in wealth driven by the commodities boom has dramatically reshaped lifestyles in the GCC countries. The population consumes more meat and refined carbohydrates, and less dietary fiber, than it did decades ago (Badran and Laher, 2012). Western fast food chains have proliferated throughout the region.

Furthermore, physical inactivity levels, especially among women, in the GCC region are about twice that of the OECD average (Figure 3.4). Climatic conditions have always presented a major obstacle to outdoor activities; in Riyadh, Saudi Arabia, for example, the high daily temperature typically surpasses 38 degrees Celsius (100 degrees Fahrenheit) from May through September and is accompanied by oppressive humidity. The availability of automotive transportation, television, computers, and air conditioning has reduced physical activities even more. The built environment in GCC countries also contributes: Cities have been planned in a way that is not conducive to physical activity, and exercise facilities are frequently not available or affordable (Benjamin and Donnelly, 2013). Finally, cultural expectations and behaviors reinforce a sedentary lifestyle; for example, women are expected to be accompanied by male family members and wear traditional dresses such as *abayas* (Klautzer et al., 2014) when going outside, posing a significant barrier to physical activity (Bugshan, 2012).

Kuwait exemplifies the environmental, social, and behavioral factors that drive an inactive lifestyle (Swinburn et al., 1999). Prosperity has increased the availability of labor-saving devices and services (El-Bayoumy et al., 2009) and daily use of private cars, both of which hinder physical activity (Guy et al., 2009). Kuwait's desert climate and

Figure 3.5 • Age-Standardized Mortality from Major Noncommunicable Diseases in GCC Countries



SOURCE: World Health Organization, 2008.

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unsupportive urban environment—with poorly constructed pedestrian walkways (Behbehani, 2014) and insufficient safety measures for pedestrians and bikers—discourage individuals from making short walking or cycling journeys part of their daily routines. In addition, being seen walking outdoors is socially stigmatized (Behbehani, 2014). Finally, Kuwaiti nationals, especially elderly women, are described as having a fatalistic outlook; they tend to regard chronic disease as a fate rather than a consequence of lifestyle (Serour et al., 2007).

Consequences of the Chronic Disease Epidemic

The adverse consequences of diabetes and other chronic diseases are already emerging. Treatment cost for diabetes and cardiovascular disease is expected to increase by about 320 and 420 percent, respectively, over the next 20 years (Mourshed et al., 2006). Combined, chronic diseases account for over 60 percent of deaths in the region (Hartl and van Hilten, 2012). The age-standardized death rate due to chronic diseases is higher in each GCC country than in the OECD (see Figure 3.5), and the difference is entirely driven by higher mortality rates for diabetes and cardiovascular disease. Such high mortality from noncommunicable diseases is all the more remarkable because Muslim countries have very low rates of smoking and alcohol abuse, two other major risk factors.³

³ For instance, current daily tobacco smoking rate in Saudi Arabia is 6 percent and in the UAE—11.3 percent below the OECD's average rate of 21%. (OECD rates are from Forde and Colombo [2014], while smoking rates are from Alwan et al. [2011].)

Patients with diabetes also have poor outcomes. For example, in Saudi Arabia, 54 percent of those with diabetics have kidney disease (Alzaid et al., 1994), and 38 percent of people with type 2 diabetes experience damage to peripheral nerves (Nielsen, 1998). Saudi Arabia has also experienced a striking increase in lifetime risk of requiring dialysis for end stage renal disease, from 4 percent in the early 1980s to 40 percent in the late 1990s (Badran and Laher, 2012).

3.2. Health Care Systems Are Not Prepared to Meet Increasing Demand

The emerging epidemic of chronic diseases places a significant burden not only on the health of the population but also on the care delivery system. Many GCC countries have made considerable strides in combating infectious diseases, improving maternal and child health, and, more recently, making tertiary care accessible locally. Even so, their health care systems are not well equipped to prevent chronic diseases, diagnose them early, and manage them effectively. As a result, patients with diabetes and other chronic diseases experience poor outcomes: According to Dr. Ala Alwan, the regional director of WHO's Eastern Mediterranean Region, up to half of those who die from chronic diseases in the region "die prematurely, before the age of 60 years" (Hartl and van Hilten, 2012).

One key issue is underinvestment: The GCC countries spend significantly less on health care than countries of comparable wealth. In 2012, total health expenditures per capita in all GCC countries but Qatar were less than half of the OECD average of US\$3,484 (OECD, 2014; Qatar's expenditures were 58 percent of the OECD average). Regional experts have recognized this issue and are pointing to the need to increase invest-



ment; Bassam Ramadan, World Bank country manager in Kuwait, recently noted, “The GCC countries have made important strides in improving the health standards of their populations but the government spending on health care remains low and does not meet people’s expectations” (World Bank, 2014b).

As a consequence, GCC countries lack a sufficient number of health care professionals and hospital beds. With the exception of Qatar, all GCC countries’ rates of physicians per 1,000 people and nurses per 1,000 people are well below the OECD averages of 2.7 and 7.7, respectively (Table 3.1). Furthermore, GCC countries heavily rely on non-nationals, which make up 40 to 80 percent of the total health care workforce (Informa, 2012). Similarly, the number of hospitals beds per 1,000 people remains comparatively low: Even Kuwait, which has 2.2 beds per 1,000 people, has a third fewer beds than the OECD average of 3.8. As the population grows, the demand for health services will also grow (Mourshed et al., 2006). Further, good available health care is usually thought to be a prerequisite to convincing successful international firms to invest in a country. If these changes are not addressed, dissatisfaction among the public is likely to rise.

Table 3.1 • Health Care Workforce and Infrastructure

Country	Health Care Workforce, 2010 (per 1,000 people)		Health Care Infrastructure, 2012
	Physicians	Nurses and Midwives	Hospital Beds
Bahrain	0.9	2.4	2.1
Kuwait	1.8	4.6	2.2
Oman	2.0	4.5	1.7
Qatar	7.7	11.9	1.2
Saudi Arabia	0.9	2.1	2.1
UAE	1.9	4.1	1.1
OECD	2.7	7.7	3.8*

SOURCE: World Bank, 2014c. **2011 data (best available).

Another concern is the absence of robust primary care delivery systems. For instance, in the UAE, primary health care centers are not adequately integrated clinically or organizationally with the inpatient facilities, resulting in low quality of care, poor patient continuity, substantial patient dissatisfaction, and overcrowding of hospital outpatient facilities (WHO, 2006). In Saudi Arabia, despite the presence of thousands of primary health care centers throughout the country, citizens still perceive quality of care to be higher at secondary and tertiary medical centers and use them as primary source of care, resulting in discontinuity of care (Mourshed et al., 2006).

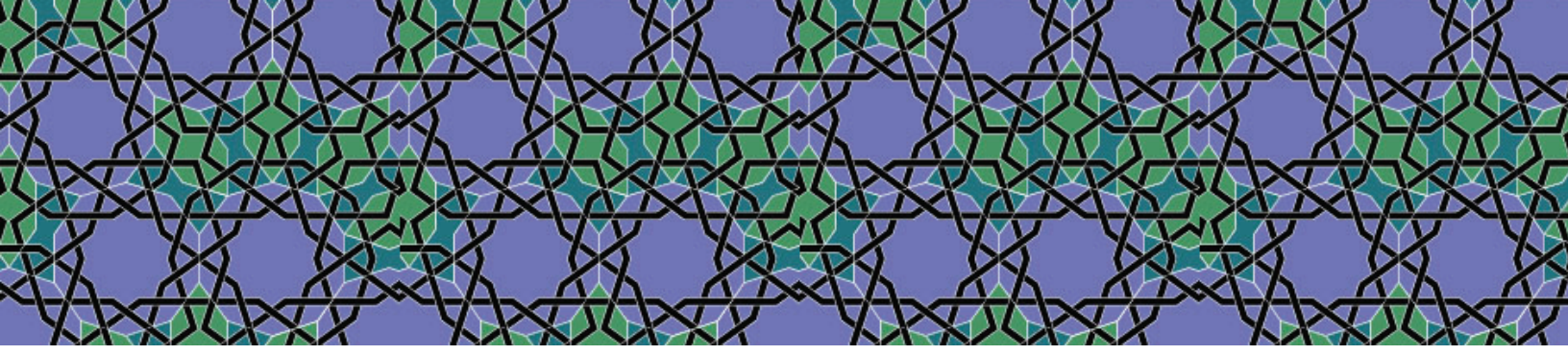
GCC countries will have to make substantial efforts to scale system capacity to the expected surge in demand for diabetes and cardiovascular care, which is projected to rise more than 300 percent in the coming two decades (Khaliq, 2011).

3.3. GCC Countries Now Face a Fundamental Choice: Imitate or Innovate

GCC governments have demonstrated interest in improving their health care systems, particularly in building hospitals and other health care facilities and in improving access to care (al-Naqeeb and Ibrahim, 2014; Alshishtawy, 2010; Fenton, 2012; Middle Eastern Health, 2013; Murshid and Badiuzzaman, 2014).

We see two options for GCC countries going forward. The first is to imitate their Western counterparts—building a Western-style health care system from the ground up. GCC governments’ considerable wealth could be applied to establish an infrastructure like that in Western Europe and the United States, where health care expenditures are nearly a fifth of GDP (by contrast, health care expenditures in the GCC countries range from 2.2 percent of GDP in Qatar to 3.2 percent in Saudi Arabia) (World Bank, 2014a). While the Western systems have achieved some remarkable accomplishments, particularly in the development of advanced medical technologies and the provision of acute care, these systems’ major weaknesses are well documented and warrant consideration. We explore the strengths and weaknesses of the Western health care systems in Chapter Three. In addition, accomplishing the transition would require aggressive hiring of expatriate health care professionals, as the local workforce and training facilities will not be able to meet demand for services. Not only would this approach be costly, it would also be inconsistent with the policy goal of GCC countries to localize highly skilled service jobs.

The alternative for the GCC countries is to design and implement a visionary approach to care delivery that will overcome the fundamental limitations with which most developed (and developing) countries are grappling. In Chapters Four and Five, we outline such an approach, a PHM model that unites the public health perspective of improving health at the population level and the medical care perspective of individual care delivery, with a robust health IT infrastructure at its core. This infrastructure would allow better leveraging of scarce, highly trained professionals by shifting tasks and reducing waste. We argue that taking this path could not only restore the leadership of the Arab world in medicine that it had in the Islamic Golden Age, but also convey substantial economic and societal benefits in terms of improved health and well-being, economic diversification, and civic contentment.



فقط بعض عناصر نموذج الرعاية
الصحية الغربية تستحق اتخاذ

Only Some Parts of the “Western-Style” Health Care Model Deserve to Be Adopted

THE “WESTERN-STYLE” MODEL of health care evolved in an era dominated by acute conditions. Health care delivery systems, approaches to financing care, and even the predominant paradigm for innovation were shaped by that historical context. Accordingly, countries employing a Western-style model have made tremendous strides in diagnosing and treating acute conditions, often with expensive technologies. For example, bone marrow transplantation allows treating previously deadly genetic disorders and malignancies. Treatment advances for acute myocardial infarction (AMI) have resulted in dramatic improvements in outcomes; patients experiencing AMI in the United States now have a 95 percent chance of survival (Bolooki and Askari, 2014).

The GCC countries are already on a path to make these and other major achievements in high-tech care accessible locally, emulating some elements of the Western-style model. King Faisal Specialist Hospital and Research Center in Riyadh offers services such as bone marrow transplant and radiation therapy. Oman has plans to invest an estimated US\$774 million to \$1 billion in the development of a health care city near Muscat that will aim to attract medical tourists from Western as well as other Arab countries. Other considerable investments include Sidra Medical and Research Center of Qatar, Cleveland Clinic Abu Dhabi, Sheikh Jaber Al Ahmad Al Jaber Al Sabah Hospital in Kuwait, and Bahrain’s project to build a health island for increasing medical tourism in the region.

While the Western-style model succeeds in treating acute problems, it is not as effective in preventing and managing chronic diseases. If one imagines health care as a pyramid, with the top representing high-tech care for acute health problems and the bottom representing maintenance of the health, wellness, and productivity of the population, countries employing a Western-style model have devoted a disproportionately large share of resources, innovation, and leadership attention to the top and are getting poor value for

their money as they are paying for the care of manifest diseases rather than averting those diseases.

Given the GCC countries' remarkably large and growing burden of chronic disease, especially diabetes, investment in the bottom of the pyramid is crucial to a healthy, productive, and content population. Therefore, the GCC countries should avoid adopting a Western-style model in its entirety. Beyond the Western-style model's failure to invest in prevention, several components of the model present significant barriers to meeting the needs of 21st century societies: encounter-based and poorly coordinated care, limited investment in IT, lack of adherence to practice guidelines, limited performance monitoring, misaligned incentives, and lack of consumer involvement in care.

4.1. Physician-Centric, Encounter-Based, and Poorly Coordinated Care

In the past, care delivery occurred mostly during patients' face-to-face encounters with physicians and other care providers. As a result, a payment system evolved that links remuneration or revenue to such encounters. This system both reflects and reinforces the focus on encounter-based care. However, as societies undergo an epidemiologic transition toward a greater burden of chronic disease, the limitations of this model become apparent.

With payment tied to the encounters, and not to any other activities, the workflow is established in a way that requires a physician to make all relevant decisions during an office visit. This setup is efficient if all relevant decisions can be made during an encounter, as is the case for many acute problems, but fails to account for the ongoing care that patients with chronic disease need. Experts attest that having more patient-care activities take place outside of office visits is likely to improve quality, save time, and reduce costs. Patients with chronic disease require ongoing monitoring between encounters, as well as support and coordination services, as they transition from one care setting to the next, such as from a hospital back to the home.

Alternative payment and delivery arrangements—such as paying providers on a capitated basis (i.e., a set fee per patient), with a bonus for good health outcomes—have been introduced with the intent of supporting the provision of care outside of face-to-face encounters, as well as the coordination of care. However, several factors, such as the large body of stakeholders that benefit from the status quo, make reforms like these challenging to implement (Chen et al., 2011). These factors are further explored later in this chapter.

Systems that revolve around physician-patient encounters tend to be physician-centric, at the expense of team-based care and task-shifting. Experts emphasize that the complex needs of chronically ill patients require the collaboration of multidisciplinary health care teams—including, for example, primary care physicians, nurses, nutritionists, rehabilitation specialists, and social workers, which are infrequently used (Boult et al., 2011). A few particularly innovative health care delivery organizations, such as Kaiser Permanente, which started in California (in the United States) but now operates nationwide,

have created training programs and workflows that maximize the use of multidisciplinary teams (Bodenheimer et al., 2009). However, the majority of delivery organizations do not employ this approach, and in the United States, projections suggest that the health care workforce of the future will not be capable of forming such teams in sufficient numbers (Bodenheimer et al., 2009).

Another consequence of tying payment to encounters and procedures is the emergence of so-called budget silos. Health care funds are often budgeted by sector, such as inpatient care, ambulatory care, and prescription drugs. This practice can create disincentives against aligning care delivery with patient needs. For example, a global survey on home health care technology revealed that home monitoring after hospital discharge continues to be underused because hospitals tend to get paid for additional admissions but not for avoidance of readmissions (Mattke et al., 2010). Thus, the hospital would have to bear the cost of monitoring patients after discharge while forgoing the revenue of a readmission. Singapore's health care system offers another example: This system has optimized access to acute care through public clinics and to hospital care in subsidized facilities, but provides only limited insurance coverage and coordination for chronic care needs, resulting in fragmented and poor quality care (Lee, 2008).

In spite of the evidence to support innovative chronic care models, an undue prioritization of hospital care is still common. Last year, Myanmar's Ministry of Health (MOH) released plans to build four new 500-bed hospitals in the capital, Nay Pyi Taw, where

Delivery System Reform: Germany's Efforts to Improve Coordination

Over the past two decades, Germany's government has embarked on several efforts to improve care coordination, especially for patients with chronic diseases (Nolte et al., 2012). For example, hospitals have been allowed to provide outpatient care since 1993; prior to this reform, only office-based physicians were paid to provide ambulatory services (U.S. Congress, 1995). As a result, hospitals started offering preoperative management and care transition services after discharge. In 2003, the German government introduced disease management programs that support evidence-based practice and increased coordination for patients with chronic diseases (Busse, 2004). Providers that join these programs are eligible for additional payments, if they meet standards for care coordination and use of team-based care (Miksch et al., 2010; Szecsenyi et al., 2008). Disease management programs have become the norm for the care of several chronic diseases in Germany (Blümel and Busse, 2009), with positive results. For example, patient participation in diabetes management programs has been associated with reduced mortality (Miksch et al., 2010).



existing hospitals were not at capacity (Myanmar Phar-Med Expo 2013, 2013). In response to widespread criticism that these new hospitals were unnecessary, the MOH decided to reallocate the funds to upgrade an existing hospital and develop a medical school.

4.2. Limited Investment in Information Technology Relative to Other Industries

During the IT “revolution” of the late 20th century, many industries achieved efficiency gains through substantial IT investments (KFF, 2013). By contrast, health care providers have been slow to adopt IT, and governments have struggled to stimulate uptake. Even after the RAND Corporation published widely cited research in 2005 suggesting that health IT could produce \$81 billion in annual savings for the United States (Hillestad et al., 2005), hospitals and ambulatory centers have been slow to adopt, with just 40 percent of physician practices and 27 percent of hospitals meeting the standards for “basic” electronic health records (Kellermann and Jones, 2013). A few countries, such as Denmark, the Netherlands, the United Kingdom, and Australia, have been successful in achieving nearly universal use of electronic health records (EHRs) in ambulatory practices. However, even in these countries, adoption of EHRs in hospitals remains limited (Gray et al., 2011; Jha et al., 2008).

United Kingdom: Maximizing General Practitioners' Use of EHRs

In the past decade, the government of the United Kingdom has undertaken two sizable initiatives aimed at increasing the effective use of health IT. First, the government has directly supported purchase and maintenance of EHRs (Jha et al., 2008). Second, the government included measures of the use of EHR features, such as clinical decision support, in its pay-for-performance scheme for general practitioners (Jha et al., 2008). (For more on this, see section 4.7). These efforts have been recognized as contributing to EHR adoption and use (Berthold et al., 2011; Jha et al., 2008). The United Kingdom now has one of the highest rates of EHR use worldwide among general practitioners, with more than 90 percent of general practitioners using EHRs.

Discouragingly, hospitals and physician practices that have invested in health IT hoping to improve efficiency and outcomes have found their ability to utilize these technologies seriously impeded by interoperability issues. In the United States, hospitals and ambulatory practices have many health IT systems and vendors to choose from. And even when different providers purchase the same system from the same vendor, the systems are customized to each provider's needs to the point where they are no longer interoperable; they are unable to "talk to each other." Since a key reason for installing such systems in the first place is to improve coordination of care across different providers, this lack of interoperability remains a major limitation.

4.3. Lack of Adherence to Guidelines and Best Practices

Clinical practice guidelines synthesize the best available evidence about the appropriate treatment for patients with a specific condition to improve quality of care and standardize practice. Clinicians, as well as hospital managers, payers, and health system planners can use clinical practice guidelines to inform their decisionmaking about care for individual patients or groups of patients. The past few decades have seen a proliferation of such guidelines: As of 2011, the Guidelines International Network contained more than 3,700 clinical practices guidelines from 39 countries (IOM, 2011). Despite the growing number of guidelines, research in many countries (including Canada, Australia, and the United States) suggests that physicians typically do not follow such guidelines (Cabana et al., 1999). Key barriers include lack of awareness of guidelines, disagreement with recommendations, and the perception that guidelines are inconvenient or difficult to use (Cabana et al., 1999).

4.4. Limited Performance Monitoring and Improvement

Traditionally, societies have relied on the medical profession to ensure quality of care through self-regulation and have not interfered with clinical autonomy, but research over the past two decades has cast doubt over the viability of this arrangement (Mattke, 2004). For example, a 1999 report by the National Academy of Sciences' Institute of Medicine (an independent research organization) estimated that between 44,000 and 98,000 people die in the United States each year due to preventable medical errors (IOM, 1999).

In response, governments and managers are increasingly undertaking efforts to measure quality, as well as other aspects of care, such as efficiency and patient experience. For example, the OECD has developed performance indicators through the Health Care Quality Indicator Project with the intention of comparing quality across OECD countries (Mattke et al., 2006). Governments and other payers have also implemented programs that aim to hold providers accountable for performance. In Germany, the Federal Office for Quality Assurance (BQS) monitors hospital performance on 194 measures, summarizing its findings in reports to individual hospitals. Hospitals that are found to be underperforming must explain their performance to BQS and, in some cases, take actions to improve it (Busse et al., 2009). In the United Kingdom, about 20 percent of primary care providers' income is related to their performance on quality indicators (Doran et al., 2006).



4.5. Misaligned Incentives

Encounter-based payment creates incentives for providers to provide additional services, which can lead to overuse. Not only does overuse waste resources (IMS Institute for Healthcare Informatics, 2013), but it can also threaten patient safety.

The wasted resources that result from overuse are especially a cause for concern when they involve high-cost and high-margin services, such as diagnostic imaging and major surgery. And even when scientific evidence discourages use of services and/or expensive drugs, practice patterns often change slowly (Timbie et al., 2012).

Overuse also threatens patient safety—for example, through exposure to radiation during discretionary imaging or through potential complications from invasive procedures. The Institute of Medicine defines overuse as “the provision of care for which the potential risks outweigh the potential benefits” (IOM Committee on Quality of Health Care in America, 2001). Several decades of research have demonstrated that overuse is a substantial problem in health care, and two areas of research in particular have quantified its magnitude.

Researchers at Dartmouth University discovered the phenomenon of geographic variation in the rates of use of a broad range of common medical procedures, including cesarean sections, magnetic resonance imaging, and heart surgery (Dartmouth Institute, 2012). They showed that variation is much higher than could be explained by variation in patient need, and also that use patterns are inconsistent (i.e., a region could have high rates for one procedure but low rates for another).

Diagnosis-Related Group Prospective Payment System in South Korea: Aligning Incentives for Lower-Cost, Higher-Quality Care

South Korea, like many developed countries, has historically used a fee-for-service payment model and has experienced rapidly increasing health care costs. However, in 1997 South Korea began experimenting with a diagnosis-related group (DRG)-based prospective payment system, in which voluntarily participating providers were paid for entire episodes of care rather than for individual services (Shanlian, 2008). The DRG-based system began as a pilot for five disease categories, and in 2002 was expanded to include eight surgeries (Lee and Lee, 2007). Health care providers who voluntarily participated in the new payment system ultimately had lower costs and the same or improved care quality (Lee and Lee, 2007; Shanlian, 2008; Tchoe, 2010). The national health administration has indicated interest in continuing to expand the system to additional diseases and surgeries, as well as to additional providers.

The second area of research on variation in medical decisionmaking and use of procedures is the appropriateness research that originated at RAND (Brook, 1995). This research uses evidence and expert opinion to define explicit criteria to judge the appropriateness of a variety of medical procedures, given a particular patient's symptoms, comorbidities, and diagnostic findings. Using the results of such appropriateness investigations, researchers typically find that about a third of high-cost, high-risk procedures, such as carotid surgery or cardiac catheterization, are performed on patients without an appropriate indication.

4.6. Lack of Consumer Involvement in Care

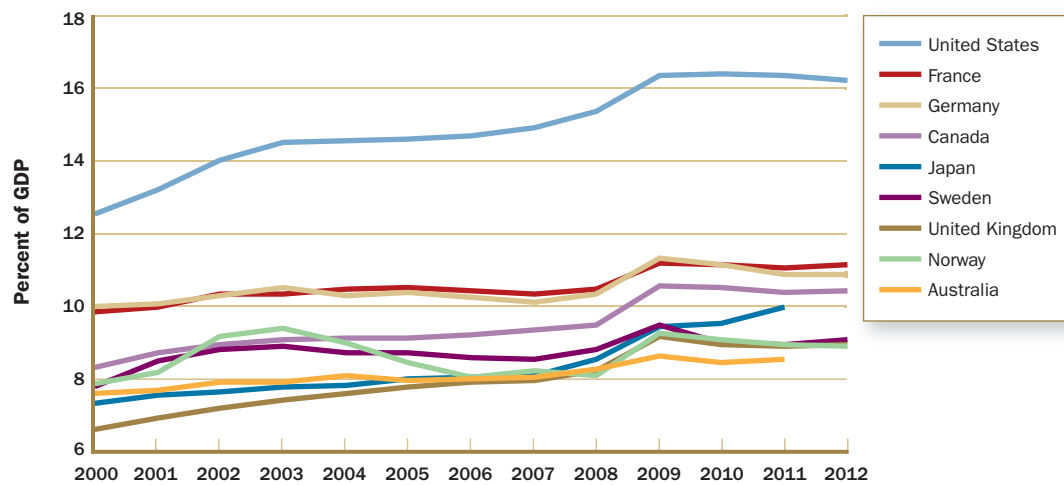
Health care providers and systems have been criticized for insufficiently engaging patients in decisions about their health care (Laurance et al., 2014). Several factors contribute to this tendency, including paternalism and payment systems that favor procedures over time spent with patient education. As a result, patients lack sufficient understanding of their conditions and the importance of treatment plan adherence and self-management (National eHealth Collaborative, 2010). A recent review summarized the evidence for the relationship between patient engagement and activation and outcomes, concluding that activated patients tend to have better health outcomes, better experience of care, and lower costs (Hibbard and Greene, 2013).

4.7. The Difficulty of Achieving Reform in Countries with Western-Style Health Care Systems

In countries with Western-style health care systems, concern is growing about the health outcomes and financial sustainability of these systems (see Figure 4.1), leading to calls for fundamental reform. However, countries that attempt to engage in reform find it difficult to do so. Reform efforts are often thwarted by what political scientists call “path dependence;” i.e., situations in which policymakers' options are constrained by history and existing institutional structures. Established health care systems tend to have many entrenched stakeholders, who are familiar with and benefit from the status quo and who resist change unless fully compensated. As a consequence, policymakers are often unable to reform policies—even if they realize the current system does not achieve optimal outcomes—or are able to effect change only if they offer substantial compensation to existing stakeholders.

By contrast, rapidly growing countries such as those in the GCC have an advantage when it comes to reforming their health care systems: To a larger degree than long-established health systems with significant path dependence, they have the opportunity to design health care systems *de novo*. This situation is akin to the conditions that promoted Germany's *Wirtschaftswunder* (economic miracle) in the 1950s. The destruction wrought by World War II and the dismantling of key industries by the allied forces had nearly eliminated Germany's industrial base. But a rapid influx of capital allowed the country to invest

Figure 4.1 • Health Care Expenditures (% of GDP), 2000-2012



SOURCE: OECD, no date. Data extracted December 19, 2014.
RAND RR889-4.1

in state-of-the-art manufacturing facilities and quickly outpace countries burdened with legacy infrastructure.

There are many examples of the difficulties that policymakers face when trying to reform established health care systems. Various attempts to implement health care reform in the United States are particularly familiar. While the world's largest economy has long spent more than any other country on health care as a share of its wealth, it has been unable to provide universal health care coverage: About 13.4 percent of the population has no health care coverage (Smith and Medalia, 2014). Several attempts to achieve universal coverage have failed over the past 20 years. For example, President Bill Clinton's Health Security Act, a 1993 proposal to expand insurance coverage and impose stronger regulations on the health care industry to improve cost controls, was heavily attacked by interest groups, particularly the powerful insurance industry. In the end, the proposal did not get enough support from Clinton's own Democratic Party to be voted on, and the bill was abandoned (Skocpol, 1997).

In 2010, President Barack Obama was able to pass a major health reform bill with the Patient Protection and Affordable Care Act, which is substantially expanding coverage. However, interest groups had extensive involvement in shaping the content of this legislation (Quadagno, 2011). The private insurance industry, employers, trade unions, pharmaceutical and medical device companies, health care provider groups, and other organizations invested heavily in lobbying members of Congress to include or exclude specific provisions (Quadagno, 2011; Steinbrook, 2009). More than eight lobbyists per member of Congress were hired to influence the health care reform effort in 2009 (Eaton and Pell, 2011), and in 2009 and 2010, more than \$1 billion was spent lobbying on behalf of health

care reform in the United States (Liberto, 2011). The law has expanded health care coverage and mandated the testing of alternative delivery and financing mechanisms, but has not for the most part introduced fundamental changes to the organization and delivery of health care, extending a costly system to more citizens.

Private health insurance companies in the United States face similar obstacles in attempting to encourage providers to make cost-saving changes in the way they deliver health care services. For example, private insurers are encouraging primary care providers to become so-called patient-centered medical homes, which would provide ongoing support and care coordination services for their patients, particularly those with chronic diseases. The rationale for patient-centered medical homes is that better support for chronically ill patients will prevent costly exacerbations, thus improving health outcomes and reducing costs. A systematic review, for example, found that, overall, patient-centered medical homes improve quality of care, reduce errors, and improve patient experiences (Rosenthal, 2008). A subsequent study reported a reduction in emergency room visits and hospital admissions, as well as overall cost savings, among patient-centered medical home patients (Fields, Leshen, and Patel, 2010), but another study found limited improvements in quality and no reductions in utilization or costs of care (Friedberg et al., 2014). Even so, insurance companies have undertaken efforts to encourage providers to establish patient-centered medical homes. To do so, they have had to offer financial incentives, such that the financial gains from improved care delivery may largely accrue to providers.

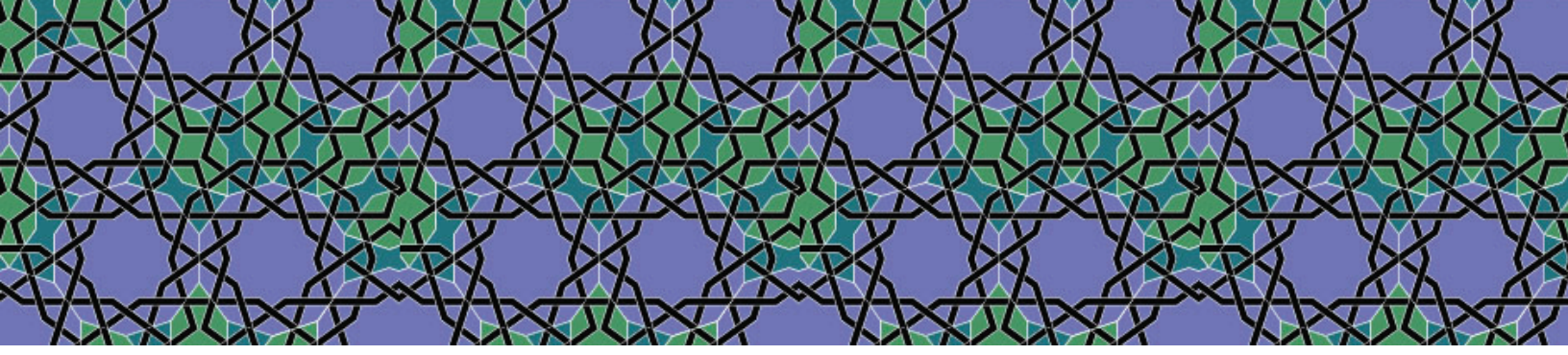
Other countries with mature health care systems have faced similar difficulties in implementing health care reform. In 2000, South Korea's government passed legislation that eliminated physicians' authority to sell medications directly to patients (Ahmad, 2000). Prior to this policy change, both physicians and pharmacists were authorized to prescribe and sell medications (Watts, 2001). Since physicians and pharmacists received income from medications they sold, they had a financial incentive to prescribe unneeded



medications. This overprescribing resulted in antibiotic resistance and abuse of medications (Kim and Ruger, 2008). To align incentives with the needs of patients, as opposed to the financial interests of physicians and pharmacists, the South Korean government decided to limit the authority of doctors and pharmacists such that doctors are only able to prescribe medications and pharmacists are only able to sell and dispense them (Watts, 2001). Physicians, having had prescribing authority for years, went on strike (Ahmad, 2000), closing 80 percent of medical clinics in the country (*Los Angeles Times*, 2000). After six days of strikes, during which a number of deaths were attributed to the absence of working physicians, the government agreed to increase physician fees for medical consultations by 72 percent and to increase fees for prescribing medications by 500 percent (Kim and Ruger, 2008). These higher fees were covered by a 21-percent increase in worker health insurance contributions (Watts, 2001). As is often seen in countries with established health care systems, needed reform came at a high price; in South Korea, the government achieved its goal of separating medication prescribing from selling, but failed to realize the expected spending decrease (Kim and Ruger, 2008).

In 2004, the United Kingdom's National Health Service undertook an ambitious initiative to shift payment for primary care toward rewarding better performance (NHS Employers, 2013; Scottish Government, 2011). Primary care physicians (called general practitioners, or GPs) work under contract with the National Health Service and are mostly paid on a capitated basis, with some additional payments for selected services, capital, and IT (Smith and York, 2004). When the National Health Service negotiated a new GP contract in 2004, one key element was the introduction of payments associated with the performance of primary care practices on a complex set of 146 quality measures (Lester et al., 2006) that focus on chronic disease management and practice organization (Charlton, 2005). But GPs negotiated protection for their previous compensation and bonus payments for performance on the quality measures (Charlton, 2005). In the three subsequent years, GPs' average income increased by about 50 percent, to £110,000 (US\$224,400) (Cockcroft, 2007). Furthermore, any improvement in the quality measures that followed implementation of the new system was judged to be modest at best (Gillam, 2011).

Compared with countries that have large, long-established health care systems, the GCC countries are relatively unburdened by existing arrangements, infrastructure, and entrenched stakeholders. They have to choose between emulating the Western-style model, with the major flaws discussed above, and establishing an innovative model to meet the future needs of a population with unparalleled rates of chronic disease, especially diabetes.



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GCC Countries Have an Unprecedented Opportunity to Design and Implement the Health Care Model of the Future

THE GCC COUNTRIES have successfully imported high-tech, acute care capabilities developed in countries that follow the Western model of health care. They now have an opportunity to avoid the shortcomings of these systems by intelligently designing a model capable of preventing, detecting, and managing chronic diseases effectively. If implemented properly, a re-envisioned population management system may make Arab medicine again the beacon of progress that it was centuries ago.

Leaders of the GCC countries often speak of their eagerness to lead the region (and the world) in the sciences. At a university inauguration ceremony, King Abdullah of Saudi Arabia said,

[This] is a continuation of what distinguished our civilization in its Golden Age. This is, first of all, what the university stands for. Throughout history, power has attached itself, after God, to science. And the Islamic nation knows too well, that it will not be powerful unless it depends on, after God, science. (National U.S.-Arab Chamber of Commerce, 2009)

Developing an innovative PHM model offers the GCC countries an opportunity to lead the world. As countries in developed and developing countries encounter the threat that chronic disease and poor quality of care poses to productivity and civic contentment, they are likely to look favorably at the opportunity to import a model that has been proven effective.

Given their rapid economic development and wealth, the GCC countries are well positioned to build a health care system of the future from the ground up, relatively free of the entrenched stakeholders that hold back the systems of most developed and many developing countries. We recommend that the GCC countries pioneer a new model that

incorporates best practices and lessons learned from other countries. This new model could be built on PHM principles and operated with industrial principles of process optimization and use of advanced IT. Doing so would avoid other countries' mistakes and enable the GCC countries to achieve the so-called three-part aim of better care, better health, and lower costs (Berwick et al., 2008).

5.1. A Blueprint for the GCC Countries' Future Health Care System

We argue that future health care systems in the GCC countries should follow two design principles: one centered on human capital and the other focused on population health. First, to cope with the relative shortage of in-country health care professionals, the GCC countries need to leverage highly skilled workers through sophisticated health IT and through shifting tasks to less-trained workers. In other words, routine and administrative tasks should be automated and delegated to the most efficient degree possible to allow scarce health care professionals, such as physicians and nurses, to focus on complex tasks.

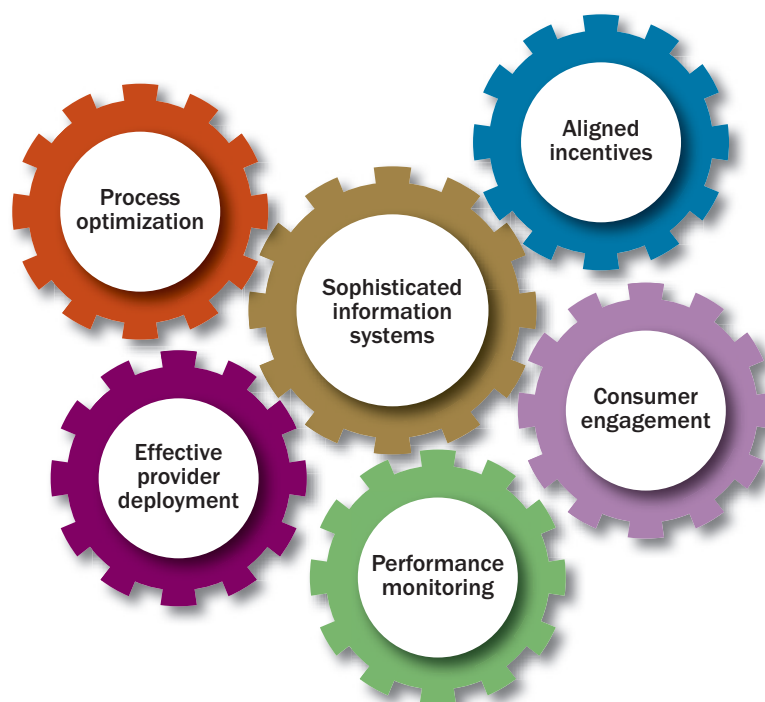
Second, the GCC countries should adopt a PHM model, which unites the public health perspective of improving health at the population level and the medical care perspective of individual care delivery (Stoto, 2013). The defining characteristics of the PHM model are a focus on the health outcomes of the entire population; coordination of health and medical services through the continuum of care needs, from prevention and health promotion to curative care, disease management, and palliative care; and proactive management of care needs. Such a model is flexible for regional adaptation and could address the future needs of a population that is experiencing an increased prevalence of health risk factors and the resulting higher burden of disease and disability.

Elements of the PHM model can be found in reform efforts that many countries are currently undertaking, such as the *Selektivverträge* (selective contracting) between sickness funds and primary care practices in Germany, the Clinical Commissioning Groups in the United Kingdom, and the accountable care organizations (ACOs) in the United States. Some early results show that successful ACOs—in which groups of hospitals and clinicians take on medical and financial responsibility for a set of patients and share the savings that results from well-coordinated care—have improved quality of care, decreased inpatient admissions, and reduced health care costs (CMS, 2013a, 2013b).

Our proposed blueprint for a future health care system in a GCC country has six inter-related components (Figure 5.1):

- sophisticated IT
- data-driven optimization of care processes
- performance monitoring at all levels of accountability
- effective deployment of health professionals
- aligned incentives
- consumer engagement.

Figure 5.1 • Blueprint for the GCC Countries' Future Health Care System



RAND RR889-5.1

5.2. Sophisticated Information Technology

A sophisticated IT infrastructure with robust capacity for expansion and adaptive innovation serves as the central cog for the envisioned PHM model because it will provide data and decision support that will be critically needed for all the other components. The infrastructure needs to have the following features:

- *structured content* that allows storage of critical data points as coded variables rather than as unstructured text
- *a high degree of usability* to facilitate data entry and information retrieval, as well as clinical decision support, such as alerts for drug-drug interactions, diagnostic algorithms, and clinical order sets (ONC, 2013)
- *interoperability* to allow data exchange between entities and different information systems
- *secure standards* for data access and transmission
- *role-based data access* to provide a window into the data that is customized for each user type. For example, individual clinicians would see a patient's trajectory, hospital managers would receive aggregate information on daily activities of all patients, and health systems planners would see aggregate information for their jurisdiction.
- *sufficient expandable capacity* to meet surges in user demand and avoid system crashes.

Using PHM Information Technology for Management Decisions: An Example

In February, Mrs. Al Zahrani, the operations manager at an oil refinery, was getting concerned about recent production delays. A unit manager explained that an unusual number of workers had been out sick in the past few weeks, and overall performance was lagging. In response, Mrs. Al Zahrani requested a report on diagnoses for hospital admissions and clinic visits for her workforce from the local information exchange that houses all PHM data. The report, which listed only aggregated information to protect the workers' privacy, showed above-average rates for influenza and other respiratory illness in the previous weeks. Mrs. Al Zahrani asked the local health bureau for help; in response, the bureau sent an infectious disease nurse to the refinery to discuss the report with her and her unit managers. In the meeting, Mrs. Al Zahrani learned that the unit managers had encouraged workers to take as few sick days as possible and work overtime, even if they did not feel well, because of the delays. The nurse explained that this advice was actually counterproductive, because sick workers would come to work and spread germs to their colleagues. She gave the unit managers educational brochures and break-room posters to educate workers about hand washing, infection control, and staying home if feverish. Within four weeks, production was again running as scheduled.

Complementing the sophisticated IT infrastructure will be a newly created profession called the health navigator. Given the shortage of providers, especially nurses, as well as the complexity involved in coordinating care across a broad range of providers and settings, health navigators will play a central role in our envisioned model. They will be paraprofessionals who are familiar with the entire health care systems' organization and operation and who will be trained in basic clinical skills. Their role is not to provide care but to direct individuals assigned to them toward the most effective, efficient, and convenient sources of care, given their needs.

The navigator may identify and coordinate various resources, such as community-based health promotion and prevention activities, primary care, specialty care, inpatient care, emergency care, rehabilitative care, long-term care, and palliative care. Because care needs will be determined by the decisions of clinicians and evidence-based algorithms coded into the IT system, navigators will require only basic clinical training. For example, a navigator who receives an alert that a diabetic patient has not adhered to her medications may refer her to pharmacist counseling. The decision to refer does not require a deep understanding of disease biology and pharmacology. Similar roles exist in other systems: In the United States, discharge planners support patients in the transition from hospital to home and

coordinate support services, such as home visits or delivery of meals. Together, sophisticated IT and health navigators could serve as an effective mechanism for meeting rapidly growing population needs in the absence of a sufficient supply of highly trained providers.

Building health IT infrastructure is an increasingly high priority in the GCC countries. Saudi Arabia's national strategy for health care services, approved by the Council of Ministers in 2009, emphasized the development of information systems. Such systems have begun to materialize in hospitals, although they are not interoperable (Almalki et al., 2011). The sophisticated health IT infrastructure we describe would build off of this foundation.

5.3. Data-Driven Optimization of Care Processes

The IT infrastructure will allow the optimization of care delivery based on clinical evidence and best practices. In areas for which clear clinical evidence or sufficient consensus is available to guide decisions, clinical leaders can code those recommendations directly into the system in the form of decision algorithms and order sets. Even experienced clinicians can make suboptimal decisions in the context of a busy workload, stressful day, or a patient with a complex or unusual combination of symptoms. Decision support tools help clinicians process large amounts of relevant information to increase the likelihood that an appropriate decision is made in the care for a patient, given the patient's specific history, symptoms, and preferences. Where standards of care are still ambiguous, health services researchers can analyze differences in clinical decisions and correlate variations in practice with outcomes to develop a future evidence base. Similarly, managers can apply operations research tools and methods to optimize resource utilization decisions and provide guidance on efficient care delivery.

5.4. Performance Monitoring at All Levels of Accountability

As pointed out in Chapter Three, Western-style health care systems achieve low value for money, as outcomes are poor despite high levels of spending. We expect that robust IT can help health system planners and managers yield substantial gain in performance through (Tang et al., 2007)

- **benchmarking** clinical results and resource use against peer groups, such as other jurisdictions or institutions
- **investigating** root causes for areas of underperformance and devising remedial plans
- **identifying** top and bottom performers to derive and promulgate best practices.

This goal will be accomplished by constructing a comprehensive set of key performance indicators for technical quality of care, health outcomes, patient experience, and

resource use at the lowest level of accountability, such as an individual physician or a care team, and then aggregating the indicators up to the respective level of decisionmaking. For example, the medical director of a clinic would receive reports on individual providers and for the entire clinic, and the Health Bureau would receive reports on all clinics and at the level of its jurisdiction. GCC leaders have indicated readiness to move in this direction.

Having a rich data infrastructure will be the precondition for measuring the complex construct of clinical quality in a valid and credible way. For example, since a provider's outcomes depend not only on his or her decisions but also on the underlying risk of his or her patients, indicators must be adequately adjusted for patient mix to allow for fair comparisons, which requires detailed clinical data at the patient level. Similarly, providers and institutions should be held accountable only for outcomes that are under their control.

Ultimately, the performance monitoring system can be used for reporting performance to the public to encourage consumer choice and competition among providers as well as pay-for-performance strategies for providers.

5.5. Effective Deployment of Health Professionals

Our analysis suggests that most of the GCC countries have a shortage of medical professionals and insufficient training capacity to achieve staffing levels comparable to Western countries with a similar disease burden. However, it is not clear that the GCC countries should emulate the Western-style staffing models and their traditionally heavy reliance on physicians. Rather, we expect that a combination of task shifting, increasing nurse training, and leveraging of health care staff in nonmedical settings can improve the capacity at current physician staffing levels.

Effective deployment of health professionals includes “practicing at the top of one’s license” (i.e., focusing on tasks that cannot be performed by professionals with a lower level of training or certification) and shifting tasks that can be performed by professionals or paraprofessionals with less training. For example, primary care physicians would concentrate on patients with complex chronic conditions, whereas advance practice nurses would see patients with routine complaints, such as sinusitis and minor injuries. Pharmacists would counsel on medication use and adherence, and health coaches would advise on health-related behaviors. Administrative and clerical tasks would be delegated to administrative assistants. Robust clinical decision support based on the IT we have discussed would expand the range of services that can safely and effectively be delegated and ensure that patient data are properly documented and shared.

A PHM model that allows health professionals to practice at the top of their licenses increases the appeal of nursing and other health professions, which aligns well with several GCC governments’ stated objective of increasing the percentage of nationals in the nursing workforce. Kuwait’s MOH, for example, has announced a plan to pursue this objective (*Arab Times*, 2014b).



At the same time, the information infrastructure allows involvement of a much broader range of health professionals in the care process, because they can be made aware of patient needs and document their decisions and services to ensure proper coordination. Work and school-based professionals and local public health staff can be tasked to deliver preventive services.

5.6. Alignment of Incentives with Policy Goals

Experience with health care reform has demonstrated the importance of aligning incentives to obtain better care, better health outcomes, and lower costs. As Western countries are struggling to undo an incentive structure that has rewarded volume instead of value, the GCC countries are in a unique position to introduce a sophisticated payment system, supported by IT, that steers providers and patients toward effective and prudent choices. Three main lessons emerge from our analysis:

- **Avoid payment silos.** A payment system that is organized by care setting creates disincentives to coordination and integration. For example, if hospitals are paid per admission, they have no financial rationale for investing in postdischarge care and care transition management. Instead, funds ought to follow the patient across settings.
- **Reward value, not volume.** The fee-for-service payment system is now viewed as a key obstacle to improving care, as it rewards providers for additional services,

irrespective of clinical benefit. By contrast, a value-based payment system would reward a primary care physician, for example, for controlling the blood pressure and glucose level of diabetics.

- **Encourage prudent decisions.** While choice is important, patients need to have a certain degree of responsibility for their decisions and actions, both with respect to provider choice and lifestyle decisions.

On the supply side, a PHM system is, by definition, population-centric, and its payment system should cross care settings. Similarly, the same rules that are programmed into the health information infrastructure to guide clinical decisions should be used to incentivize providers. A physician may choose to deviate from an evidence-based course of action to preserve clinical freedom, but adherence to guidelines would result in bonus payments.

On the demand side, the GCC countries have limited cost-sharing requirements, and so patients are relatively isolated from their decisions. There is an opportunity to stratify cost-sharing requirements to steer patients toward choices that are consistent with policy goals and system performance. For example, services that can reduce overall cost, such as immunizations and medicines to control diabetes and blood pressure, could be offered to patients at no cost. Conversely, seeking care at high-intensity settings for minor problems could be discouraged with higher copayments.

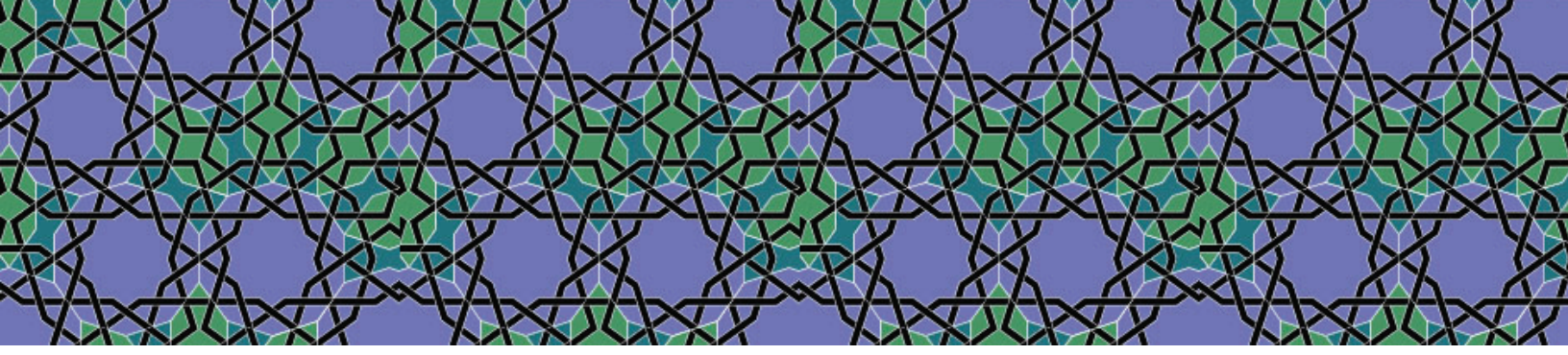
Obviously, developing and maintaining a payment system of such complexity requires advanced information systems that can automate most processes and financial transactions. And consumers and patients will need an advocate who helps them understand their options and the consequences of their choices; the health navigator would fill this role.

5.7. Consumer Engagement and Education

Consumers and patients will have to be engaged in their care decisions beyond cost-sharing. They need to be informed of their choices and the consequences of those choices: They are then free to select lifestyles, providers, and treatment options within the constraints of the PHM system. Of course, actual engagement requires substantial patient education about disease, the role of self-management, and the effects and side effects of treatments so that patients can make truly informed decisions. Patients will need to progress from being passive recipients of medical advice to becoming experts in their own diseases and partners in care decisions.

This ideal, set forth in the Chronic Care Model (Coleman et al., 2009), remains difficult to accomplish. But several aspects of the PHM model support its achievement. The sophisticated IT infrastructure can include a portal that provides patients with easy access to information about their health and health care options, as well as a method for communicating with the health navigator and other professionals involved in their care. With

better access to information and the support of the health navigator, GCC residents can move closer to becoming active and informed patients. The more engaged people become, the better their health outcomes. The value of patient engagement is not a new concept in the GCC countries; Qatar's national health strategy explicitly embraces this goal: "The aim is . . . to empower the people of Qatar to be active participants in self-care, prevention, and maintaining wellness" (2013 General Secretariat, 2013).

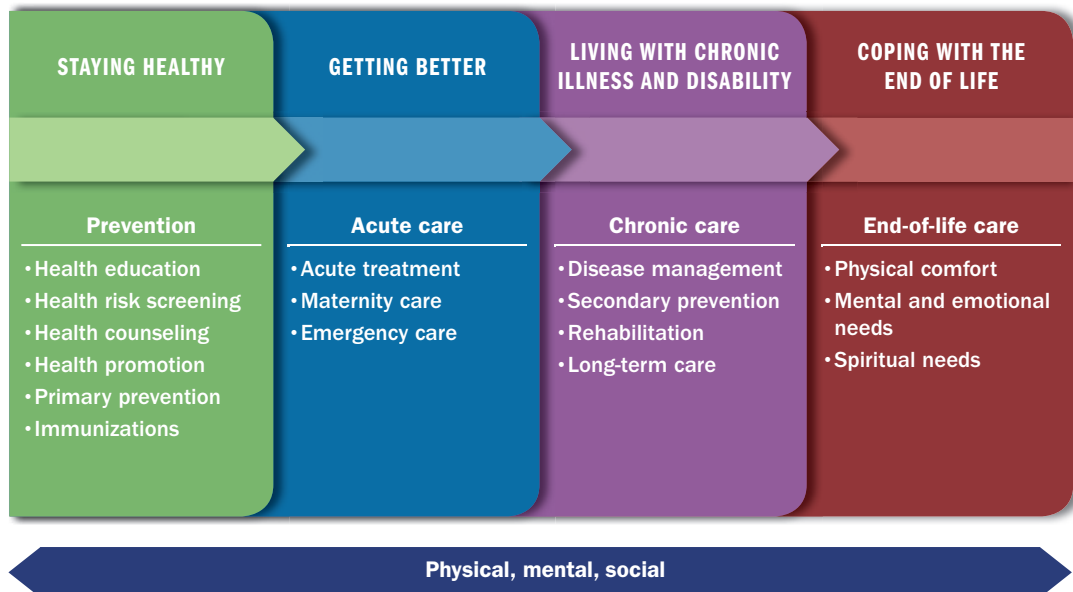


تصور توزيع الرعاية المستقبلية وفقاً لنموذج "تدبير صحة السكان"

Envisioning Future Care Delivery Under the PHM

A HEALTH CARE SYSTEM must address the health and medical needs of all of its citizens—particularly patients with chronic conditions that increasingly stretch existing infrastructure and resources. As Figure 6.1 shows, the health needs of a population and the goals of health care span a continuum from maintaining health and wellness, through recovering from acute illness and managing chronic conditions, to coping with the end of life. Likewise, a health care delivery model must support the full

Figure 6.1 • Health Needs and the Full Continuum of Health Care



RAND RR889-6.1

Preventive Services Under the PHM: An Example

Mrs. Al-Ahmad is a 45-year-old woman who works as an administrative assistant for a local government agency. At the end of last year, she saw her primary care provider at the community health care center, within walking distance of her apartment complex, after her health navigator reminded her of an overdue preventive visit via emails and cell phone text messages. During her visit, her health navigator updated her personal health record with her current health behaviors (e.g., physical activity and diet). Her physician did a physical exam and told her that she was healthy but needed to lose weight. At the end of the visit, a nutrition counselor met with Mrs. Al-Ahmad and discussed the importance of weight control; recommended dietary changes, such as avoiding fast food chains; and suggested she follow up with the team regarding the weight-control program.

continuum of health care. And each of these stages encompasses all dimensions of health, including physical, mental, and social well-being, as defined by WHO (Foundation for Accountability, 1997; Hurtado et al., 2001; WHO, 1948). Research has shown that managing health across the full continuum of care improves patient outcomes at relatively low cost (Mueller and MacKinney, 2006). The central tenet of the new ACO model in the United States is to manage care across the continuum, a goal that has remained elusive over the past five decades despite numerous attempts at reform (Rittenhouse et al., 2009).

6.1. Health Promotion and Disease Prevention

Our analysis has shown that unhealthy lifestyles are an important contributor to the rising burden of chronic disease in the GCC countries. The traditionally healthy diet is being replaced by one laden with foods high in saturated fat and sugar, and physical activity is low. To ensure the long-term health and productivity of the populations, leaders need to implement a robust health promotion and disease prevention strategy that combines public health approaches—such as educational campaigns, taxes, and regulations—with personalized preventive services that would be delivered under the PHM.

The preventive services would include assessment of health behaviors (e.g., diet, physical activity) and biometric screening (e.g., BMI, blood pressure, and lipid levels) followed by referrals to appropriate counseling and medical treatment services, when needed. To avoid overtaxing the medical care system, health promotion and disease prevention activities can leverage other existing institutions, such as public health agencies, school nurses, and workplace health staff. In particular, workplace health and wellness activities are now

regarded as a preferred risk reduction strategy in Western countries, as employers have both access to and the trust of the adult population. A recent survey found that more than half of employers in the United States offer wellness services, and most believe that they improve productivity and reduce health-related absences (Mattke et al., 2013).

Of course, personalized preventive services should be complemented by evidence-based public health interventions. Such interventions can have significant impact on population behaviors and health outcomes. For example, a tax of one cent per ounce of sugar-sweetened beverage has been estimated to lead to at least a 10-percent reduction in calorie consumption from these beverages (Brownell et al., 2009).

6.2. Acute Care

Undoubtedly, the GCC countries have made enormous progress in providing care for acute medical problems. Infant mortality rates have been falling, and life expectancy at birth has been increasing continuously over the past half-century. Large cities have erected world-class hospitals, such as Al Mafraq Hospital in Abu Dhabi. Any future care delivery model needs to build on this progress and incorporate current best practices to avoid over-investment in redundant infrastructure:

Acute Medical Services Under PHM: An Example

Mr. Al Shammari is a 24-year-old worker in an oil refinery. Three years ago, he was feeling unusually tired and called his health navigator for advice. The health navigator scheduled an appointment at the refinery's clinic for the next morning. The clinic's physician assistant took his vital signs, drew blood, and conducted a physical exam, which revealed that Mr. Al Shammari's right testicle was swollen. He initiated a teleconsultation with an urologist in the community clinic, who recommended blood tests, x-rays, a CT scan, and a testicular ultrasound. The health navigator scheduled the tests and a follow-up visit with the urologist two days later. The urologist confirmed to Mr. Shammari that he had a stage 4 seminoma but had an excellent prognosis. The urologist had already instructed the health navigator to book a bed at the city's main university hospital's cancer care center for surgery, radiation, and chemotherapy, and to inform Mr. Shammari's employer of the need for a prolonged medical leave. After two months of intensive therapy, Mr. Al Shammari was discharged home in full remission and made a quick recovery. He continues to do well, and his health navigator calls him regularly to schedule the recommended follow-up tests and visits.

- **Centers of excellence.** Hospitals that perform a high volume of complex procedures (e.g., cardiac surgery, pancreatectomy) are increasingly shown to achieve better outcomes (Halm et al., 2002; Markar et al., 2012; Soljak, 2002). Thus, provision of such services should be regionalized to a limited number of large academic medical centers.
- **Referral networks.** To allow centers of excellence to concentrate on their role, routine procedures need to be shifted to affiliated community hospitals. Rotation of staff through the network allows a large number of providers to be trained at the best centers and patients to see specialists close to their homes.
- **Deinstitutionalization.** Substantial evidence suggests that minimizing institutional (inpatient) care reduces cost and improves outcomes. Thus, the hospital of the future should perform many more procedures in the ambulatory setting and focus increasingly on hospital-to-home concepts (Shepperd and Iliffe, 2008; Shepperd et al., 2013). Providing care in patients' homes clearly reduces cost and allows them to recover in a familiar environment, without the risk of hospital-acquired complications such as infections and confusion. At the same time, early discharge requires use of advanced remote monitoring technology and care coordination procedures to ensure a safe recovery.



Chronic Care Services Under PHM: An Example

Mrs. Al-Kindi is a 58-year-old merchandise manager of a retail chain and lives in a suburban area. Mrs. Al-Kindi was diagnosed with diabetes and hypertension three years ago during a routine exam at the community health center. Despite medical treatment, her physician could not get her blood pressure and glucose under sufficient control and referred her to an endocrinologist for consultation, who gave Mrs. Al-Kindi wireless glucose and blood pressure monitors and an electronic diabetes diary that would transmit data directly into her personal health record. After two months of data collection, the endocrinologist determined that Mrs. Al-Kindi had trouble adhering to her diet and medication regimen because of her busy travel schedule. The doctor adjusted Mrs. Al-Kindi's medication and referred her to a diabetes educator, who developed a personalized diabetes control program. Six months later, Mrs. Al-Kindi has learned how to maintain a healthy lifestyle even during extended travel and has gotten her blood pressure and glucose under control. Her health navigator reminds her regularly to visit the center for check-ups.

6.3. Chronic Care

Our findings, particularly regarding the high mortality rate from chronic diseases, suggest that the GCC countries need to strengthen their infrastructure for chronic care delivery. While a robust prevention strategy, as we already outlined, will reduce the burden of chronic disease in the long run, its effects will take decades to materialize and may be undermined by population aging. A recent concept paper that RAND prepared for WHO argued that a successful strategy to reduce the burden of chronic disease must optimize the combination of prevention and treatment services for the local conditions (Mattke and Chow, 2012).

Western countries' lack of progress in improving chronic care delivery, in spite of high levels of spending, offers numerous lessons. In particular, the GCC countries should focus on providing ongoing support, monitoring, and care management to avoid the limitations of an encounter-based medical system, and utilize patient-centered and team-based care as we have described.

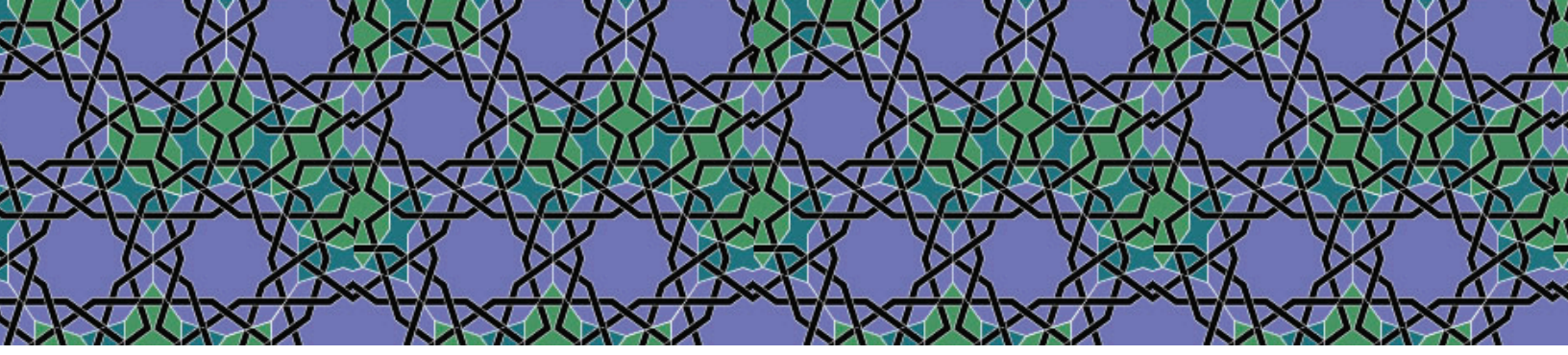
6.4. End-of-Life Care

Caring for terminally ill patients is a complex challenge that requires ensuring both physical comfort and culturally appropriate emotional and spiritual support (Foley and

Gelband, 2013). Substantial data show that evidence-based palliative care improves patient comfort and reduces the use of futile medical interventions (Lorenz et al., 2008), but physicians are often reluctant to discuss this subject with patients and family members. With chronic diseases now accounting for the lion's share of mortality, the GCC countries need to develop culturally appropriate end-of-life care guidelines, train a pool of qualified professionals, and increase access to hospice care to avoid unnecessary hospital admissions for terminally ill patients.

End-of-Life Care Under PHM: An Example

Mr. Al-Awadhi has been living with metastatic lung cancer for two years. After completing chemotherapy and radiation treatment, he had regular consultations with his doctor—some by phone, and some in person. The day before each appointment, the scheduling function in his personal health record sends his daughter an email reminder and notifies his health navigator to give him a phone call. During three consecutive appointments, Mr. Al-Awadhi's doctor observed rapidly worsening lung function and functional status and scheduled a meeting with Mr. Al-Awadhi and his daughter to discuss options, drawing from a shared decisionmaking tool and documentation of Mr. Al-Awadhi's preferences in his personal health record. After the meeting, the health navigator scheduled a follow-up meeting and, per protocol, sent culturally sensitive, evidence-based information on hospice care to Mr. Al-Awadhi (by mail) and his daughter (by email). Mr. Al-Awadhi discussed his options with his family, ultimately deciding that he would like to move to hospice care. Mr. Al-Awadhi shared his decision with his doctor at the follow-up meeting and identified his preferred hospice facility. The health navigator confirmed next steps with Mr. Al-Awadhi and provided hospice with access to Mr. Al-Awadhi's personal health record. Mr. Al-Awadhi's family helped him move to the hospice and visits him regularly.



نظام الرعاية الصحية المبتكر
يساعد الناس في معيشة حياة أكثر إشباعاً
ويؤدي إلى فوائد للاقتصاد الأوسع

An Innovative Health Care System Has Benefits for the Broader Economy and Contributes to More Fulfilling Lives

IMPLEMENTING AN INNOVATIVE health care system based on PHM principles and sophisticated health IT will better meet health care needs across the continuum, leading to improved health outcomes, productivity, and civic contentment. Investment in such a health care system would also strengthen the GCC economies in several strategic areas.

7.1. Localization

In developed countries, the health care sector employs a sizable proportion of the population. In the United States, for example, about 10 percent of the employed population works in this sector (Center for Sustainable Health Spending, 2013). Importantly, the health care sector has been resilient in the face of the recent severe recession, growing by almost 11 percent from late 2007 to early 2013, during which time the rest of employment shrank by more than 3 percent (Center for Sustainable Health Spending, 2013).

Localization of health workers can not only help eliminate dependence on foreign health care workers and systems (a concern discussed in Chapter One), but also help provide prestigious and meaningful employment to highly educated citizens, advancing stated GCC policies of Saudization, Kuwaitization, Emiratization, Omanization, Bahrainization, and Qatarization. The PHM model is designed to leverage scarce highly trained medical professionals with use of support technology and ancillary staff. It allows for a gradual shift to locally trained providers rather than importing large numbers of providers from abroad.

Gulf countries such as Qatar and Oman have increasingly recognized the need to localize their health care workforces. Qatar, given the high turnover and inconsistent care resulting from heavy reliance on an expatriate health care workforce (Fenton, 2012), has made a skilled national workforce a primary goal in its five-year national health strategy: “As many high quality health care professionals as possible should be trained and devel-

oped in Qatar, including both Qataris and long term residents” (2013 General Secretariat Supreme Council of Health, 2013). Oman’s five-year health development plan points to “increasing difficulties in the recruitment of expatriate staff” and a “shortage in the basic inputs of the health workforce” as key challenges, and calls for the “[d]evelopment and training of Omani workforce in all health professional categories in order to achieve high levels of Omanization or self-sufficiency in health workforce” (Oman MOH, 2011).

Furthermore, experience of world-class primary care in-country can serve as a way to convince citizens to seek care locally. In Abu Dhabi, a World Bank study found that government-funded medical travel for cardiology decreased by 55 percent after a cardiac surgery center had opened up (Cattaneo, 2009). GCC countries often fund nationals’ travel to other countries for major medical and surgical procedures, siphoning away money that might better be used to support local health care providers (Mourshed et al., 2006).

7.2. Diversification

GCC countries have increasingly sought to diversify their economies, leveraging oil and gas revenues in order to expand other industries and move toward long-term economic sustainability.

This strategy yields both long-term and short-term benefits, as articulated in the Kingdom of Saudi Arabia’s long-term strategy:

Diversification of the economic base has been a key objective of economic and social development ever since the . . . Kingdom realized the importance of decreasing dependence on oil resources that are likely to be depleted in the long run and that are subject to the volatility of international energy markets in the short term. (Kingdom of Saudi Arabia Government)

The UAE, Oman, Qatar, Bahrain, and Kuwait have founded their respective national strategies on continued economic diversification. As the Amir of Kuwait, Sheikh Sabah Al Ahmed Al Sabah, frames his national vision, “The aim of this strategy is to diversify our economy as we can no longer be dependent solely on oil for our revenues” (Amir Sheikh Sabah Al Ahmed Al Sabah, 2014). Similarly, the Sultanate of Oman, in its long-term economic vision, reaffirms its intent to “strive to use the proceeds of oil and gas for sustainable economic diversification” (Sultanate of Oman, 1995). The recent volatility in oil prices and the potential of a longer-lasting decline because of competition from shale oil exploitation underscores the importance of diversification (*The Economist*, 2014).

So far, GCC countries have primarily used their wealth to succeed in capital-intensive industries such as transportation and infrastructure. Dubai has made particularly remarkable progress, increasing the role of its non-oil sector from 46 percent in 1975 to

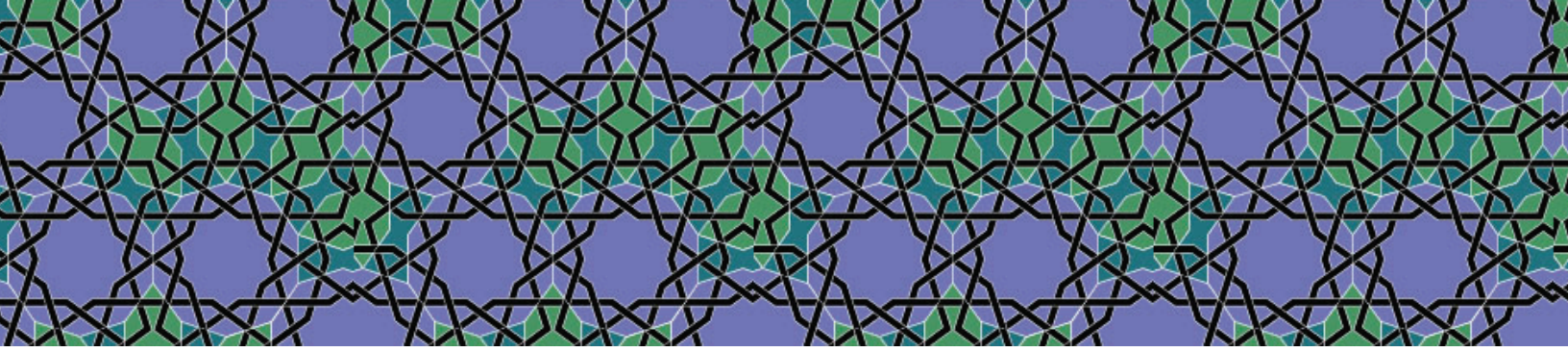
90 percent in 2000, and to an impressive 95 percent in 2005, due to what it terms “a deliberate policy of diversifying the economy in favor of the non-oil sectors [of] tourism, transportation, construction, and financial services” (Al Maktoum, 2007). The other GCC countries have made similar attempts, but are not as far ahead in terms of diversification. In Saudi Arabia, the oil sector represents 45 percent of GDP, while in Kuwait, Qatar, and Oman, oil, gas, and petroleum accounts for around 50 percent of GDP (GulfBase, 2014). Yet Oman aims to raise its “relative share of non-oil sectors, including natural gas, to 91 percent of GDP by 2020” (Sultanate of Oman, 1995).

The logical next step is to shift toward knowledge-based industries. These take longer to develop but provide sustainable development and opportunities for prestigious and meaningful employment. Saudi Arabia lists “moving towards a knowledge-based economy” as one of its five-year development plan’s primary goals (Saudi Embassy, 2010). Abu Dhabi has recognized this opportunity in its 2030 economic vision, citing “Healthcare Equipment and Services” as one of the sectors that “are expected to provide the growth that will be necessary to achieve the Emirate’s agenda of economic diversification” (Government of Abu Dhabi, 2008). Opportunities in knowledge-based industries include not just health care provision but also innovative technologies, such as mobile health, big data analytics, and care management services. Finally, high-quality health care improves the GCC countries’ ability to attract skilled workers.

7.3. Principled Leadership

An innovative health care model can provide a model that incorporates Islamic principles as a source of emulation for not only the rest of the *Ummah* but the world. Qatar has already embraced this challenge, affirming in its health vision and mission: “We believe that Qatar has an opportunity to create a health care system that will provide the most effective and advanced health care to its people and to become a model for the world to follow” (State of Qatar, 2014c). Saudi Arabia’s Basic Law of Governance, Article 29 states: “The State . . . shall encourage scientific research, protect the Islamic and Arab heritage, and contribute towards Arab, Islamic and human civilization” (Embassy, 2013).

Islamic finance and banking has blossomed from a regional phenomenon to a global industry in which Middle Eastern countries such as Saudi Arabia, the UAE, Kuwait, and Qatar play leadership roles. As a rapidly expanding industry, global Islamic finance assets have grown from under \$400 billion in 2007 (Lim, 2009) to \$1.46 trillion in 2012 and are expected to exceed \$2 trillion by the end of 2014 (Maslakovic, 2013). In a similar way, a model of health care that responds to the needs of GCC populations could not only lay a foundation for economic diversification and localization of highly qualified jobs, but lead the way toward personal fulfillment and principled care for the rest of the Islamic community and world.



الختم

Conclusion

THE GCC COUNTRIES' economic progress and epidemiologic transition over the past 50 years have outpaced their health care systems. The health of the populations is being influenced simultaneously by their greater reliance on food of poor nutritional value, low physical activity, growing wealth, and migration from rural to urban living. The result is a large and expanding burden of chronic disease—especially diabetes—and disability, even as mortality due to acute illness wanes. To handle the new challenge, the GCC countries' health systems must undergo a transformation.

Their current delivery systems are handicapped by underinvestment, a severe workforce shortage (especially of nurses), a hospital bed shortage, and lack of robust, interoperable IT. A large, well-integrated primary care delivery system is also lacking. At the same time, the GCC countries have the unique opportunity to leapfrog other countries: Their relative freedom from legacy infrastructure and entrenched interests mean they can adapt an innovative model for health care delivery that is purposefully designed for the 21st century, rather than emulating inefficient models that exist elsewhere.

Visionary leaders who embark on this ambitious agenda will be remembered for three accomplishments: First, for implementing a high-performing health care system that is centered on the needs of citizens and offers continuous support at all stages of health, thereby promoting civic contentment; second, for promoting economic diversification into knowledge industries; and third, for providing inspiration to the *Ummah* and the rest of the world and for restoring the leadership role of Arab medicine.

Appendix | GCC Health Care Systems

نظم الرعاية الصحية لدول مجلس التعاون الخليجي



A.1 The Kingdom of Bahrain

مملكة البحرين

Bahrain has a population of 1.3 million people, 49 percent of whom are Bahraini citizens (GLMM, 2014). As a small island archipelago, 88.7 percent of Bahrain's total population is urbanized; 0.3 million live in the capital of Manama (CIA, 2014a). Bahrain spends 3.9 percent of its GDP on health care (World Bank, 2014a), resulting in the following health care resources per 1,000 people: 0.9 physicians, 2.4 nurses and midwives, and 2.1 hospital beds (World Bank, 2014d). The Bahraini government provides and funds the majority of health care in Bahrain, offering services for free to citizens and at a cost to expatriates, who are encouraged to obtain private insurance.

GOVERNANCE

The MOH directs health care policy and regulates health services in Bahrain (Bahrain MOH, 2014). Its current health improvement strategy lists strengthening population and primary health care as its first priority initiative, in addition to encouraging greater private-sector participation, developing health information systems, and conducting a study on how to best diversify funding sources (Bahrain MOH, 2012a). Past proposals have included insurance systems for non-Bahrainis and outsourcing the management of public hospitals and clinics to the private sector, but implementation appears to have stalled (Bahrain MOH, 2002, 2007).

PROVISION OF CARE

The public health care sector provides 90 percent of primary services and 80 percent of secondary services in Bahrain (Ebert, 2010). The Bahraini government operates nine hospitals with a total bed capacity of 2,046, accounting for 82 percent of hospital beds in the country, and offers 26 primary health care units and centers (Bahrain MOH, 2012e). The public sector also cares for 73 percent of inpatients and 81 percent of outpatients in Bahrain and employs 2,061 physicians and 4,918 nurses, accounting for 60 percent and 78 percent respectively of the country's totals (Bahrain MOH, 2012e). The MOH is the main public health care provider, but there are a few others (Bahrain MOH, 2012e), such

as the Bahrain Defense Force Hospital, which provides free health care to members of the Defense Force and select government employees (Ebert, 2010). All other public health care facilities are open to both citizens and expatriates (Ebert, 2010). However, 66 percent of outpatient visits to public general practitioner clinics were from citizens, while 36 percent were from expatriates (Bahrain MOH, 2012d).

The private sector operates 15 hospitals with a total bed capacity of 452, accounting for 18 percent of hospital beds in the country (Bahrain MOH, 2012e), and operates 42 clinics and polyclinics (Ebert, 2010). It also cares for 27 percent of inpatients and 19 percent of outpatients in Bahrain (Bahrain MOH, 2012e), and employs 1,363 physicians and 1,372 nurses, accounting for 40 percent and 22 percent, respectively, of the country's totals (Bahrain MOH, 2012e).

FINANCING

In 2012, the government spent 73 percent of total health care costs in Bahrain (Bahrain MOH, 2012e). Of this expenditure, the MOH spent 11 percent on administration, 27 percent on primary care and public health, 59 percent on secondary care, and 2 percent on training (Bahrain MOH, 2012b). The Bahraini government and MOH, in addition to levies on private employers, fund the public hospitals' budgets (Ebert, 2010). Public health care services are free or nearly free for citizens but not for expatriates, who pay fees for treatments (Ebert, 2010).

In 2012, private-sector health care costs made up 27 percent of the total cost of health care in Bahrain (Bahrain MOH, 2012e). In the private sector, patients either pay for treatments out of pocket or have third parties, such as insurers, pay the costs (Ebert, 2010). Expatriates are advised to obtain private health insurance, whether independently or through their employers (Expat Arrivals, 2014). International insurers may sell insurance in Bahrain only with a local partner (*Telegraph*, 2014). The Bahraini government had planned to require private medical insurance for all expatriates by 2013, but this does not appear to have been implemented (*Telegraph*, 2014).

HEALTH WORKFORCE

Bahrain has a total of 3,424 physicians and 6,290 nurses (Bahrain MOH, 2012e). Bahrain's health care workforce is mostly national; 83 percent of physicians and 60 percent of nurses are Bahraini citizens (Bahrain MOH, 2007). The MOH manpower in 2012 was 79 percent Bahraini (Bahrain MOH, 2012c). In the MOH workforce specifically, Bahrain citizens accounted for 82 percent of physicians, 94 percent of dentists, 98 percent of pharmacists and technicians, 48 percent of staff nurses, 100 percent of practical nurses, and 65 percent of health professionals overall (Bahrain MOH, 2012c). Bahrain's College of Health Sciences graduates nurses and other health professionals, and WHO considers the Medical Equipment Directorate in Bahrain as a regional training center (WHO, 2013).



A.2 The State of Kuwait

الكويت

Kuwait has a population of 2.7 million people, 2.4 million of whom live in Kuwait City (CIA, 2014b). Thirty-two percent are Kuwaiti citizens, and 98.3 percent are urbanized (GLMM, 2014; CIA, 2014b). Kuwait's terrain consists of desert plain (CIA, 2014b). Kuwait spends 2.6 percent of its GDP on health care (World Bank, 2014a), resulting in the following health care resources per 1,000 people: 2.0 physicians, 4.5 nurses and midwives, and 1.7 hospital beds (World Bank, 2014d). The Kuwaiti government is currently the main provider and financier of health care in Kuwait, but plans to shift sizable burdens of health finance and care for expatriates to quasi-private entities in the near future.

GOVERNANCE

The Kuwaiti Supreme Council for Planning and Development regulates health care policy in Kuwait. Kuwait is currently implementing a plan to privatize health insurance and care for expatriates and corporatize health insurance for nationals, in addition to building new hospitals, clinics, and centers (al-Naqeeb and Ibrahim, 2014; Saleh, 2014).

PROVISION OF CARE

The public sector accounts for nine tertiary care hospitals and specialized centers with a total bed capacity of 2,555, six secondary care hospitals with a total bed capacity of 3,517, and 85 primary health care centers with 14.9 million annual patient visits (Kuwait MOH, 2013). The public-sector hospitals employ 3,695 physicians and 10,685 nurses (Kuwait MOH, 2013). Its health care facilities accept both citizens and expatriates (Oxford Business Group, 2013). The MOH is the main public health care provider, though the Ministry of Defense also runs a hospital, and the Ministry of Social Affairs runs an elderly residential home (Kuwait MOH, 2013). The private sector currently operates nine private hospitals and three oil company hospitals, with a total bed capacity of 969 total beds, which employ 846 physicians and 2,283 nurses (Kuwait MOH, 2013). The private sector also accounts for 2 million outpatient visits annually (Kuwait MOH, 2013) and operates at least ten primary health care facilities (Kuwait MOH, 2014).

Kuwait intends to shift health care provision for most expatriates to the private sector via The Kuwait Health Assurance Company (KHAC), which is planned as a health maintenance organization (HMO) (Newmex Intelligence, 2013). KHAC will have 62 percent of the total expatriate population as an initial client base (*Arab Times*, 2014a), directly providing primary and secondary health care services and referring patients who need tertiary care to the MOH (*Arab Times*, 2014a). KHAC's ownership is divided between the Kuwaiti government, Kuwaiti nationals, and private investor Arabi Holding (*Arab Times*, 2014a).

While KHAC was originally scheduled to start operating three hospitals and 15 primary health care clinics in 2015 (*Arab Times*, 2014a), implementation has been delayed, and KHAC is now expected to be in operation in 2017 (Newmex Intelligence, 2013).

FINANCING

The public sector accounts for 82 percent of total health expenditure in Kuwait (Kuwait MOH, 2014). The Kuwaiti government provides citizens with free health care. The government currently requires that expatriates purchase the MOH health assurance policy for an annual fee to obtain a residency permit, even if they carry additional forms of private insurance (Advisory Group, 2011). The annual fee of \$175 is supplemented by charges for additional services, such as x-rays (Oxford Business Group, 2013). The private sector accounts for 18 percent of total health expenditure in Kuwait (Kuwait MOH, 2014). Private pre-paid plans account for 9.4 percent of private expenditure on health in Kuwait (Kuwait MOH, 2014).

Kuwait intends to eventually corporatize health care insurance for all Kuwaiti citizens through the Private Health Insurance Company for Kuwaiti Nationals (PHICKN); the state will likely heavily subsidize premiums (al-Razouki, 2011). PHICKN will be owned half by a private-sector consortium and half by the public, with shares likely distributed equally among all Kuwaiti citizens (al-Razouki, 2011). In June 2014, the Kuwaiti Parliament approved health insurance for retirees on an experimental basis; the program is to be extended later to other citizens (al-Naqeeb and Ibrahim, 2014).

Kuwait plans to privatize health insurance for expatriates through the KHAC, which was initially scheduled to start operating in 2015 (Advisory Group, 2011). KHAC's ownership is part public and part private (Advisory Group, 2011). Instead of being required to purchase the MOH health assurance plan, non-exempt expatriates will likely be required to obtain KHAC insurance in order to receive a residence permit (Advisory Group, 2011). The MOH will still cover insurance for expatriates who are public-sector, domestic, or agriculture and fisheries workers, dependents of Kuwaiti nationals, or stateless (Advisory Group, 2011). However, KHAC will have the option to offer insurance to any resident or citizen who chooses its services (Advisory Group, 2011). Once KHAC is operational, employers will pay KHAC annual premiums of \$450 to cover their expatriate employees, who will make copayments of \$9 for primary care visits and \$14 for emergency room visits (Advisory Group, 2011). KHAC will provide primary and secondary care directly but refer patients to the MOH for tertiary care; KHAC will pay 5 percent of the yearly collected premium to MOH to cover these services (Advisory Group, 2011).

HEALTH WORKFORCE

Kuwait's health workforce consists of approximately 10,300 physicians and 21,500 nurses (Kuwait MOH, 2014). In 2006, only 6.6 percent of nurses (Al-Jarallah et al., 2009) and 36.6 percent of physicians were Kuwaiti (Al-Jarallah et al., 2010). Kuwait University

contains a college of medicine (Kuwait University, 2009). The MOH has announced plans to increase the percentage of Kuwaiti nurses working in the country, introducing incentives and opportunities for obtaining higher training and postgraduate degrees abroad (Arab Times, 2014b).



A.3 The Sultanate of Oman

سلطنة عُمان

Oman has a population of 3.2 million, 0.7 million of whom live in the capital city of Muscat (CIA, 2014c). Fifty-seven percent are Omani citizens, and 73.4 percent are urbanized (GLMM, 2014; CIA, 2014c). Oman's terrain consists of central desert plain with some rugged mountains (CIA, 2014c). Oman spends 2.6 percent of its GDP on health care (World Bank, 2014a), resulting in the following health care resources per 1,000 people: 2.0 physicians, 4.5 nurses and midwives, and 1.7 hospital beds (World Bank, 2014d). The Omani MOH regulates, funds, and provides most health care in the country, offering essentially free and comprehensive health coverage to all citizens and to all expatriates who work in the public sector. A supplementary private health care sector is funded by private employers and expatriates.

GOVERNANCE

The MOH regulates and oversees health care in Oman, in addition to directing health care strategy via five-year health development plans. Ongoing reforms include plans to build two medical cities at US\$1 billion each, new hospitals, polyclinics, and medical centers (Alshishtawy, 2010). The current five-year plan covers 35 specific health fields and includes developing IT and electronic system data and increasing the number of Omanis in the national health workforce as key goals (Oman MOH).

PROVISION OF CARE

The MOH is also the main provider of health services, accounting for 93 percent of hospitals, 97 percent of hospital beds, 77.2 percent of doctors, 91.6 percent of nurses, and 85 percent of other paramedics in Oman (Alshishtawy, 2010). The MOH operates 49 hospitals with a capacity of 4,605 beds and employs 3,620 physicians and 9,277 nurses. The MOH operates 167 health centers throughout the country, which, in addition to local hospitals, provide primary health care at the *wilayat* or local administration level. Twenty-one of these centers are extended health centers, providing specialty care. Regional and subregional hospitals provide secondary health care. Four national referral hospitals specialize in various fields and provide tertiary care. Mobile medical teams reach the 2 percent of the Omani population that lives in remote mountainous areas. A few other public providers, including the Royal Omani Police and Ministry of Defense, operate a small number of additional health care facilities (Alshishtawy, 2010).

The private sector in Oman offers inpatient, outpatient, pharmaceutical, and dental services. The private sector is growing and accounts for 7 percent of hospitals, 3 percent of hospital beds, 95 percent of clinics, 23 percent of physicians, and 8 percent of nurses. In

absolute terms, this is four hospitals, 148 hospital beds, 766 clinics, 1,182 physicians, and 941 nurses. There are also 364 private pharmacies (Alshishtawy, 2010).

FINANCING

The Omani public health system is funded primarily through the government budget, in addition to minimal cost-sharing. The MOH provides comprehensive coverage for all Omani citizens and expatriates who work for the public sector. This coverage requires those covered only to purchase a health card annually (\$2.60) and make a minimal co-payment each time they visit a facility (\$0.50). The other public sector providers offer similar payment structures. The MOH also funds treatment abroad for 350–400 individuals each year (Alshishtawy, 2010). All public hospitals admit medical emergencies regardless of nationality or citizenship status, but non-urgent care for expatriates who do not work in the public sector has to be paid for right away, often in cash (InterNations, 2014).

Private health care in Oman is funded primarily as a roughly equal-parts combination of employer payments according to an employer mandate and out-of-pocket payments by patients. Minimal contributions from automobile accident insurance and social security taxes on private-sector employees for work-related injuries also contribute to health care financing (Alshishtawy, 2010).

HEALTH WORKFORCE

25 percent of the 5,194 physicians and 56 percent of the 11,233 nurses working in Omani health institutions are Omani citizens. These physicians are educated and trained at the public Sultan Qaboos University College of Medicine and Health Sciences, the private Oman Medical College, or at universities abroad, and the MOH has designated teaching hospitals and is sponsoring physicians to train in specialties. Omani training institutes have graduated 9,031 health professionals, including nurses, laboratory technicians, radiographers, physiotherapists, and assistant pharmacists (Alshishtawy, 2010).



A.4 The State of Qatar

قطر

Qatar has a population of 2.1 million, 0.5 million of whom live in the capital city of Doha (CIA, 2014d). Fourteen percent are Qatari citizens, and 98.8 percent are urbanized (GLMM, 2014; CIA, 2014d). Qatar's terrain consists mostly of flat, barren desert of sand and gravel (CIA, 2014d). Qatar spends 2.2 percent of its GDP on health care (World Bank, 2014a), resulting in the following health care resources per 1,000 people: 7.7 physicians, 11.9 nurses and midwives, and 1.2 hospital beds (World Bank, 2014d). Qatar has a health care system with both public and private providers, and is in the process of expanding compulsory social health insurance to apply universally.

GOVERNANCE

The Supreme Council of Health regulates health care provision and oversees public health programs (State of Qatar, 2014a). The council's current national health strategy aims to strengthen the national health workforce and improve referral systems, e-health, and continuing care, in order to shift care toward a preventative, community-based model (2013 General Secretariat, 2013). Qatar is also undertaking an expansion of national social health insurance to all citizens, expatriates, and tourists (Fenton, 2012).

PROVISION OF CARE

The Hamad Medical Corporation (HMC) is a government-run, nonprofit health care system that operates four tertiary care hospitals with a collective bed capacity of 1,106; three general hospitals with a collective bed capacity of 375; and continuing care facilities (Hamad Medical Corporation, 2014). These include a hospital with a bed capacity of 520, mental health departments, a skilled nursing facility with 147 residential care beds, and a home health care services program with 700 patients registered (Hamad Medical Corporation, 2014). The HMC's primary health care facility is the Hamad Medical Centre, which in 2010 received over 80 percent of public health care spending (Lepeska, 2010). A prominent recent development in the provision of care has been the creation of the high-tech Sidra Medical and Research Center, funded by the Qatar Foundation. The medical center will provide care to women and children and is scheduled to open in 2015 (McGinley, 2013; Roberts, 2014).

Private facilities account for over 65 percent of health care providers in Qatar (Fenton, 2012). Qatar has five private hospitals (Lepeska, 2010), mostly located in or near the capital city of Doha (Kheir and Fahey, 2011). The Primary Health Care Corporation, which is independent from the government, operates 21 primary health care centers across the country (Primary Health Care Corporation, 2014).

FINANCING

In the status quo, the Qatari government provides health care services to both citizens and resident expatriates of Qatar at heavily subsidized rates. Expatriates without a residence visa or health card can still visit HMC health care facilities but are not eligible for subsidized rates (Life in Qatar, 2014).

In 2013, the Qatari state established the National Health Insurance Company to implement and administer its Social Health Insurance plan (State of Qatar, 2014b). This plan will make national health insurance mandatory for all Qatari citizens, expatriates, and tourists according to a phased implementation timeline: first, achieve coverage for all Qatari citizens by the end of 2014; second, expand coverage to white collar expatriates and visitors by early 2015; and third, extend coverage to blue collar expatriates by the end of 2015 (Hamad Medical Corporation, 2013). The Qatari government will cover insurance expenses for citizens, while employers will cover insurance expenses for expatriate employees (State of Qatar, 2014b). Cost sharing at point of service has been declared permissible (State of Qatar, 2014b). Expatriates without employers will have to purchase the insurance themselves (Hamad Medical Corporation, 2013).

The National Health Insurance Company will enter annual network agreements with public and private health care providers (2013 General Secretariat Supreme Council of Health, 2013). Insurance companies will not be able to cover basic health services that will now be covered by the Social Health Insurance plan for its first ten years, but will still be able to cover supplementary services (Hamad Medical Corporation, 2013). Al Khaleej Takaful Group is a private insurance company appointed as a third-party administrator for the National Health Insurance Company and is currently developing insurance plans for blue-collar workers (Fenton, 2012).

HEALTH WORKFORCE

Qatar has 11,949 health care professionals (Bener and Mazroei, 2010). Expatriates make up 95 percent of the health workforce in Qatar, resulting in high turnover and inconsistency of care (Fenton, 2012). Over 76 percent of physicians in Qatar work in tertiary care, compared with 8.9 percent in primary care (Bener and Mazroei, 2010). The Academic Health System brings together eight health, education, and research partners in Qatar to inform, educate, and produce its health workforce (Hamad Medical Corporation, 2014). Hamad Medical Corporation gave its staff free access to the Institute for Healthcare Improvement's Open School, and in 2013, 1,078 of its health professionals completed a total of 40,939 courses (Hamad Medical Corporation, 2014).



A.5 The Kingdom of Saudi Arabia

المملكة العربية السعودية

The Kingdom of Saudi Arabia has a population of 27.3 million people, 68 percent of whom are Saudi citizens and 83.3 percent of whom are urbanized (CIA, 2014e; GLMM, 2014). Saudi Arabia's terrain is mostly uninhabited, sandy desert; 5.5 million people live in Riyadh, 3.6 in Jeddah, 1.6 in Mecca, and 1.2 in Medina (CIA, 2014e). Saudi Arabia spends 3.2 percent of its GDP on health care (World Bank, 2014a), and has the following health care resources per 1,000 people: 0.9 physicians, 2.1 nurses and midwives, and 2.1 hospital beds (World Bank, 2014d). The Saudi government is the primary provider and financier of most health care in the country and is seeking to expand the private sector and shift responsibility for coverage to the employer.

GOVERNANCE

The MOH regulates the public and private health care sectors (Saudi Arabia MOH, 2012) and directs health care strategy (Almalki et al., 2011). The Council for Cooperative Health Insurance regulates health insurance and health care provision to non-Saudi residents (Insurance, 2014). The Council of Health Services seeks to increase coordination and integration (Saudi Health Council, 2013). Saudi Arabia has recently expanded health insurance coverage and increased the health care budget in order to establish five new medical cities, 19 new hospitals, and 155 new primary health care centers (Middle Eastern Health, 2013). The MOH's current strategic plan focuses on, among other goals, diversifying funding sources, developing information systems, developing the workforce, and encouraging the private sector (Saudi Arabia MOH, 2009).

PROVISION OF CARE

The public sector of Saudi Arabia provides 79 percent of hospital services in Saudi Arabia, operates 39 hospitals at a total bed capacity 10,822 beds (Almalki et al., 2011), and employs 70 percent of physicians and 79 percent of nurses (Khaliq, 2011). The MOH is the main health care provider in Saudi Arabia, covering 60 percent of total hospital services, employing 50 percent of the health workforce, and accounting for 244 hospitals, 3,327 hospital beds, and 2,307 primary health care (PHC) centers (Almalki et al., 2011). The MOH supervises 20 regional directorates-general of health affairs throughout the country, which in turn each operate hospitals, health sectors, and PHC centers (Almalki et al., 2011). At the community level, selective committees called "Health Friends" liaise between communities and the PHC centers that serve them (Almalki et al., 2011). The PHC centers refer advanced cases to public hospitals (secondary care) or central or specialized hospitals (tertiary care) (Almalki et al., 2011). The MOH also operates the Home Healthcare Program, reaching more than 20,000 homebound patients, and provides health care services

to pilgrims that come to Saudi Arabia during the hajj season, requiring seasonal expansion of health care facility networks (Almalki et al., 2011). In 2009, more than 740,000 pilgrims were treated by 21 hospitals and 157 PHC centers (Almalki et al., 2011). All other public-sector providers account for 19 percent of total hospital services in Saudi Arabia; these providers are mostly agencies providing services to defined populations, such as their employees and associated dependents (Almalki et al., 2011).

The private health sector provides 21 percent of hospital services in Saudi Arabia, accounting for 125 hospitals, 11,833 beds, 2,218 dispensaries and clinics (Almalki et al., 2011), and 17,148 physicians. These facilities and services are concentrated in cities and large towns (Almalki et al., 2011). Increasing numbers of public hospitals are to be privatized over the coming years (Almalki et al., 2011).

FINANCING

In 2008, the Saudi government accounted for 68 percent of total health spending in the country (Khaliq, 2011). The Saudi government currently provides free health care to all expatriates and citizens working in the public sector, and to pilgrims during the hajj season (Almalki et al., 2011). The kingdom plans to reduce this heavy financial burden by expanding the Cooperative Health Insurance Act (CHIA) in three phases.

The first phase of CHIA has been implemented, requiring all private-sector employers to purchase health insurance for their Saudi citizen and expatriate employees from approved private Saudi companies (Cooperative Health Insurance Council, 2009). Currently, 26 registered private cooperative health insurance companies cover 6.5 million expatriates and 1.9 million citizens (Khaliq, 2011). Annual average premium rates range from \$226 to \$553 (Kenawi, 2010). In phase two, the government will shift from directly providing public sector employees with health care to purchasing cooperative health insurance for them, incorporating both citizen and expatriate employees (Khaliq, 2011). In phase three, cooperative health insurance will be applied to other groups, including pilgrims (Almalki et al., 2011).

In 2008, the private sector accounted for 32 percent of total health spending in the kingdom (Khaliq, 2011). Of private-sector spending on health services in Saudi Arabia, 68 percent is paid by employers through health insurance premiums, direct payments, or the cost of company-owned facilities (Khaliq, 2011). The private sector operates on a fee-for-service basis, paid by the employer, the insurer, or the patient (Khaliq, 2011). Sixteen percent of all health services in Saudi Arabia are financed by out-of-pocket expenditures (Khaliq, 2011).

HEALTH WORKFORCE

Of the 248,000 health professionals that make up the health workforce in Saudi Arabia, 38 percent are Saudi citizens, including 23.1 percent of physicians and 32.3 percent of nurses (Almalki et al., 2011). The MOH employs a higher percentage (54 percent) of Saudi

citizens, including 22.6 percent of physicians and 50.3 percent of nurses; in the private sector, only 4.9 percent of physicians and 4.8 percent of nurses are Saudi citizens (Almalki et al., 2011). Five medical schools in the country are private (Almalki et al., 2011). The Saudi government also operates 73 colleges for medicine, health, and nursing, in addition to four health institutes (Almalki et al., 2011). The Saudi Commission for Health Specialties supervises all health-related training programs and issues licenses (Khaliq, 2011). In the attempt to substitute the primarily expatriate workforce with qualified Saudi citizens, the Saudi government has also increased the budget allocation for training, scholarships, and support for studying abroad (Almalki et al., 2011).



A.6 The United Arab Emirates

الإمارات العربية المتحدة

The UAE has a population of 5.6 million people; 12 percent are Emirati citizens, and 84.4 percent are urbanized (CIA, 2014f; GLMM, 2014). The Emirate of Abu Dhabi, the political capital, and the Emirate of Dubai, the most populous city, have larger populations (0.9 million and 2.0 million, respectively) than the smaller northern emirates. The UAE's terrain consists of flat and barren coastal plain, sand dunes, desert wastelands, and mountains (CIA, 2014f). The UAE spends 2.8 percent of its GDP on health care (World Bank, 2014a), resulting in the following health care resources per 1,000 people: 1.9 physicians, 4.1 nurses and midwives, and 1.1 hospital beds (World Bank, 2014d). The UAE health care system is managed by the federal government, but also by the Emirate of Abu Dhabi and the Emirate of Dubai, which oversee and provide health care for their respective populations.

GOVERNANCE

Health care is regulated at both the federal and emirate level, with some overlaps in division of authority. The UAE MOH regulates health care services and oversees health strategy across the emirates, but particularly oversees the northern emirates' health care systems, supplemented by the Emirates Health Authority and the Sharjah Health Authority (Kurlander et al., 2013). The Department of Health and Medical Services and the Dubai Health Authority plan and regulate health care in Dubai, while Health Authority–Abu Dhabi (HAAD) does the same for Abu Dhabi (Kurlander et al., 2013). The UAE government is promoting greater involvement from the private sector and considering a unified health insurance system (Schildgen and Tahsili, 2010).

PROVISION OF CARE

The MOH operates 22 hospitals, 88 PHC centers, in addition to school, maternity, and child health across the UAE (Schildgen and Tahsili, 2010). In Abu Dhabi, the Abu Dhabi Health Services Co. (SEHA) manages 13 hospitals, 60 primary health care centers, and more than eight specialized centers, including maternal, child, and dental health (Abu Dhabi Health Services Company, 2014). The Department of Health and Medical Services manages four hospitals and 20 PHCs in Dubai (Schildgen and Tahsili, 2010), which also hosts two free-zone health complexes: the Dubai Healthcare City and Dubai Biotechnology and Research Park (Kurlander et al., 2013). The Army Directorate of Medical Services also operates three hospitals and a number of field clinics across the UAE (Schildgen and Tahsili, 2010). The private sector has surged in recent years and operates more than 51 hospitals with 1,864 beds (Schildgen and Tahsili, 2010). Fewer than 200 people live more than 30 km from a health service or PHC clinic (Schildgen and Tahsili, 2010).

FINANCING

The UAE government accounts for around 70 percent of total health care spending and provides health care for free to all Emirati citizens (Schildgen and Tahsili, 2010). Expatriates and visitors to the country must obtain health insurance (WHO, 2014) and purchase medications from private pharmacies; expatriate workers and visitors without health insurance must pay all costs of medical treatment received in the country (Schildgen and Tahsili, 2010). The private sector accounts for around 30 percent of health care funding in the UAE (Schildgen and Tahsili, 2010).

In the Emirate of Abu Dhabi, all employers are required to provide one of three types of health insurance to employees and their dependents, each of which have different levels of co-payments: Thiqa cover, only for Emirati citizens; Enhanced cover, primarily for skilled expatriate workers, and Basic cover, mainly for unskilled laborers (Koornneef et al., 2012). Thiqa and Basic are provided by the Abu Dhabi government, while Enhanced is provided by licensed insurers; over 95 percent of the Abu Dhabi population is enrolled in one of these plans (Koornneef et al., 2012).

HEALTH WORKFORCE

Expatriates make up 82 percent of health professionals in the UAE: 81 percent of doctors and 92 percent of nurses (Hannawi and Salmi, 2013). Expatriates make up more than 93 percent of the Abu Dhabi health workforce (Abdel-Razig and Alameri, 2013), which consists of 22,000 health care professionals, including 5,000 physicians, 1,000 dentists, 8,000 nurses, and 5,000 allied health professionals (Koornneef et al., 2012). The UAE has two medical schools and five nursing institutes, but physicians typically go abroad for specialty training, and the health workforce faces issues with turnover, skill imbalances, and relatively low salaries (Hannawi and Salmi, 2013). Abu Dhabi has designed reforms to promote and improve graduate medical education in the emirate (Abdel-Razig and Alameri, 2013).

References

- 2013 General Secretariat, *National Health Strategy; 2011–2016 Caring for the Future; Executive Summary Update 2013*, Doha: Supreme Council of Health, Qatar, 2013. As of December 2, 2014: <http://www.nhsq.info/app/media/325>
- Abdel-Razig, Sawzan, and Hatem Alameri, “Restructuring Graduate Medical Education to Meet the Health Care Needs of Emirati Citizens,” *Journal of Graduate Medical Education*, Vol. 5, No. 2, 2013, pp. 195–200.
- Abdulle, Abdishakur, Abdulla Al-Junaibi, and Nicolaas Nagelkerke, “High Blood Pressure and Its Association with Body Weight Among Children and Adolescents in the United Arab Emirates,” *PloS One*, Vol. 9, No. 1, 2014, p. e85129.
- Abu Dhabi Health Services Company, “Homepage,” 2014. As of December 2, 2014: <http://www.seha.ae/Pages/Intro.aspx>
- Advisory Group, “Kuwait Health Assurance Company; Executive Brief,” 2011. As of December 2, 2014: <http://www.kia.gov.kw/En/Documents/KHAC%20Executive%20Brief%20Presentation%2007-03-2011.pdf>
- Ahmad, K., “South Korean Doctors End Crippling Strike,” *Lancet*, Vol. 356, No. 9223, 2000, p. 54.
- al-Naqeeb, Ahmed, and Abubakar Ibrahim, “Parliament Okays Proposed Health Insurance for Retirees,” *Arab Times*, 2014.
- al-Razouki, Mussaad, “Kuwait Report: Government to Spend Billions on Major Healthcare Overhaul,” *Middle East Health Magazine*, 2011. As of December 2, 2014: <http://www.middleeasthealthmag.com/cgi-bin/index.cgi?http://www.middleeasthealthmag.com/nov2011/feature8.htm>
- Al-Jarallah, K. F., M. A. A. Moussa, S. K. Hakeem, and F. K. Al-Khanfar, “The Nursing Workforce in Kuwait to the Year 2020,” *International Nursing Review*, Vol. 56, No. 1, 2009, pp. 65–72.
- Al-Jarallah, Khaled, Mohamed Moussa, and Khadija Figen Al-Khanfar, “The Physician Workforce in Kuwait to the Year 2020,” *International Journal of Health Planning and Management*, Vol. 25, No. 1, 2010, pp. 49–62.
- Al Maktoum, “Highlights Dubai Strategic Plan (2015): Dubai, Where the Future Begins,” 2007.
- Ali, F., Zlatko Nikoloski, Husein Reka, Orsida Gjebrea, and Elias Mossialos, “The Diabetes-Obesity-Hypertension Nexus in Qatar: Evidence from the World Health Survey,” *Population Health Metrics*, Vol. 12, 2014, p. 18.
- Almalki, M., G. Fitzgerald, and M. Clark, “Health Care System in Saudi Arabia: An Overview,” *Eastern Mediterranean Health Journal*, Vol. 17, No. 10, 2011.
- Alshishtawy, Moeness M., “Four Decades of Progress: Evolution of the Health System in Oman,” *Sultan Qaboos University Medical Journal*, Vol. 10, No. 1, 2010, p. 12.

- Alwan, Ala, Timothy Armstrong, Melanie Cowan, and Leanne Riley, "Noncommunicable Diseases Country Profiles 2011," *Geneva (CH)*, 2011. As of December 2, 2014: http://whqlibdoc.who.int/publications/2011/9789241502283_eng.pdf?ua=1
- Alzaid, Aus A., S. Sobki, and V. De Silva, "Prevalence of Microalbuminuria in Saudi Arabians with Non-Insulin-Dependent Diabetes Mellitus: A Clinic-Based Study," *Diabetes Research and Clinical Practice*, Vol. 26, No. 2, 1994, pp. 115–120.
- Amir Sheikh Sabah Al Ahmed Al Sabah, "Vision," 2014. As of December 2, 2014: <http://www.da.gov.kw/eng/hhamir/vision.php>
- Arab Times*, "Kuwait Health Assurance Co Could Have Positive Impact on Economy; Company Slated to Be Operational by 2015," 2014a. As of December 2, 2014: <http://www.arabtimesonline.com/NewsDetails/tabid/96/smId/414/ArticleID/169420/t/Kuwait-Health-Assurance-Co-could-have-positive-impact-on-economy/Default.aspx>
- , "Major Reforms Earmarked for Kuwait Healthcare Sector," 2014b. As of December 2, 2014: <http://www.arabtimesonline.com/NewsDetails/tabid/96/smId/414/ArticleID/176892/reftab/73/t/Major-reforms-earmarked-for-Kuwait-healthcare-sector/Default.aspx>
- Badran, Mohammad, and Ismail Laher, "Type II Diabetes Mellitus in Arabic-Speaking Countries," *International Journal of Endocrinology*, Vol. 2012, 2012.
- Bahrain MOH—See Kingdom of Bahrain Ministry of Health.
- Behbehani, Kazem, "Kuwait National Programme for Healthy Living: First 5-Year Plan (2013–2017)," *Medical Principles and Practice*, Vol. 23, No. 1, 2014, pp. 32–42.
- Beidas-Strom, Samya, Tobias Rasmussen, David O. Robinson, Joshua Charap, Abderrahmane Cherif, May Khamis, Ananthakrishnan Prasad, Arthur Ribeiro da Silva, Pedro Rodriguez, and Renas Sidahmed, *Gulf Cooperation Council Countries; Enhancing Economic Outcomes in an Uncertain Global Economy*, International Monetary Fund, 2011. As of December 2, 2014: <https://www.imf.org/external/pubs/ft/dp/2011/1101mcd.pdf>
- Bener, A., A. O. Al-Hamaq, M. T. Yousafzai, and M. Abdul-Ghani, "Relationship Between Patient Satisfaction with Diabetes Care and Treatment," *Nigerian Journal of Clinical Practice*, Vol. 17, No. 2, 2014, pp. 218–225.
- Bener, Abdulbari, and Ahmed Al Mazroei, "Health Services Management in Qatar," *Croatian Medical Journal*, Vol. 51, No. 1, 2010, pp. 85–88.
- Benjamin, Kathleen, and Tam Truong Donnelly, "Barriers and Facilitators Influencing the Physical Activity of Arabic Adults: A Literature Review," *Avicenna*, 2013.
- Berthold, Heiner K., Kurt P. Bestehorn, Christina Jannowitz, Wilhelm Krone, Ioanna Gouni-Berthold, Chureen T. Carter, Henry Leher, Paula Smith, Daniel B. Smith, and Heidi C. Waters, "Disease Management Programs in Type 2 Diabetes: Quality of Care," *American Journal of Managed Care*, Vol. 17, No. 6, 2011, p. 393.
- Berwick, Donald M., Thomas W. Nolan, and John Whittington, "The Triple Aim: Care, Health, and Cost," *Health Affairs (Millwood)*, Vol. 27, No. 3, 2008, pp. 759–769.
- Blümel, M., and R. Busse, "Disease Management Programs: Time to Evaluate," *Health Policy Monitor*, Vol. 13, 2009.
- Bodenheimer, Thomas, Ellen Chen, and Heather D. Bennett, "Confronting the Growing Burden of Chronic Disease: Can the US Health Care Workforce Do the Job?" *Health Affairs (Millwood)*, Vol. 28, No. 1, 2009, pp. 64–74.
- Bolooki, H. Michael, and Arman Askari, "Acute Myocardial Infarction," 2014. As of December 2, 2014: <http://www.clevelandclinicmeded.com/medicalpubs/diseasemanagement/cardiology/acute-myocardial-infarction/>

- Boult, Chad, Lisa Reider, Bruce Leff, Kevin D. Frick, Cynthia M. Boyd, Jennifer L. Wolff, Katherine Frey, Lya Karm, Stephen T. Wegener, and Tracy Mroz, "The Effect of Guided Care Teams on the Use of Health Services: Results from a Cluster-Randomized Controlled Trial," *Archives of Internal Medicine*, Vol. 171, No. 5, 2011, pp. 460–466.
- Brook, Robert H., "The RAND/UCLA Appropriateness Method," 1995.
- Brownell, Kelly D., Thomas Farley, Walter C. Willett, Barry M. Popkin, Frank J. Chaloupka, Joseph W. Thompson, and David S. Ludwig, "The Public Health and Economic Benefits of Taxing Sugar-Sweetened Beverages," *New England Journal of Medicine*, Vol. 361, 2009, pp. 1599–1605. As of December 17, 2014: <http://www.nejm.org/doi/full/10.1056/NEJMr0905723>
- Bugshan, Fares, "Most GCC Residents Not Getting Frequent Exercise," *Gallup*, 2012. As of December 2, 2014: <http://www.gallup.com/poll/154691/gcc-residents-not-getting-frequent-exercise.aspx>
- Busse, R., U. Nimptsch, and T. Mansky, "Measuring, Monitoring, and Managing Quality in Germany's Hospitals," *Health Affairs (Millwood)*, Vol. 28, No. 2, March–April, 2009, pp. w294–304. As of December 2, 2014: <http://www.ncbi.nlm.nih.gov/pubmed/19174391>
- Busse, Reinhard, "Disease Management Programs in Germany's Statutory Health Insurance System," *Health Affairs (Millwood)*, Vol. 23, No. 3, 2004, pp. 56–67.
- Cabana, M. D., C. S. Rand, N. R. Powe, A. W. Wu, M. H. Wilson, P. A. Abboud, and H. R. Rubin, "Why Don't Physicians Follow Clinical Practice Guidelines? A Framework for Improvement," *JAMA*, Vol. 282, No. 15, October 20, 1999, pp. 1458–1465. As of December 2, 2014: <http://www.ncbi.nlm.nih.gov/pubmed/10535437>
- Cattaneo, Olivier, *Trade in Health Services: What's in It for Developing Countries?* World Bank, 2009. As of December 2, 2014: <https://openknowledge.worldbank.org/bitstream/handle/10986/4305/WPS5115.pdf?sequence=1>
- Center for Sustainable Health Spending, *Health Sector Economic Indicators; Insights from the Bureau of Labor Statistics (BLS) March 2013 Employment Data*, Altarium Institute, 2013. As of December 2, 2014: http://www.altarium.org/files/imce/CSHS-Labor-Brief_April%202013.pdf
- Centers for Disease Control and Prevention, "Defining Overweight and Obesity," 2012a. As of December 2, 2014: <http://www.cdc.gov/obesity/adult/defining.html>
- , *Lack of Health Insurance and Type of Coverage: Early Release of Selected Estimates Based on Data from the 2011 National Health Interview Survey*, 2012b. As of December 2, 2014: http://www.cdc.gov/nchs/data/nhis/earlyrelease/earlyrelease201206_01.pdf
- Centers for Medicare and Medicaid Services, "Accountable Care Organizations," March 22, 2013a. As of December 9, 2014: <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ACO/index.html>
- , "Pioneer Accountable Care Organizations Succeed in Improving Care, Lowering Costs," 2013b. As of December 2, 2014: <https://www.cms.gov/Newsroom/MediaReleaseDatabase/Press-Releases/2013-Press-Releases-Items/2013-07-16.html>
- Central Intelligence Agency, "Obesity—Adult Prevalence Rate," *The World Factbook*, 2009. As of December 2, 2014: <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2228rank.html?countryname=Kuwait&countrycode=ku®ionCode=mde&rank=10#ku>
- , *The World Factbook*, 2010. As of December 2, 2014: <https://www.cia.gov/library/publications/the-world-factbook/fields/2116.html#ku>

- _____, "Bahrain," *The World Factbook*, 2014a. As of December 2, 2014:
<https://www.cia.gov/library/publications/the-world-factbook/geos/ba.html>
- _____, "Kuwait," *The World Factbook*, 2014b. As of December 2, 2014:
<https://www.cia.gov/library/publications/the-world-factbook/geos/ku.html>
- _____, "Oman," *The World Factbook*, 2014c. As of December 2, 2014:
<https://www.cia.gov/library/publications/the-world-factbook/geos/mu.html>
- _____, "Qatar," *The World Factbook*, 2014d. As of December 2, 2014:
<https://www.cia.gov/library/publications/the-world-factbook/geos/qa.html>
- _____, "Saudi Arabia," *The World Factbook*, 2014e. As of December 2, 2014:
<https://www.cia.gov/library/publications/the-world-factbook/geos/sa.html>
- _____, "United Arab Emirates," *The World Factbook*, 2014f. As of December 2, 2014:
<https://www.cia.gov/library/publications/the-world-factbook/geos/ae.html>
- Charlton, Rodger, "Implications of the New GP Contract," *Clinical Medicine*, Vol. 5, No. 1, 2005, pp. 50–54.
- "Cheaper Oil: Both Sympom and Balm," *The Economist*, 2014. As of December 2, 2014:
<http://www.economist.com/news/finance-and-economics/21625819-oil-price-tumbling-good-or-bad-news-world-economy-both?frsc=dg%7Ca>
- Chen, Melinda A., James P. Hollenberg, Walid Michelen, and Lawrence P. Casalino, "Patient Care Outside of Office Visits: A Primary Care Physician Time Study," *Journal of General Internal Medicine*, Vol. 26, No. 1, 2011, pp. 58–63.
- CIA—See Central Intelligence Agency.
- CMS—See Centers for Medicare and Medicaid Services.
- Cockcroft, Lucy, "Average Salary for a GP Leaps to £110,000," *The Telegraph*, 2007.
As of December 2, 2014: <http://www.telegraph.co.uk/news/uknews/1567887/Average-salary-for-a-GP-leaps-to-110000.html>
- Coleman, K., B. T. Austin, C. Brach, and E. H. Wagner, "Evidence on the Chronic Care Model in the New Millennium," *Health Affairs (Millwood)*, Vol. 28, No. 1, January–February, 2009, pp. 75–85.
As of December 2, 2014: <http://www.ncbi.nlm.nih.gov/pubmed/19124857>
- Cooperative Health Insurance Council, *Implementing Regulations of the Cooperative Health Insurance Law in the Kingdom of Saudi Arabia (Amended)*, Kingdom of Saudi Arabia Secretariat General, 2009. As of December 2, 2014:
<http://www.cchi.gov.sa/en/Rules/Documents/Rules%20and%20Regulations.pdf>
- Coulter, A., "Paternalism or Partnership? Patients Have Grown Up—and There's No Going Back," *British Medical Journal*, Vol. 319, No. 7212, September 18, 1999, pp. 719–720. As of December 2, 2014: <http://www.ncbi.nlm.nih.gov/pubmed/10487980>
- Council of Cooperative Health Insurance, "Our Message," 2014. As of December 2, 2014:
<http://www.cchi.gov.sa/en/AboutUs/Pages/Message.aspx>
- Dartmouth Institute for Health Policy and Clinical Practice, "The Dartmouth Atlas," 2012. As of December 2, 2014: <http://tdi.dartmouth.edu/about/contact-us>
- Doran, T., C. Fullwood, H. Gravelle, D. Reeves, E. Kontopantelis, U. Hiroeh, and M. Roland, "Pay-for-Performance Programs in Family Practices in the United Kingdom," *New England Journal of Medicine*, Vol. 355, No. 4, July 27, 2006, pp. 375–384. As of December 2, 2014:
<http://www.ncbi.nlm.nih.gov/pubmed/16870916>
- Eaton, Joe, and M. B. Pell, "Lobbyists Swarm Capitol to Influence Health Reform," Center of Public Integrity, February 24, 2010. As of December 2, 2014:
<http://www.publicintegrity.org/2010/02/24/2725/lobbyists-swarm-capitol-influence-health-reform>

- Ebert, Sabine, "Healthcare in Bahrain," 2010. As of December 2, 2014:
<http://lexarabiae.meyer-reumann.com/blog/2010-2/healthcare-in-bahrain/>
- Economist Intelligence Unit of Great Britain, *The GCC in 2020: The Gulf and Its People*, 2009. As of December 2, 2014: <http://graphics.eiu.com/upload/eb/Gulf2020part2.pdf>
- El-Bayoumy, Ibrahim, Ibrahim Shady, and Hesham Lotfy, "Prevalence of Obesity Among Adolescents (10 to 14 years) in Kuwait," *Asia-Pacific Journal of Public Health*, 2009.
- Embassy, Saudi, "About Saudi Arabia; the Basic Law of Governance," 2013. As of December 2, 2014:
http://www.saudiembassy.net/about/country-information/laws/The_Basic_Law_Of_Governance.aspx
- Expat Arrivals, "Healthcare in Bahrain," 2014. As of December 2, 2014:
<http://www.expatarrivals.com/bahrain/healthcare-in-bahrain>
- "Expat Guide to Bahrain: Health Care," *Telegraph Weekly World Edition*, 2014.
 As of December 2, 2014:
<http://www.telegraph.co.uk/health/expathealth/8382987/Expat-guide-to-Bahrain-health-care.html>
- Fenton, Jenifer, "Qatar Roll Out Universal Healthcare Plan," *Financial Times*, 2012.
- Fields, D., E. Leshen, and K. Patel, "Driving Quality Gains and Cost Savings Through Adoption of Medical Homes," *Health Affairs (Millwood)*, Vol. 29, No. 5, May 2010, pp. 819–826. As of December 2, 2014: <http://www.ncbi.nlm.nih.gov/pubmed/20439867>
- Foley, Kathleen M., and Hellen Gelband, eds., *Improving Palliative Care for Cancer*, Washington, D.C.: National Academy Press, 2013.
- Forde, Ian, and Francesca Colombo, *Czech Republic Should Improve Primary Care and Prevention to Reduce Chronic Disease, Says OECD*, Organisation for Economic Co-operation and Development, 2014. As of December 2, 2014: <http://www.oecd.org/health/czech-republic-should-improve-primary-care-and-prevention-to-reduce-chronic-disease.htm>
- Foundation for Accountability, *Reporting Quality Information to Consumers*, Portland, Oregon: FACCT, 1997.
- Friedberg, Mark W., Eric C. Schneider, Meredith B. Rosenthal, Kevin G. Volpp, and Rachel M. Werner, "Association Between Participation in a Multipayer Medical Home Intervention and Changes in Quality, Utilization, and Costs of Care," *JAMA*, Vol. 31, No. 8, 2014, pp. 815–825. As of December 17, 2014: <http://jama.jamanetwork.com/article.aspx?articleid=1832540>
- Gillam, Stephen J., "Pay for Performance in UK General Practice: The Ambiguous Impact of the Quality and Outcomes Framework," 2011. As of December 2, 2014:
<http://www.qualitymeasures.ahrq.gov/expert/expert-commentary.aspx?id=25658>
- GLMM—See Gulf Labour Markets and Migration Programme.
- Government of Abu Dhabi, *The Abu Dhabi Economic Vision 2030*, General Secretariat of the Executive Council, Department of Planning and Economy, Abu Dhabi Council for Economic Development, 2008. As of December 2, 2014: <https://gsec.abudhabi.ae/Sites/GSEC/Content/EN/PDF/Publications/economic-vision-2030-full-version,property=pdf.pdf>
- Gray, Bradford H., Thomas Bowden, Ib Johansen, and Sabine Koch, "Electronic Health Records: An International Perspective on 'Meaningful Use,'" *Issue Brief (Commonwealth Fund)*, Vol. 28, 2011, pp. 1–18.
- Gulf Labour Markets and Migration Programme, "Age Distribution of National and Non-National Populations in GCC Countries: A Comparison (Around 2010)," most recent national data. As of December 2, 2014: <http://gulfmigration.eu/media/graphs/GLMM%20-%20Website%20-%20GCC%20Graph%204%20-%202008%20Nov%202013.pdf>

- , “GCC: Total Population and Percentage of Nationals and Non-Nationals in GCC Countries (Latest National Statistics, 2010–2014),” October 2014. As of January 30, 2015:
<http://gulfmigration.eu/gcc-total-population-and-percentage-of-nationals-and-non-nationals-in-gcc-countries-latest-national-statistics-2010-2014>
- GulfBase, “GulfBase Country Profile: Sultanate of Oman,” 2014. As of December 2, 2014:
<http://www.gulfbase.com/Gcc/Index/5>
- Guy, Geoffrey W., Alistair V. W. Nunn, Louise E. Thomas, and Jimmy D. Bell, “Obesity, Diabetes and Longevity in the Gulf: Is There a Gulf Metabolic Syndrome?” *International Journal of Diabetes Mellitus*, Vol. 1, No. 1, 2009, pp. 43–54.
- Hajat, Cothier, Oliver Harrison, and Zainab Shather, “A Profile and Approach to Chronic Disease in Abu Dhabi,” *Globalization and Health*, Vol. 8, No. 1, 2012, p. 18.
- Halm, E. A., C. Lee, and M. R. Chassin, “Is Volume Related to Outcome in Health Care? A Systematic Review and Methodologic Critique of the Literature,” *Annals of Internal Medicine*, Vol. 137, No. 6, September 17, 2002, pp. 511–520. As of December 2, 2014:
<http://www.ncbi.nlm.nih.gov/pubmed/12230353>
- Hamad Medical Corporation, “Qatar: Compulsory Health Insurance Leaves Window for Treatment Abroad,” *International Medical Travel Journal*, 2013. As of December 2, 2014:
<http://www.imtj.com/news/?entryid82=429611>
- , *Annual Report: 2013–2014*, 2014. As of December 2, 2014:
http://www.hmc.org.qa/annualreport2014/pdf/hmc_ar2013_14_en.pdf
- Hannawi, Suad, and Issa Al Salmi, “Health Workforce in the United Arab Emirates: Analytic Point of View,” *International Journal of Health Planning and Management*, 2013.
- Hartl, Gregory, and Menno van Hilten, “WHO Recognizes Progress of Gulf States for Adopting Regional Strategy to Address Noncommunicable Diseases,” 2012. As of December 2, 2014:
http://www.who.int/mediacentre/news/statements/2012/ncds_20120106/en/
- Hibbard, J. H., and J. Greene, “What the Evidence Shows About Patient Activation: Better Health Outcomes and Care Experiences; Fewer Data on Costs,” *Health Affairs (Millwood)*, Vol. 32, No. 2, February, 2013, pp. 207–214. As of December 2, 2014:
<http://www.ncbi.nlm.nih.gov/pubmed/23381511>
- Hillestad, R., J. Bigelow, A. Bower, F. Girosi, R. Meili, R. Scoville, and R. Taylor, “Can Electronic Medical Record Systems Transform Health Care? Potential Health Benefits, Savings, and Costs,” *Health Affairs (Millwood)*, Vol. 24, No. 5, September–October 2005, pp. 1103–1117. As of December 2, 2014: <http://www.ncbi.nlm.nih.gov/pubmed/16162551>
- Hurtado, Margarita P., Elaine K. Swift, and Janet M. Corrigan, *Envisioning the National Health Care Quality Report*, Washington, D.C.: National Academies Press, 2001.
- IDF—See International Diabetes Foundation.
- IMS Institute for Healthcare Informatics, *Avoidable Costs in U.S. Healthcare: The \$200 Billion Opportunity from Using Medicines More Responsibly*, 2013. As of December 2, 2014:
http://www.imshealth.com/deployedfiles/imshealth/Global/Content/Corporate/IMS%20Institute/RUOM-2013/Avoidable_Costs_Infographic.pdf
- Informa—See Informa Exhibitions, Life Sciences.
- Informa Exhibitions, Life Sciences, “Healthcare in the GCC: A Snapshot,” *Hospital Build & Infrastructure*, 2012. As of December 2, 2014:
<http://hospitalbuild.lifesciencemagazines.com/healthcare-in-the-gcc-a-snapshot/>

- Institute of Medicine, *To Err Is Human: Building a Safer Health System*, Washington, D.C.: National Academy of Sciences, 1999.
- , *Clinical Practice Guidelines We Can Trust*, Washington, D.C.: National Academy of Sciences, 2011.
- Institute of Medicine Committee on Quality of Health Care in America, *Crossing the Quality Chasm: A New Health System for the 21st Century*, Washington, D.C.: National Academies Press, 2001.
- As of December 2, 2014: <http://www.iom.edu/Reports/2001/Crossing-the-Quality-Chasm-A-New-Health-System-for-the-21st-Century.aspx>
- International Diabetes Federation, *IDF Diabetes Atlas*, 6th edition, Brussels, Belgium: International Diabetes Federation, 2013. As of December 2, 2014:
- http://www.idf.org/sites/default/files/EN_6E_Atlas_Full_0.pdf
- International Monetary Fund, “Gulf Economies Should Diversify to Sustain Strong Future Growth,” *IMF Survey Magazine; Countries and Regions 2014*, 2014. As of December 2, 2014:
- <http://www.imf.org/external/pubs/ft/survey/so/2014/car060314a.htm>
- InterNations, “Oman at a Glance; Healthcare in Oman,” 2014. As of December 2, 2014:
- <http://www.internations.org/oman-expats/guide/living-in-oman-15747/healthcare-in-oman-2>
- IOM—See Institute of Medicine.
- Jha, A. K., D. Doolan, D. Grandt, T. Scott, and D. W. Bates, “The Use of Health Information Technology in Seven Nations,” *International Journal of Medical Informatics*, Vol. 77, No. 12, December, 2008, pp. 848–854. As of December 2, 2014:
- <http://www.ncbi.nlm.nih.gov/pubmed/18657471>
- Kaiser Family Foundation, “Health Expenditure Per Capita (PPP; International \$),” 2013. As of December 2, 2014: <http://kff.org/global-indicator/health-expenditure-per-capita/>
- Kellermann, A. L., and S. S. Jones, “What It Will Take to Achieve the As-Yet-Unfulfilled Promises of Health Information Technology,” *Health Affairs (Millwood)*, Vol. 32, No. 1, January 2013, pp. 63–68. As of December 2, 2014: <http://www.ncbi.nlm.nih.gov/pubmed/23297272>
- Kenawi, Hany, *Healthcare in the Kingdom of Saudi Arabia*, Lex Arabiae. Myer-Reumann & Partners, 2010. As of December 2, 2014:
- <http://lexarabiae.meyer-reumann.com/blog/2010-2/healthcare-in-the-kingdom-of-saudi-arabia/>
- KFF—See Kaiser Family Foundation.
- Khaliq, Amir A., “The Saudi Health Care System: A View from the Minaret,” *World Health & Population*, Vol. 13, No. 3, 2011, pp. 52–64.
- Kheir, Nadir, and Michael Fahey, “Pharmacy Practice in Qatar: Challenges and Opportunities,” *Southern Med Review*, Vol. 4, No. 2, 2011, p. 92.
- Kim, Hak-Ju, and Jennifer Prah Ruger, “Pharmaceutical Reform in South Korea and the Lessons It Provides,” *Health Affairs (Millwood)*, Vol. 27, No. 4, 2008, pp. w260–w269.
- Kingdom of Bahrain Ministry of Health, *Bahrain Health Strategy: Framework for Action (2002–2010)*, 2002. As of December 2, 2014: <http://www.moh.gov.bh/pdf/bahrainhealthstrategy.pdf>
- , *Health Care in the Kingdom of Bahrain*, 2007. As of December 2, 2014:
- <http://www.gepa2.de/files/Bahrain-Health-Care1.pdf>
- , *Bahrain’s Health Agenda; Health Improvement Strategy (2011–2014)*, Kingdom of Bahrain, 2012a.
- , *Financial Resources*, Kingdom of Bahrain, 2012b. As of December 2, 2014:
- http://www.moh.gov.bh/PDF/Publications/statistics/HS2012/PDF/Chapters/CH04-financial%20resources_2012.pdf

- _____, *Human Resources*, Kingdom of Bahrain, 2012c. As of December 2, 2014: http://www.moh.gov.bh/PDF/Publications/statistics/HS2012/PDF/Chapters/CH05-human%20resources_2012.pdf
- _____, *Primary Health Care*, Kingdom of Bahrain, 2012d. As of December 2, 2014: http://www.moh.gov.bh/PDF/Publications/statistics/HS2012/PDF/Chapters/CH08-Primaryhealthcare_2012.pdf
- _____, *Summary Statistics*, Kingdom of Bahrain, 2012e. As of December 2, 2014: http://www.moh.gov.bh/PDF/Publications/statistics/HS2012/PDF/Chapters/CH01-summary_2012.pdf
- _____, "Homepage," 2014. As of December 2, 2014: <http://www.moh.gov.bh/EN/default.aspx>
- Kingdom of Saudi Arabia Government, *Long Term Strategy 2025: The Long Term Strategy of the Saudi Economy*, Ministry of Economy and Planning, Kingdom of Saudi Arabia. As of December 2, 2014: <http://www.mep.gov.sa/themes/GoldenCarpet/index.jsp#1405888730292>
- Kingdom of Saudi Arabia Ministry of Health, "The Strategic Plan: 1431–1440 A.H.," 2009. As of December 2, 2014: <http://www.moh.gov.sa/Portal/WhatsNew/Documents/OKIstragi260p.pdf>
- _____, "About the Ministry; Mission," 2012. As of December 2, 2014: <http://www.moh.gov.sa/en/Ministry/About/Pages/Mission.aspx>
- Klautzer, Lisa, Joachim Becker, and Soeren Mattke, "The Curse of Wealth: Middle Eastern Countries Need to Address the Rapidly Rising Burden of Diabetes," *International journal of Health Policy and Management*, Vol. 2, No. 3, 2014, p. 109.
- Koornneef, Erik J., Paul Robben, Mohammed B. Al Seiri, and Zaid Al Siksek, "Health System Reform in the Emirate of Abu Dhabi, United Arab Emirates," *Health Policy*, Vol. 108, No. 2, 2012, pp. 115–121.
- Kurlander, Stuart, Ahmad Anani, Abid R. Qureshi, Marc Makary, and Charles Fuller, *2013 Update: Healthcare Regulation in the United Arab Emirates*, ClientAlert, 2013.
- Kuwait Ministry of Health, *Kuwait Nutrition Surveillance (2001–2004)*, Kuwait: Ministry of Health, 2004.
- _____, *World Health Survey in Kuwait; Main Report 2013*, State of Kuwait, Ministry of Health, 2013. As of December 2, 2014: http://www.moh.gov.kw/SURVEY%20REPORT_2013.pdf
- _____, *Kuwait Health Indicators: Monitoring Health Situation, Trends, and Health System Performance 2003–2012*, Health & Vital Statistics Division, National Center of Health Information, 2014. As of December 2, 2014: <http://www.moh.gov.kw/reph%202003-2012.pdf>
- Kuwait University, "College of Medicine Homepage," 2009. As of December 2, 2014: <http://kuniv.edu/ku/Colleges/CollegeofMedicine/index.htm>
- Laurance, Jeremy, Sarah Henderson, Peter J. Howitt, Mariam Matar, Hanan Al Kuwari, Susan Edgman-Levitan, and Ara Darzi, "Patient Engagement: Four Case Studies That Highlight the Potential for Improved Health Outcomes and Reduced Costs," *Health Affairs*, Vol. 33, No. 9, 2014, pp. 1627–1634. As of December 17, 2014: <http://content.healthaffairs.org/content/33/9/1627.full>
- Lee, Kheng Hock, "The Hospitalist Movement—a Complex Adaptive Response to Fragmentation of Care in Hospitals," *Annals, Academy of Medicine Singapore*, Vol. 37, No. 2, 2008, p. 145.
- Lepeska, David, "Qatar's Healthcare System Under Strain," *The National*, 2010. As of December 2, 2014: <http://www.thenational.ae/news/world/middle-east/qatars-healthcare-system-under-strain>

- Lester, Helen, Deborah J. Sharp, F. D. R. Hobbs, and Mayur Lakhani, "The Quality and Outcomes Framework of the GMS Contract: A Quiet Evolution for 2006," *The British Journal of General Practice*, Vol. 56, No. 525, 2006, p. 244.
- Liberto, Jennifer, "Health Care Lobbying Boom Continues," 2011. As of December 2, 2014: http://money.cnn.com/2011/03/25/news/economy/health_care_lobbying/index.htm
- Life in Qatar, "Life in Qatar; Healthcare," 2014. As of December 2, 2014: <http://www.lifeinqatar.com/en/section/healthcare>
- Lim, Cheryl, *Confidence Preserved: Most of the World's Largest Islamic Banks Are Concentrated in Only Five Markets*, The Asian Banker, 2009.
- Lorenz, K. A., J. Lynn, S. M. Dy, L. R. Shugarman, A. Wilkinson, R. A. Mularski, S. C. Morton, R. G. Hughes, L. K. Hilton, M. Maglione, S. L. Rhodes, C. Rolon, V. C. Sun, and P. G. Shekelle, "Evidence for Improving Palliative Care at the End of Life: A Systematic Review," *Annals of Internal Medicine*, Vol. 148, No. 2, January 15, 2008, pp. 147–159. As of December 2, 2014: <http://www.ncbi.nlm.nih.gov/pubmed/18195339>
- Los Angeles Times*, "Doctors' Protest Hobbles Health Care," 2000. As of December 2, 2014: <http://articles.latimes.com/2000/feb/18/news/mn-253>
- Malik, M., A. Bakir, B. Abi Saab, G. Roglic, and H. King, "Glucose Intolerance and Associated Factors in the Multi-Ethnic Population of the United Arab Emirates: Results of a National Survey," *Diabetes Research and Clinical Practice*, Vol. 69, No. 2, 2005, pp. 188–195.
- Markar, S. R., A. Karthikesalingam, S. Thrumurthy, and D. E. Low, "Volume-Outcome Relationship in Surgery for Esophageal Malignancy: Systematic Review and Meta-Analysis 2000–2011," *Journal of Gastrointestinal Surgery*, Vol. 16, No. 5, May 2012, pp. 1055–1063. As of December 2, 2014: <http://www.ncbi.nlm.nih.gov/pubmed/22089950>
- Maslakovic, Marko, *UK, the Leading Western Centre for Islamic Finance*, UK Islamic Finance Secretariat, TheCityUK, 2013. As of December 2, 2014: <http://www.thecityuk.com/assets/Uploads/Islamic-finance-2013-F.pdf>
- Mattke, Soeren, "Monitoring and Improving the Technical Quality of Medical Care: A New Challenge for Policymakers in OECD Countries," *Towards High-Performing Health Systems*, Paris: OECD Publications, 2004.
- Mattke, Soeren, and Jack C. Chow, "Measuring Health System Progress in Reducing Mortality from Noncommunicable Diseases," 2012.
- Mattke, Soeren, Arnold M. Epstein, and Sheila Leatherman, "The OECD Health Care Quality Indicators Project: History and Background," *International Journal for Quality in Health Care*, Vol. 18, No. suppl 1, 2006, pp. 1–4.
- Mattke, Soeren, Lisa Klautzer, Tewodaj Mengistu, Jeffrey Garnett, Jianhui Hu, and Helen Wu, "Health and Well-Being in the Home," 2010.
- Mattke, Soeren, Hangsheng Liu, John P. Caloyeras, Christina Y. Huang, Kristin R. Van Busum, Dmitry Khodyakov, and Victoria Shier, *Workplace Wellness Programs Study: Final Report*, Santa Monica, Calif.: RAND Corporation, RR-254-DOL, 2013. As of December 2, 2014: http://www.rand.org/pubs/research_reports/RR254.html
- McGinley, Shane, "Qatar's Sidra Medical and Research Center to Be Fully Operational by 2015," *Arabian Business*, 2013. As of December 2, 2014: <http://www.arabianbusiness.com/qatar-s-sidra-medical-research-center-be-fully-operational-by-2015-521120.html#.VFIO4pp0yM9>
- Meyer, Brian F., Osama Alsmadi, Salma Wakil, and Khalid Al-Rubeaan, "Genetics of Type 2 Diabetes in Arabs: What We Know to Date," *International Journal of Diabetes Mellitus*, Vol. 1, No. 1, 2009, pp. 32–34.

- Middle Eastern Health, "Saudi Budgets \$14.5 bn for Healthcare: MoH Plans to Build Another 5 Medical Cities," *Middle East Health*, 2013. As of December 2, 2014: http://www.middleeasthealthmag.com/nov2013/MEH_Nov_Dec_2013_Magazine.pdf
- Miksch, Antje, Gunter Laux, Dominik Ose, Stefanie Joos, Stephen Campbell, Burgi Riens, and Joachim Szecsenyi, "Is There a Survival Benefit Within a German Primary Care-Based Disease Management Program?" *American Journal of Managed Care*, Vol. 16, No. 1, 2010, pp. 49–54.
- Mourshed, Mona, Viktor Hediger, and Toby Lambert, "Gulf Cooperation Council Health Care: Challenges and Opportunities," *Global Competitiveness Reports*, 2006.
- Moussa, Mohamed A. A., Mayra Alsaeid, Nabila Abdella, Thanaa M. K. Refai, Nashami Al-Sheikh, and Joseph E. Gomez, "Prevalence of Type 2 Diabetes Mellitus Among Kuwaiti Children and Adolescents," *Medical Principles and Practice*, Vol. 17, No. 4, 2008, pp. 270–275.
- Mueller, Keith J., and A. Clinton MacKinney, "Care Across the Continuum: Access to Health Care Services in Rural America," *Journal of Rural Health*, Vol. 22, No. 1, 2006, pp. 43–49.
- Murshid, Lamice, and Naem Badiuzzaman, *GCC Healthcare Spending Expected to Grow 11.4% from 2010–2015*, EY, 2014. As of December 2, 2014: <http://www.ey.com/EM/en/Newsroom/News-releases/7-Jan-14-GCC-healthcare-spending-expected-to-grow-11-4--from-2010-2015>
- Myanmar Phar-Med Expo 2013, "News; Government Suspends Plan to Build 4 Hospitals in the Capital," 2013. As of December 2, 2014: <http://pharmed-myanmar.com/index.php/news/government-suspends-plan-to-build-4-hospitals-in-the-capital.html>
- National eHealth Collaborative, "The Patient Engagement Framework," 2010. As of December 2, 2014: <http://www.nationalehealth.org/patient-engagement-framework>
- National U.S.-Arab Chamber of Commerce, "Saudi Arabia's King Abdullah Inaugurates 21st Century Research University," *US-Arab Tradeline*, Vol. XVII, No. 2, 2009.
- Newmex Intelligence, "US\$800 Million Invest in Kuwait Health Assurance Company (KHAC)," 2013. As of December 2, 2014: <http://www.newmex-intelligence.de/home/khac/>
- Ng, Shu Wen, Sahar Zaghloul, H. I. Ali, Gail Harrison, and Barry M. Popkin, "The Prevalence and Trends of Overweight, Obesity and Nutrition-Related Non-Communicable Diseases in the Arabian Gulf States," *Obesity Reviews*, Vol. 12, No. 1, 2011, pp. 1–13.
- NHS Employers, "Quality and Outcomes Framework," 2013. As of December 2, 2014: <http://www.nhsemployers.org/payandcontracts/generalmedicalservicescontract/qof/Pages/QualityOutcomesFramework.aspx>
- Nielsen, J. V., "Peripheral Neuropathy, Hypertension, Foot Ulcers and Amputations Among Saudi Arabian Patients with Type 2 Diabetes," *Diabetes Research and Clinical Practice*, Vol. 41, No. 1, July, 1998, pp. 63–69. <Go to ISI>://WOS:000075650000009
- Nolte, Ellen, Cécile Knai, Maria Hofmarcher, Annalijn Conklin, Antje Erler, Arianne Elissen, Maria Flamm, Brigit Fullerton, Andreas Sönnichsen, and Hubertus J. M. Vrijhoef, "Overcoming Fragmentation in Health Care: Chronic Care in Austria, Germany and the Netherlands," *Health Economics, Policy and Law*, Vol. 7, No. 1, 2012, pp. 125–146.
- OECD—See Organisation for Economic Co-operation and Development.
- Office of the National Coordinator for Health Information Technology, "Policymaking, Regulation and Strategy: Clinical Decision Support (CDS)," 2013. As of December 2, 2014: <http://www.healthit.gov/policy-researchers-implementers/clinical-decision-support-cds>
- Oman MOH—See Sultanate of Oman Ministry of Health.
- ONC—See Office of the National Coordinator for Health Information Technology.
- Organisation for Economic Co-operation and Development, "OECD.StatExtracts," website, no date.

- Organisation for Economic Co-operation and Development, *Population Aged 65 and Over, in OECD Factbook 2009*, OECD Publishing, 2009. As of December 2, 2014: http://www.oecd-ilibrary.org/economics/oecd-factbook-2009/population-aged-65-and-over_factbook-2009-table4-en
- Oxford Business Group, "Kuwait: Health Care Privatisation Moves Ahead," 2013. As of December 2, 2014: <http://www.oxfordbusinessgroup.com/news/kuwait-health-care-privatisation-moves-ahead>
- Primary Health Care Corporation, "Corporate Profile," 2014. As of December 2, 2014: http://phcc.qa/portal_new/index/index.php?lang=en&type=2&page=5&id=35
- Quadagno, Jill, "Interest-Group Influence on the Patient Protection and Affordability Act of 2010: Winners and Losers in the Health Care Reform Debate," *Journal of Health Politics, Policy and Law*, Vol. 36, No. 3, 2011, pp. 449–453.
- Rittenhouse, Diane R., Stephen M. Shortell, and Elliott S. Fisher, "Primary Care and Accountable Care—Two Essential Elements of Delivery-System Reform," *New England Journal of Medicine*, Vol. 361, No. 24, 2009, pp. 2301–2303.
- Roberts, Elizabeth, "Qatar Offers Thousands of Expat Jobs at Pioneering Medical Centre," *The Telegraph*, 2014. As of December 2, 2014: <http://www.telegraph.co.uk/expat/before-you-go/10846554/Qatar-offers-thousands-of-expat-jobs-at-pioneering-medical-centre.html>
- Rosenthal, T. C., "The Medical Home: Growing Evidence to Support a New Approach to Primary Care," *Journal of the American Board of Family Medicine*, Vol. 21, No. 5, September–October, 2008, pp. 427–440. <http://www.ncbi.nlm.nih.gov/pubmed/18772297>
- Saleh, A., "MP Demands Efforts for "Kuwaitization," *Kuwait Times*, 2014. As of December 2, 2014: <http://news.kuwaittimes.net/mp-demands-efforts-kuwaitization-govt-urged-show-seriousness/>
- Saudi Arabia MOH—See Kingdom of Saudi Arabia Ministry of Health.
- Saudi Embassy, *The 9th Five-Year Development Plan (2010–2014) Adopted*, Washington, D.C.: Royal Embassy of Saudi Arabia, 2010. As of December 2, 2014: http://www.saudiembassy.net/latest_news/news04051002.aspx
- Saudi Health Council, "Homepage," 2013. As of December 2, 2014: <http://www.chs.gov.sa/En/default.htm>
- Schildgen, Elena, and Zahra Tahsili, *Healthcare in the United Arab Emirates*, 2010. As of December 2, 2014: <http://lexarabiae.meyer-reumann.com/blog/2010-2/healthcare-in-the-united-arab-emirates/>
- Scottish Government, "More Scottish Focused GP Contract," 2011. As of December 2, 2014: <http://www.scotland.gov.uk/News/Releases/2011/12/19102020>
- Serour, Maleka, Hanadi Alqhenaei, Sawsan Al-Saqabi, Abdel-Rahman Mustafa, and Abdulla Ben-Nakhi, "Cultural Factors and Patients' Adherence to Lifestyle Measures," *British Journal of General Practice*, Vol. 57, No. 537, 2007, pp. 291–295.
- Shepperd, Sasha, and Steve Iliffe, *Hospital at Home Versus In-Patient Hospital Care (Review)*, The Cochrane Library, 2008.
- Shepperd, Sasha, Natasha A. Lannin, Lindy M. Clemson, Annie McCluskey, Ian D. Cameron, and Sarah L. Barras, *Discharge Planning from Hospital to Home (Review)*, The Cochrane Library, 2013.
- Skocpol, Theda, *Boomerang: Health Care Reform and the Turn Against Government*. W.W. Norton & Company, 1997.
- Smith, Jessica C., and Carla Medalia, *Health Insurance Coverage in the United States: 2013*, U.S. Census Bureau Current Population Reports, Washington, D.C.: U.S. Government Printing Office, September 2014. As of December 17, 2014: <http://www.census.gov/content/dam/Census/library/publications/2014/demo/p60-250.pdf>

- Smith, Peter C., and Nick York, "Quality Incentives: The Case of UK General Practitioners," *Health Affairs (Millwood)*, Vol. 23, No. 3, 2004, pp. 112–118.
- Soljak, M., "Volume of Procedures and Outcome of Treatment," *British Medical Journal*, Vol. 325, No. 7368, Oct 12, 2002, pp. 787–788. As of December 2, 2014: <http://www.ncbi.nlm.nih.gov/pubmed/12376425>
- State of Qatar, "About SCH," 2014a. As of December 2, 2014: <http://www.sch.gov.qa/about-sch/>
- , "Qatar Health System," 2014b. As of December 2, 2014: <http://www.sch.gov.qa/health-services/services-to-public/qatar-health-system>
- , "Vision & Mission," 2014c. As of December 2, 2014: <http://www.sch.gov.qa/about-sch/vision-n-mission>
- Steinbrook, Robert, "Lobbying, Campaign Contributions, and Health Care Reform," *New England Journal of Medicine*, Vol. 361, No. 23, 2009.
- Stoto, M. A., "Population Health in the Affordable Care Act Era," 2013. As of December 2, 2014: <http://www.academyhealth.org/files/AH2013pophealth.pdf>
- Sultanate of Oman, *The Vision for Oman's Economy: Oman 2020*, Chapter 6, 1995. As of December 2, 2014: http://shodhganga.inflibnet.ac.in/bitstream/10603/3836/11/11_chapter%206.pdf
- Sultanate of Oman Ministry of Health, *The 8th Five-Year Plan for Health Development (2011–2015)*, 2011.
- Swinburn, Boyd, Garry Egger, and Fezeela Raza, "Dissecting Obesogenic Environments: The Development and Application of a Framework for Identifying and Prioritizing Environmental Interventions for Obesity," *Preventive Medicine*, Vol. 29, No. 6, 1999, pp. 563–570.
- Szecsényi, Joachim, Thomas Rosemann, Stefanie Joos, Frank Peters-Klimm, and Antje Miksch, "German Diabetes Disease Management Programs Are Appropriate for Restructuring Care According to the Chronic Care Model An Evaluation with the Patient Assessment of Chronic Illness Care instrument," *Diabetes Care*, Vol. 31, No. 6, 2008, pp. 1150–1154.
- Tang, Paul C., Mary Ralston, Michelle Fernandez Arrigotti, Lubna Qureshi, and Justin Graham, "Comparison of Methodologies for Calculating Quality Measures Based on Administrative Data Versus Clinical Data from an Electronic Health Record System: Implications for Performance Measures," *Journal of the American Medical Informatics Association*, Vol. 14, No. 1, 2007, pp. 10–15.
- Timbie, Justin W., D. Steven Fox, Kristin Van Busum, and Eric C. Schneider, "Five Reasons That Many Comparative Effectiveness Studies Fail to Change Patient Care and Clinical Practice," *Health Affairs (Millwood)*, Vol. 31, No. 10, 2012, pp. 2168–2175.
- UN DESA—See United Nations Department of Economic and Social Affairs.
- U.S. Congress, *Hospital Financing in Seven Countries*, Washington, D.C.: U.S. Congress Office of Technology Assessment, 1995.
- United Nations Department of Economic and Social Affairs, *World Population Prospects, The 2012 Revision*, New York, 2013. As of December 2, 2014: <http://esa.un.org/unpd/wpp/index.htm>
- Watts, Jonathan, "Korea's Pharmacists Protest Against Drug Law Reforms," *Lancet*, Vol. 357, No. 9257, 2001, p. 697.
- WHO—See World Health Organization.
- Wild, Sarah, Gojka Roglic, Anders Green, Richard Sicree, and Hilary King, "Global Prevalence of Diabetes Estimates for the Year 2000 and Projections for 2030," *Diabetes Care*, Vol. 27, No. 5, 2004, pp. 1047–1053.

- World Bank, *Health Expenditure, Total (% of GDP)*, 2014a. As of December 2, 2014:
<http://data.worldbank.org/indicator/SH.XPD.TOTL.ZS>
- , *Strengthening Healthcare Systems in the GCC Countries Is Key to Improved Fairness and Accountability*, Kuwait City, 2014b. As of December 2, 2014:
<http://www.worldbank.org/en/news/press-release/2014/02/21/strengthening-healthcare-systems-in-the-gcc-countries>
- , “World Development Indicators,” 2014c. As of December 2, 2014:
<http://data.worldbank.org/data-catalog/world-development-indicators>
- , “World Development Indicators, Figure 1.6: Personnel from 2010, Hospital Beds from 2012,” 2014d.
- World Health Organization (WHO), “WHO Definition of Health,” 1948. As of December 2, 2014:
<http://www.who.int/about/definition/en/print.html>
- , *Health System Profile, United Arab Emirates*, Regional Health System Observatory, 2006. As of December 2, 2014: <http://gis.emro.who.int/HealthSystemObservatory/PDF/United%20Arab%20Emirates/Full%20Profile.pdf>
- , “Global Health Observatory Data Repository,” 2008 data, 2008. As of December 2, 2014:
<http://apps.who.int/gho/data/node.main>
- , *Country Cooperation Strategy at a Glance; Bahrain*, WHO, 2013. As of December 2, 2014:
http://www.who.int/countryfocus/cooperation_strategy/ccsbrief_bhr_en.pdf
- , “Country Cooperation Strategy at a Glance; United Arab Emirates,” 2014. As of December 2, 2014: http://www.who.int/countryfocus/cooperation_strategy/ccsbrief_are_en.pdf