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Kurdistan Regional Government
Ministry of Planning · Ministry of Health

The Future of Health Care in the Kurdistan Region—Iraq

Toward an Effective, High-Quality System
with an Emphasis on Primary Care



Melinda Moore
C. Ross Anthony
Yee-Wei Lim
Spencer S. Jones
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Joanne K. Yoong



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Sponsored by the Kurdistan Regional Government

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Preface

In 2010, the Kurdistan Regional Government (KRG), under the auspices of His Excellency Dr. Ali Sindi, Minister of Planning, asked the RAND Corporation to undertake four studies aimed at improving the economic and social development of the Kurdistan Region—Iraq. RAND’s work was intended to help the KRG expand access to high-quality education and health care, increase private-sector development and employment for the expanding labor force, and design a data-collection system to support high-priority policies. The studies were carried out over the year beginning in February 2010. The RAND teams worked closely with the Ministries of Planning, Education, and Health to develop targeted solutions to the critical issues faced by the KRG.

This study provides an analysis of the health care system, with an emphasis on primary care, in the Kurdistan Region and what strategies can be pursued to move toward a more effective and higher-quality health care system. This report is based on a variety of methods and analyses. These include a review of the existing literature; analyses of available data; an analysis of Kurdistan Regional and Iraqi National documents and laws; modeling of future health care demand; and a qualitative assessment of numerous conversations with government officials, health care providers, health care policymakers, and private sector health care leaders.

This study was undertaken by the RAND Corporation at the request of the Kurdistan Regional Government under the auspices of the Ministry of Planning and in collaboration with the Ministry of Health. The research was conducted from February 2010 through March 2011.

The findings should be of interest to those interested in health care and health care–related policies in the Kurdistan Region—Iraq specifically and in health care policy more generally.

This research was prepared within RAND Health’s Global Health Initiative. RAND Health has built an international reputation for conducting objective, high-quality, empirical research to support and improve policies and organizations around the world. Its work focuses on a wide array of domestic and international policy areas, including quality of care, health promotion, financing, organization, public health preparedness, domestic and international health care reform, and military health policy.

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Executive Summary

This report describes the results of a yearlong effort conducted at the request of the Kurdistan Regional Government (KRG) to analyze the current health care system in the Kurdistan Region—Iraq; to make recommendations for better utilizing resources to improve the quality, access, effectiveness, and efficiency of primary care; and to define the issues entailed in revising the existing health care financing system.

Approach

To conduct this work, RAND staff reviewed available literature on the Kurdistan Region as well as information relevant to primary care. We interviewed a wide range of policy leaders, health practitioners, patients, and government officials to gather information and understand their priorities, and we collected and studied all available data related to health resources, services, and conditions.

Using the available information, we described current service utilization, projected demand for services five and ten years into the future, and calculated the additional resources (beds, physicians, nurses, etc.) needed to meet future demand. We used this information and the articulated needs of the Kurdistan Region to develop an array of options for improving primary care organization and management, the health workforce, and information systems, and to address issues in health financing. We developed an extensive list of policy options and discussed them with key policy leaders in the Kurdistan Region and among the research team to rate them by importance and feasibility. We then used these criteria to identify a subset of policy changes as potentially the most important for implementation over the next two years.

Current Health System in the Kurdistan Region

The health system in the Kurdistan Region has many strengths:

- *Access* to care is excellent. The majority of people live within 30 minutes of some type of primary health care center (PHC); in remote regions, hospital and emergency services are increasingly accessible.
- The *total number of health facilities* is adequate. All governorates have public general, emergency, and pediatric hospitals, and most PHCs provide most of the basic primary care services.

- *Health care providers* are knowledgeable and strongly committed to patient health. Some of the better physicians in Iraq have migrated to the Kurdistan Region.
- The *commitment* of health system leaders is strong, and they have set appropriate strategic goals and priorities for improvement.

The primary health care system in the region also faces challenges:

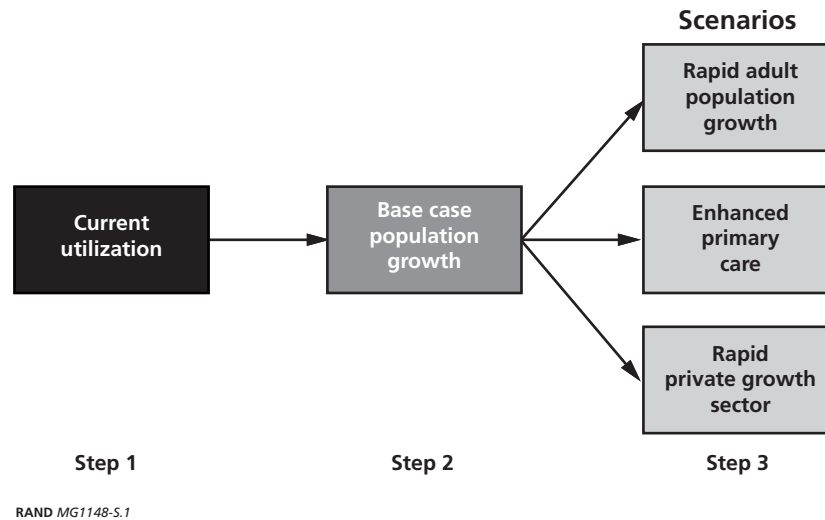
- The *number of physician-staffed PHCs and the distribution of PHCs and medical staff are not optimal*. The number of main PHCs (staffed by at least one physician) per capita falls short of international standards. Slightly fewer than 30 percent (249 of 847) of PHCs have at least one physician; the remaining 598 branch facilities do not. Services offered at each type of facility and reporting requirements are not standardized. Facilities are not systematically networked, and referrals are not well organized.
- Primary care is of variable *quality and availability*. Quality is not systematically measured, and most personnel lack training in quality improvement methods. Many health authorities indicate that the quality of PHC services could be improved.
- *Physicians are poorly distributed and overworked, and nurses are underutilized and lack appropriate training*. The number and distribution of medical staff are not optimal, especially in rural areas. Many general practitioners in PHCs are neither supervised nor mentored, and most physicians work only in the morning, devoting the rest of the day to private practice. Job descriptions and staff performance standards are lacking, and few health care managers are trained.
- *Health information systems* are not systematically used to support policymaking, regulation, or system management. Data collection and analysis are not standardized, and computer technologies are not fully utilized. Data systems are inefficient, and data are not readily available; available data are not routinely used at all relevant levels. Patient record-keeping at ambulatory centers is virtually nonexistent.
- Health care is generally *financed by government budgets*, and the financing system provides no incentives to promote efficiency. There is very little private insurance.

A *primary care–oriented health care system* could help the KRG address many of these challenges. An ideal model is an integrated health care system that offers services at the appropriate level of care; creates incentives for patients to seek urgent and other care in the community, when appropriate; and integrates health information across levels of care. Systems that integrate health care delivery produce consistently higher-quality care and better clinical outcomes, with associated lower costs.

Projecting Future Health Care Supply and Utilization for the Kurdistan Region

To estimate future resource needs, the RAND team projected future supply and demand for health services in the Kurdistan Region in a *base case*; this model assumed that the current health services provided and current patterns of health service utilization remained unchanged through 2020. We then changed the assumptions in the model to compare the gap between supply and needs under *different scenarios* (Figure S.1).

Figure S.1
Overview of Modeling Plan



Estimating Demand for Health Care: Base Case

We first projected health care supply and utilization for 2015 and 2020, assuming moderate population growth consistent with the levels of growth the Kurdistan Region has experienced recently (3 percent annual growth between 2010 and 2020) and unchanged patterns of health service delivery and utilization. Table S.1 shows the additional resource needs under these conditions.

Estimating Demand for Health Care: Three Future Scenarios

We then estimated how the additional resources needed would change under different assumptions (see Table S.2), focusing on three indicators of future health service utilization for each governorate:

- Total hospital admissions
- Total emergency department (ED) visits
- Total number of outpatient visits.

Scenario 1 assumes rapid population growth due to expansion of the oil economy, with an approximate 2.4-percent yearly influx of foreign workers, primarily young male adults. The

Table S.1
Projected Workforce and Hospital Bed Needs—Base Case

Health Care Resources	2015	2020
Hospital beds	+1,343	+2,574
Physicians	+1,070	+2,097
Nurses	+1,681	+3,325
Dentists	+126	+246
Pharmacists	+82	+151

Table S.2
Summary of Projected Changes in Resource Requirements in 2020 for Each Scenario, Compared with the Base Case (% difference)

Scenario	Hospitalizations	ED Visits	Outpatient Visits
Rapid population growth	28.2%	74.2%	7.9%
Improved primary care (lower-bound estimate)	-1%	-20%	20%
Growth in private sector health care (lower-bound estimate)	2.0%	0%	5.0%
Growth in private sector health care (upper-bound estimate)	10.0%	0%	20.0%

increase in net migration will result in an average annual population growth rate of 4.8 percent between 2010 and 2020 and a total projected population of about 8.75 million by 2020. These foreign workers will have higher rates of hospitalization and ED use, and lower rates of outpatient care utilization. Under this scenario, hospitalizations could increase by as much as 28 percent over the base case by 2020, ED use by as much as 74 percent, and outpatient visits by as much as 8 percent.

Scenario 2 assumes enhanced primary care, meaning fewer hospitalizations for care that could be provided in ambulatory facilities, increased outpatient utilization, and decreased ED utilization. These assumptions will result in a 20-percent reduction in hospitalizations for chronic disease, a 20-percent increase in outpatient visits, and a 20-percent decrease in ED utilization.

Scenario 3 assumes expansion of the private health care sector. This assumption will result in broad increases in utilization (2- to 10-percent increase in inpatient utilization, a 5- to 20-percent increase in outpatient utilization, and no change in use of emergency care).

We draw the following conclusions from our modeling effort:

- Population is the main driver of future health care use.
- Significant investment in health care (physicians, hospitals, and PHCs) will be needed to meet the projected demand for care.
- Better primary care could reduce hospitalizations and emergency room use.
- The growth in private sector health care will increase systemwide utilization in most areas.

Health Care Financing System

The KRG's Minister of Planning asked RAND to review the basic tenets of health care financing and to develop a road map to help guide KRG policy development in this area. We (1) provided an overview of health care financing and its basic tenets, (2) examined how other countries have dealt with financing issues, (3) developed a general profile of the Kurdistan Region's present health care financing system, and (4) defined the questions the KRG will need to address as it considers its future financing system.

Health care financing is the process of mobilizing, accumulating, and allocating money to cover the health needs of the population, individually and collectively. The purpose of health financing is to make funding available and to give providers the right incentives so that everyone has access to effective public and personal health.

No two countries finance health care exactly the same way, because each country has its own objectives, cultural context, and health status. But every health financing system must answer the following questions:

- Who is eligible for health care coverage?
- Which services are covered?
- What is the source of funds to pay for services?
- How are funds pooled?
- How is payment made for services provided?

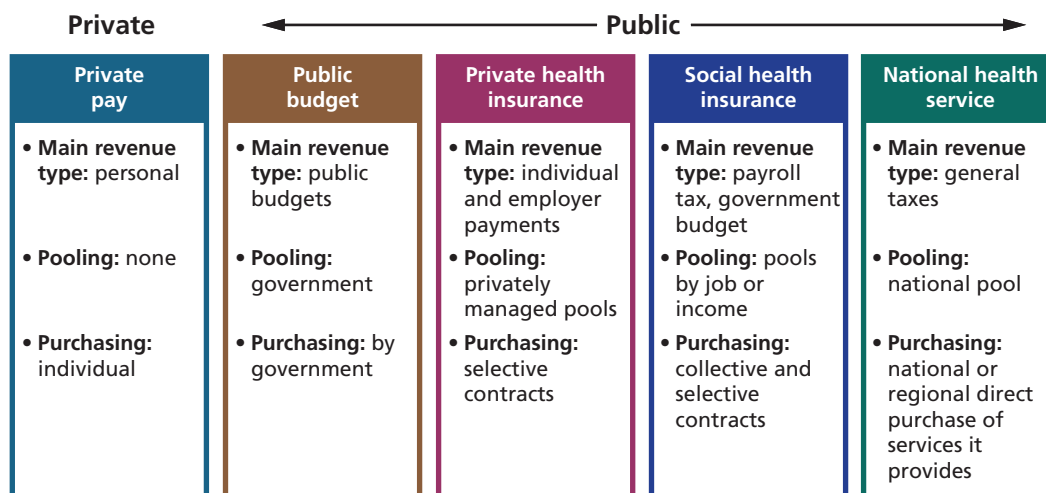
Most financing systems fall into one of the five general types of health financing systems shown in Figure S.2. The type of system a country has depends on a range of factors, including data systems, ability to collect taxes, the public workforce, number of physicians, education of the population, and the sophistication of the banking and insurance systems. Almost all countries have mixed systems.

A country's health care financing system is a critically important component of its health care system that enables all other parts. The financing system enables equitable collection of sufficient resources in order to offer efficient, quality care to all segments of society. The financing system defines the compensation that providers will receive and embodies incentives that help determine efficiency and quality of care. The system also reflects a country's basic cultural and economic values.

Kurdistan's current health care financing system is primarily a public budget system. All Iraqis are covered under the system, and a wide range of primary, hospital, and other medical care is offered in the public facilities, where most health care is provided. Some services are provided by private hospitals and physicians in private practice.

Most services are paid for out of public budgets (KRG, governorates, or Baghdad); private physician and hospital services are paid for by individuals. In theory, the government regulates both the public and private health care sectors. Private insurance is almost nonexistent.

Figure S.2
Common Health Care Financing Systems



Co-pays are very low. Costs are rising quickly, as are payments for care abroad. The system provides few incentives for efficiency, quality, or cost control.

The Kurdistan Region currently lacks the sophisticated data, information technology (IT) systems, and managerial skills required to successfully operate more management-intensive systems such as social insurance or national health plans. These requirements must be in place before the KRG can successfully embark on reform. However, the Kurdistan Region is rapidly developing. In the near future, it can likely take the next step in establishing health financing systems that are not primarily budget driven. Careful planning and wise choices can help the Kurdistan Region achieve the health outcomes of much richer countries at a greatly reduced cost.

To examine other finance system options, the KRG will need to address multiple dimensions of the five key questions described above. These dimensions are given below.

Who is eligible for health care coverage?

- Will non-Kurdistan, non-Iraqi citizens receive the same health care benefits that Kurdistan citizens receive, and if so, will they pay the same amount?
- Will/can the KRG and Iraq *have different financing plans with different benefits?* If so, how will benefits be coordinated?
- How will the KRG administer and verify eligibility (for example, issue an insurance identification card)?

Which services are covered?

- Which services will and will not be covered?
- What process will the KRG use to decide coverage?
- How will the list of covered services be updated for new technologies?
- How will treatment for services not available in the Kurdistan Region be financed?

What is the source of funds to pay for services?

- What share of national income will be allocated to health care?
- Who will bear the burden of providing resources: the government (the KRG or governorate), individuals, and/or companies?
- What will be the size of co-payments and deductibles, and will they vary by type of service?
- How will care for the poor be financed?
- How much will non-Kurdistan residents pay for treatment?

How are funds pooled?

- Will the KRG continue to utilize the national budget to pool resources or will it move toward some form of insurance?
- If the KRG pursues an insurance system, will it be public or private, voluntary or compulsory?
- How will the KRG and Baghdad rationalize and coordinate systems?

How is payment made?

- What mechanism(s) will be set up to process and pay for services and staff?
- Will there be incentives in the system to encourage efficiency and productivity?

- What will the payment rates for services be?
- Will a *prospective* payment system be used to encourage efficiency?
- Should payment be linked to performance or level of effort for providers, hospitals, PHCs, and so forth?

As part of the process of assessing which health financing system might be best for the Kurdistan Region, it is worth noting that spending a great deal on health care does not guarantee good health outcomes. For instance, the United States spends more than \$7,000 per capita on health care—more than any other country. However, in Korea, which spends about \$1,500 per capita on health care, life expectancy is higher than in the United States; higher life expectancy and lower per capita spending is also the case for Cuba, Japan, Spain, France, Switzerland, Canada, Norway, Denmark, and the United Kingdom. Many factors besides expenditures on health care contribute to life expectancy, but the way in which countries organize and spend their limited health care dollars can have a profound influence.

Deciding on and establishing a health financing system is a complex and demanding undertaking. To make good policy decisions, the KRG should review all policy options and choices, with special attention to the following key questions:

- What data are required to manage any system?
- What actions can be taken now to improve efficiency and control costs?
- What incentives should be embedded in the system to ensure quality health care for all residents of the Kurdistan Region?

It will also be necessary to develop a strategic health care financing plan and define a research agenda to fulfill it. The financing system will be key to the effective functioning of the health care system in the Kurdistan Region as well as to the region's development and the health of its people.

Improving Primary Care

Primary care is key to the success of a modern health care system. Primary care anchors the organization of health services by providing an ongoing patient-clinician connection for delivery of most care and a pathway to and from other sources of care. Since improving primary care services is essential to ensuring access to care for all people living in the Kurdistan Region, it is not surprising that the Minister of Health and other KRG authorities have highlighted it as a high priority.

To address this priority, we examined the organization and management of primary care, and associated needs related to the health workforce and health information systems. Improvements in these areas underpin the entire health care system in the Kurdistan Region, now and into the future. Improvements can build on Kurdistan's tradition of medical excellence while expanding, upgrading, and modernizing health services.

Based on an analysis of the current system, discussions with health care leaders and managers throughout the region, and the guiding principles of primary care in the Twenty-First Century endorsed by the World Health Organization (WHO) and the U.S. Institute of Medicine (IOM), the RAND team made recommendations for improving Kurdistan's primary care

system in three areas: (1) organization and management of primary care facilities and services, (2) the health care workforce, and (3) health information systems.

Organization and Management of Primary Care Facilities and Services

The present organization and management of the KRG primary health care system has important strengths on which to build. At the same time, it also presents challenges that must be addressed in order to improve the efficiency, continuity, and quality of primary care service delivery. Below we discuss three major initiatives designed to improve the organization and management of primary care facilities and services:

- Distribute facilities and services efficiently
- Develop and implement a system for referrals and continuity of care
- Develop and implement a program for continuous quality improvement (CQI).

Distribute Facilities and Services Efficiently. The types, sizes, and locations of hospitals are relatively standardized across the Kurdistan Region. However, primary health care centers (PHCs) are much less standardized, and the number of main PHCs (those staffed by a physician) on a per capita basis falls short of international and Iraqi standards. Iraqi law defines different types of health centers (labeled as Types A–G) and establishes criteria for the population covered, physical infrastructure, and staffing at each type of facility; however, it is clear that these criteria have not been applied in a systematic and consistent fashion across the region.

Functionally, the primary care system in the Kurdistan Region is based on two levels of PHCs:

- *PHC Main Center* (Types A, B, C)—In general a main PHC serves a population of 5,000–10,000 and is staffed by at least one physician. A main PHC has the capacity to deliver all primary care services. Type B centers also serve as medical and paramedical training centers; Type C centers provide uncomplicated obstetric deliveries and simple medical and surgical emergency care.
- *PHC Subcenter/Branch* (Type D)—In general a branch PHC serves a population of up to 5,000 and is staffed by a male nurse, a female nurse, and a paramedical assistant. It provides simple maternal and child health services, immunizations, and simple curative services.

Health authorities have suggested that PHCs are not necessarily distributed appropriately, nor are they systematically standardized or monitored by such criteria as type, size of population served, staffing level, and services offered. Many of the basic or “traditional” primary care services are already provided in the Kurdistan Region, but not consistently. Experts have also persuasively argued that chronic disease management now be included in the package of primary care services, since nearly three-fourths of avoidable mortality—including a significant proportion of deaths in the Kurdistan Region—can be attributed to behavioral and environmental factors, such as diet, exercise, tobacco use, and alcohol consumption. Experience shows that each of these can be significantly reduced through public education and other prevention-oriented interventions.

A key aim in the Kurdistan Region should be to make primary care services more comprehensive and more uniformly and universally accessible at appropriate levels of care. The absence

of functional KRG standards for catchment areas, staffing, and services hampers efficiency and systematic improvement. The goals of universal access and high-quality care cannot be achieved without systematic application of such standards. Making the scope of services more uniform at each level of care is also a prerequisite to improving service quality, efficiency, and staff productivity. Therefore, we recommend that immediate attention be given to (a) aligning services with appropriate levels of care, (b) ensuring that facilities are properly equipped and staffed and can provide all appropriate services, and (c) ensuring the quality of those services.

The distribution of primary care facilities and services is intended to achieve primary care-oriented health care delivery that is accessible, patient-centered, integrated, efficient and meets the Twenty-First-Century needs of the Kurdistan population. With these objectives in mind, we recommend six strategies to improve the efficient distribution of facilities and services while maintaining sufficient flexibility to reflect different local conditions:

- *Define the appropriate scope of services to be provided at public sector clinics*
- *Organize the system of existing and new PHCs based on a core three-tiered networked system and specified access standards*
- Develop a plan to provide services based on standards appropriate for each type of facility
- Extend the reach and quality of health services through telemedicine
- Expand health education activities in clinics and schools
- Develop and implement health education campaigns for the public to promote safe and healthy behaviors of greatest relevance to the region.

All of these recommendations are important. However, the first two appear to be the most important and feasible for the near term.

Develop and Implement a System for Referrals and Continuity of Care. As a key report from WHO clarifies, patients should have a regular point of entry into the health system and an ongoing relationship with their primary care team (WHO, 2008b). The resulting continuity of care means that patient care is not simply episodic—neither patients nor providers should have to start from the beginning with every primary care or specialist visit. Ideally, there would be no gaps in care due to lost information or failed communication between providers. Effective care depends on continuity, not only in general primary care, but also in chronic disease management, reproductive health, mental health, and healthy child development. Continuity of care also requires that the system be as easy to use as possible for patients.

Currently, the Kurdistan Region has no system in place to give patients a consistent point of contact with the health care system—for example, a designated primary care provider or team. Likewise, there is no established method for communication between a referring provider and a consultant specialist. These two components of continuity of care are critical contributors to more cost-effective care and better health outcomes.

A system for referrals and continuity of care aims to ensure that patients receive services at the most appropriate time and in the most appropriate setting and that care is well coordinated across care levels and providers. Patients referred to specialists and hospitals should be able to return to their home clinic and primary care provider for follow-up or ongoing management. Ideally, this means that a patient should see the same primary care provider, or at least the same team of providers, at each visit, and that referrals out to and back from specialty care entail smooth transitions in both directions.

Such a system is built on a foundation of quality services at each level of care. Also, at a minimum, all providers should have access to the patient's health care record so that they are aware of important test or examination results and do not waste resources duplicating efforts. Electronic health records greatly facilitate effective systems for referrals and continuity of care, but they are not the only way to achieve this goal. In this report we offer four recommendations for improving referrals and continuity of care:

- *Develop and implement a patient referral system*
- Explore the feasibility of designating population catchment areas and a “home clinic” and “primary care provider” for all population members
- Take initial steps in a transition to electronic health records at all levels across the region to facilitate referrals and continuity of care
- Promote local awareness of available services, appropriate use, and referrals within and beyond the local catchment area.

All of these recommendations are important, but they are challenging to address collectively in the near term. The first recommendation appears to be most important and at least moderately feasible.

Develop and Implement a Program for Continuous Quality Improvement. IOM (2005) has identified six desired attributes of quality health care, and WHO (2008b) has persuasively argued for a seventh:

1. *Safety:* Avoiding injuries to patients from the care that is intended to help them
2. *Effectiveness:* Providing services based on scientific knowledge (evidence-based) to all who could benefit, and refraining from providing services to those not likely to benefit (minimizing underuse and overuse, respectively)
3. *Patient-centeredness:* Providing care that is respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values are considered in making clinical decisions
4. *Timeliness:* Avoiding waits and sometimes harmful delays for both those who receive care and those who give care
5. *Efficiency:* Avoiding waste, including waste of equipment, supplies, ideas, and energy
6. *Equity:* Providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status
7. *Access:* Health care is available to everyone in the region. Facilities are appropriately located and provide an appropriate scope of services; residents are aware of available services and are physically and financially able to access them.

So far, there is no consistent program to assess the current quality of health care delivery in the Kurdistan Region, draw lessons from any issues found, or institute appropriate changes or incentives within the system to encourage quality. These activities are the heart of continuous quality improvement (CQI), an essential component of effective care.

The goal of CQI is to help health systems and professionals consistently improve the quality of health care delivery and outcomes through access to effective knowledge and tools. An essential requirement for CQI is establishing clinical practice standards that are uniform and based on best evidence. In this report we offer six specific interventions related to CQI:

- *Develop and implement evidence-based clinical management protocols for common conditions seen at ambulatory (and hospital) facilities*
- *Define and expand the safe scope of practice for nurses in ambulatory settings*
- Consider standardized patient encounter forms (e.g., checklists) to facilitate use of clinical management protocols at PHC facilities at all levels
- Identify and test efficiency measures to enhance patient flow
- Develop and implement carefully focused surveys of client and staff satisfaction on a routine basis at PHC facilities
- Begin to explore the feasibility of a regional and, ultimately, international accreditation process for ambulatory and hospital inpatient services.

Continuous quality improvement is a process needed at all levels of a health care system, but addressing the full range of interventions to establish such a system in the Kurdistan Region will take time. In the near term, the first two interventions listed above appear to be the most important and are at least moderately feasible. Thus, they might be the appropriate priorities in the near term.

The Health Workforce

Many studies have demonstrated that the size and qualifications of a country's health workforce are associated with health outcomes. Preparing the workforce—including doctors, nurses, midlevel health workers, and others—requires both careful planning and strategic investments in education that are designed to address the country's key health system priorities. Once trained, the workforce needs to be properly managed (i.e., clinical skills monitored, maintained, and updated). Policies and incentives are needed to achieve these objectives.

Iraq has a long tradition of excellence in medical services and training. Some of Iraq's best physicians have recently migrated to the Kurdistan Region. Although the KRG health system experienced significant erosion during Saddam Hussein's regime, since 1991 the situation has begun to stabilize. The current health care workforce has notable strengths, but important areas for improvement remain in terms of size and qualifications. For example, the Kurdistan Region has fewer physicians per capita than many other countries in the region. Physician shortages involve training/competencies as well as numbers, distribution (shortages are especially pronounced in rural areas), and hours worked.

In the Kurdistan Region, public sector ambulatory care relies almost exclusively on the obligatory one-year service of junior general-practice physicians after they have completed one or two years of post-graduate clinical (residency) training. This year of obligatory clinic service is not itself treated as a year of formal clinical training. During this year, these physicians receive no mentorship, supervision, or other professional development support, and they have limited access to professional resources, such as the Internet or professional journals. Virtually all of them provide clinic services in the morning and see private patients in the afternoon. All physicians who complete their clinical training have guaranteed government jobs (and pensions), but they receive relatively meager government salaries for public sector work and derive much more substantial income from seeing private patients.

According to KRG health authorities and our own observations, problems with the nursing profession are especially critical. The Kurdistan Region has more nurses per capita than some countries in the region but fewer than other countries. However, the Minister of Health has indicated that the *number* of nurses in Kurdistan may not be quite as critical a problem

as the *distribution, qualifications, and competencies* of nurses across all levels. The Minister of Health and most other health authorities we consulted are particularly concerned about an absence of defined nursing competencies, an absence of defined responsibilities and duties, and the resulting inefficient use of nurses in clinical care.

Below we discuss two strategies for improving the health workforce in Kurdistan:

- Enhance professional qualifications through education and training
- Improve the distribution and performance of the health workforce through specific human resource management interventions.

Enhance Professional Qualifications Through Education and Training. A trained workforce forms the core of every health care system. Both the number and the quality of health workers demonstrably affect all health outcomes, and the decisions the health workers make determine whether resources are used efficiently and effectively. Research shows that a workforce makes best use of available resources if its members are properly trained and motivated. IOM (2005) recommends education that includes practical experience that allows clinicians to master five core competencies: (1) patient-centered care, (2) ability to work in interdisciplinary teams, (3) utilization of evidence-based practice, (4) application of quality improvement, and (5) utilization of informatics.

In this report, we offer eleven specific interventions for improving professional education and training:

- *Establish an executive professional committee to develop and oversee new professional education, training, licensing and recertification standards, recruitment of students across the medical professions, and management of the supply of medical personnel to meet forecasted demand*
- *Preferentially recruit medical and nursing students from rural areas as a means to attract professionals to more permanent rural service*
- *Include primary care in the curricula of medical and nursing schools*
- *Improve the experience of general practice physicians during their year of obligatory medical service in primary care centers by providing preferential incentives for rural service and professional development opportunities*
- Enhance the profile of family medicine as a foundation for modern medical care and medical education
- Include primary care in the clinical rotations of medical and nursing schools
- Enhance training in practical clinical skills during medical and nursing school training, internship, rural rotation year, and all post-graduate training
- Complete redesign of and implement new nursing curriculum and training at each of the KRG's three levels of nurse training (university, college, institute)
- Develop and implement a mandatory continuing education system for medical, nursing, dental, and pharmacy professionals
- Develop and implement a system for licensing and revalidation for medical professionals
- Enhance training and create a strong career track for preventive medicine specialists.

All of these interventions are all potentially valuable ways to improve professional qualifications. However, the first four might be the most appropriate near-term priorities because of their importance and feasibility.

Improve the Distribution and Performance of the Health Workforce Through Specific Human Resource Management Interventions. Recruiting and retaining health care workers, especially in remote/rural areas, is a problem not unique to Kurdistan. It is a worldwide phenomenon that has been a focus of considerable research effort. WHO has documented several factors that influence the choices of doctors, nurses, and midwives to work in rural areas. Some factors attract workers (for example, better employment opportunities or career prospects, better income and allowances, better living and working conditions, better supervision, and a more stimulating environment for worker and family). Other factors repel health care workers from rural assignments (for example, poor job security, poor socioeconomic environment, poor working and living conditions, poor access to education for the worker's children, inadequate availability of employment for the worker's spouse, and work overload).

In this report we offer six specific interventions to help improve health workforce management:

- *Develop, implement, and monitor required qualifications and job descriptions for professional staff at all relevant levels*
- Develop a plan to distribute staff based on standards defined in law for each type of facility
- Define and implement systematic and supportive supervision for physicians, nurses, and other health professionals serving in PHCs, especially in rural/remote areas
- Institute appropriate incentives to attract medical and nursing staff to serve (and remain) in rural/remote areas
- Increase the use of online human resource management forms, including applications for study, training, placement, licensure, continuing education, and related documentation
- Develop and implement strategies to reduce fraudulent private medical practice by unauthorized personnel (e.g., medical assistants advertising themselves as and providing services of physicians).

All of these interventions could help improve management of the health workforce. However, the first is very important and appears feasible in the near term.

Health Information Systems

Modern health information systems are essential to improving quality and efficiency. A health care system depends on data to inform wise investments in policies and programs and to monitor their implementation. Ideally, data are processed into information of sufficient scope, detail, quality, and timeliness to confidently manage health care services at all levels. Management information systems (MISs) make it possible to monitor health resources, services, and clinic utilization. Surveillance and response systems support the monitoring of mortality, morbidity, and health risk factors. Implementing such systems requires trained personnel and standardized data collection, processing, analysis, and presentation. Patient record-keeping is a key element in the management of primary care facilities and underpins efficient referrals and continuity of care.

It is clear that KRG policymakers wish to have such data. However, a “culture of data for action”—where data collection, processing, analysis, presentation, and use are routine and relatively easy—remains elusive. Below we discuss two broad strategies, corresponding to two broad types of health information systems:

- Develop and implement health management information systems
- Enhance surveillance and response systems.

Both of these types of systems serve managers at the regional, governorate, and district levels and are critical; improvements are highly feasible in the near term because the important foundations are already in place.

A third type of data system—patient clinical record-keeping—primarily serves clinical providers and patients and is also critically important to primary care. However, the foundations are not yet in place for such a system. Efforts to lay these foundations should be a near-term priority.

Develop and Implement Health Management Information Systems. Health MISs include data on health resources (e.g., facilities, staffing, equipment, supplies, and medications) and services provided, as well as health service utilization (number of clients served by each service provided). MISs support management of health resources and can help ensure service coverage, performance, and efficiency. For example, these systems can be used to help managers and policymakers track the distribution of health facilities/services to ensure adequate coverage; the services delivered at specified health facilities; the number and qualifications of health workers providing these services; the equipment and supplies at health facilities providing preventive, diagnostic, and treatment services; the utilization of health services; the percentage of the target population covered by each type of service; the efficient use of health facility staff; the proportion of the intended population that receives preventive services; and patient referrals and continuity of care across different levels and providers of health services.

In this report we offer two main recommendations for developing and implementing health MISs, each with numerous subcomponents:

- *Monitor clinic resources and services*
- *Monitor clinic utilization.*

The first recommendation appears to be most important and feasible to pursue in the near term. Monitoring of clinic utilization also seems very important and only slightly more difficult. Both would significantly enhance management and, ultimately, the efficiency and effectiveness of primary health care services.

Enhance Surveillance and Response Systems. Public health surveillance is the ongoing, systematic collection and dissemination of health-related data to be used for public health action and ongoing management. These data include mortality, morbidity, and risk factors for communicable diseases, noncommunicable diseases, and injuries. Desirable attributes of any surveillance system include broad and representative coverage, high-quality data, and timeliness. Such systems enable effective monitoring of trends in health outcomes and risk factors, timely detection of unusual health events, and appropriate action to respond to anomalous events or trends. Taking responsible action based on surveillance requires information collection designed to be actionable, adequate workforce size and analytic capabilities (particularly in the areas of applied epidemiology and statistics), and established response mechanisms and procedures (especially for epidemiological investigation of outbreaks, implementation of appropriate control measures, and/or design of further research).

This report offers eleven strategies to improve KRG surveillance and response systems:

- *Standardize the diseases and conditions to be included in routine surveillance*
- *Standardize data collection forms (for indicator-based surveillance)*
- *Hire and/or train personnel who will be responsible for specific surveillance functions*
- Conduct a systematic assessment of current surveillance systems across the Kurdistan Region, from the local level to the regional level
- Standardize the sources of surveillance information
- Standardize reporting processes, from the local level to the regional level
- Streamline data processing at the governorate and regional levels
- Develop and disseminate standardized analyses for surveillance information at all appropriate levels (district, governorate, region)
- Develop and implement a system for immediate alerts (event-based surveillance)
- Develop and implement standardized protocols for responding to events warranting timely investigation
- Monitor health risk factors.

These strategies largely represent a logical progression for improving surveillance and response and are all valuable for achieving that overall goal. However, near-term priorities might focus on the first three strategies, which we judged to be the most important and the most feasible.

Looking to the Future

The KRG has made significant progress in improving the region's health care services and the health of its people. However, more can be done, especially with respect to improving the health care system's quality, efficiency, organization, management, workforce, and data systems. Such initiatives will be increasingly important as Kurdistan continues its trajectory of modernization and integrates more closely with the rest of the world.

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Abbreviations

ACSC	ambulatory care sensitive condition
ACT	artemisinin-based combination therapy
AHRQ	Agency for Healthcare Research and Quality
ANC	antenatal care
ARI	acute respiratory infection
B-EOC	Basic Essential Obstetric Care
BRFSS	Behavioral Risk Factor Surveillance System
CDC	Centers for Disease Control and Prevention
C-EOC	Comprehensive Essential Obstetric Care
CHW	community health worker
CME	continuing medical education
CMU	Couverture Maladie Universelle (French)
CNE	continuing nursing education
CQI	continuous quality improvement
DG	Director General
DMO	district medical officer
DPT	diphtheria-pertussis-tetanus (DPT3 refers to third dose of DPT vaccine)
DRG	Diagnosis-Related Group
ED	emergency department
EIS	Epidemic Intelligence Service
EMT	emergency medical technician
EPI	Expanded Program on Immunizations
ESR	erythrocyte sedimentation rate

GDP	gross domestic product
GIS	geographic information system
GP	general practitioner
HAS	Haute Autorité de Santé (French)
Hct	hematocrit
Hgb	hemoglobin
HF	health facility
HMN	Health Metrics Network
HMO	health maintenance organization
ICD	International Classification of Diseases
ICT	information and communication technologies
IEC	information, education, and communications
IMCI	Integrated Management of Childhood Illness
IMF	International Monetary Fund
IOM	Institute of Medicine
IT	information technology
KRG	Kurdistan Regional Government
KRSO	Kurdistan Regional Statistics Office
MD	medical doctor
MDG	Millennium Development Goal
MIS	management information system
MOH	Ministry of Health
MSA	medical savings account
NGO	non-governmental organization
NHI	National Health Insurance
NHS	national health service
NICE	National Institute for Health and Clinical Excellence
NRI	natural rate of increase
OECD	Organization for Economic Cooperation and Development
OPD	outpatient department

ORS	oral rehydration salts
ORT	oral rehydration therapy
PCT	primary care trust
PHC	primary health care center
QHW	qualified health worker
RTA	road traffic accident
SARS	severe acute respiratory syndrome
SMC	specialized medical center
SSK	Sosyal Sigortalar Kurum (Turkey)
TB	tuberculosis
UAE	United Arab Emirates
UNGA	United Nations General Assembly
USAID	U.S. Agency for International Development
WBC	white blood cells
WDI	World Development Indicators
WHO	World Health Organization

Introduction

As economic development improves the length and quality of life in countries around the world, many countries face the challenges of modernizing their health care system in response to evolving health needs and evolving best practice. Evolving health needs encompass the demographic and health transitions from high birth and death rates and predominance of health problems typical of developing countries (communicable diseases, maternal and perinatal conditions) to lower birth and death rates and health problems typically predominant in industrialized countries (noncommunicable diseases and injuries). At the same time, new technologies and attention to health service quality have supported modernization of medical practice and health service delivery.

The Kurdistan Region has a long tradition of excellence in medicine and a current cadre of competent and dedicated health leaders at all levels whose insights and experiences can lead the region into a new era of health care. While primary health care has been an anchor for health service delivery globally for over 30 years, it is not a relic to be relegated to the past in favor of a new paradigm. In the 2008 report from the World Health Organization (WHO), *Primary Health Care: Now More than Ever*, Director General Dr. Margaret Chan reaffirmed that “the values that . . . informed the Alma-Ata Declaration [in 1978, declaring primary care as the model for global health policy] have been tested and remain true” (WHO, 2008b, p. viii). WHO and others believe that a primary care-oriented health system is the best framework for health service delivery in all countries and large areas around the world. The actions recommended in this report will build on current strengths in the region’s health care system while also modernizing it to meet the Twenty-First-Century health needs of the Kurdish population, taking advantage of modern technologies and best practices.

After initial discussions, in 2008 the Kurdistan Regional Government (KRG) asked RAND to conduct research in four areas, including health care. We agreed to focus our research on primary care. As a result of unfolding events, the final contract was not signed until there had been a change in government. As a result of shifting interests and priorities, RAND agreed to provide, in addition to research on primary care, a general overview of key aspects of health care financing policy that would form the basis of future discussions as part of its work effort. This workplan reflected both the recognition of the importance of primary care and the need to begin to think about a more modern health financing system. In this report we present the major findings from our assessment of the current health system in the Kurdistan Region, describe key aspects of a well-integrated model of care, summarize the key features of primary care in the modern era within the context of an integrated care model, project future health demand and health service supply needs in Kurdistan, and recommend specific

interventions related to three critical infrastructure elements of primary care: organization and management of services, workforce, and support for health information systems.

Methods

We used several standard research methods in this study. First, we conducted an extensive review of the available literature both inside and outside Kurdistan. This included all the literature we could find on the Kurdistan Region as well as information relevant to primary care and the other topical areas of interest. We then visited and interviewed a wide array of policy leaders, health practitioners, patients, government officials, and others engaged in health policy in Kurdistan to gather information and understand their priorities. We also collected and studied all locally available data related to health resources, services, and conditions.

Although our efforts were limited by the availability of data, we used traditional methods to project demand for services five and ten years into the future. We used these projections and present utilization patterns to calculate the resources (beds, physicians, nurses, etc.) needed to meet future demand. We looked at supply where possible to make statements on the gap between supply and demand. We compared the status in the Kurdistan Region with the statuses of other countries in the WHO Eastern Mediterranean region to gain a better understanding of the needs of the Kurdistan Region in the future. We also developed geographic information system (GIS) maps of the locations of primary health care centers (PHCs) in Erbil and, to a lesser extent, in the other governorates where we lacked the necessary data to fully apply such methods.

Finally, we conducted a detailed policy analysis. Utilizing the information we had, and the articulated needs of the region, we listed an array of policy options to improve primary care, deal with data shortages, and address issues in health financing. We presented a list of policy options and used a modified Delphi technique of inquiry of key policy leaders in the Kurdistan Region and among the research team to order options by their level of importance and feasibility. This allowed us to select a subset of policy changes that we suggest as potentially the most important for implementation in the next two years.

Organization of This Report

This report is organized as follows:

- Chapter Two summarizes our key findings on the current health system in Kurdistan and describes a well-integrated model of care and key features of modern primary care within this context.
- Chapter Three presents the methods for and results from our modeling of future demand and health service supply needs under three scenarios—a base case and three plausible future situations.
- Chapter Four provides an overview of the health care financing system and the questions that the KRG must answer as it moves to modernize its system of health financing.
- Chapter Five discusses the organization and management of health services in the Kurdistan Region and presents specific recommended interventions related to distribution and scope of services, referrals and continuity of care, and continuous quality improvement.

- Chapter Six addresses the health workforce and presents specific recommended interventions related to education/training and human resource management.
- Chapter Seven discusses health information systems to support health system efforts and presents specific recommendations for interventions related to surveillance and response and to management information systems (MISs).
- Chapter Eight provides a summary and conclusions from the previous chapters and suggests potential next steps.

Current Health Care System in the Kurdistan Region—Iraq and Vision for the Future

Potential Policy Actions

- Offer health services at the lowest level of care that is safe and effective for each patient
- Create incentives for patients to seek care in community settings, when appropriate
- Leverage information technology (IT) to integrate health information across levels of care

As the KRG looks to the future, it has many policy choices and opportunities to adapt and modernize its health care system. In a Twenty-First-Century model of care, we believe primary care is a cornerstone for providing health services and for serving as a point of referral for more specialized services. In this chapter we provide an overview of the current health system in the Kurdistan Region, describe characteristics of a well-integrated health system based on the latest research, and describe the role of primary care in such a system. We believe that a primary care orientation and the potential objectives presented in this chapter should help frame a KRG vision for health care in the modern era, to serve both the people and the needs of this rapidly developing region.

Current Status

The population in the Kurdistan Region is relatively young and increasing rapidly in size, particularly in the Duhok governorate and in urban areas. The 11- to 15-year-old age group and the 56- to 60-year-old age group are proportionally smaller in the region's population pyramid, reflecting excess mortality associated with malnutrition and war, respectively, during the late Saddam Hussein era, before the No Fly Zone was established.

Mortality

The leading causes of death in 2009 for persons five years of age and older and for children under five years of age, as reported to the Ministry of Health (MOH), are shown in Table 2.1. These likely represent the subset of deaths occurring in health institutions rather than all deaths. Nonetheless, the table provides insight into the rank and relative importance of these leading causes of death. Grouping injuries of all kinds into a single cause of death artificially escalates injuries to the leading cause of death among persons five years of age and older;

Table 2.1
Leading Causes of Death in Persons ≥5 Years of Age and Children <5 Years of Age, 2009

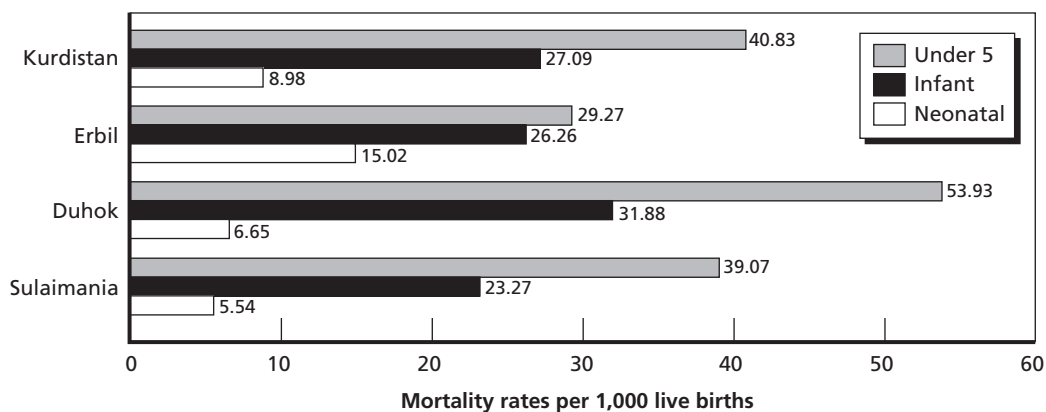
Rank	Deaths in Persons ≥5 Years		Deaths in Children <5 Years	
	Condition	#	Condition	#
1	Injury (all types)	925	Prematurity	399
2	Cancer (multiple types)	463	Septicemia	170
3	Stroke	450	Birth asphyxia	127
4	Cardiac disease (multiple types)	442	Dyspnea	113
5	Heart attack	359	Injury (all types)	106
6	Encephalitis	241	Congenital malformation	64
7	Kidney failure	177	Pneumonia	49
8	Diabetes	39	Neonatal heart failure	42
9	Respiratory failure	30	Gastroenteritis	23
10	Hypertension	28	Peritonitis	18

SOURCE: MOH/Planning statistics (May 2010).

however, the causes of death for this age group are otherwise largely consistent with patterns seen in other countries.

Although there is considerable reported variability across the governorates, neonatal deaths (<1 month of age) account for about one-third of all infant deaths (0–11 months of age) in the Kurdistan Region (1,270 of 3,833, 33 percent), and infant deaths account for about two-thirds of all under-five child deaths (3,833 of 5,776, 66 percent, Figure 2.1). Both of these ratios are comparable to those for the world as a whole. Consistent with these ratios, in which neonatal deaths among infants and infant deaths among children are disproportionately high, most of the causes of child deaths in Table 2.1 reflect conditions in neonates and infants under one year.

Figure 2.1
Neonatal, Infant, and Under-5 Child Mortality Rates in the Kurdistan Region—Iraq



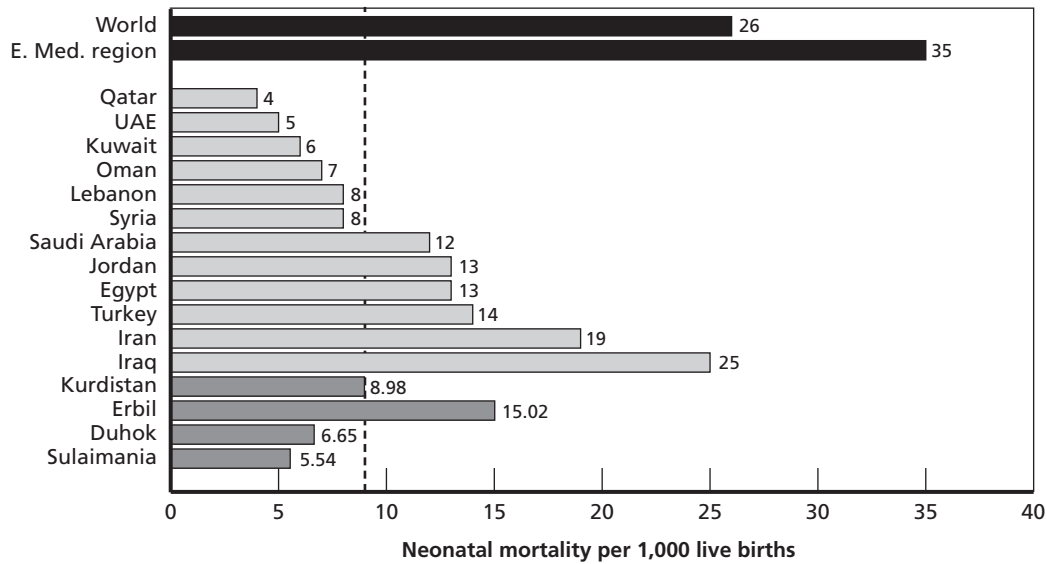
SOURCE: MOH Annual Report for 2009.

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The neonatal mortality rate in the Kurdistan Region (8.98 per 1,000 live births) is about midrange compared to other countries in the region and considerably lower than the WHO Eastern Mediterranean region or the world as a whole (Figure 2.2).

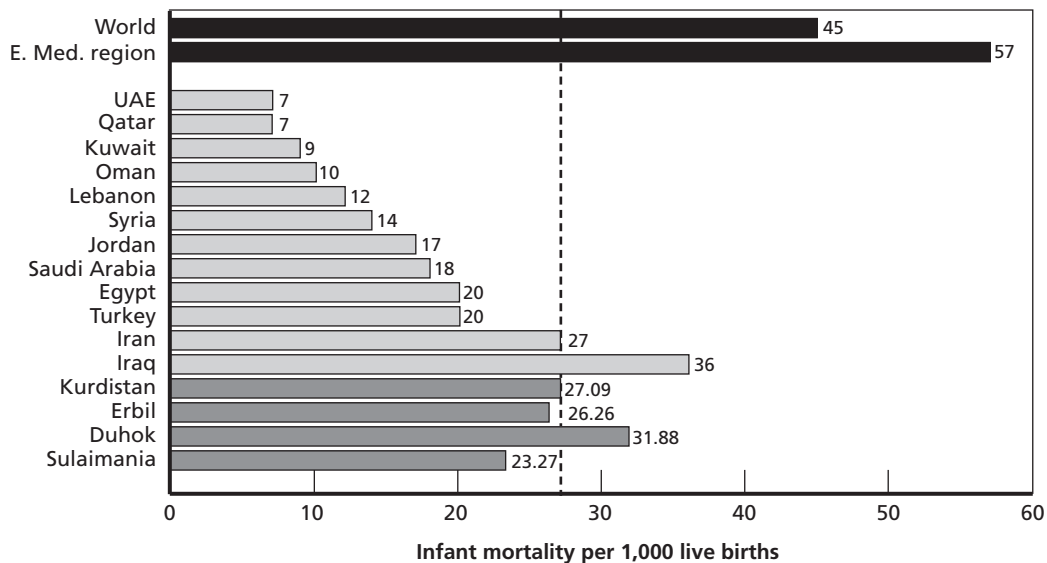
In contrast, the infant mortality rate (27.09 per 1,000 live births) and the under-five child mortality rate (40.83 per 1,000 live births) in Kurdistan are considerably higher than rates in other countries in the region, but they are still less than the WHO Eastern Mediterranean region or the world as a whole (Figures 2.3 and 2.4).

Figure 2.2
Neonatal Mortality Rates in the Kurdistan Region and Selected Countries



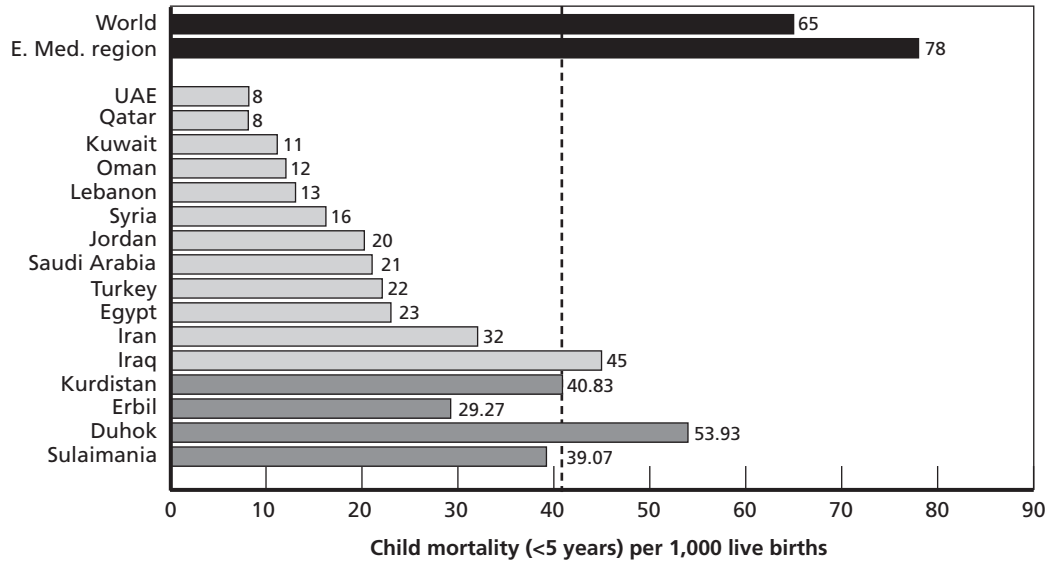
SOURCES: WHO, World Statistics 2010; Kurdistan figures from MOH Annual Report for 2009.
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Figure 2.3
Infant Mortality Rates in the Kurdistan Region and Selected Countries



SOURCES: WHO, World Statistics 2010; Kurdistan figures from MOH Annual Report for 2009.
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Figure 2.4
Under-Five Child Mortality Rates in the Kurdistan Region and Selected Countries



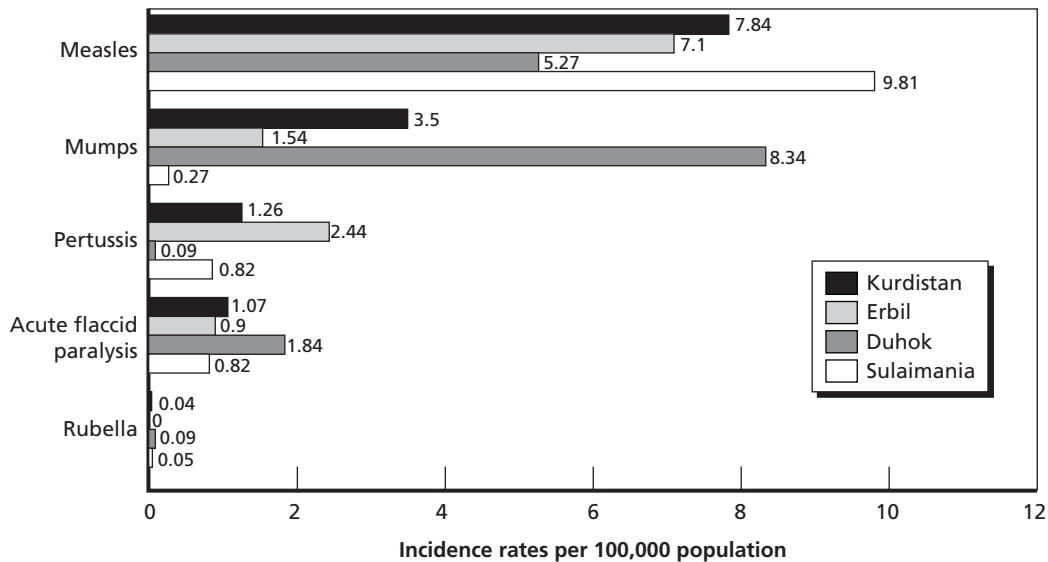
SOURCES: WHO, World Statistics 2010; Kurdistan figures from MOH Annual Report for 2009.

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Morbidity

The MOH’s Annual Report for 2009 includes important morbidity data across the three main groups of health conditions reflected in the WHO Global Burden of Disease reporting—communicable diseases, noncommunicable diseases, and injuries. The reported incidence rates for selected communicable diseases are shown in Figures 2.5 and 2.6. There were no cases of

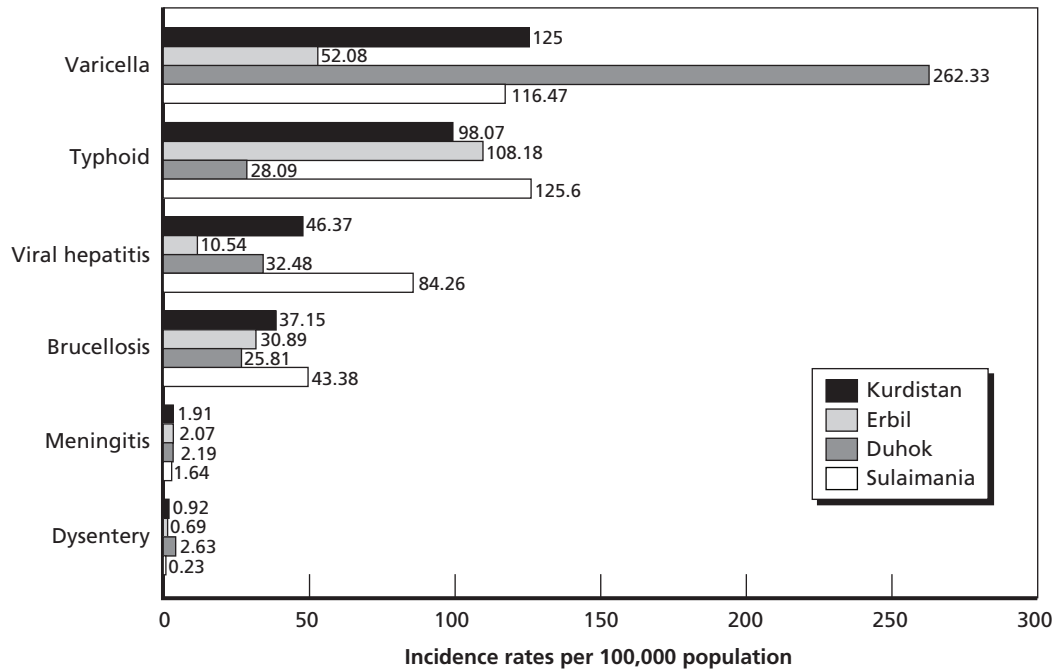
Figure 2.5
Incidence Rates of Selected Vaccine-Preventable Diseases



SOURCE: MOH Annual Report for 2009.

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Figure 2.6
Incidence Rates of Other Selected Communicable Diseases



SOURCE: MOH Annual Report for 2009.

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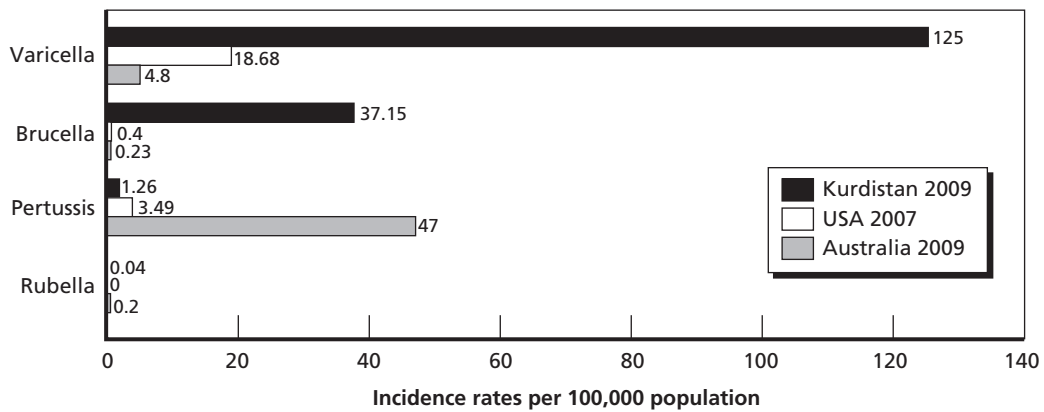
neonatal tetanus, cholera, rabies, or bilharzia (schistosomiasis) reported in any province in 2009. These figures highlight the importance of disaggregating disease data by location: In 2009, the incidence rates for mumps and varicella were significantly higher in Duhok, the rate for pertussis (whooping cough) was significantly higher in Erbil, and the rates for measles and viral hepatitis were significantly higher in Sulaimania, each compared to rates in the other provinces. Data further disaggregated by district or subdistrict would be useful to help detect and pinpoint disease outbreaks needing investigation to identify and guide specific control measures.

The incidence rates for some communicable diseases (varicella, brucella) were higher in Kurdistan compared to other countries, and the rates for some other diseases (pertussis, rubella) were lower (Figure 2.7).

The MOH Annual Report for 2009 also presents data on hospitalization rates for selected chronic diseases (Figure 2.8). The figure indicates that hospitalization rates were higher in Duhok for all diseases, compared to hospitalization rates in Erbil or Sulaimania. These data alone do not indicate whether the diseases themselves are more prevalent in Duhok or whether other factors, such as the propensity to seek care, account for the high hospitalization rates.

Finally, the MOH Annual Report for 2009 presents information on the types of injury cases seen in emergency hospitals (Figure 2.9) and the types of emergency deaths seen in forensic medicine centers (Figure 2.10). As shown in the figures, road traffic accidents (RTAs) are by far the leading cause of injury cases among the types of injuries reported, especially in Sulaimania and Duhok. The rate of deaths from burns was significantly higher in Erbil compared to Duhok or Sulaimania, but this figure alone does not indicate whether this is an ongoing risk

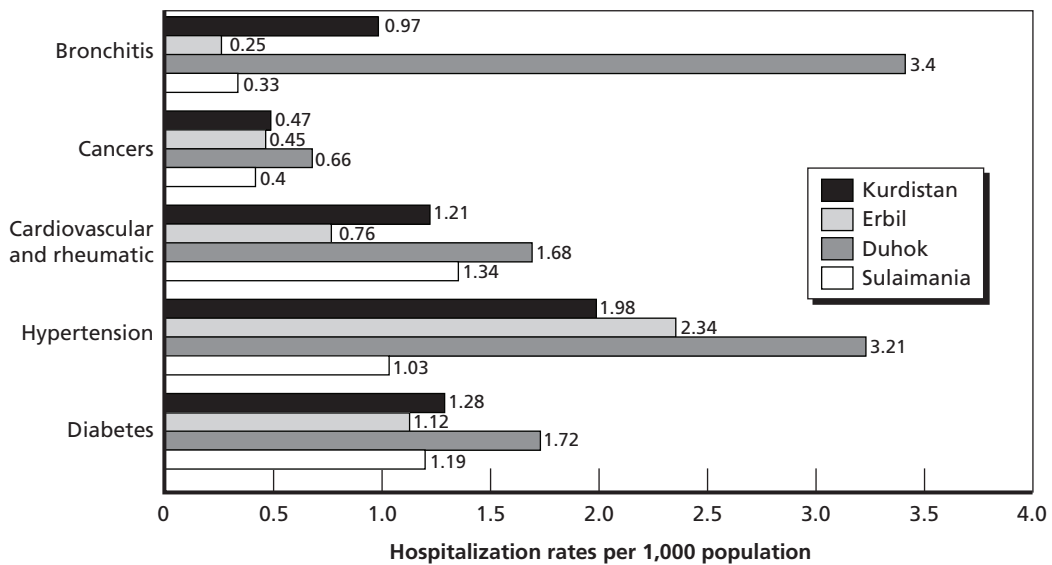
Figure 2.7
Incidence Rates of Selected Communicable Diseases in the Kurdistan Region, Australia, and the United States



SOURCES: Kurdistan figures form MOH Annual Report for 2009; Australia and U.S. figures from national surveillance websites.

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Figure 2.8
Hospitalization Rates for Selected Noncommunicable Diseases

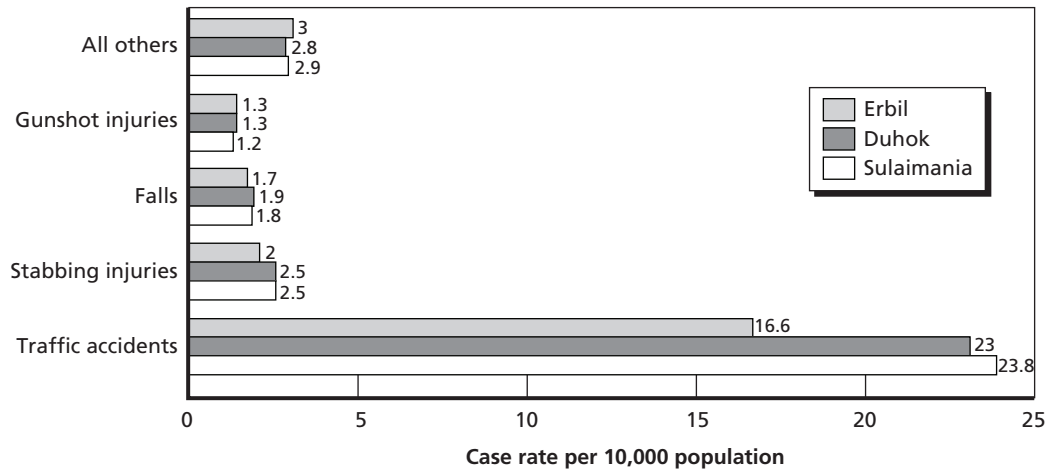


SOURCE: MOH Annual Report for 2009.

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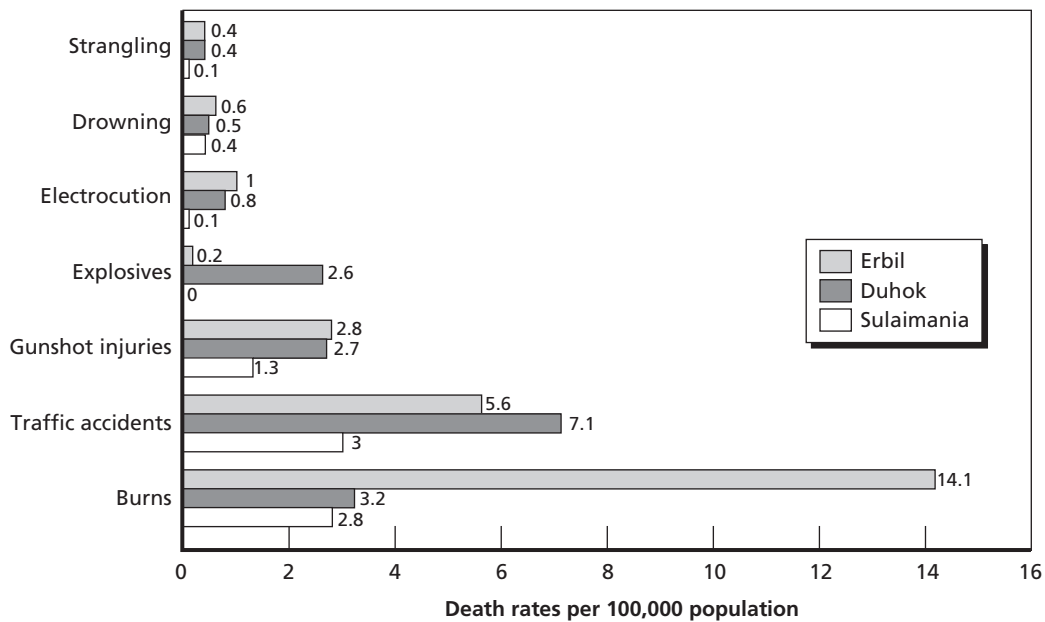
or a one-time catastrophic event. The rate of deaths from explosives was significantly higher in Duhok, compared to the other provinces. Because of the high rate of burn deaths reported for Erbil, burns were the leading cause of injury deaths overall, followed by road traffic accidents especially in Duhok and Erbil. Death rates from gunshot injuries were also higher in Duhok and Erbil compared to Sulaimania. The injury data point to the importance of reducing the number of RTAs in all provinces and potentially addressing the risk of burns in Erbil, if these data indicate a true and continuing heightened risk for burns in that province.

Figure 2.9
Types of Injury Cases Seen in Emergency Hospitals



SOURCE: MOH Annual Report for 2009.
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Figure 2.10
Types of Injury Deaths Seen in Forensic Medicine Centers



SOURCE: MOH Annual Report for 2009.
RAND MG1148-2.10

Risk Factors

In comparison with mortality and morbidity data, we found virtually no information for the Kurdistan Region regarding health risk factors such as smoking, diet, and physical activity or environmental factors, which are also important to guide decisions about priority health problems. Some of these factors are monitored by WHO (within the context of the Millennium Development Goals [MDGs]). Table 2.2 presents a comparison of such factors across countries in the region, the Eastern Mediterranean region as a whole, and the world.

Table 2.2
Selected Health Risk Factors, by Location

Location	% Population w/ Improved Drinking Water (2008)			% Population w/ Improved Sanitation (2008)			% Children <5 yrs (2000–2009)		% Obesity (>15 yr olds, 2006)		% Smokers (>15 yr olds, 2006)	
	Urban	Rural	Total	Urban	Rural	Total	Stunted	Over- weight	Male	Female	Male	Female
Kurdistan	—	—	—	—	—	—	—	—	—	—	40.0	5
Iraq	91	55	79	76	66	73	27.5	15.0	26.2	38.2	29.6	3.4
Jordan	98	91	96	98	97	98	17.5	14.8	—	—	42.9	9.1
Lebanon	100	96	99	100	—	—	16.5	16.7	—	—	42.9	9.1
Oman	92	77	88	97	—	—	—	—	16.7	23.8	20.5	1.3
Qatar	100	100	100	100	100	100	—	—	—	—	—	—
Turkey	100	96	99	97	75	90	15.6	9.1	15.6	23.9	51.3	19.5
UAE	100	100	100	98	95	97	—	—	17.1	31.4	25.0	2.6
EM region	93	76	83	83	45	61	—	—	—	—	32.0	4.4
UK	100	100	100	100	100	100	—	—	24.0	24.0	26.1	23.5
World	96	78	87	76	45	60	—	—	—	—	41.1	8.9

SOURCES: Kurdistan data—KRG MOH; all others—WHO, World Health Statistics 2010.

From the experiences of demographically similar countries, the KRG can expect increased levels of chronic diseases as the population ages, urbanizes, and gains in wealth. This demographic transition is often associated with less healthy lifestyles including smoking, unhealthy diets, and less physical activity; urbanization is also often associated with an increase in RTAs (which kill or injure drivers and passengers of automobiles and scooters as well as pedestrians). These are predictable challenges that can be reduced, if addressed proactively. A Twenty-First-Century primary care-oriented health care system is well suited to help meet Millennium Development Goals and to address the challenges of the demographic transition currently under way in the Kurdistan Region.

Strengths of the Current Primary Care System in the Kurdistan Region—Iraq

Primary care in the Kurdistan Region is provided almost exclusively through public sector primary health care centers (PHCs)—including main PHCs, which are staffed by at least one (typically, *only* one) physician, and PHC branches, which are staffed by paramedical personnel. Chapters Five–Seven provide more details related to the current primary care system. In examining Kurdistan’s primary health care facilities and services, the assessment team found some important strengths, which are discussed below.

Access. Access to care is generally good. The majority of people live within 30 minutes of some type of primary health care center (PHC), and hospital and emergency services in remote areas are increasingly accessible.

Facilities. While the total number of health care facilities is generally adequate, the number of main PHCs (staffed by at least one physician) is not sufficient to meet national standards and, according to many health authorities, they are not well distributed. PHCs provide

some or all primary care services. PHC pharmacies appear to be well stocked and operational. PHC laboratories are able to perform a relatively well standardized set of tests appropriate to ambulatory care.

Overall, all provinces exceed both the international and Iraqi standard of 10,000 for the average population size covered by a PHC (WHO Inter-Agency Standing Committee for Global Health Cluster, 2009; Republic of Iraq, 2010). Of note, however, Iraqi standards are higher than those espoused by WHO and others in the context of disaster relief (WHO Inter-Agency Standing Committee for Global Health Cluster, 2009; Sphere Project, 2004). While the government of Iraq calls for one “subsidiary” health center per 5,000 population and one “main” health center per 10,000 population, the international (disaster-related) standards for these are one per 10,000 and one per 50,000, respectively. On average, the number of people served by one PHC (with or without a physician) in Kurdistan is 6,172, with considerable variability across the three provinces (4,796 in Sulaimania, 7,316 in Erbil, and 8,762 in Duhok). However, it would be particularly useful to know more about the distribution of these centers based on the populations they are intended to serve—the average population size covered by each type of PHC and the population served by each specific center. This information was available only for Duhok, where the average population covered by the 64 centers with a physician is 13,173 (ranging from 7,317 in the Amedy district to 18,102 in the Zakho district), and the average population covered by centers without a physician is 2,632 (ranging from 1,157 in the Shekhan district to 7,216 in the Berdarash district). More information on the distribution of facilities and services can be found in Chapter Four.

All provinces have public general hospitals and at least one emergency and pediatric hospital. The average population size covered by hospitals is 93,357 for Kurdistan as a whole (ranging from 84,671 in Sulaimania to 89,882 in Erbil and 126,557 in Duhok). This is larger than the standard established by law, which specifies at least a 50-bed hospital for populations above 40,000 (personal communication with Dr. Abdullah Saeed Abdullah, Director General of Health—Duhok, November 3, 2010).

Personnel. In our visits to numerous health facilities, we observed that health care providers are generally compassionate and knowledgeable, and their commitment is strong. In discussions with KRG health leaders, we were told that some of the better physicians in Iraq, which has historically had one of the best medical systems in the Middle East, have migrated to Kurdistan. Physicians, dentists, and pharmacists at the PHCs we visited appeared to be busy and productive. More information on the number and distribution of medical professionals is found in Chapter Six.

Performance. Measures of health system performance reported for Kurdistan tend to fall at neither the high end nor the low end of other countries in the region; several performance indicators are not reported for Kurdistan (Table 2.3). For example, the percentage of births attended by skilled health personnel falls below that for several countries in the region but is above the levels for the WHO Eastern Mediterranean region and the world overall. Kurdistan’s vaccination coverage levels for measles (90 percent) and diphtheria/pertussis/tetanus (DPT3) (81 percent) fall midway between levels for other countries in the region. Not reported for Kurdistan are antenatal service coverage and the proportion of children with acute respiratory infections (ARIs) taken to a facility or with diarrhea receiving oral rehydration therapy (ORT). Vaccine-preventable diseases are contagious, and vaccination protects both the individual child and the community from disease spread; adequate treatment of childhood pneumonia and diarrhea also reduces two of the ten leading causes of child mortality in Kurdistan and worldwide.

Table 2.3
Selected Health System Performance Indicators, by Location

Location	% Antenatal Care Coverage (2000–2009)		% of Births Attended by Skilled Personnel (2000–2008)	% Immunization Coverage in Children 12–23 Months		% of Children <5 yrs	
	≥1 Visit	≥4 Visits		Measles (2008)	DPT3 (2008)	With ARI Taken to Facility	With Diarrhea Receiving ORT
Kurdistan	—	—	88	90	81	—	—
Iraq	84	—	89	69	62	81.6	30.7
Jordan	99	94	99	95	97	75.0	74.9
Lebanon	96	76	98	53	74	—	—
Oman	100	83	98	99	92	—	—
Qatar	—	—	100	92	94	—	—
Turkey	92	54	83	97	96	41.0	—
UAE	—	—	100	92	92	—	—
EM region	65	44	59	83	82	—	—
UK	—	—	99*	86	92	—	—
World	78	48	66	83	82	—	—

SOURCES: Kurdistan data—KRG MOH; all others—WHO, World Health Statistics 2010.

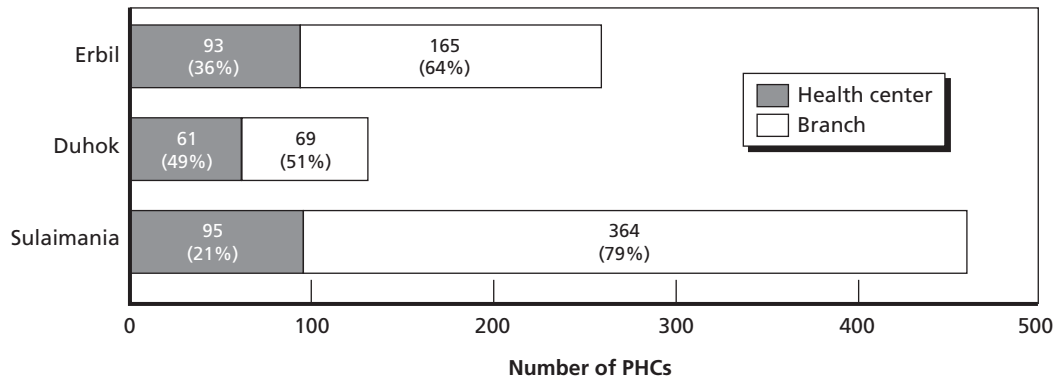
*UK data are for 1990–1999 (2000–2009 not available).

Current Challenges to Primary Care

We identified several elements of Kurdistan’s primary health care system for which there are important opportunities for improvement. These are based on reviews of documents, discussions with KRG health policymakers, and our own observations from visiting numerous health centers and hospitals across the three provinces. We also recognize that management in Kurdistan must be consistent with health sector principles and conform to at least the minimum standards set by the central government in Baghdad, though the KRG can choose to exceed such standards.

Organization and Management of Services. As noted above, the overall number of PHCs may fall within reasonable standards in terms of population size covered, but the number of main PHCs (staffed with at least one physician) does not, and most health authorities feel that facilities are not well distributed. The present system of PHCs includes two or three major facility types—249 health centers (29 percent of the total) with at least one physician (Types A, B, and C facilities, the overwhelming majority of which have only one general practitioner [GP]) and 598 branches (71 percent) without physician staffing (Type D PHC). The percentage of PHCs with physician staffing ranges from a low of 21 percent in Sulaimania to a high of 49 percent in Duhok, with 36 percent in Erbil (Figure 2.11). However, the labeling of health facility categories, and hence their reporting, is not consistent across the three provinces or functionally standardized centrally (notwithstanding the recent law that we were unable to obtain but that we understand defines and specifies criteria for ambulatory centers Types A to G). Some older PHCs are somewhat dilapidated and need physical renovation.

Figure 2.11
Physician-Staffed PHCs and Non-Physician-Staffed Branches, by Province



SOURCE: MOH Annual Report for 2009.

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Very few, if any, health directors at the regional, provincial, district, or facility level have received formal skill training in health care leadership or management.

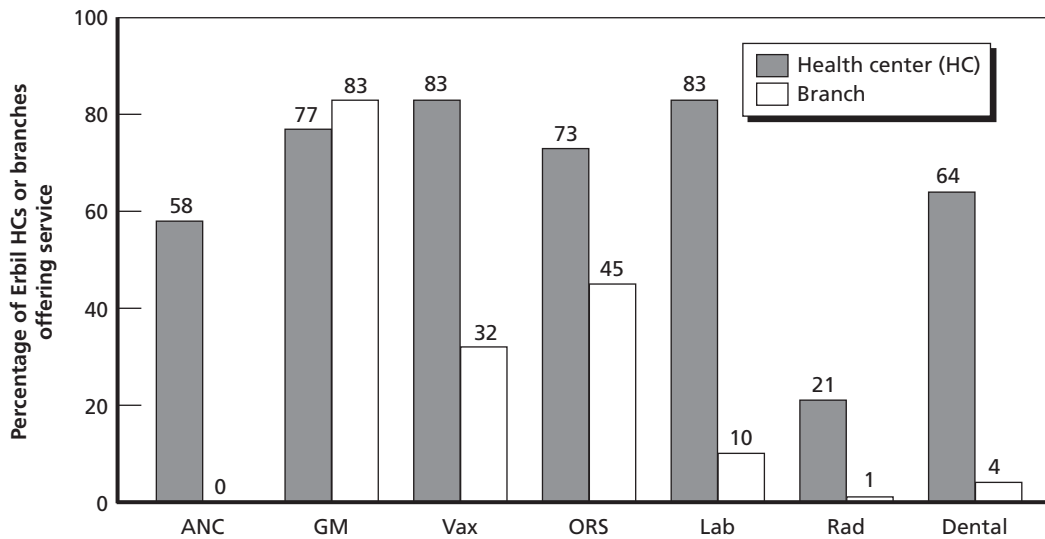
It does not appear that branches (Type D) and main health centers (Types A, B, and C) are systematically networked, that is, structured such that a higher-level center provides referral services for populations in the same catchment area. Health sector management flows from the central KRG to health directorates in each province to district medical offices to individual health facilities.

Perhaps one of the most critical challenges is the lack of adequate patient record-keeping across the Kurdistan Region. Clinical records are a key element of primary care, to facilitate quality and continuity of care and efficient patient referrals.

Scope of Services. In practice, the services provided by PHCs are not standardized within or across provinces in Kurdistan. Many PHCs do not offer all of even the most basic most basic primary care services (Figures 2.12 and 2.13). On one hand, a relatively high proportion of both health centers and branches in Erbil monitor child growth. On the other hand, antenatal care is provided at only slightly more than half of Erbil's health centers and at no branches, since prenatal services are delivered exclusively by physicians, often specialized female physicians. Vaccination and oral rehydration salts (ORS) are provided at a large proportion of health centers in both Erbil and Duhok but at a significantly lower proportion of branches in both provinces. However, we observed that some facilities we visited in Erbil that were providing ORS do not follow the worldwide best practice of treating children on-site. Rather, they provide the ORS salt-sugar packets for the parent to take home to treat the child. Only two-thirds of Erbil health centers have laboratories; however, most laboratories we observed performed a similar set of on-site tests using comparable equipment and testing methods. Patients seen in centers without a laboratory or requiring other types of laboratory tests are referred elsewhere for testing.

Referrals and Continuity of Care. As noted above, there is currently no functional patient record-keeping in ambulatory care centers and no organized referral system for primary care providers to send patients from a branch to a center with a physician or for referral to specialist care. PHCs are not considered the "home clinic" by either patients or providers. Referrals include, at best, small nonstandardized hastily handwritten notes. Patients typically do not return to their PHC provider for ongoing follow-up care. Without a systematic approach to

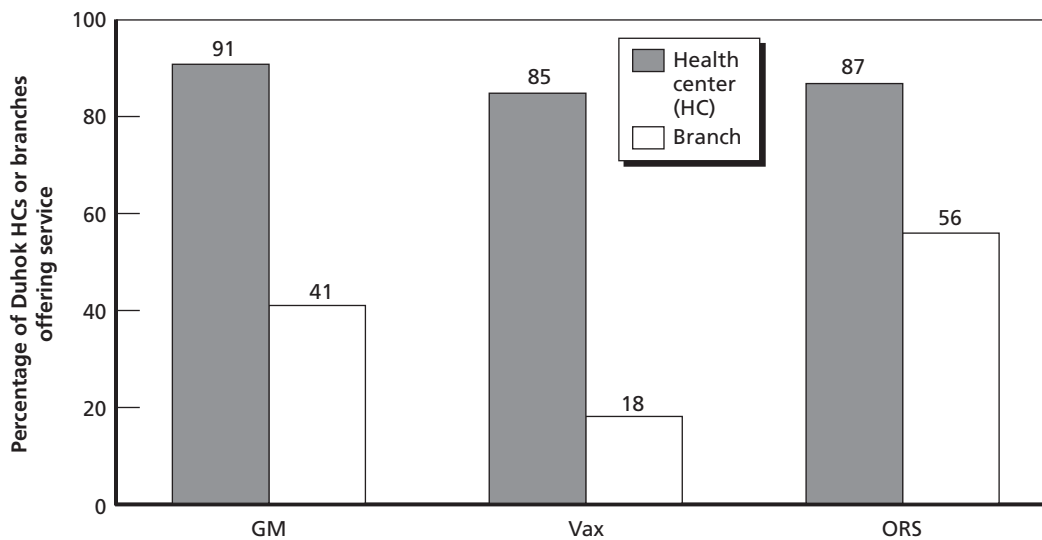
Figure 2.12
Primary Care Services Offered at Erbil Health Centers and Branches



NOTES: ANC = antenatal care; GM = growth monitoring; Vax = vaccination; ORS = oral rehydration salts; Lab = laboratory; Rad = radiology (X-ray).

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Figure 2.13
Primary Care Services Offered at Duhok Health Centers (with physician) and Branches (without physician)



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patient record-keeping and referrals, the specialist may not receive critical data on the patient’s condition as part of the referral. Likewise, without an established process for specialists to give feedback to the referring GP, the patient is not likely to derive full benefit from the consultation in terms of ongoing care.

Quality of Care. From a review of documents and site visits by the RAND team, primary care appears to be of variable quality and availability, and quality is not systemati-

cally measured. PHCs are mainly dependent on rotating general practice physicians (general practitioners, GPs) who have completed just one or two years of general practice training, and only 29 percent of Kurdistan's 847 PHCs appear to have a physician at all. The rotating general practice physicians receive no substantial mentorship or supervision during their year of obligatory PHC service. Many see 50 or more patients each day, which represents only about five minutes per patient over a typical four-hour workday, and only slightly more over a longer workday. In some facilities, equipment that clinic staff need (e.g., an X-ray machine for dentists or equipment for a clinic laboratory) is either absent or not fully functional. Some areas also experience drug shortages, especially for more costly cancer drugs. One specific cause of this is the influx of patients from the south, principally Mosul, who reportedly come to Kurdistan (especially Duhok) for services and drugs. This influx of patients from outside the standard Kurdistan province population makes PHC service planning difficult and depletes the PHC drug supply. We found no evidence of systematic efforts to identify problem areas in health care delivery and improve them. Most personnel do not yet have any training or orientation in quality improvement methods.

Workforce. There are critical gaps in the quantity, distribution, and qualifications of physicians and nurses for primary care services. Nursing is an especially critical problem. While there may be sufficient numbers of nurses, their education/training and use within the health system do not meet the quality expectations of the Minister of Health and many other health leaders across the Kurdistan Region. Upgrading the nursing profession is one of the Minister's highest priorities. At present, nurses have no job descriptions. They prefer to work in PHCs rather than hospitals because of fewer and more regular hours. However, in the PHCs we visited, they appeared to take on only limited responsibilities and be underutilized—primarily giving immunizations and therapeutic injections rather than, say, also providing health education, counseling, or other simple medical services.

As noted earlier and described in greater detail in Chapter Six, roughly one-third of PHCs have a physician, although this varies greatly by province, from a low of 21 percent in Sulaimania to a high of 49 percent in Duhok (Figure 2.11). These are mostly junior GPs in their mandatory year of PHC service. Many of the GPs at PHCs have not completed their clinical training and generally are neither supervised nor mentored; those we spoke with feel professionally unfulfilled. The current rotational system is a structural impediment to modern primary care, in which continuity of provider is an essential component. Moreover, there are fewer physicians overall per population in the Kurdistan Region—compared to other countries, only about 11 physicians per 10,000 residents—compared to 16–33 physicians per 10,000 residents in other countries in the WHO Eastern Mediterranean region (see Chapter Five). Also, many physicians work only in the morning and dedicate evening hours and sometimes most of their day to private practice. Compounding these issues for both medical and nursing professions is that routine continuing medical education (CME) is generally unavailable, especially in outlying areas.

Information Support. A “culture of data for action” is not in place. At present, insufficient data are collected or disseminated to facilitate informed policymaking, regulation, or system monitoring. Patient records, another fundamental element of primary care, and efficient referrals do not exist. Although the KRG MOH has been in the process of doing so for some time, health encounter data collection forms are not yet functionally standardized across the provinces. Even if required forms are standardized, they must be used for effective patient record-keeping. However, standardized forms are only the first step toward health system monitoring

and eventual electronic record-keeping. Data must be processed, analyzed, presented clearly, and used regularly in order to monitor health trends and manage health services. Currently, there is only limited use of computers for record-keeping in those facilities that have computers. Most information is recorded on slips of paper, and no detailed or chronological patient records are kept.

Since computers are typically not used for clinic record-keeping, the ability to monitor quality is limited. What data are available are generally of uncertain quality; only Duhok appears to audit and provide feedback on regularly reported facility data.

While aggregate data are available for some key indicators, data are mostly not readily available, comparable, or sufficiently disaggregated to permit the range of analyses that policymakers and managers need. Moreover, most data appear to be available mainly at the governorate and/or central levels (i.e., not disaggregated to reflect specific districts and subdistricts within governorates), and they are not routinely used at any level to guide policy or monitor health services or outcomes. While central data collection and analysis units exist within the Ministries of Planning (the Kurdistan Regional Statistics Office [KRSO]) and Ministry of Health's Department for Planning and Education), the current shortage of trained staff limits both data entry and data analysis capacity at all levels.

Key Aspects of a Well-Integrated Model of Care

The KRG will need to address several critical policy issues over the next ten years as it plans its future health care system. *Establishing an optimal model of care will not be easy.* It will require KRG policymakers to balance five key elements related to health services: (1) access, (2) scope, (3) provision, (4) integration, and (5) quality. The KRG can examine and optimize these elements in a manner that creates a system that is safe, timely, effective, patient-centered, efficient, and equitable.¹

Research shows that systems that integrate health care delivery produce consistently higher-quality care and improved clinical outcomes, with associated lower costs. Reflecting that model, Kurdistan will need a health care system that aligns available services with the needs of residents by providing incentives that guide patients to seek appropriate care and guide clinicians to provide appropriate services. More care is not necessarily better care. Indeed, in many cases more care can lead to suboptimal clinical outcomes (e.g., higher infection rates, iatrogenic injury) and lower patient satisfaction (e.g., long wait times).

The *ideal model* for an integrated health care system requires an infrastructure offering a spectrum of care that encourages patients to obtain needed services in the most convenient and least intensive setting that is consistent with safe and effective care. The system must simultaneously discourage overuse and promote preventive services in tandem with diagnostic and therapeutic services. Historically, developed countries initially focus on the provision of centralized, hospital-based care in the major cities, with health posts in rural communities. However, as countries develop economically, health status improves, and health care systems mature, the focus shifts in part away from hospital care toward a comprehensive model of care across the continuum of each individual's lifetime. A primary care orientation is the foundation of such a system.

¹ U.S. Institute of Medicine quality domains (IOM, 2001).

We believe KRG authorities should consider three key objectives as they modernize their health care system:

1. ***Offer services at the appropriate level of care.*** For example, this might mean creating incentives to migrate those services away from acute care hospitals that can be effectively and safely provided in lower-intensity institutional and community-based settings.
2. ***Create incentives for patients to seek urgent and other care in the community, when appropriate.*** This means reserving hospital inpatient care and hospital-based emergency care services for those who most need them.
3. ***Integrate health information across levels of care.*** This entails use of secure networks to provide efficient access to essential patient information.

Such activities would contribute to an ideal model of care, where health care services are offered in appropriate settings, the entire population is covered but patients are encouraged to seek care in appropriate settings, and technology is leveraged to ensure seamless information flow across care settings.

Objective 1—Offer Services at the Appropriate Level of Care

In an ideal model of care, coverage is universal and services are provided at the appropriate level—the facility closest to the community level where a patient can be treated safely and receive quality care. For example, acute care hospitals should be reserved to the degree possible for those in need of care that is not safe and feasible to manage in the ambulatory setting. Patients with less severe or less complex conditions should be able to receive care at the appropriate outpatient facilities. Patients who seek care in hospitals may expose themselves unnecessarily to the risks associated with such settings (e.g., higher rates of medical errors and nosocomial infections). Their presence also creates backlogs that delay care for some patients who truly need inpatient services (e.g., cancer surgery).

Ensuring that services are provided at the lowest level of care that can safely and effectively manage each patient will require an infrastructure that can provide high-quality health services that are appropriate for each level. Moving appropriate services out of the hospital setting has the potential to improve patient outcomes.

Providers who frequently perform services and procedures deliver better and more appropriate care than those who only occasionally perform them. Consequently, the KRG may seek to establish ambulatory care centers where appropriate procedures and services could be concentrated to take advantage of the quality and efficiency outcomes of such concentrated care, while assuming access. Such a policy could also move care to a more appropriate setting and free up resources in the hospital setting.

Ambulatory services include a spectrum of service types, each requiring special training and expertise. These services include, but are not limited to, the following:

- ***Primary care.*** Providers and facilities offering primary care services focus on general pediatric, adult, and geriatric medicine. Basic mental health and dental services are also provided in these settings, although not necessarily in the same facilities. Primary care providers specialize in a holistic approach to the patient and family, coordinating care with specialists and other providers to ensure appropriate and efficient use of resources (see next section—“Primary Care in the Twenty-First Century”).

- *Prenatal and obstetric care.* Prenatal services are typically provided in a primary care setting. Uncomplicated obstetric services can also be provided in appropriately equipped and staffed centers other than hospitals. Regular prenatal visits are associated with optimal maternal and child outcomes. The ability to provide convenient access, limited wait times, and access to trained clinical providers can help meet an appropriate Millennium Development Goal (MDG)—for women to have healthy pregnancies and pregnancy outcomes—and thereby ensure that babies born today, the next generation of Kurds, are healthy.
- *Specialty outpatient care.* Specialist providers have particular expertise in pediatrics, internal medicine, surgery, and their related subspecialties. Patients with certain diseases or risk factors have better health outcomes when they receive care from providers with specialized training. However, routine care is better and more efficiently delivered by providers who focus on primary care and can refer selected patients for specialty care when specifically needed. The services of specialists are, on average, more costly. In addition, given the limited number of specialists available in any one specialty, optimal care for the population is achieved when specialists are available to those who need their services. The ideal model should not only include some single specialty clinics and practices but also encourage expansion of multispecialty clinics where patients have access to practitioners from multiple specialties. Numerous specialty clinics already exist in the Kurdistan Region, and some health authorities told us they hope to create more multispecialty clinics in the future.
- *Urgent care.* Ambulatory urgent care centers treat patients with minor and moderate illnesses or injuries. Such services should be considered as an approach to reduce overcrowding in emergency hospitals and departments, if this is a problem, while also providing a mechanism for effective triage and referral to higher levels of emergency care when needed. Urgent care facilities need to have skilled providers appropriately trained for the conditions seen in such settings. They should also have ready access to ancillary services such as laboratory, imaging, and pharmacy services.
- *Ambulatory surgery and related care.* Many of the services currently provided in hospitals around the world have been shown to be safely provided by trained teams in ambulatory settings. For example such services include routine colonoscopy, cataract surgery, limited breast surgery, and a simple tonsillectomy. The future system should encourage expansion of ambulatory surgery and related departments or separate care facilities. This will reduce capacity pressures on hospital inpatient facilities while providing patients with a safe, less costly, convenient, and potentially more satisfying alternative source of care.

Objective 2—Create Incentives for Patients to Seek Care in Community Settings, When Appropriate

The ability to relieve some of the burden on hospital inpatient and emergency facilities will require a cultural shift in how residents view inpatient and ambulatory care. Current planning efforts, both in the public and private sectors, should focus on establishing the community infrastructures to provide quality ambulatory services that can be delivered safely and effectively outside of hospitals. As the facilities are established, financial and/or other incentives must be developed to encourage patients to seek care in the most appropriate setting and physicians to provide it efficiently. Residents of the Kurdistan Region will need to be convinced that facilities other than hospitals can provide the quality health services that they tend to seek from

hospitals. Specifically targeted financing systems can assist in providing appropriate incentives to promote a model of care that encourages care-seeking in primary care settings when appropriate—such as requiring lower patient co-payments for primary care than for specialty care or paying primary care physicians a premium to work in rural areas. Cultural and philosophical norms will also need to be addressed.

Objective 3—Integrate Health Information Across Levels of Care

Establishing a good health information infrastructure that is supported by technology would greatly facilitate establishing a patient-centered system that ensures continuity of care across all levels and settings, from clinics to hospitals and back to the “home clinic.” Having a functional information infrastructure reduces miscommunication, ensures that any patient-specific health issues (e.g., allergies, previous interventions) are known, and reduces unnecessary duplication of services (e.g., repeat laboratory tests, imaging studies). The future system must not only have the ambulatory services described above but also offer ready access to ancillary services (e.g., pharmacy, laboratory, and radiology), all of which should eventually be integrated into an efficient electronic health information system.

Primary Care in the Twenty-First Century

WHO describes primary health care as the hub of coordinated/integrated care and continuity of care in the modern era. Thus, it is the anchor for the well-integrated model of care described above. However, primary health care must be nimble in adapting to new needs and changing conditions. In 2003, the WHO World Health Assembly reaffirmed the relevance of primary health care 25 years after the landmark Declaration of Alma Ata, asserting, “Many countries still view primary health care both as a policy cornerstone and a framework for health care delivery, and they are re-examining this model to adapt it to a range of different health and social issues. . . . In developed and middle income countries primary health care focuses on delivering the right services at the right level. A key characteristic of any effective local model of primary health care in the future will be adaptability to rapidly changing circumstances, responsiveness to locally defined needs, and sufficient and stable resources” (WHO, 2003, p. 2).

The expectations for primary care have moved far beyond the earlier belief that it was just “poor care for poor people” (WHO, 2008b, p. xiv). Indeed, WHO describes the “dangerous over-simplification” of primary care in resource-limited settings by noting that in low-income settings it is not acceptable that primary care would be

- “reduced to a stand-alone health post or isolated community health worker”
- “restricted to a one-way delivery channel for priority health interventions”
- “just about treating common ailments”
- “synonymous with low-tech, non-professional care for the rural poor who cannot afford any better” (WHO, 2008b, p. xvii).

Evidence supports having a regular and trusted provider as an entry point into a primary care-oriented system. The evidence also points strongly to more-efficient utilization of health services and greater patient satisfaction (Table 2.4). As WHO notes, “Better information and technological developments are creating new opportunities,” and “Technological innovation is

Table 2.4
Evidence Supporting the Benefits of Having a Regular Entry Point into the Health Care System

Contribution

Increased satisfaction with services
 Better compliance and low hospitalization rate
 Less use of specialists and emergency services
 Fewer consultations with specialists
 More efficient use of resources
 Better understanding of the psychological aspects of a patient's problem
 Better uptake of preventive care by adolescents
 Protection against overtreatment

SOURCE: WHO, 2008b—each listed item includes one or more literature citations.

indeed a driver in improvement and current trends show that it is expanding a range of services offered by primary-care teams” (WHO, 2008b, p. 102).

The U.S. Institute of Medicine (IOM) in 1996, citing previous work of others, notes that primary health care has been defined along a number of different but related dimensions (IOM, 1996). IOM attributes this to the different interpretations of the word *primary*: “primary” meaning first in time (entry point, triage onward) or “primary” meaning first in importance (central to health care). This confusion is reflected in the various descriptions of primary care:

- *The care provided by certain clinicians*—for example, physicians trained in family medicine, general internal medicine, general pediatrics, and obstetrics/gynecology
- *A set of specified activities*—which collectively make up the constellation of primary care services and beyond and include specialist and inpatient services
- *A level of care or setting*—ambulatory versus inpatient care; an entry point into the system that feeds into secondary care at community hospitals and tertiary care at specialized and teaching hospitals
- *A strategy for organizing the health system*—focusing on community-oriented care with less emphasis on hospital or technology-intensive care.

Twenty-First-Century primary care includes all of the dimensions in this list. In 1996 the IOM Committee on the Future of Primary Care updated and built on its 1978 definition of primary care, reflecting changes in health needs and health care delivery in the United States over the intervening two decades:

Primary care is the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community. (IOM, 1996, p. 31)

IOM provides details related to each of the key concepts in this definition:

- *Integrated*—care over disparate settings and levels of care, and over time
 - *Comprehensive*: Address any problem at any stage of life
 - *Coordinated*: Provide services and information that meet patient needs and connect these efficiently
 - *Continuous*: Clinician or team provides seamless care and information over time

- *Accessible*—easy patient access to clinicians for any health problem, e.g., on site or by phone Since the IOM report it should be noted that electronic communications have become more feasible and common place
- *Health care services*—services provided to promote, maintain or restore health
- *Clinician*—person (physician or other) who applies a recognized scientific base of knowledge and has the authority to provide personal health services to patients
- *Accountable*—responsibilities of primary care clinicians, teams and systems for quality of care, patient satisfaction, efficient use of resources, and ethical behavior
- *Majority of personal health care needs*—primary care clinicians have the training to diagnose and manage most problems (physical, mental, social) and recognize when referral is needed
- *Sustained partnership*—relationship between patient and clinician/team that is expected to endure over time (IOM, 1996, pp. 32–33).

Of note, the IOM purposely excludes the public health–oriented functions of *primary health care* as defined by WHO and uses a slightly different term: *primary care*. Nonetheless, the 1996 IOM recommendations are consistent with the subsequent 2008 WHO report on several important points:

- First, in describing the continuing relevance of primary care in the modern era: “Primary care improves the quality and efficiency of care and expands access to appropriate services. . . . No health care system can be complete without primary care” (IOM, 1996, p. 3).
- Second, the IOM report reinforces the later WHO report in calling for public policies that “create conditions favorable to primary care” (IOM, 1996, p. 112).
- Third, the IOM report asserts that “primary care is more than a junior level of specialty care or a triage function for specialty care” (IOM, 1996, p. 124).

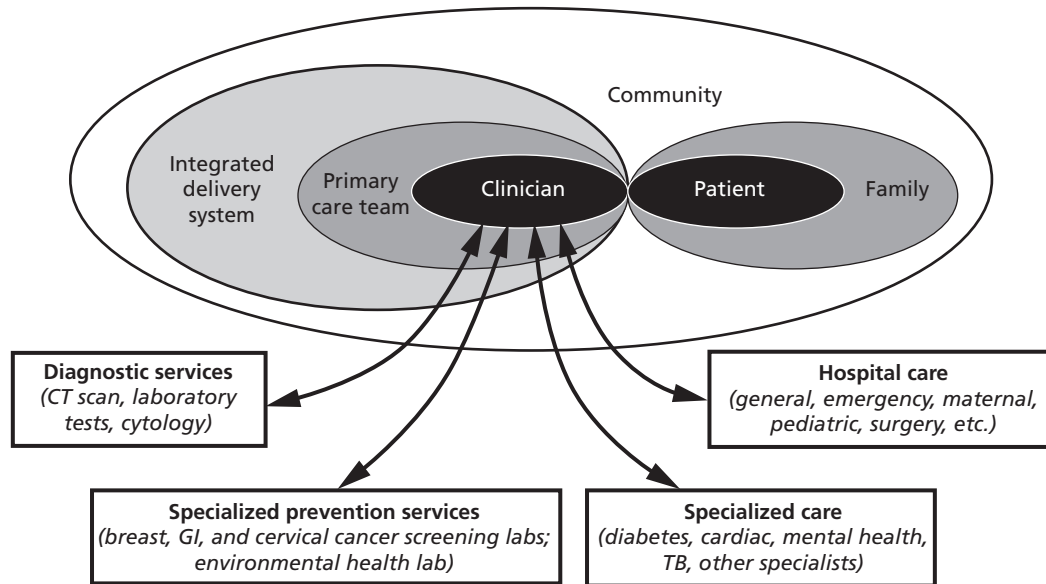
The performance of primary care services should be monitored to ensure access, the technical quality of care, health outcomes, patient satisfaction, and clinician satisfaction. Information support for primary care includes systems for recording and maintaining clinical data; providing assistance to clinical decisionmaking (e.g., clinical practice guidelines, clinical algorithms); monitoring quality of care and overall practice management, patient education materials, information on the community served, and continuing education for primary care staff.

Integrating the concepts of modern-day primary care as espoused by both WHO and IOM, patients in a primary care–oriented health care system can easily access a usual source of care (i.e., a primary care provider or team at a “home clinic” or “medical home”) that provides a set of high-quality core services in an efficient manner that satisfies both patient and provider:

- First-contact care for preventive services and as broad a range as possible of new acute and chronic health conditions
- Ongoing management of as broad a range of health problems as possible
- Continuity of care over time
- Coordination of referrals when evaluation or care by other providers is needed.

These concepts are illustrated further in Figure 2.14. The central relationship is between a patient and a clinician; however, the clinician is supported by a broader primary care team

Figure 2.14
Conceptual Framework for Primary Care in the Twenty-First Century



SOURCES: Adapted from WHO, 2008b; IOM, 1996.

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and integrated delivery system within the community. The local primary care system can refer patients to specialized diagnostic, preventive, and care services as well as to hospitals, and is the “home clinic” where patients return for ongoing care.

In its *World Health Report 2008: Primary Health Care: Now More Than Ever*, WHO (2008b) notes, “The current international environment is favorable to a renewal of PHC [primary health care]” (p. xix). The report also notes, “Beginnings count . . . Reforms that emphasize universal access to people-centered primary care can help to correct [distortions in services and financing that favor the wealthy elite] . . . and can take advantage of technological innovations that facilitate rapid, simple, reliable, and low-cost access to services” (p. 104). The report describes four areas of reform to achieve its objective of health for all: universal coverage, service delivery, public policy, and leadership. The KRG already has a universal access/coverage policy. Thus, the other three reform areas might be of greater relevance for future policy consideration:

- *Service delivery reforms*—to achieve person-centered, comprehensive, and integrated care and continuity of care (building blocks include infrastructure, human resources, information, technologies, and financing)
- *Public policy reforms*—integration of public health and primary care through policies related to health systems, public health, and other sectors to promote and protect the health of communities (such policies address human resources, accreditation, drugs, technologies, and quality control)
- *Leadership reforms*—to ensure that leaders have the information support they need for health sector reform and innovation.

Illustrative Examples of Good Health Practices, Appropriate Levels of Service, and Indicators and Benchmarks

WHO has published guidelines that were designed for disaster relief and recovery, but we believe they are also relevant to Kurdistan's health system. For example, illustrative good practices from the guidelines are outlined in Table 2.5. A checklist of selected services to be offered at community, health center (primary), and hospital (secondary and tertiary) levels is presented in Table 2.6. Also relevant are internationally accepted indicators and associated benchmarks for these services, presented in Table 2.7.

Table 2.5
Illustrative Good Health Practices

Area	Practice
General health services	At least one basic health unit per 10,000 people exists Role of midlevel medical practitioners (nurses, midwives, health officers) in provision of health services is enhanced Community health workers (CHWs) have a role in provision of curative care for childhood illness—e.g., community-case management of pneumonia in remote locations as a potential strategy to reach remote scattered communities and inaccessible displacement camps
Child health	Children with pneumonia have access to adequate treatment within 24-48 hours of onset of symptoms Zinc supplementation is part of treatment for childhood diarrhea Vitamin A supplementation is given to children under five Oral rehydration salts are available at home level Recommended artemisinin-based combination therapy (ACT) is treatment of choice for malaria, with rapid diagnostic testing or microscopic diagnosis
Nutrition	Severe acute malnutrition is managed at health center level
Maternal and newborn health	Six signal functions of Basic Essential Obstetric Care (B-EOC) are provided at health center level: (1) administer parenteral antibiotics, (2) administer parenteral oxytocic drugs, (3) administer parenteral anticonvulsant drugs for preeclampsia and eclampsia, (4) perform manual removal of placenta, (5) perform removal of retained products, and (6) perform assisted vaginal delivery Clean delivery kits are provided to pregnant women with counseling on how to use the kit and birth preparedness plan Immediate postnatal (maternal and newborn) care is provided within 24–48 hours after delivery by medical personnel or trained community health workers Referral mechanism is made available, with special attention to Comprehensive Essential Obstetric Care (C-EOC), which comprises the six signal functions of B-EOC plus (7) perform surgery (caesarean section) and (8) perform blood transfusions Neonatal resuscitation materials and adequately trained staff are available at all health service delivery points and staff are trained on essential newborn care including neonatal resuscitation Aim to increase proportion of deliveries at facility level

SOURCES: Excerpted and adapted from WHO, 2009, Chapter 6 "Ensuring Standards"; signal functions of B-EOC and C-EOC from UNICEF/WHO/UNFPA, 1997.

Table 2.6
Illustrative Health Services Checklist: Services by Level of Care

Level of Care	Area	Health Services
Community care	Child health	Integrated Management of Childhood Illness (IMCI) community component: information, education, and communications (IEC) of child caregiver, active case finding Home-based treatment of fever/malaria, ARI/pneumonia, dehydration due to acute diarrhea Community mobilization for and support to mass vaccination campaigns
	Communicable diseases	Vector control (IEC, impregnated bed nets, indoor/outdoor insecticide spraying) Community mobilization for and support to mass vaccination campaigns IEC on local priority diseases—e.g., tuberculosis (TB)
	Maternal and newborn health	Clean home delivery, including distribution kits to visibly pregnant women, IEC and behavioral change communication, knowledge of danger signs and where/when to go for help, support for breast-feeding
	Noncommunicable diseases, injuries, and mental health	Promotion of self-care, provision of basic health care and psychosocial support, identification and referral of severe cases for treatment, needed follow-up for people discharged by facility
Primary care	General clinical services	Outpatient services Basic laboratory services Short hospitalization capacity (5–10 beds) Referral capacity: referral procedures, means of communication, transportation
	Child health	Routine immunization against all national target diseases and adequate cold chain in place Under-five clinic conducted by IMCI-trained health staff Screening of undernutrition/malnutrition: growth monitoring (weight/age), mid-upper arm circumference, weight/height, height/age
	Communicable diseases	Sentinel site of early warning system of epidemic-prone diseases, outbreak response Diagnosis and treatment of TB Diagnosis and treatment of other relevant local diseases
	Maternal and newborn health	Skilled care during childbirth for clean and safe normal delivery Essential newborn care: newborn resuscitation, warmth, eye prophylaxis, clean cord care, early and exclusive breast-feeding Basic Essential Obstetric Care (B-EOC): parenteral antibiotics, oxytocic drugs, anticonvulsive drugs, manual removal of placenta, removal of retained products (e.g., with manual vacuum aspiration), assisted vaginal delivery 24 hours a day 7 days a week Postpartum care: examination of mother and newborn (up to six weeks), respond to observed signs, support breast-feeding, promote family planning
	Noncommunicable diseases, injuries, and mental health	Injury and mass casualty management (disaster settings) Hypertension treatment Diabetes treatment
Secondary and tertiary care	General clinical services	Inpatient services (medical, pediatrics, and obstetrics and gynecology wards) Emergency and elective surgery Laboratory services (including public health laboratory) Blood bank services (currently referred to as transfusion medicine services) X-ray services (currently referred to as imaging services)
	Child health	Management of children classified with severe or very severe diseases (parenteral fluids and drugs, oxygen)
	Maternal and newborn health	Comprehensive Emergency Obstetric Care: B-EOC, surgery (caesarean section), safe blood transfusion
	Noncommunicable diseases, injuries, and mental health	Disability and injury rehabilitation Outpatient psychiatric care Acute psychiatric inpatient unit

SOURCE: Adapted from WHO, 2009, Chapter 9 “Standard Services and Indicators Lists.”

Table 2.7
Indicators and Benchmarks for Key Health Resources and Services

Indicator	Benchmark	
	International	Iraq
Health Resources Availability		
Average population covered by functioning health facility (HF), by type of HF and by administrative unit	<i>Sphere standards:</i> <ul style="list-style-type: none"> • 10,000 for 1 health unit <ul style="list-style-type: none"> —2–5 staff including ≥ 1 qualified health worker [QHW] and 50 consultations per day per QHW • 50,000 for 1 health center <ul style="list-style-type: none"> —≥ 5 QHW including ≥ 1 MD; 50 outpatient consultations per day per QHW; 1 QHW per 20–30 beds • 250,000 for 1 district/rural hospital <ul style="list-style-type: none"> —≥ 1 MD with surgical skills 	<ul style="list-style-type: none"> • 5,000 per subsidiary health center • 10,000 per main health center
# of HFs with Basic Essential Obstetric Care (B-EOC) per 500,000 population, by administrative unit	<ul style="list-style-type: none"> • ≥ 4 B-EOC • 125,000 for 1 HF w/ B-EOC 	
# of HFs with C-EOC per 500,000 population, by administrative unit	<ul style="list-style-type: none"> • ≥ 1 C-EOC • 500,000 for 1 HF w/ C-EOC 	
% of HFs without stock-out of a selected essential drug in 4 groups of drugs, by administrative unit	100	
# of hospital beds per 10,000 population (inpatients and maternity), by administrative unit	>10	25
# of health workforce (total number of MDs, nurses, and midwives) per 10,000 population, by administrative unit	22	40
# of CHWs per 10,000 population, by administrative unit	<ul style="list-style-type: none"> • WHO standard: ≥ 10 <i>Sphere standards:</i> <ul style="list-style-type: none"> • 1 CHW per 500–1,000 • 1 skilled/traditional birth attendant per 2,000 	
Health Services Coverage		
# of outpatient consultations per person per year, by administrative unit	≥ 1 new visit per person per year	
# of consultations per clinician per day, by administrative unit	<50	
Coverage of measles vaccination (6 months–15 years)	<ul style="list-style-type: none"> • >95% in camps or urban areas • >90% in rural areas 	100%
Coverage of DPT3 in <1 yr, by administrative unit	>95%	
% of births assisted by skilled attendant	>90%	90% (by 2014)
% of expected deliveries by caesarean section, by administrative unit	$\geq 5\%$ and $\leq 15\%$	

SOURCES: Adapted from WHO, 2009, Chapter 9 “Standard Services and Indicators Lists”; Sphere Project, 2004; Iraqi benchmarks from Republic of Iraq, 2010.

Projecting Future Health Care Utilization

Potential Policy Actions

- *Increase health care workforce and hospital capacity to meet need*—Population growth is the main driver of future health care use.
- *Build primary health workforce and infrastructure*—Individual or public preventive health programs can reduce hospitalizations and emergency room use.
- *Strengthen the private sector health workforce and infrastructure*—Growth in the private health care sector will increase systemwide utilization.

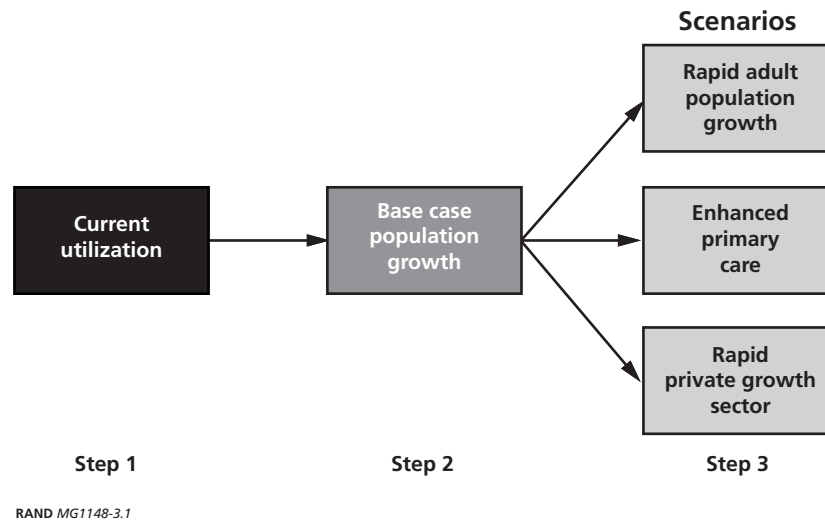
Introduction

To assist the KRG in planning for the future, we have developed projections of future health care utilization. By projecting both future demand (e.g., utilization) for services and planned future supply (e.g., hospitals, PHCs, and manpower), we can determine whether the projected supply is sufficient to meet future demand. We can then alter the models to see whether, under various scenarios, the gap between future supply and demand grows or lessens. We can also examine whether the KRG's investment policies in health care are likely to allow it to meet the goals and objectives it has laid out for itself in the health care sector. We would have liked to have modeled the system at the district and subdistrict levels, but the availability of necessary data limited us in what we could do.

Our modeling *process* had two steps (see Figure 3.1):

1. **Construct a base model:** The base model projects health care utilization (demand) for the years 2015 and 2020 using the same patterns of care that exist today but with projected population growth in Kurdistan that is consistent with KRG population growth estimates.
2. **Examine the impact of three scenarios on future health care demand:** We examined scenarios that we believe could affect future health care utilization or that are goals that policymakers have articulated to us. We project the scenario effects for the years 2015 and 2020. The scenarios are the following:
 - Rapid growth in the working-adult population (e.g., for the oil industry)
 - Enhanced delivery of primary care
 - Growth of the private health care sector.

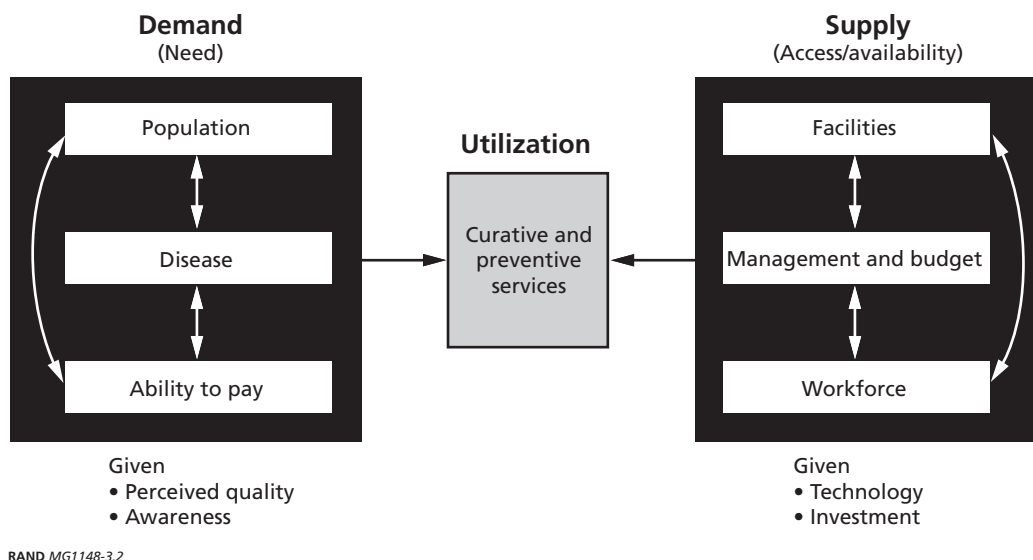
Figure 3.1
Overview of Modeling Plan



We modeled and estimated how each of these scenarios would affect demand for and supply of health care. We have organized our modeling as follows: (1) we describe our methods for developing the base model, including projecting future population and resulting baseline future health service utilization (demand), (2) we outline several possible scenarios and describe our approach for estimating each scenario’s effects on health care utilization, and (3) we present the modeling results, including the resources and investments needed in the future in order to close the gap between future health care demand and future health care supply.

We used the basic theoretical model of supply and demand and resulting equilibrium utilization depicted in Figure 3.2 to guide our modeling exercise.

Figure 3.2
Conceptual Framework for Modeling Exercise



Constructing the Base Model

In the base model, we assumed that the current health services provided (e.g., the current ratios of doctors, nurses, and hospital beds per capita) and the current patterns of health service utilization would remain unchanged through 2020. Thus, increased demand would result solely from population growth. Change will take place, of course, but having a base model that explains the effects of the main driver of health care utilization (i.e., population growth) allows us to more closely examine other variables of interest. We took the following steps to estimate the base case:

- Obtained current utilization data by governorate
- Gathered data on current population and population growth rates
- Projected utilization for 2015 and 2020 by multiplying current utilization levels by the projected rate of population growth, assuming the supply would be available to meet increased demand.

Baseline Health Service Utilization

We estimated health service utilization rates using data provided to us by the Ministry of Health and the Ministry of Planning for the year 2009, the latest year for which these data are available. Table 3.1 shows aggregate health service utilization for each governorate; Table 3.2 shows the corresponding health service utilization rates (per 1,000 population) by governorate for 2009.

Table 3.1
Baseline (2009) Health Service Utilization by Governorate

	Erbil	Duhok	Sulaimania	Kurdistan
Population	1,887,518	1,139,012	2,201,450	5,227,980
Inpatient utilization (number of hospitalizations)	169,601	119,729	292,033	581,363
Emergency utilization (number of emergency visits)	230,919	218,139	268,821	717,879
Outpatient utilization (number of outpatient visits)	1,689,815	2,855,841	3,884,290	8,429,946

SOURCE: MOH Annual Report, 2009.

Table 3.2
Baseline (2009) Health Service Utilization Rates (per 1,000 population) by Governorate

	Erbil	Duhok	Sulaimania	Kurdistan Total
Inpatient utilization rate (hospitalizations)	89.9	105.1	132.7	111.2
Emergency utilization rate (emergency visits)	122.3	191.5	122.1	137.3
Outpatient utilization rate (clinic visits)	895.3	2,507.3	1,764.4	1,612.5

SOURCES: Population—MOH, 2009; Health Service Utilization—MOH Annual Report, 2009.

We used aggregate population and utilization numbers to estimate governorate-level utilization rates. We calculated rates as

$$R_{gi} = U_{gi} / P_g$$

where

R_{gi} is the baseline utilization rate of a given health service i for a governorate g

U_{gi} is the amount of service i used for a given governorate g

P_g is the population of a governorate g .

Because of the limited data available to us, we could estimate utilization rates only at the governorate level. If more granular data (e.g., district-level utilization) were to become available, we could revise our estimates.

Population Projections

Our population projections are based on 2009 data from MOH.² We projected the 2015 and 2020 populations at the governorate level (see Table 3.3) using the following assumptions:

- We utilized natural rates of increase (NRIs) (i.e., the crude birth rate minus the crude mortality rate) for each governorate using the data provided:
 - Erbil: 2.2 percent
 - Duhok: 3.6 percent
 - Sulaimania: 1.9 percent.

These statistics are based on the number of births and deaths reported by the MOH Annual Report for 2009.

- We assumed moderate levels of immigration. As there are no reliable immigration statistics for the Kurdistan Region and as the last ten years is not typical (it reflects the return of Kurds after the No Fly Zone was established as well as the recent migration of people

Table 3.3
Governorate-Level Population Projections for 2015 and 2020

Governorate	NRI	Immigration	Annual Growth Rate	2009 Population	2015 Population	2020 Population
Erbil	2.2%	0.6%	2.8%	1,887,518	2,227,665	2,557,498
Duhok	3.6%	0.6%	4.2%	1,139,012	1,457,923	1,790,908
Sulaimania	1.9%	0.6%	2.5%	2,201,450	2,553,007	2,888,493
Regional total			3.0%	5,227,980	6,238,595	7,236,899

SOURCE: Population—MOH/Ministry of Planning, 2009.

NOTE: NRI + immigration = annual growth rate.

² Although we are aware of alternative population estimates, such as the recent census frame, we decided to use the same population numbers used by the Ministry of Health so that our results would be comparable. As we are primarily interested in the rate of change, we felt this was a valid way to proceed.

from southern Iraq who were seeking a safer environment), we used the annual net migration of Jordan, which was 0.6 percent. Jordan was chosen as the benchmark because its net rate of migration is regarded as fairly moderate for the Middle East region, and it is a country that resembles the current situation in the Kurdistan Region.

Future Health Care Utilization: Base Case

In the base case, the changes in utilization result solely from population growth. Projections of future health service utilization assume that the baseline patterns of health service utilization do not change; patterns of health service delivery and utilization remain fixed. We calculated future health service utilization as follows:

$$U_{gst} = B_{gs} \times P_{gt}$$

where

- U_{gst} is the future use of a given health service s (e.g., outpatient services) for a given governorate g for a given year t
- B_{gs} is the baseline utilization rate of a given health service s in a given governorate g
- P_{gt} is the future population of a governorate g in a given year t (e.g., 2015).

Using this approach, we calculated the following indicators of future health service utilization for each governorate:³

- Total hospital admissions
- Total emergency department (ED) visits
- Total outpatient visits.

Scenario Analysis Methods

The base model projected the demand for health care services assuming that the services provided and the patterns of service did not change. In the next step of our modeling process, we estimated how changes to the status quo (e.g., reform scenarios to the health care delivery system) would affect future utilization. We overlaid the scenarios on the base model described above but did not change the underlying structure of the model. To model the effects of the scenarios, we added a single coefficient, γ_{rg} , to the model:

$$U_{gst} = B_{gs} \times P_{gt} \times \gamma_{rg}$$

where γ_{rg} is the estimated effect (r) of a given change in health services–related variable for each scenario (e.g., rapid population growth or increased growth of the private sector) on utilization of a given health service (e.g., related hospitalizations) in a given governorate (g). We estimated the effects of three scenarios.

³ We are assuming here that the increase in demand will be met by a sufficient increase in supply.

Scenario Descriptions

Scenario 1: Rapid Growth in the Working-Adult Population. In the first scenario we considered how the discovery of oil in Kurdistan and the resulting rapid economic growth would affect future health service utilization. Other oil-rich nations, such as the United Arab Emirates (UAE) and Qatar, have observed rapid population growth driven primarily by immigration of working-age (usually male) adults. These immigrants typically remain in the country only temporarily, and they have a different health service utilization profile than the native population, as they tend to be younger, male, and construction and oil field workers. In this scenario we assumed a high rate (2.4 percent) of immigration, comparable to that which has been observed in UAE. This immigration could be from other countries, such as India or Malaysia, as has been the case in other Middle East oil-rich economies, or it could be migration of workers from other areas in Iraq.

We used data from Qatar to construct a proxy utilization profile for the immigrant population. Evidence from Qatar suggests that these foreign workers will have relatively high rates of hospitalization utilization (200 hospitalizations per 1,000 population versus 111 for the Kurdistan Region) and ED utilization (500 ED visits per 1,000 population versus 137 for Kurdistan), and relatively low rates of outpatient care utilization (600 visits per 1,000 population versus 1,612 for Kurdistan). These workers do not use routine care and tend to use the emergency room as their first entry into the medical system. Table 3.4 shows population projections for the rapid growth scenario. Each governorate's present population growth was increased by the rate of growth found in Qatar. We have made no attempt to try to correlate present oil exploration with where this increase in population might locate. If we did such a calculation and the overall national average rate of growth was 2.4%, the result would be to increase the rate of population growth of Sulaimania, where we understand most of the potential oil and gas reserves are, and to lower the increase in Duhok and Erbil.

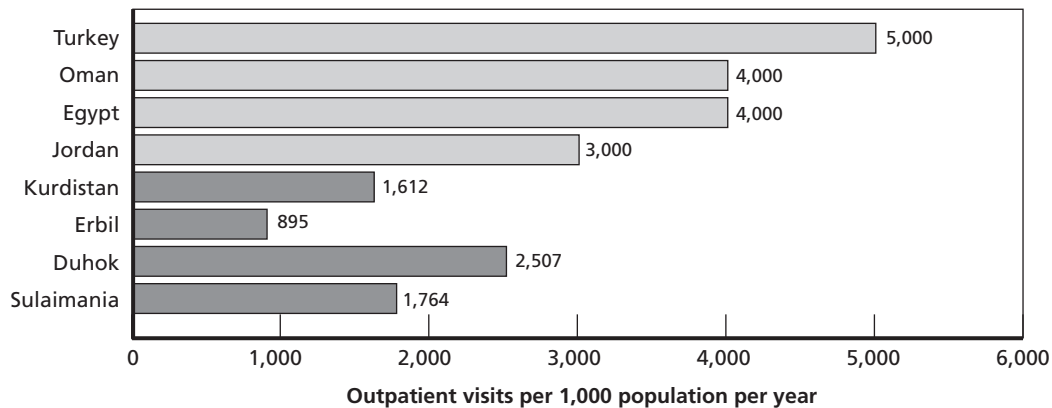
Scenario 2: Enhanced Delivery of Primary Care. Figure 3.3 compares current levels of outpatient utilization (a proxy for primary care) in Kurdistan with those of other countries. Outpatient utilization rates in Kurdistan (1,612 per 1,000 population) are lower than in other countries in the region, for example, Jordan (3,000 visits per 1,000 population) and Turkey (5,000 visits per 1,000 population). In some cases, the rates are lower than European countries as well. For example, the Netherlands, which is considered to have an efficient health care system, has 5,400 outpatient visits per 1,000 population.

Table 3.4
Rapid Population Growth Scenario: Governorate-Level Population Projections for 2015 and 2020

Governorate	NRI	Immigration	Annual Growth Rate	2009 Population	2015 Population	2020 Population
Erbil	2.2%	2.4%	4.6%	1,887,518	2,472,186	3,095,563
Duhok	3.6%	2.4%	6.0%	1,139,012	1,615,710	2,162,185
Sulaimania	1.9%	2.4%	4.3%	2,201,450	2,834,097	3,498,132
Regional total	2.4%	2.4%	4.8%	5,227,980	6,921,993	8,755,880

SOURCE: Population—MOH, 2009.

Figure 3.3
Outpatient Visits per 1,000 Population for the Kurdistan Region and Comparison Countries



SOURCES: World Bank World Development Indicators; Kurdistan figures from MOH Annual Report for 2009.
 NOTE: We cannot explain why the rate of visits in Erbil is so much lower than in Sulaimania and Duhok but suspect that reporting is part of the difference.

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In the second scenario we modeled the implications of Kurdistan rapidly improving its performance on several key indicators of primary care quality. The assumed effects of this improvement are as follows:

- A 20-percent reduction in hospitalizations for ambulatory care sensitive conditions (ACSCs) (Dorr, Wilcox, et al., 2006; Bindman, Chattopadhyay, et al., 2005; Gadomski, Jenkins, et al., 1998). ACSCs are chronic conditions for which patients are less likely to be hospitalized if they have adequate primary care (e.g., diabetes). Given good care, a person is less likely to be hospitalized for diabetes-related complications. In 2009, ACSCs accounted for 28,404 hospitalizations (4.9 percent of all hospitalizations) due to diabetes, hypertension, cardiovascular disease, and bronchitis (see Table 3.5).
- A corresponding 20-percent increase in outpatient visits (Counsell, Callahan, et al., 2007; Gadomski, Jenkins, et al., 1998; Wasson, Gaudette, et al., 1992; Reid, Coleman, et al., 2010).

Table 3.5
Number of Patients Admitted for Chronic Diseases by Cause, 2009

	Erbil	Duhok	Sulaimania	Kurdistan Total
Diabetes	2,106	1,954	2,630	6,690
Hypertension	4,410	3,659	2,269	10,338
Cardiovascular, rheumatic, and heart diseases	1,443	1,913	2,952	6,308
Bronchitis	472	3,870	726	5,068
Total	8,431	11,396	8,577	28,404
% of all admissions	5.0	9.5	2.9	4.9

SOURCE: MOH, 2009 Annual Report, Chapter 1, Table 9.

- A 20-percent reduction in ED utilization (Counsell, Callahan, et al., 2007; Gadowski, Jenkins, et al., 1998; Wasson, Gaudette, et al., 1992).

Scenario 3: Expansion of the Private Health Care Sector. The third scenario assumes that increased health care privatization will increase health care utilization (Fiedler, 1996; Waitzkin, Jasso-Aguilar, and Iriart, 2007). With more providers, the population will have better access to care, and experience shows there will be an increase in discretionary care consumed. There may be some movement of patients from public sector to private sector care, but the systemwide effect is likely to be an overall increase in utilization.

The implications of this scenario include the following:

- A 2- to 10-percent increase in inpatient utilization
- A 5- to 20-percent increase in outpatient utilization
- No change in ED utilization (Fiedler, 1996; Waitzkin, Jasso-Aguilar, and Iriart, 2007).

Approach for Comparing Future Health Care Utilization (Demand) and Health Care Supply

After we implemented the scenarios and estimated future health care utilization, we estimated what health care supply would be needed to meet projected future demand. We calculated the ratio of current health care utilization to health care supply and projected the ratio into the future to determine the increase in health care supply that will be needed to maintain the ratio. For example, the ratio of hospital admissions to the number of hospital beds in 2009 was projected forward to 2015 and 2020 to estimate the number of hospital beds required in the future to maintain the same number of beds per capita as today. We used relevant international benchmarks of these ratios to provide context in comparing our projections and to suggest a range of values for the KRG to consider in planning future health care system capacity.

We performed a similar calculation of the ratio of health care utilization to health care workforce to estimate future health care workforce needs. These estimates give policy leaders an idea of future demand under these assumptions, but it is also possible that policy leaders may make a policy decision that they expect will affect these ratios over time. For instance, policy leaders could decide to move as many procedures as possible to the outpatient setting. One would expect this to change the ratio of hospital days in the future. We drew on a wide variety of data sources, including the following:

- Demographics
 - Population, MOH (2009)
 - Crude mortality rate, MOH (2009)
 - Crude birth rate, MOH (2009)
 - Immigration rates, World Fact Book (2008)
 - Health care utilization
 - Hospital admissions, MOH (2009)
 - Outpatient visits, MOH (2009)
- Hospital and ambulatory care facilities, MOH (2009)

- Health care workforce
 - Physicians, MOH (2009)
 - Nurses, MOH (2009)
 - Dentists, MOH (2009)
 - Pharmacists, MOH (2009)
- International benchmarks
 - World Health Organization (2010)
 - Organisation for Economic Co-Operation and Development (2011).

Modeling Results

Current Health Care Utilization and Health Care Supply⁴

According to information and data received from the KRG MOH and found in reports from the World Bank and WHO, current outpatient use in Kurdistan is lower than that of other selected representative countries, and Kurdistan's hospitalization rates are similar to rates in other countries (Figure 3.4). For example, Kurdistan's hospitalization rate of 111.2 per 1,000 population is comparable to that of the Netherlands and the United Kingdom.

In terms of health care supply, Kurdistan has fewer physicians, dentists, and pharmacists per 10,000 population than most other countries in the region as well as the WHO Eastern Mediterranean region. For example, Kurdistan has 11.1 physicians per 10,000 population; Jordan has 26, Kuwait 18, and Egypt 24 per 10,000 population (World Bank, 2010). Kurdistan also has fewer hospital beds per 10,000 population compared to other countries, including Jordan, Turkey, Lebanon, and the world average. On the other hand, the number of nurses in Kurdistan is comparable to the number in other countries (Waitzkin, Jasso-Aguilar, and Iriart, 2007).⁵ Detailed comparison charts can be found in Chapter Six, Figures 6.1–6.4.

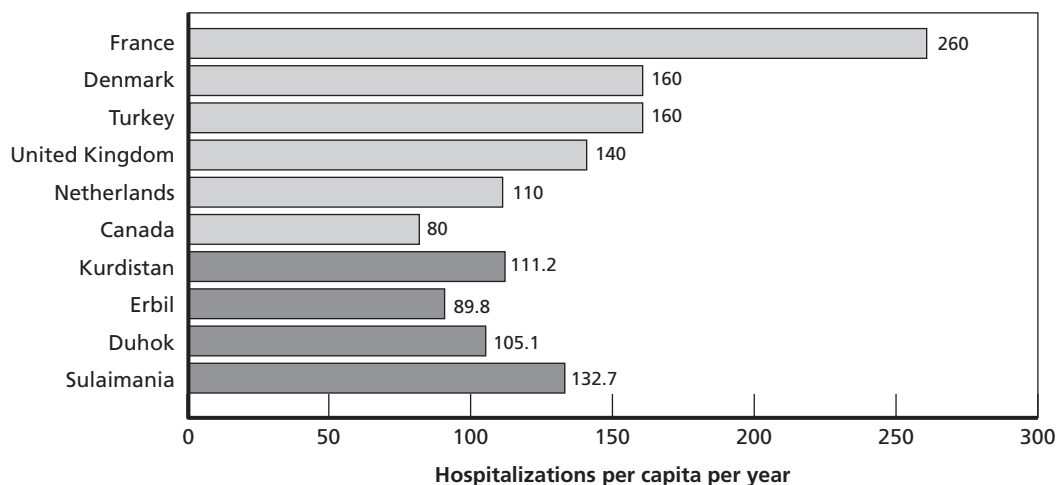
Base Case: Health Care Results. We used current health care utilization levels to project future health care utilization for the base case (i.e., projections based only on current population growth forecasts for 2015 and 2020). The base case forecasts showed that Kurdistan's health care utilization (hospitalizations and outpatient visits) will increase by 19 percent in 2015 and 38 percent in 2020 (projections by governorate are illustrated in Figures A.1 and A.2 in Appendix A).

Future growth in population and health care utilization will require growth in the future health care workforce and infrastructure. By 2015, Kurdistan is projected to need an additional 1,070 physicians, 1,681 nurses, 126 dentists, 82 pharmacists, and 1,343 hospital beds in order

⁴ The availability of additional data would enable a more-detailed analysis that could improve our projections. Examples of additional data that would be useful include patient-level data on health care utilization by disease, procedure code, gender, and age (only aggregate data at the regional level were available); primary care and specialist outpatient data broken down by age and reasons for visits; information on private sector care; and health care workforce data (only broad categories available). More-detailed data would allow us to make projections at a finer level of granularity and provide more-targeted recommendations. Moving forward, Kurdistan should consider systematic collection of health care utilization data in all sectors in a uniform format for the entire country, which would allow longitudinal monitoring and validation of data and trends.

⁵ Despite the fact that the number of nurses in Kurdistan is comparable to the number in other countries, many individuals whom we interviewed felt that nurses are not trained to the same skill level as in other countries and are not responsible for a comparable scope of work.

Figure 3.4
Hospitalizations per 1,000 Population in 2009



SOURCES: Used KRG MOH/MOP population projection; Benchmarks, OECD, 2011.

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to maintain current workforce-to-population and hospital-bed-to-population ratios. Table 3.6 summarizes projections for future health care workforce and hospital bed needs for 2015 and 2020.

Enhanced productivity of the current workforce could reduce the need for these increases. For example, physicians currently work only a few hours a day in the public sector and are said to spend much of that time not actively working. Productivity could be improved in the public sector by getting physicians to work harder during that time, for example, by instituting productivity rewards. If they were to work more hours in the public sector as a result of policy or financial incentives, this would just take away from their time in the private sector. This alone would not meet the overall need for physician services (i.e., output in both the public and private sectors). In our observations and discussions, there was a consensus that physicians could spend more hours in the public sector and greatly improve their productivity. For example, if physicians who were more productive were paid more in the public sector, this would likely result in an increase in efficiency. Some policymakers have suggested that physicians should work in either the public sector or the private sector but not both.

However, if Kurdistan wished to achieve workforce-to-population and hospital-bed-to-population ratios comparable to those in other countries, the projected requirements would

Table 3.6
Projected Workforce and Hospital Bed Needs (base case)

Health Care Resources	2015	2020
Hospital beds	+1,343	+2,574
Physicians	+1,070	+2,097
Nurses	+1,681	+3,325
Dentists	+126	+246
Pharmacists	+82	+151

be considerably higher. For example, to achieve ratios comparable to those in Jordan in 2015, instead of 1,343 additional hospital beds, the Kurdistan Region would need 4,753, or 250 percent, more beds. In terms of physicians, to match Jordan's workforce-to-population ratios in 2015 would require an additional 10,041 physicians, 11,104 nurses, 4,330 dentists, and 8,378 pharmacists. In all cases, these are significant interrelated increases.

Using Jordan, which is at the high end among Middle Eastern countries, as a comparison is not to suggest that Kurdistan should train and supply 10,000 more physicians in the next five years; rather, it is to illustrate Kurdistan's current low level of health care supply with respect to other countries. Thus, Jordan represents an upper bound of a reasonable level of additional workforce and hospital capacity that Kurdistan might wish to build in the next five years. Detailed comparisons with other countries for projections in 2015 and 2020 can be found in Appendix A (see Figures A.3–A.10).

Results of the Impact of Alternative Scenarios

This section presents the results of our modeling of the three scenarios laid out above.

Scenario 1: Rapid Growth in Working-Age Population. In this scenario, we assume a greater growth in Kurdistan population compared to the base case. Increased economic activity, particularly in the oil industry, will attract larger numbers of young adults to work in Kurdistan (both foreigners and non-Kurdish Iraqis). We assume a net migration rate of 2.4 percent per year (compared with .6 percent in the base case projection above). This results in an average 3-percent population growth rate in all of Kurdistan (Erbil 2.8 percent, Duhok 4.2 percent, and Sulaimania 2.5 percent).

The increase in net migration will result in an increase in population by 4.8 percent per year on average from 2010 to 2020 (Erbil 4.6 percent, Duhok 6.0 percent, and Sulaimania 4.3 percent) compared to the 3-percent rate in the base case scenario. The total projected population of Kurdistan by 2020 in this scenario will be around 8.75 million (see Table 3.7).

From our experiences in Qatar examining health care use among foreign workers, we found that young male adults have higher rates of hospitalization and emergency department (ED) utilization: 0.2 hospitalizations per capita versus 0.09–.15 for Kurdistan, 0.5 ED visits per capita versus 0.14–0.20 for Kurdistan; and lower rates of outpatient care utilization, 0.6 visits per capita versus 1.5–2.7 for Kurdistan. We incorporated these estimates into our projections. That is to say, we used these utilization patterns to project the health care demand of the increase in population due to increased in-migration.⁶

The more-rapid population growth scenario suggests a significant increase in health care utilization relative to the base case, as shown in Table 3.8. Hospitalizations could increase by as much as 28 percent, ED visits by as much as 74 percent, and outpatient visits by as much as 8 percent by 2020.

Scenario 2: Enhanced Delivery of Primary Care. One of the priority areas for improving Kurdistan's health care system is enhancing the primary care system. This will require a multifaceted approach, which is laid out in some detail in Chapters Five–Seven. In this scenario, consistent with the recommendations that come later, we assume that the enhancement of the primary care system will reduce hospitalizations for ambulatory care sensitive conditions. We anticipate an increase in the number of outpatient visits but a decrease in

⁶ We are not endorsing the way Qatar handles foreign workers, but it is a situation that is likely to be duplicated in the Kurdistan Region.

Table 3.7
Scenario 1 Population Projection

Governorate	2015 Population, Moderate Growth	2020 Population, Moderate Growth	2010–2020 Moderate Annual Growth Rate
Base Case			
Erbil	2,227,665	2,557,498	2.8%
Duhok	1,457,923	1,790,908	4.2%
Sulaimania	2,553,007	2,888,493	2.5%
Total population	6,238,595	7,236,899	3.0%
Rapid Population Growth			
Erbil	2,472,186	3,095,563	4.6%
Duhok	1,615,710	2,162,185	6.0%
Sulaimania	2,834,097	3,498,132	4.3%
Total population	6,921,993	8,755,880	4.8%

Table 3.8
Comparison of Health Care Utilization: Base Case Compared with Rapid Population Growth Scenario

	Hospitalizations	Emergency Hospital Visits	Outpatient Visits
2015			
Base case	692,086	863,498	10,154,364
Rapid population growth	829,577	1,208,260	10,553,688
% difference	19.9	39.9	3.9
2020			
Base case	801,228	1,008,588	11,876,483
Rapid population growth	1,027,438	1,756,820	12,815,843
% difference	28.2	74.2	7.9

ED utilization. These assumptions translate to a 20-percent reduction in hospitalizations for chronic disease (Dorr, Wilcox, et al., 2006; Bindman, Chattopadhyay, et al., 2005; Gadomski, Jenkins, et al., 1998), a 20-percent increase in outpatient visits (Counsell, Callahan, et al., 2007; Gadomski, Jenkins, et al., 1998; Wasson, Gaudette, et al., 1992; Reid, Coleman, et al., 2010), and a 20-percent decrease in ED utilization (Counsell, Callahan, et al., 2007; Petersen, Burstin, et al., 1998; Reid, Coleman, et al., 2010). It should be noted that the number of hospital beds stays stable, but the acuity of patients, and therefore beds, will increase, requiring additional hospital resources. Table 3.9 summarizes the impact of the primary care enhancement scenario.

Scenario 3: Increased Growth in the Private Health Care Sector. The private health care sector in Kurdistan is expected to grow in the future. However, because of population growth

Table 3.9
Projected Effect of Enhancing the Primary Care System on Health Care Utilization

	Hospitalizations	Emergency Hospital Visits	Outpatient Visits
2015			
Base case	692,086	863,498	10,154,364
Primary care enhancement	685,208	690,798	12,185,237
% difference	-1	-20	20
2020			
Base case	801,228	1,000,588	11,876,483
Primary care enhancement	793,131	800,470	14,251,780
% difference	-1	-20	20

and the resulting increased demand for health care, we do not anticipate that private sector health care will substitute for public sector care to any substantial degree. Rather, consistent with the experience elsewhere, we believe growth in private sector health care will result in a net systemwide increase in health care utilization in Kurdistan.

In this scenario we assume that hospitalizations will increase 2–10 percent, outpatient visits will increase 5–20 percent, and ED visits will not change. Tables 3.10 and 3.11 show the corresponding lower- and upper-bound estimates, respectively, for the health care utilization effect. The lower-bound estimate uses the lower parameter estimate (e.g., 2 percent in the case of hospitalizations), and the upper-bound estimate uses the larger parameter estimate (e.g., 10 percent in the case of hospitalizations).

Table 3.10
Projected Effect of Growth in Private Sector Health Care on Health Care Utilization, Lower-Bound Estimate

	Hospitalizations	Emergency Hospital Visits	Outpatient Visits
2015			
Base case	692,086	863,498	10,154,364
Private sector expansion	705,928	863,498	10,662,082
% difference	2	0	5
2020			
Base case	801,228	1,000,588	11,876,483
Private sector expansion	817,253	1,000,588	12,470,307
% difference	2	0	5

Table 3.11
Projected Effect of Growth in Private Sector Health Care on Health Care Utilization, Upper-Bound Estimate

	Hospitalizations	Emergency Hospital Visits	Outpatient Visits
2015			
Base case	692,086	863,498	10,154,364
Private sector expansion	761,295	863,498	12,185,237
% difference	-10	0	-20
2020			
Base case	801,228	1,000,588	11,876,483
Private sector expansion	881,351	1,000,588	14,251,780
% difference	-10	0	-20

Summary

In the base case and in the three scenario projections, population growth is the main driver of health care use in the near future. Moderate population growth alone could drive as much as a 20-percent increase in both inpatient and outpatient health care utilization by 2015 and as much as a 40-percent increase by 2020. This projected growth implies the need for a significant increase in the health care workforce and hospital capacity. Presently, the number of physicians is increasing at about a rate that is sufficient to maintain the present physician-to-population ratio. However, the Kurdistan Region's physician-to-population ratio is smaller than the ratios of all its neighbors. As care at international levels begins to be demanded, the need for physicians and other health inputs will rise significantly. We cannot reasonably project the number of hospital beds, as this is so capital-intensive and budget allocations are not secure. That said, bed capacity is also behind international norms and will probably worsen given the rate of present new-bed construction.

The primary care system enhancement scenario illustrates that individual or public preventive health programs can reduce projected hospitalizations and emergency department use somewhat. However, achieving this reduction will require planning and building primary care and public health workforce and infrastructure. But even if these health reforms are implemented, under current utilization patterns, there will be a significant need for increased staffing and facilities to meet the needs of a growing population and an expanding economy, as the effects of population growth will overwhelm those of the reform scenarios modeled. If utilization patterns, and presumably the level of care provided in other countries in the region, are to be achieved, the need for hospital beds and staffing at all levels will be even greater.

Growth in the private health care sector will continue. The private sector has a major role to play in meeting the demand for health care in a growing Kurdistan. The increase in the private sector will increase systemwide health care utilization in all areas, implying a need for more health care providers and infrastructure.

In the final analysis, there is a great deal of uncertainty in estimates of this nature. Nevertheless, it is clear that Kurdistan faces a rapidly escalating need for health care services—services that will greatly tax the present system. Meeting this new demand will require not only additional resources but wise policy choices, improved financing systems, and incentives instilled in the system for improved levels of health as well as improved quality and effectiveness. The following chapters address many of these issues.

Health Care Financing: Overview and Lessons

Introduction

One of the most important foundations of a national health system is the means by which it is financed. Financing is a critical defining factor that is central to achieving all other public and private health goals and objectives.

This chapter responds to the specific request of the KRG's Minister of Planning to review the basic tenets of health care financing and to suggest a future road map to help guide KRG policy development in this area. Although we provide an overview of the KRG health care financing system, we do not investigate or analyze it in detail, nor do we make specific policy recommendations. Rather, we seek to identify policy questions KRG policy leaders will need to address in order to adopt any reform to the health financing system. With this in mind, the chapter (1) provides an overview of health care financing and its basic tenets; (2) looks at how other countries have dealt with financing issues; (3) provides an overview of the KRG's present health care financing system; and (4) lays out the questions the KRG will need to address as it considers its future financing system.

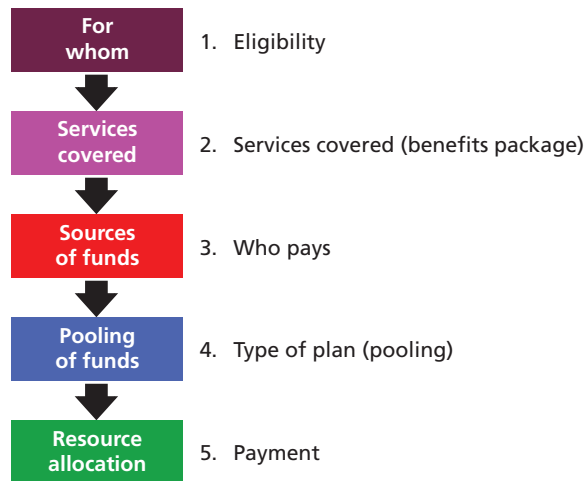
Overview of Health Care Financing

WHO defines health care financing as the “function of a health system concerned with the mobilization, accumulation, and allocation of money to cover the health needs of the people, individually and collectively, in the health system.” Further, WHO states that the “purpose of health financing is to make funding available, as well as to set the right financial incentives to providers, to ensure that all individuals have access to effective public health and personal health” (Islam, 2007, p. 71).

Fundamental Issues

Health care financing addresses fundamental questions about health and health care. A health care financing system determines who pays for health care, how much they pay, and how they pay. It also determines the kind of care that is provided and to whom it is rendered (see Figure 4.1). These complex questions, which relate to the collection and distribution of funding for health care, establish the incentives under which both providers and patients operate. Policymakers in all countries end up answering these questions, whether directly or indirectly, and their answers characterize the country's overall health financing system.

Figure 4.1
Basic Financing Issues



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No two countries finance health care in exactly the same way, as each country has its own objectives as well as its own culture and health situation. Ultimately, most countries seek to ensure that all citizens have access to a basic package of health care services that are equitably allocated and efficiently provided.

For the purposes of this discussion, it is helpful to break down health care financing into five primary areas:

- Who is covered (eligibility)
- Which services are covered (benefits package)¹
- Source of funds (who pays)
- Pooling of funds
- Resource allocation (payment).

Eligibility: Who Is Covered. Eligibility for care determines who has the right to access care, which can be paid for and/or provided by the public or private sector. Many countries designate access to a basic package of health services as a “right” of all citizens. Most countries, like the KRG, have codified this principle in their constitutions or in law. However, several of these countries have a constitutional right to publicly provided health care but have not defined the specific benefits included in that right. The KRG constitution stipulates that all citizens have a right to basic health care services. To date, that has meant that citizens can use KRG health care facilities, which are basically free.

Services Covered: Benefits Package. All national and private financing plans need to determine which services will be covered under the plan. Defining the benefits package not only will be sensitive to services that offer good benefits but will be influenced by the level of resources available to pay for the care covered. There is widespread agreement among most health policymakers that a national plan should offer a basic package of services that includes primary, emergency, hospital, and physician care. There also tends to be agreement that some

¹ Some discussions add the question of what level of personal financial protection is covered. We do not discuss this issue here.

elective services (such as cosmetic or plastic surgery solely for the purpose of improving a person’s appearance rather than needed surgery after an accident or a congenital defect) should *not* be covered. However, the challenge is to define coverage in detail, and what is covered will change over time. Figure 4.2 lays out some of the services usually covered, and not covered, in common benefits packages, but almost all countries differ in the details specifying coverage.

In many countries, funding that allows facilities to provide certain tests or types of care is not available, limiting service availability. One example of how governments might deal with this issue is provided by the U.S. state of Oregon, which has used the benefits package creatively in deciding which services to cover for its poorer citizens under the Medicaid program.² In Oregon’s case, policymakers sought to organize Medicaid services according to those they felt offered the greatest value to patients. They offered the same services to all eligible Medicaid beneficiaries. Working within a budget constraint, however, they did not have enough money to offer all available services to all beneficiaries, so they went down the list and funded the most valuable services up to the point that they exhausted the budget.

Sources of Funds. A key financing function is deciding on the resources needed to fund the health care system and then procuring those resources. Usually resource collection systems are designed with the goal of ensuring that, as far as possible, resources

- are adequate to pay for the services covered and delivered in a quality manner
- are raised in an equitable and efficient way
- are sufficient to cover public health and primary care
- protect people who are sick, injured, or poor from financial hardship.

The source of funds varies depending on the system and the level of a country’s development. Funding may come from private, public, and corporate sources in many different forms and from philanthropic or international aid (see Figure 4.3).

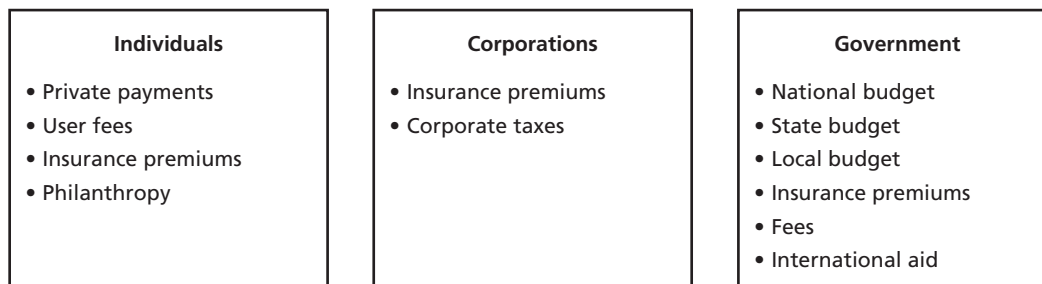
Figure 4.2
Common Benefits Package

Services often covered	Services often not covered
<ul style="list-style-type: none"> • Inpatient care • Prescription drugs • Outpatient generalist and specialist care • Diagnostics • Maternity care • Mental health and substance abuse • Routine dental care • Eye exams • Hearing exams • Therapies • Preventive services 	<ul style="list-style-type: none"> • Medically unnecessary services • Experimental treatments • Cosmetic plastic surgery • Overseas care

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² Medicaid is the U.S. state-run health insurance program for the poor.

Figure 4.3
Possible Sources of Health Funding



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Pooling of Funds. Whatever the nature of the system, all national health care financing systems pool revenue (i.e., revenues are collected and placed in a fund to be distributed according to need). Indeed, one of the core principles of insurance is to pool funds in order to spread risk. Systems that pool revenues are designed to both *efficiently* and *equitably* manage health risk. For example, paying for a very costly procedure, such as a kidney transplant, would be financially catastrophic for most individuals. However, kidney transplantation is rare, so if one averages the per capita cost across a large number of people, the average payment is only a small fraction of any one individual's income. The same principle applies to less rare, but also costly, procedures, such as coronary artery bypass surgery.

Although governments or large corporations can spread risk through a budget or corporate payment, the usual way to pool funds is through some kind of insurance system—public (national, state, or local), corporate, or private. National systems can be designed in which the government manages just the insurance mechanism and does not provide health services (referred to as social health insurance). Germany and Japan are examples of high-income countries with social health insurance systems. The law in a few countries requires that all people purchase private insurance through private insurance providers. Government insurance pools are usually organized at the national level, but some countries have organized their public insurance funds on a regional or state level. For instance, Canada has provincial health insurance funds that follow national guidelines and regulations, but the funds are organized and managed at the provincial level.

Alternatively, in a national health service (NHS) system, the government collects funds and acts as a health care provider. Most NHS systems have compulsory universal coverage, financed from general government revenues, with provision of care predominantly in the public sector. Examples of countries with NHS systems include the United Kingdom and the Scandinavian countries. Health care delivery in these countries is organized around distinct geographic administrative units. A provincial or regional single payer system is a variation on the NHS model—with compulsory universal coverage and general tax financing, but with provincial (or regional) purchasers operating under national guidelines and entering into contracts with both public and private health care providers. Canada is an example of a provincial single payer system.

Allocation of Resources or Payment. The final fundamental issue laid out in Figure 4.1 to consider is *resource allocation*—the purchasing of services and inputs. This is the process by which pooled funds are paid to providers in order to deliver a set of health interventions. Purchasing can be performed passively or strategically. Passive purchasing implies following a predetermined budget or simply paying bills when presented. Strategic purchasing involves a

continuous search for the best ways to maximize health system performance by deciding which interventions should be purchased, how, and from whom.

The way in which services are purchased should encourage purchase of the *right amount* of the *right kind* of services. Payment rates to service providers that are properly structured from the pooling entity or from private individuals establish incentives for efficient and effective operation of the system. Payments also must provide sufficient funding to providers in order for them to hire labor and to purchase whatever is needed to provide care. Funds do not necessarily have to be used in the same way in all cases, which allows for multiple payment systems for specific functions within the same overall health financing system.

Health funding is commonly used to purchase all of the following:

- Hospital care
- Physician services
- Medicine
- Public health
- Laboratory services
- IT/medical records
- Emergency care
- Nursing and other labor
- Buildings and equipment
- Primary care
- Rehabilitation
- Dental services.

The method of *provider payment* constitutes an important part of the purchasing arrangement. Common types of provider payment methods found around the world include the following:

- Capitation (fixed per capita payment for a predetermined time, usually a year; includes outpatient and physician services plus medicines)
- Fee-for-service (pay for each service or procedure after it is rendered)
- Global budgeting (providing a set yearly budget for a defined set of services)
- Line-item budgeting (budget for services divided into categories, such as salaries and capital)
- Salary-based payment (pay a salary, say to a physician or a nurse, for a set number of hours of work)
- Diagnosis-Related Groups (DRGs) (a set payment amount based on the diagnosis, irrespective of the costs of the care to the inpatient facility).

It is also the case that payment systems for hospital services have changed dramatically worldwide over the past 25 years. Most countries today use some form of prospective payment often based on a diagnosis for hospital services. For example, in the United States, Medicare hospital services are reimbursed on the basis of the DRG that the service falls in.³ Thus, the hospital receives a “standard” payment for the DRG to which a hip replacement or a cesarean

³ Medicare is the large federal insurance program in the United States that covers those over age 65, those who are disabled, and those on renal dialysis.

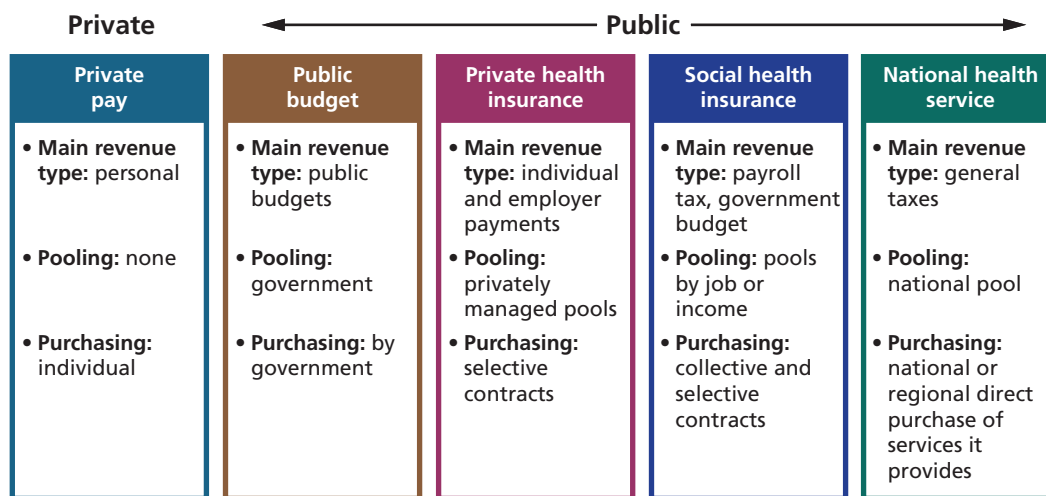
delivery is assigned, irrespective of the resources the hospital uses to treat the patient or the length of time the patient is in the hospital.⁴ Research has shown that this incentivizes hospitals to be more efficient without jeopardizing the quality of care. Of course, hospital lengths of stay and hospital costs are highly correlated.

Payments on a yearly per capita basis or capitated payments (capitation) are also commonplace. The pure model of such a payment system is the health maintenance organization (HMO), which receives a yearly payment to provide all the care a patient might require within a defined benefits package. There are many other payment mechanisms, but the trend is moving away from fee-for-service payment, where the insurance company pays the bill submitted for a service by the provider, to some form of prospective or bundled payment system, where incentives for cost control and improved quality are embedded.

Common Health Care Financing Systems

Although there are many variations in exactly how countries finance their health care, five general types account for most systems found: (1) government budget allocations, (2) social health insurance, (3) national health service, (4) private health insurance, and (5) private pay (see Figure 4.4). In fact, *almost all countries have mixed systems*, and a public system may operate side by side with a private system with a very different payment scheme. We will deal primarily with four common ways that national governments provide coverage for their populations (2–5 above). Figure 4.4 summarizes the key characteristics of each approach.

Figure 4.4
Common Financing Systems



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⁴ In reality, however, the Medicare system is a bit more complicated. Certain adjustments are made to the standard DRG rate to account for factors like rural location, whether the hospital is a teaching hospital, and so forth. Additionally, an allowance is made for outlier cases, in which the case is far more costly than the norm for reasons that are not the fault of the facility. Burn cases, which often require many months in the hospital to resolve and where individual patients respond quite differently and unpredictably to treatment, are a good example of an outlier case.

Figure 4.5
Examples of Public Health Financing Systems from Around the World

Public budget	National health service	Social health insurance	Private health insurance
<ul style="list-style-type: none"> • KRG • Iraq • Ghana • Nepal • Qatar 	<ul style="list-style-type: none"> • Canada • New Zealand • Australia • Italy • United Kingdom 	<ul style="list-style-type: none"> • France • Germany • Japan • Turkey • UAE 	<ul style="list-style-type: none"> • United States • Greece • Singapore • Holland

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As Figure 4.5 highlights, countries—often with similar economies and from the same parts of the world—employ quite different financing systems. Each system reflects the country’s financial resources and cultural needs and values. Each system also has specific advantages and disadvantages.

Public Budget–Based Systems

Public budget–based systems are found in most developing countries and countries without mature data collection and/or management systems. Generally in such systems, central budgets finance a Ministry of Health that funds and operates publicly owned health care facilities. Public budget–based systems typically have the following advantages and disadvantages:

Advantages

- Do not require sophisticated management systems to operate
- Can be easily changed to reflect government policy
- Have low costs of administration
- Allow costs to be controlled via the budget process.

Disadvantages

- Tend to underallocate resources to the health sector
- Are slow to invest in new technologies
- Keep wages arbitrarily low, usually discouraging labor entry
- Incorporate few incentives to promote performance, quality, or cost control
- Are centrally controlled by the politically powerful, who may or may not allocate services equitably
- Impede long-term planning because funding depends on budgets that may change from year to year.

National Health Service

In countries with a national health service system, like the United Kingdom, a public insurance fund not only collects funds and pays for services but also operates the facilities that provide the services. National health service systems typically have the following advantages and disadvantages:

Advantages

- Efficient operation
- Usually offers more equitable funding and availability of services than social insurance funds
- Better control of physician and hospital costs.

Disadvantages

- Comprehensive medical services are complex and costly to provide
- Very sophisticated management and medical personnel are required to oversee and operate the system
- Policy often conflicts with richer individuals' desires for better care than that provided in the public sector
- Rationing takes place via waiting time, which frustrates many patients and may lead to suboptimal medical outcomes and growth of secondary markets.

Social Health Insurance

Social health insurance systems are usually set up to be operationally independent of the government, although they may receive a good deal of funding from the public budget. However, funding usually comes from a payroll or employment tax levied on firms that is paid directly into the social insurance fund. The social insurance fund, in turn, contracts for—often collectively—the provision of care among private and/or public providers. Usually established by law, social insurance funds are thought to allow for independent operation and equitable contribution to the funds. Social health insurance systems typically have the following advantages and disadvantages:

Advantages

- Funding, which is usually a percentage of wages, is independent of the political process
- There is a link between contributions and the benefits package
- Usually incentives exist for quality and cost control
- Characterized by fairly stable funding, which allows for long-term planning.

Disadvantages

- Are less progressive than general taxation systems
- May discourage general employment
- Can be difficult to manage because they require a good deal of coordination among players
- Require a good deal of data in order for systems to operate effectively and to monitor performance
- May have difficulty controlling benefits in economic downturns
- Require that the formal sector of the economy, which can be taxed, be large in comparison to the informal sector, which is difficult to tax or control.

Private Health Insurance

Private health insurance systems entail individuals or families purchasing private health insurance. At the country level, the government can mandate that all individuals or companies must purchase private insurance for themselves or their employees. There are many problems with

such a system, and generally it has not been effective as a national strategy. That said, almost all countries allow private health insurance to operate side by side with a national public system so that those who want, and are able to pay for, better coverage can purchase additional supplemental coverage. The key question then becomes whether private insurance is a supplement to the public system or whether people are allowed to purchase private insurance and then opt out of the public plan. If the latter is allowed, it almost always leads to two tiers of care in terms of quality, with the private system covering wealthier and healthier individuals and the public system covering poorer and sicker individuals. Private health insurance systems typically have the following advantages and disadvantages:

Advantages

- Can be used to supplement government programs to cover perceived gaps
- Can be provided by employers irrespective of government programs
- Offer a great deal of flexibility in benefits design and payment options
- Offer a vehicle that the public sector can contract with to administer public programs.

Disadvantages

- Insurance companies will discourage enrollment of perceived higher-risk people, such as the elderly, to minimize their risk; this may not be in the public's best interest. If private insurance is allowed to replace public plans, two-tiered health care will likely result, with the rich receiving higher-quality care.
- Companies care little about public health and usually inadequately cover primary and preventive care.
- Insurance companies are more interested in maximizing their profits than in the health of the community.

Flow of Funds

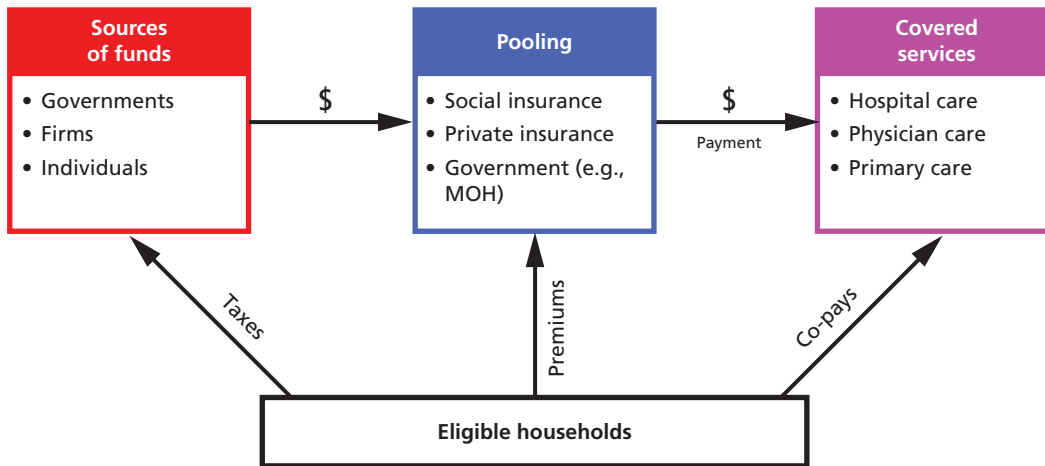
Another way to look at health care financing is to trace the flow of funds—in other words, follow the money. Figure 4.6 shows the flow of funds in a representative country where coverage and access have already been determined.

Except for aid from abroad or philanthropy, households (i.e., families) are the ultimate source of funding for the system as well as the ultimate recipients of care. Households pay taxes to the government. The government also has other sources of funding, such as taxes from firms, fees, and rent. In the case of the Kurdistan Region, sources include oil revenue that comes via Baghdad. All sources of funding are pooled in the government and/or private or social insurance companies. Once the insurance companies collect the funding available to them, they must decide what care to pay for (typically hospital, physician, and primary care) and how much to pay. Households may also pay directly to the pooling agent in the form of premiums and/or directly to providers in the form of user fees or private out-of-pocket payments.

Country Comparisons

Many studies have compared countries across a wide variety of factors related to health care financing and the outcomes of those expenditures. The evidence is consistent that richer countries spend more overall, and more per capita, on health care than poorer countries. Richer countries also spend an increasingly larger share of income on health care compared with poorer countries. This pattern is not surprising. The priorities of poor countries are usually

Figure 4.6
How a Health Financing System Works (money flows)



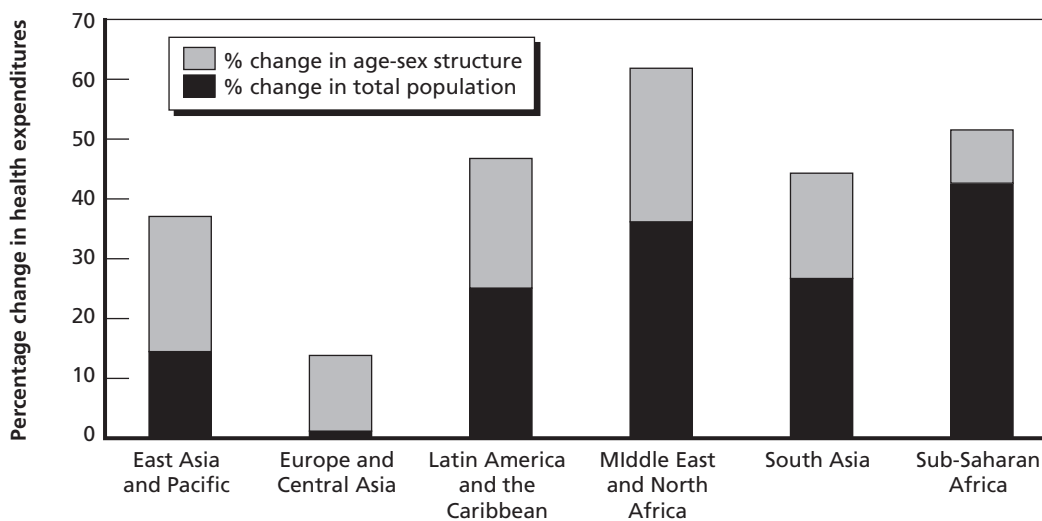
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provision of food and shelter. Once these needs are met, more resources can be devoted to health care.

Demographics also play a role. People in richer countries tend to live longer, which causes the average age of the population to rise. On average, older people have more chronic health conditions and consume more health care over time, which of course increases expenditures.

Using World Bank data, Pablo Gottret and George Schieber (2006) analyzed projected changes in health expenditures that would be accounted for either by changes in the absolute size of the population or by changes in the age and sex structure of the population (see Figure 4.7). In Europe, where the population is growing very slowly, most of the change in

Figure 4.7
Change in Health Care Expenditures by Region



SOURCE: 2000 National Medical Expenditures Survey and HNP Stats, quoted in Gottret and Schieber, 2006.

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health expenditures will be accounted for by an aging population. For example, infectious diseases accounted for only 3 percent of the burden of disease in Europe in 2002, and injuries accounted for 15 percent; 82 percent was attributable to other diseases, primarily chronic conditions.

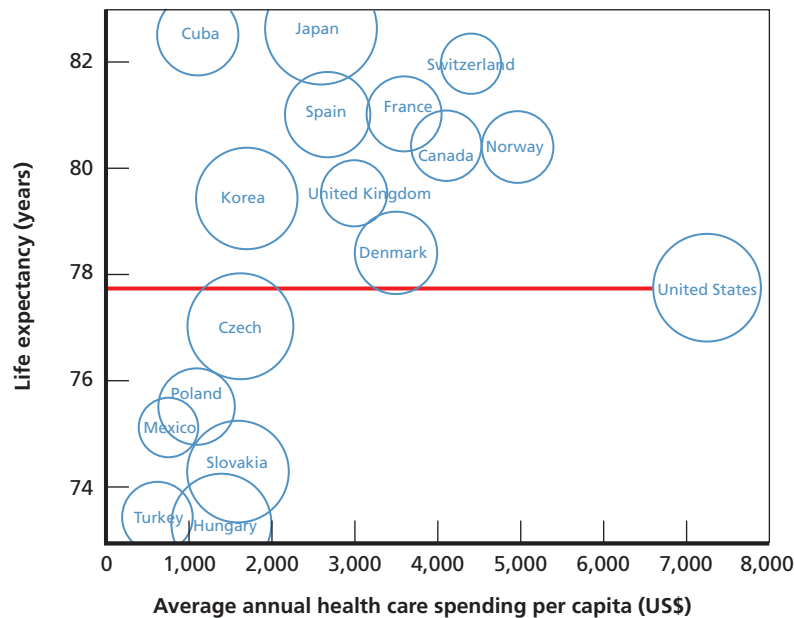
In the Middle East and North Africa, including Iraq, change in the absolute size of the population is more important now. For example, infectious diseases accounted for 67 percent of the burden of disease in Africa in 2002, and injuries accounted for 12 percent; 21 percent was attributable to all other diseases. But in the future, aging of the population will increase health expenditures on chronic diseases.

Spending a great deal on health care does not guarantee good health outcomes. There are many ways to gauge the link between expenditures and outcomes, but one common approach is to look at per capita health care spending versus life expectancy (see Figure 4.8). For instance, the United States spends more than \$7,000 per capita on health care—more than any other country. However, life expectancy in Korea, which spends about \$1,500 per capita on health care, is higher than in the United States, as is the case of all the countries above the line in Figure 4.8. Many factors besides expenditures on health care contribute to life expectancy, but the way in which countries organize and spend their limited health care funds can have a profound influence.

Country Income per Capita and Financing Systems

Figure 4.5 showed that countries in the same region (e.g., Europe) often have different health financing systems. The type of system a country has depends on a range of factors, including data systems, ability to collect taxes, the public workforce, number of physicians, use of

Figure 4.8
Life Expectancy Versus per Capita Health Care Expenditures in Selected Countries, 2009



SOURCE: Andrew Gelman, "Statistical Modeling, Causal Inference, and Social Science, Healthcare Spending and Life Expectancy." <http://www.stat.columbia.edu/~gelman/blog/> (December 30, 2009).

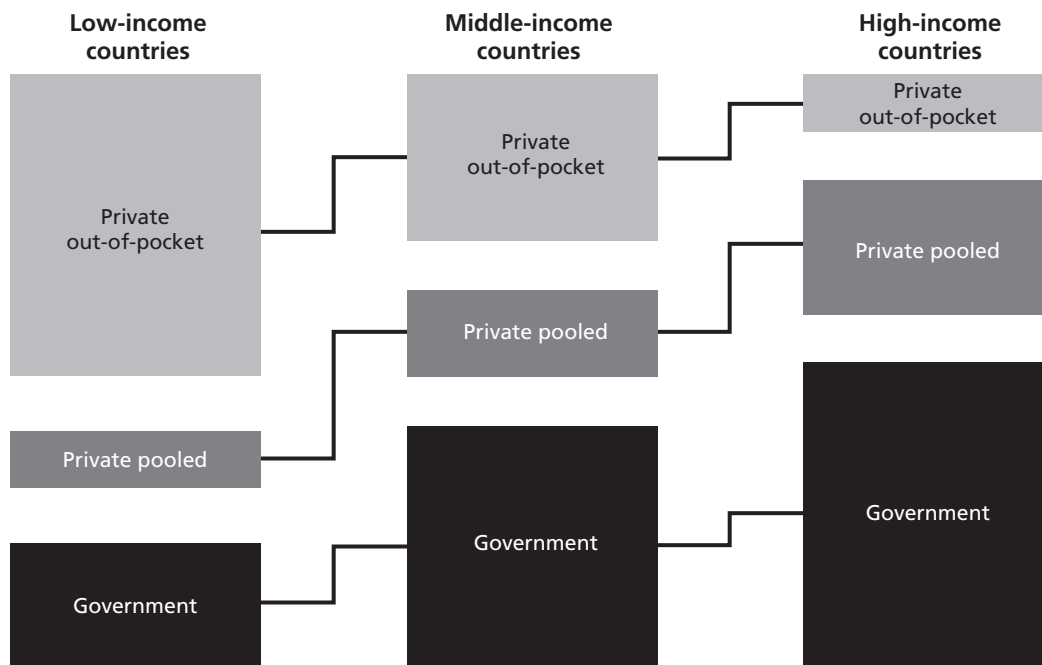
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other health care providers, education of the population, and the sophistication of the banking and insurance systems. Figure 4.9 compares the magnitude of health care funding from various sources (private out-of-pocket, private pooled, and government) for low-, middle-, and high-income countries. For example, private pooled resources (i.e., private insurance) are less common in low-income countries that do not have sophisticated insurance schemes or the mechanisms to maintain them.

As countries become richer, their financing options expand. It is not by accident that very few low-income countries have well-functioning social insurance or national health services. Such programs require sophisticated data and IT systems, public administrative capacity, a well-educated workforce, and revenue and collection systems capable of handling such programs, to name but a few factors. Other factors commonly associated with development of more-complex health financing schemes include the following:

- Larger public per capita health care budgets
- More-sophisticated public administration and taxation systems
- Better data and information technology
- Private insurance companies that can handle claims processing and payment
- Lower reliance on international aid per capita (the percentage of financing from external sources was 7.9 percent for low-income countries, 0.86 percent for lower-middle-income countries, 0.43 percent for upper-middle-income countries, and 0.03 percent for high-income countries [Gottret, 2006])
- Higher per capita incomes

Figure 4.9
Country Differences in Funding Sources



SOURCE: Gottret, Schieber, and Waters, 2008.

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- A shift from burden of disease to chronic conditions and long-term care
- Increased government concern for quality and cost controls.

How Some Countries Have Dealt with Health Financing, Coverage, and Payment

This section describes how specific countries have dealt with health financing challenges, which may be of relevance to Kurdistan. The countries, and the specific points they illustrate, are the following:

- United Kingdom—prioritizing which services to offer
- France—promoting quality care and full access
- Singapore—offering efficient health care financing
- Taiwan—offering universal coverage through a single payer
- Turkey—combining social security health insurance with private and public insurance
- Mexico—offering health insurance for rural populations.

Key statistics for these countries are provided in Table 4.1.

United Kingdom—Prioritizing Which Services to Offer. The UK National Health Service (NHS) delivers more than 87 percent of health care services in the United Kingdom. Each country of the United Kingdom manages its own NHS. The English NHS is managed by the Department of Health and is administered by 152 geographically defined health authorities, called primary care trusts (PCTs). Each PCT covers an average population of 400,000 residents. The Department of Health sets a global budget for allocation to PCTs, which was £64.3 billion (US\$96.1 billion) in fiscal year 2007.

The UK National Institute for Health and Clinical Excellence (NICE), established as a Special Health Authority in 1999, sets the clinical and reimbursement standards for the NHS. NICE provides patients, providers, and manufacturers with best-practice procedures and evidence. NICE is responsible for evidence-based evaluation of medical technologies and

Table 4.1
Financing Data for Selected Countries

Indicator	UK	France	Singapore	Taiwan	Turkey	Mexico
Per-capita income	\$36,128	\$34,400	\$47,937	\$14,663	\$13,767	\$14,266
Infant mortality rate	4.9	3.6	2.4	5.0	21.4	28.8
Life expectancy at birth	79.3	81.0	80.5	78.3	72.0	74.9
Obesity (% of adults)	22.7	—	6.9	—	11.4	23.4
Health spending per capita	\$2,784	\$3,554	\$1,228	\$879	\$645	\$756
Health spending as a % of GDP	8.2	11.0	3.3	6.1	4.8	6.6
% health spending (public)	87%	80%	33%	59%	73%	44%
Doctors per 10,000 population	23	34	15	—	16	20
Population (millions)	61.4	62.0	62.0	23.0	73.9	106.4
Smoking (% of population ages 15+)	35.7	31.7	31.7	—	35.5	24.7

SOURCE: 2010 World Development Indicators, the World Bank.

pharmaceutical products proposed for introduction into the package of services offered by the NHS—using clinical effectiveness and cost-effectiveness as the primary standards for evaluation. NICE also prepares and disseminates clinical guidelines for best practices for clinical procedures, medical devices, and pharmaceutical products, as well as for public health priorities including substance abuse and immunization programs.⁵

France—Promoting Quality Care and Full Access. The French health system features universal, mandatory coverage of basic health insurance. In 2000, the universal health insurance program (Couverture Maladie Universelle—CMU) extended eligibility for a complementary package of publicly funded health service coverage to low-income individuals. Currently, approximately 92 percent of the population has access to the complementary package, in addition to basic health coverage. The complementary package—generally managed through private insurance—reimburses co-payments and provides services that are not fully covered by the public system, including optical and dental care (Buchmueller and Couffinhal, 2004).

The French system potentially has much to offer KRG health policymakers. Nearly half of French physicians are GPs in private practice. GPs are paid on a fee-for-service basis but earn significantly less (\$84,000 on average in 2004) than their counterparts in the United States (\$146,000) and the United Kingdom (\$121,000). The fee schedule and accompanying value-based incentives are negotiated by physicians' unions and the public (social security) health insurance funds. French specialists, also paid on a fee-for-service basis, also made less (\$144,000 in 2004) than specialists in the United States (\$236,000) and the United Kingdom (\$153,000) (Fujisawa and Lafortune, 2008). Thirty-six percent of physicians work in either public hospitals or other public establishments and are paid on a salaried basis by the government.⁶

To address the issue of quality, the French National Authority for Health (Haute Autorité de Santé—HAS) was established in 2004 and is responsible for quality assurance, technology assessment and evaluation of medical devices and drugs, and recommendations as to procedures that should be covered by health insurance. HAS is explicitly responsible for value-based purchasing for both the public health insurance funds and the complementary insurance package provided either by private insurance or through the public system. Like the functions of NICE in the United Kingdom, the functions of HAS are highly relevant for health technology assessment and for establishing the contents of benefits packages for both public and private health insurance.

Singapore—Offering Efficient Health Care Financing. Singapore has achieved excellent health outcomes at a low cost. The government's share of total health care expenditures contracted from 50 percent in 1965 to 25 percent in 2000. Under the Medisave Program, all employed citizens are required to pay a 6- to 8-percent income tax—stratified by age—into an individual savings account, called a medical savings account (MSA). These funds are tax deductible and can subsequently be spent only on qualifying health services—including most hospital care and certain outpatient services, focusing on chronic conditions. MSAs represent approximately 10 percent of health financing in Singapore (Lim, 2004; Taylor and Blair, 2003; Gottret and Schieber, 2006).

Taiwan—Offering Universal Coverage Through a Single Payer. Taiwan created a National Health Insurance (NHI) program in 1995. NHI is a government-run social insur-

⁵ For additional information, see <http://www.nice.org.uk>.

⁶ All figures are given in U.S. dollars.

ance program with compulsory participation. The Taiwanese have a relatively high life expectancy of 76 years—a staggering improvement from 50 years ago, when life expectancy was just 53.4 years for men and 56.3 years for women. Taiwan spent almost 6 percent of its gross domestic product (GDP) on health care in 2002, or a total of \$752 per capita.

The primary financing sources for NHI are premium revenues contributed by the insured and their employers. These revenues are supplemented by a government subsidy. In 2001, 40 percent of NHI revenues came directly from individuals, and 32 percent came from private employers. The remaining 28 percent of revenues was contributed by national and local governments—including both their share of the premiums for public employees and the subsidies from general tax revenues, although the government's lack of timely payment has been a problem.

NHI functions as a single payer. By 1999, it had contracted with 94 percent of the medical facilities in Taiwan, the vast majority of which are public and private clinics. Hospital budgets are preplanned through global national budgets, and physicians working in hospitals are paid on a salary basis. Other services are reimbursed on a pay-per-service basis according to established national rates, while reimbursements are capitated for primary care. Like most other systems at this stage in their evolution, the health insurance system in Taiwan is concerned about cost containment, alongside overconsumption of services. To adequately fund the program in future, NHI will almost certainly need to increase the contribution rate (Morlock et al., 2004).

Turkey—Combining Social Security Health Insurance with Private and Public Insurance.

Turkey has three main social security schemes offering health care coverage: Social Security (or Sosyal Sigortalar Kurum, known as SSK), which covers an estimated 52 percent of the population; Bağ-Kur (23 percent) for the self-employed; and Emekli Sandığı (15 percent) for public employees. SSK is financed through a 12.5-percent payroll tax—7.5 percent paid by the employer and 5 percent paid by the employee. Despite the presence of these systems and the Green Card system for the poor, an estimated 10 million Turks (about 13 percent) lack access to health care. The population employed within the agricultural sector presents a particular worry for coverage since the SSK and Bağ-Kur systems cannot completely cover this group. The benefits and coverage of the existing social security schemes and the Green Card are variable.

Twenty-seven percent of health care is financed by out-of-pocket expenses. Most public health spending goes into salaries and pharmaceuticals, while public expenditures on preventive care have decreased from 12.1 percent of total expenditures in 1996 to 6.3 percent in 2001. Per capita health expenditures are inequitably distributed across these systems. Private health insurance has strong potential for growth in the country, but it currently covers only 1 percent the population, through 35 companies. The main limits to the growth of private insurance have been the limited potential for reinsurance and limited capacity of the population to pay.

There is currently a strong push in Turkey for universal coverage and a unified public health insurance program. This will mean defining a basic benefits package, likely to be expandable through the purchase of supplementary private insurance (Morlock et al., 2004).

Mexico—Offering Health Insurance for Rural Populations. Mexico has seen dramatic improvements in life expectancy and a steady reduction in infant mortality rates since the 1950s. Mortality and morbidity patterns in most Mexican states are no longer dominated by communicable diseases, and the share of disease accounted for by chronic and lifestyle-related conditions has increased. Nonetheless, Mexico remains below most OECD (Organization for Economic Cooperation and Development) countries for a number of health status indicators.

Child and infant mortality rates are the second highest in the OECD area after Turkey, and its maternal mortality rate is also much higher than the OECD average.

Since the 1990s, Mexican authorities have engaged in reform efforts to widen access to care for the uninsured population and improve the availability and quality of health services. The System of Social Protection in Health aims to improve financial protection for those without social security coverage, inject new resources into the system, and rebalance the financial transfers from the federal government to the states.

Mexico's PROGRESA program identifies the poor for conditional cash payments. The program reaches 20 percent of Mexico's population which represents a remarkable 20 percent of total income for this group. For health, payments are provided if family members, especially mothers and children, make a specified number of annual clinic visits. The program has led to increases in school enrollment, declines in levels of child malnutrition and illness, and reductions in poverty.

Additionally, Mexico is seeking to develop a financial protection scheme (Seguro Popular) to cover the population without health insurance. The plan foresees a basic package of medical and drug benefits made available to low- and middle-income families who are not covered by social security. This package fully covers primary and specialist outpatient care for a list of priority illnesses, and includes emergency care, inpatient care, and surgeries for conditions that most commonly result in catastrophic household spending. The family's contribution to the fund is stratified by income, and the package is subsidized up to the full amount for the poorest families. Currently, beneficiaries have no choice as to where they may seek care, but as the program is scaled up they will be able to seek care in any health center or general hospital within the state in which they reside. Seguro Popular aims to cover 11 million families over the next seven years (Frenk et al., 2003; OECD, 2005).

Present KRG Health Care Financing System

In the discussion above, we examined some of the basic tenets of health care financing and looked at how a variety of countries have dealt with health financing issues. To provide a reference point for our concluding suggestions of a KRG research agenda on health financing issues, we provide below a general description of the KRG's current health care financing system.

In terms of economic development, Kurdistan today is much like a middle-income country. Its data, IT, and government administrative systems would be hard-pressed to support a social insurance program immediately. That said, household incomes are rising, education levels are high, and social cohesion and a national purpose are strong. The Kurdistan Region also has a democratic government and the skills needed to run such a system.

Now is the ideal time for the KRG to begin evaluating future health care financing options, to make detailed plans to adopt the chosen system, to craft a strategic health financing plan, and to establish mechanisms that are designed to achieve the desired outcomes. The plan should include development of the supporting IT and data systems (see Chapter Seven), which are essential to administering more-complicated financing and insurance systems. Careful planning will enable the KRG to utilize its resources wisely and achieve good outcomes that are consistent with its vision.

Health care in the Kurdistan Region is currently financed by both the public sector and the private sector. In the public sector, government budgets pay for all public health services

and also fund public hospitals of various types (e.g., general, emergency, and women's hospitals) as well as a variety of PHCs. These facilities are supported by publicly funded central laboratories and other ancillary services.

The government also pays the operating expenses of the medical facilities. The majority of these costs are salaries for health care personnel (physicians, nurses, nurse midwives, dentists, pharmacists, lab technicians, ambulance drivers, cleaners, etc.), but public budgets either directly or indirectly also pay for medicines, laboratories, dental care, vaccines, disposables, ambulance expenses, pension expenses, training and education, and so forth.

The government pays for the health care capital expenses through investment budgets. These include the purchase of major equipment, buildings, and other larger capital expenditures. Investment budget allocations are made available by MOH, the governors of the governorates, and directly or indirectly from Baghdad.

The public health care budget for fiscal 2010 was set at just over 620 billion dinars, of which about 85 percent was dedicated to operational expenses and 15 percent was allocated to investment. Health care receives 5.2 percent of the public budget, which is low by international and even regional standards. It is also worth noting that in interviews, officials indicated that the initial budget amounts were not nearly sufficient to meet the levels that providers knew to be necessary in order to cover basic care and medicines. In general, when the governorates that control the local budgets reach their budget ceilings, they generate additional resources by transferring funds from less-important areas, reducing the investment budgets, and requesting supplements from the Minister of Health and the Ministry of Finance.

At the 2011 International Congress on Reform and Development of the Health Care System in the Kurdistan Region, held February 2–4 in Erbil, a number of presenters indicated that the best estimate of the size of the private sector was about 20–30 percent of the total spent on health care, with 70–80 percent spent by the public sector. Using these estimates we can approximate the percentage of GDP going to health care at about 3 percent. This compares with the estimate for Iraq as a whole in 2007 at 2.5 percent, Jordan at 8.9 percent, Turkey at 5 percent, and most European countries in the 8–10 percent range (World Bank, 2010). Therefore, the amount of GDP spent on health care today is low by international standards and can be expected to rise as the Kurdistan Region improves the provision and availability of care.

As we understand it, the process for setting budgets begins with MOH querying each of the five KRG Directors General (DGs) about their needs for the coming year. MOH reviews this input and fashions an operating budget that is discussed with the DGs. That budget is then presented to the Ministry of Finance, which reviews the request and makes a budget determination that is almost always smaller than requested. DGs can and do request top-ups to their budgets as the year goes on, and they move funding around to pay for priority areas, such as salaries and medicines.

Note that medical personnel are paid a salary, and facilities receive a budget. There is no relationship between pay and performance or even the number of hours worked. The system does not reward facilities that do a good job. This type of “purchasing” provides no incentives for people to work harder or to provide high-quality care.

As mentioned above, a substantial amount of care is provided by physicians working in their own private offices and financed by individuals out of their own pockets. There is also a growing number of private hospitals. All of these facilities expect to be paid cash when services are rendered. Although these facilities charge reasonable fees by Western standards, they are far more expensive than care in the public sector, which is very highly subsidized.

Except for a few foreigners, almost no one is covered by private insurance. If the KRG were to seriously consider a modern social insurance system, it would need to begin the process of encouraging the formation of private insurance companies so that they could develop the skills necessary to manage an insurance system that collects premiums, adjudicates bills, and pays providers. As a matter of fact, common types of insurance (auto, home, and life insurance) are not routinely available in the Kurdistan Region today.

Below we describe policy questions that the KRG should address as it contemplates its strategic health financing options for the future in each of the areas we laid out earlier (eligibility, services coverage, revenue collection, pooling, and resource allocation and payment).

Eligibility

Currently, non-Kurdistan Region citizens who are Iraqi citizens can avail themselves of KRG health facilities and medicines under the same terms as Kurdistan citizens. Non-Kurdistan citizens who are not Iraqis are not afforded the same protection under the constitution.

The KRG must address a number of eligibility questions as it considers a new financing system. They include the following:

- Will non-Iraqi citizens be covered, and if so, for which benefits? Most countries do not automatically cover foreign workers, and in oil-rich countries where 60–70 percent of the population may not be citizens, this becomes a very important issue.
- Will Iraqi citizens who are not Kurdistan Region residents continue to receive the same level of coverage that citizens of the region currently enjoy, and will they be charged a fee?
- How will the KRG verify and administer eligibility? The KRG will need to verify eligibility for access to the system and perhaps, like many other countries, issue an insurance or identification card.

Benefits—Services Covered

In Kurdistan, all citizens are eligible for a broad package of health care, dental, and emergency services that are provided in public hospitals and PHCs. The services provided are limited by the budget, available equipment and medicines, and the education and training of the staff. We are not aware of any place where a detailed list of covered services has been articulated to date or where a process exists for determining items to be covered, as is the case in most countries.

In many countries, as in Kurdistan, available funding limits service availability. In Kurdistan, one safety valve for lack of service availability is approval to receive care abroad. It is our understanding that in Kurdistan various political parties pay for a substantial amount of care abroad to members of their parties when it is deemed necessary but is not available in the KRG or Iraq.

Coverage questions that the KRG must address in the future include the following:

- Which health care services will be covered?
- What process will the KRG put in place to make this determination?
- How will it make such determinations for new technologies and medicines?
- What will be the KRG's policy on care abroad?

Revenue Collection and Sources of Funding

At this time, funding for the KRG's public health sector comes from public budget allocations. Most of the funding flows from the KRG central budget through MOH to care providers

(hospitals, PHCs, and salaries for personnel). Funding for the KRG central budget comes primarily from the 17-percent allocation from Baghdad. Some funding for investment or directly purchased goods and equipment also comes to the health sector directly from Baghdad and/or from the governorate. Although approved by MOH, funds flow directly from the Ministry of Finance of the KRG to the governorate-level. Flow of funds for capital investments are more complicated and come from (1) the KRG budget from the Ministry of Finance to the governorate-level DGs of Health, (2) the governor's budget, and/or (3) Baghdad—directly in the form of equipment, or indirectly through the governors.

At present, revenues from other sources are minor. For example, individuals pay very small user fees for public health services: At PHCs, patients pay 250 dinars to receive a ticket to be seen and 500 dinars if they need medicines. However, taxes and fees could become important sources of future funding. The health sector currently consumes 5.2 percent of the KRG budget, and the experience of other countries suggests that this percentage will grow considerably over the next ten years.

Although exact figures are not available, individuals make substantial out-of-pocket payments for private medical care, which is typically care provided in the afternoon and evening by the same physicians who work in the public sector in the morning. There is a growing number of private hospitals, particularly in Erbil, which are much smaller in size than the public hospitals.

The KRG will need to address a number of issues related to revenue collection for funding a growing health care delivery system. These issues include the following:

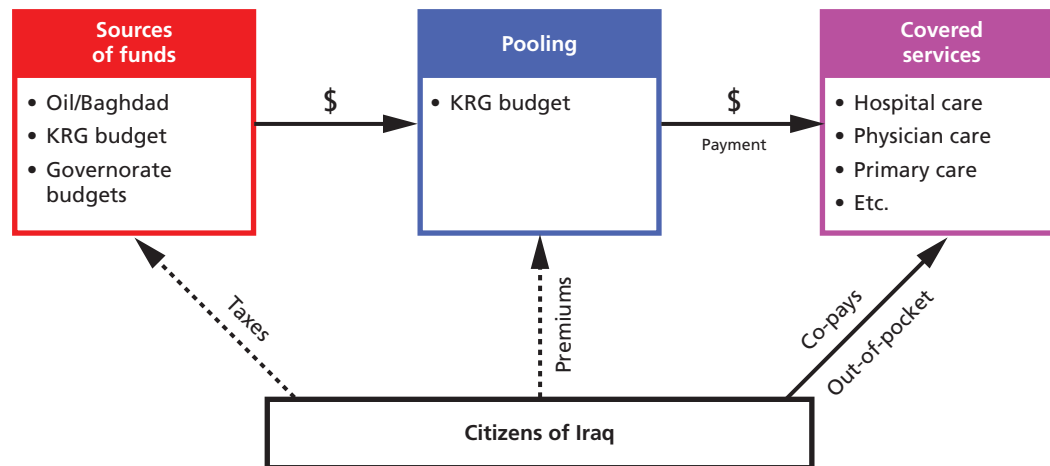
- What share of the national budget should be allocated to health care?
- What segment of the population will bear what share of the burden for financing the system?
- Which tax or revenue system will be used and through which mechanisms (public taxation, wage tax, etc.)?
- How will equity in revenue collection be addressed given the KRG's present sophistication of tax, accounting, and collection systems?
- What level and type of user fees will be collected?
- How will care for the poor be funded?

Allocation of Resources or Payment

In the public health care sector in Kurdistan today, payment for services and inputs (i.e., doctors and nurses) is an underutilized policy tool. In general, people pay a standard small fee and receive the care they need. Physicians are not paid differentially for serving in rural areas or for providing services that may be deemed of greater social value by the government.⁷ More important, because prices do not reflect resources utilized, there are few incentives to use them efficiently or for physicians to operate efficiently. For instance, physicians are paid a monthly salary with a guaranteed lifetime retirement pension that does not vary by or depend on the number of hours they work, or their productivity or the quality of care they provide. Some health care policy leaders suggested to us that the system should be redesigned so that it reflects the level of work performed—for example, by offering differential pay based on hours worked

⁷ Some governorates have implemented priority credits toward specialty training selection for physicians willing to serve their third year in remote areas.

Figure 4.10
Money Flows in the KRG



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or procedures performed. This kind of change would be one way to use payment as a tool for implementing policy and encouraging efficient delivery of care.⁸

Figure 4.10 traces the present flow of funding for health in the KRG.

Next Steps: Health Financing Analytical Agenda and Plan

To plan for the future, the KRG should embark on a five-step process:

- Step 1: Analyze the current system
- Step 2: Establish a vision for the future
- Step 3: Develop a data collection and research plan
- Step 4: Develop a detailed health financing strategic plan
- Step 5: Implement the plan.

Step 1: Analyze the Current System

The planning process should begin with an analysis of the strengths and weaknesses of the KRG's current health care financing system. Analysis should include the availability of finance-related data and systems for collecting data, and the status of the prerequisites for different financing systems. If the KRG chooses to move toward a social or even private insurance system, much more sophisticated data collection and IT systems will be required. Analysis should also include sources and collection of funds, pooling of resources, resource allocation and purchasing of services and inputs (e.g., labor), the benefits package, treatment of disadvantaged groups, and the incentives embedded in the system.

⁸ Policymakers must make changes with care. In countries that pay according to the number of visits, physicians may see many people for very short visits and encourage revisits, which is inefficient and does not offer optimal medical care.

Once a thorough evaluation of the present system has been completed, policy changes that can have an immediate effect on improving quality, access, and cost could be proposed. Such an exercise is also a prerequisite to the next step of establishing a vision for the future.

Step 2: Establish a Vision for the Future

The process of developing a vision for the future KRG health care system should begin with a detailed listing of feasible options and the policy changes and resources that would be required to successfully implement them. This necessary background work could be followed by convening leaders from government, medicine, and the community to fashion a vision for the future. We suggest such a convening be held under the auspices of MOH, which could submit options and recommendations for consideration to the proper government authorities. To ensure future community buy-in, the convened group should include businessmen, citizens, representatives from key users of the system (such as women), and representatives from disadvantaged groups (such as the poor and remote rural inhabitants).

Once agreed on, the vision of the future should be communicated to the public via a public relations or media campaign to gain feedback and buy-in for the long-term changes. What follows should define the process and the intermediate steps to achieve the long-run vision.

Step 3: Develop a Data Collection and Research Plan

Once a consensus vision is in place, a research agenda that supports a detailed health financing strategic plan and the ultimate new financing system can be developed and executed. This should include a greatly enhanced effort to collect good data on all aspects of the health system, including health status, costs, disease patterns, public health and primary care needs (see Chapter Seven). Research required will depend on the vision and direction articulated for the KRG as well as the need to analyze many of the questions laid out above.

Collecting adequate high-quality data will undoubtedly require a detailed household survey as well as facility/provider survey to determine health status, use, and availability of services in both the public and private sectors.

Step 4: Develop a Detailed Health Financing Strategic Plan

Using the data and information developed, MOH could fashion a detailed health financing strategic plan based on the vision. The plan would need to be multiyear with both a long-term vision and specific objectives that could be achieved in the next few years. The plan should clearly indicate how prerequisites for attaining the vision (e.g., data, IT, and management systems) will be achieved. For instance, almost any of the insurance options will employ or even require the services of well-managed insurance companies. Presently, there are no such companies in the KRG. MOH should also pick key strategic objectives that, if achieved, would have the overall effect of helping achieve other parts of the plan. In reality, institutions cannot focus on more than a few objectives at one time, so great care must be taken in selecting, implementing, and monitoring performance of those aspects of the system that will have the greatest overall impact.

Step 5: Implement the Plan

Most plan implementations must await decisions in steps 1–4. That said, there are many areas where implementation can begin in the short run once a strategic vision and direction have

been set. For instance, almost all modern financing systems require data and information on which to set rates and manage the system; implementation of such areas could take place in parallel with steps 1–4. All research to date shows that health care financing choices are extremely important to a country achieving its health care and development goals, as well as achieving superior health outcomes at a reasonable cost, and that they should be entered into with a great deal of thought and, if possible, national consensus.

Summary and Conclusion

A country's health care financing system is a critically important component of its health care system that enables all other parts. The financing system enables equitable collection of sufficient resources in order to offer efficient quality care to all segments of society. The financing system embodies incentives that help determine the efficiency and quality of care, as well as the compensation that providers receive. The system also reflects a country's basic cultural and economic values. All countries have unique systems that usually embody more than one form of financing.

Kurdistan currently lacks the sophisticated data, IT systems, and managerial skills required to successfully operate more management-intensive systems, such as social insurance or national health plans. These requirements must be in place before the KRG can successfully embark on reform. However, the Kurdistan Region is rapidly developing and will likely be able to take the next step in establishing systems that are not primarily budget-driven. Careful planning and wise choices can help Kurdistan achieve the health outcomes of much richer countries at a greatly reduced cost.

Organization and Management of Primary Care Services

Potential Policy Actions

Distribution of Facilities and Services

- Define appropriate scope of PHC services
- Develop plan for appropriate distribution of primary care facilities
- Develop plan for standardizing services at each level of facility
- Extend services through telemedicine
- Expand health education
- Develop and implement public education campaigns

Referrals and Continuity of Care

- Explore feasibility of “home clinic” concept
- Develop and implement a patient referral system
- Take initial steps to transition to electronic health records
- Promote local awareness of available services

Continuous Quality Improvement

- Implement clinical management protocols
- Use standardized patient encounter forms
- Define safe scope of practices for PHC nurses
- Identify and test measures to enhance patient flow
- Survey client and staff satisfaction at PHCs
- Explore regional and international accreditation

Overview

The KRG primary health care system already possesses key strengths on which to build. However, health leaders and clinical providers at all levels also face significant challenges to improve health care delivery and health outcomes. Improving the organization and management of primary care services is a particular priority highlighted by the Minister of Health and other KRG authorities. Such improvements underpin the entire health care system in Kurdistan, and will continue to do so in the future.

In this chapter, we discuss recommendations for activities to be undertaken in the next two to three years to improve the organization and management of health services—building on initiatives already under way as well as deciding how to prioritize and sequence the proposed

activities. Some recommended activities represent early steps in a longer-term effort. The recommendations draw from guiding principles of primary care in the Twenty-First Century (especially those endorsed by WHO and IOM), as described in Chapter Two. Our recommendations focus on three areas:

- Distribution of facilities and services
- Referrals and continuity of care
- Continuous quality improvement (CQI).

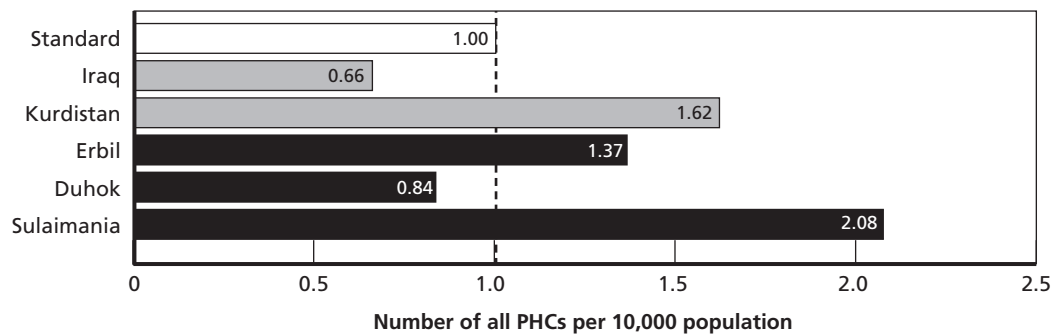
Current Status in the Kurdistan Region—Iraq

Despite many years of underinvestment during the Saddam Hussein era, Kurdistan’s ambulatory health care system is quite good in terms of the number of facilities and the type of services provided. This is probably due to both a long tradition of excellence in medicine and diligent rebuilding by KRG authorities in recent years.

The types, sizes, and locations of hospitals are relatively standardized across the three provinces; however, primary health care centers (PHCs) are much less standardized. PHCs exist across all provinces, but while the number of all PHCs appears to meet the national standard (see Figure 5.1), the number of main PHCs staffed by at least one physician (to which the standard applies) falls short of international and Iraqi standards (see Figures 5.2 and 5.3).

Moreover, health authorities suggest that PHCs are not necessarily distributed appropriately. Only in Duhok were we able to find data on population coverage by type of health facility (Table 5.1). (The Director General of Health in Duhok monitors population coverage and services offered in each facility, by district and type of facility.) Not surprisingly, health centers with physician staffing cover larger populations—around 13,000 on average across all districts—and are typically located in larger towns and cities. In contrast, centers managed by paramedical personnel and without a physician cover smaller populations—roughly 2,600 on average across the province—and tend to serve smaller settlements, such as villages. Monitoring the population coverage of each facility enables managers to assess when and how services or even facilities may need to be added to serve a population growing beyond a specified

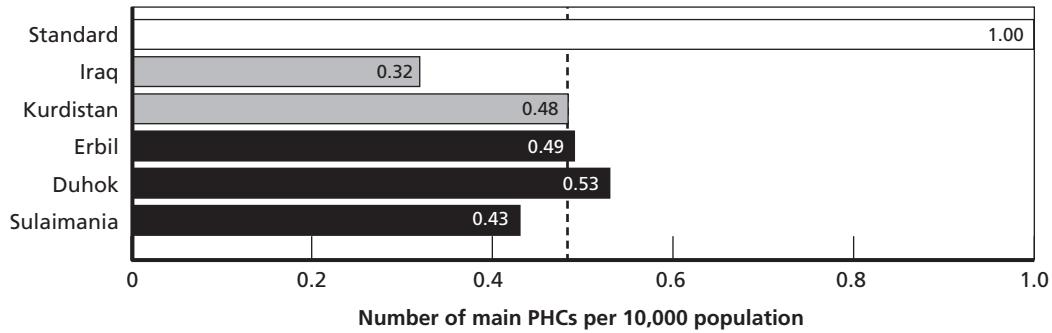
Figure 5.1
Number of All PHCs per 10,000 Population



SOURCES: Kurdistan data—MOH Annual Report for 2009; Iraq data—WHO, 2009.

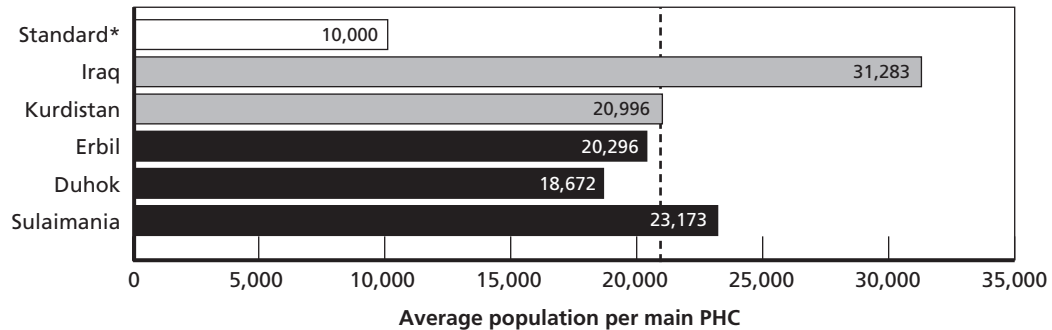
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Figure 5.2
Number of Main PHCs per 10,000 Population



SOURCES: Kurdistan data—MOH Annual Report for 2009; Iraq data—WHO, 2009.
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Figure 5.3
Average Population Covered by Main PHCs



*Iraqi standard = 1 main PHC per 10,000 population.
 SOURCES: Kurdistan data—MOH Annual Report for 2009; Iraq data—WHO, 2009.
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threshold or standard for service coverage (such as specified in the Iraqi government’s strategic plan for 2010–2014).

PHCs are also not universally standardized or monitored by criteria such as type, size of population served, staffing level, and services offered. As of November 2010, the Minister of Health was in the process of working with the DGs of Health in Erbil, Duhok, and Sulaimania to assess the location and catchment population of existing clinics as a step toward better distribution and standardization of services. We understand that an Iraqi law is in place to define and establish criteria for different types of ambulatory centers, but the centers have not yet been systematically aligned to meet these criteria. Likewise, the services offered at different types of PHCs do not appear to be standardized within or across governorates. Several health officials also commented that job descriptions do not exist for key staff at these facilities.

The absence of functional KRG standards for catchment areas, staffing, and services hampers efficiency and systematic improvement. The goals of universal access and high-quality care cannot be achieved without systematic application of such standards. Routine monitoring by district medical officers (DMOs) of the staffing and services provided at facilities is also critical.

Table 5.1
Population Coverage by Type of Health Facility, Duhok

District	PHCs Managed by Physician				PHCs Managed by Paramedical Personnel			
	No.	Population	Average Population per PHC	No. of PHCs per 10,000 Pop. ^a	No.	Population	Average Population per PHC	No. of PHCs per 10,000 Pop. ^b
Duhok	18	264,065	14,670	0.68	8	17,496	2,187	4.57
Zakho	11	199,131	18,102	0.55	6	13,165	2,194	4.55
Akre	7	87,926	12,560	0.80	14	41,094	2,935	3.41
Berderash	3	41,732	13,910	0.72	7	50,514	7,216	1.39
Amedy	11	80,496	7,317	1.37	11	15,583	1,416	7.06
Summail	7	86,016	12,288	0.81	11	26,945	2,450	4.08
Shekhan	7	83,730	11,961	0.83	10	11,569	1,157	8.64
Total	64	843,096	13,173	0.75	67	176,366	2,632	3.80

SOURCE: Dr. Abdullah Saeed, DG of Health, Duhok.

^a National standard is ≥ 1 .^b National standard is ≥ 2 .

Furthermore, the current management systems seem to be ad hoc in nature and vary greatly across governorates, districts, and facilities. Such an arrangement is inefficient. Some local administrators probably waste effort “reinventing the wheel” at their center or within their district, and the province and KRG health administrations have not yet reaped the management efficiencies that derive from standardization of facilities, staffing, and services. Rationalizing the administrative structure does not, however, mean imposing strict uniformity: If local managers have at least some flexibility to adapt to local conditions, but are also accountable for their results, the entire system should benefit from both the relative uniformity of the system and the innovations that result from reasonable local variability. The distinct innovations demonstrated by the DGs of Health in Erbil, Duhok, and Sulaimania well illustrate the benefits of flexibility within a set of general parameters.

Through conversations with MOH officials and health workers, we identified two other areas that, if improved, could strengthen health delivery in Kurdistan:

- **Continuity of care**—Currently, there is no coherent system in place to give patients a consistent point of contact with the health care system, such as a designated primary care provider or team. Likewise, there is no established method for communication between a referring provider and a consultant specialist. These two components of continuity of care are critical contributors to more cost-effective and better health outcomes.
- **Continuous quality improvement**—More broadly, there is no consistent program in place to assess the current quality of health care delivery in the KRG region, draw lessons from any issues found, or institute appropriate changes or incentives within the system to encourage it. These activities are the heart of CQI, an essential component of effective care.

In the following sections we outline the principles underpinning our recommendations on how to strengthen distribution and management of services, referrals, continuity of care, and CQI. We then describe our recommendations in detail.

Policy Goals to Improve the Organization and Management of Primary Care Services

Borrowing from exemplary practices from around the world, we recommend three goals to improve the structure and management of the primary care system:

- Goal 5.1: Distribute primary care facilities and services efficiently
- Goal 5.2: Develop and implement a system for referrals and continuity of care
- Goal 5.3: Develop and implement a program for continuous quality improvement.

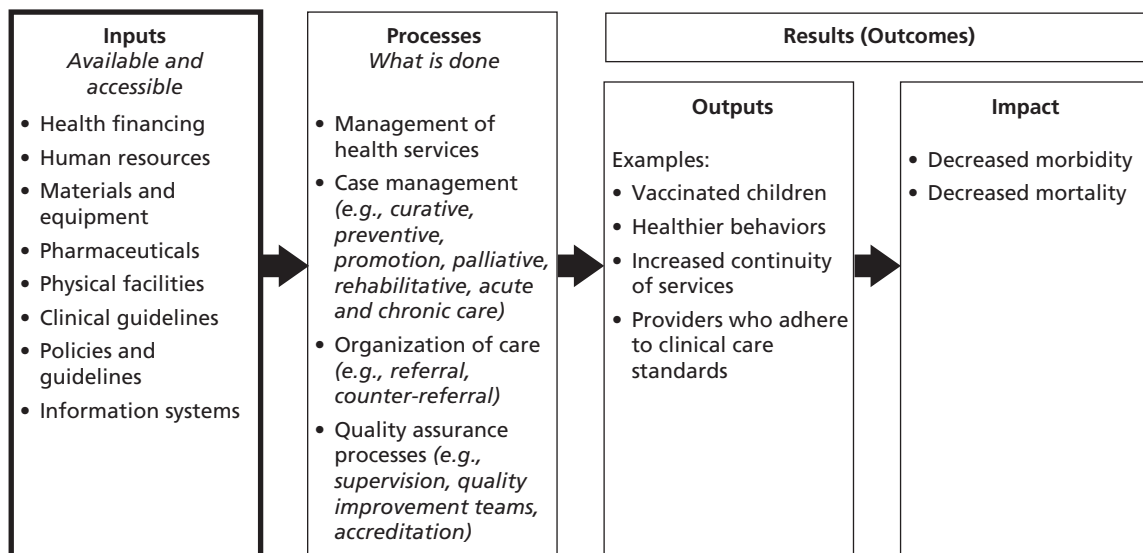
Background and Justification

Health service delivery requires a set of inputs and processes to produce results (outcomes)—short-term outputs and longer-term impacts. Figure 5.4 captures the essential elements of health service delivery. Collectively, these are addressed in the following sections, organized according to the three policy goals.

Organization of Primary Care Facilities and Scope of Services

There is no one “correct” standard for structuring primary care delivery. However, global experience suggests that it must meet population needs efficiently and effectively, while also allowing the flexibility to adapt as local conditions and changing circumstances require. We understand that Iraqi law defines different types of health centers (Types A–G) and establishes criteria for the population covered, the physical infrastructure, and the staffing at each type of facility. However, it is not clear that these criteria have been applied in a systematic and

Figure 5.4
Health Service Delivery System



SOURCE: Adapted from Massoud et al., as cited by Islam, 2007.

consistent fashion across the region. Moreover, it appears that the core primary care system is largely based on two key levels of centers:

- **PHC Main Center** (Types A, B, and C)—Serves a population that is between 5,000 and 10,000 and is staffed by at least one physician
 - **Type A:** Delivers all primary health care services
 - **Type B:** Offers the same services as Type A plus training for medical and paramedical staff at the facility and medical school students
 - **Type C:** In addition to providing all primary health care services, offers uncomplicated obstetric deliveries and simple medical and surgical emergency care
- **PHC Subcenter/Branch (Type D)**—Serves a population that is less than 5,000 and is staffed by a male nurse, a female nurse, and a paramedical assistant; provides simple maternal and child health services, immunizations, and simple curative services

We were unable to obtain information on Types E, F, and G centers, but we believe these may refer to specialized and insurance clinics and perhaps also to on-call centers that are open in the afternoon or evening.

Many of the basic or “traditional” primary care services (i.e., as defined in the 1978 Declaration of Alma Ata) are already provided in the Kurdistan Region but are not provided consistently. This suggests that one key aim should be to make services more uniformly and universally accessible at appropriate levels of care. While our own observations were that most centers did not appear to be overutilized, numerous reports from others suggest heavy use concentrated in just 2–3 hours in the morning. Many PHCs do not provide a complete package of basic primary care services. Thus, the immediate focus should be to (1) align services with appropriate levels of care, (2) ensure that facilities are properly equipped and staffed and are able to provide all appropriate services, and (3) ensure the quality of those services.

Making the scope of services more uniform at each level of care is a prerequisite to improving service quality and efficiency and staff productivity. Such an approach is consistent with the recommended scope of care described in the Alma-Ata Declaration, reinforced since then by WHO. Indeed, a recent WHO report for Iraq spells out specific services recommended for each level of care (WHO and Iraq Ministry of Health, 2009). Some of these are captured in Table 5.2. The equipment and staffing at a center, as well as the primary care services offered, are not only essential in their own right but often important complements to each other. For example, dental services are much more effective if dental radiology is available at the same site, and medical care is enhanced by on-site imaging (e.g., X-ray) and laboratory diagnostic services.

Experts have persuasively argued for a broad range of services to be provided within the context of primary care, including the implications of adding new preventive and chronic disease management services to Kurdistan’s primary care portfolio: Risky behaviors are responsible for about half of avoidable mortality, including poor diet, inadequate physical exercise, tobacco use, and alcohol consumption (McGinnis and Foege, 1993). The available mortality data from the KRG support this statement: Road traffic injuries, cardiovascular disease, hypertension, and diabetes are among the leading causes of death in the region and encumber significant costs to the health system. Experience shows that each of them can be significantly reduced through public education and other prevention-oriented interventions. Indeed, primary prevention and health promotion can avert up to 70 percent of the expensive disease

Table 5.2
Selected WHO Recommendations for Primary Care Services to be Delivered at Different Levels of Ambulatory Facilities in Iraq

Services	PHC Subcenter	PHC Main Center
Antenatal Care		
Information, education, communication	Yes	Yes
Diagnosis of pregnancy	Assumption	Yes
Antenatal visits—weight, height, blood pressure measurement	Yes	Yes
Tetanus immunization	(Not specified)	Yes
Multi-micronutrient supplementation	Yes	Yes
Blood sugar measurement, urine analysis	No	Yes
Anemia diagnosis	No	Yes
Anemia treatment	Yes—iron, folic	Yes—iron, folic, blood
Detection of pregnancy at risk	Yes, refer	Yes
Delivery Care		
Detection of fetal risks	Yes, refer	Yes
Assist normal delivery	No	Yes (Type C)
Delivery requiring instrumentation	Refer	Yes (Type C)
Postnatal Care		
Prevention of newborn ophthalmia	Yes	Yes
Vitamin supplementation	Yes	Yes
Treatment of anemia	Yes	Yes
Provide family planning counseling; distribute condoms, oral contraceptives	Yes	Yes
Services for Children <5 Years Old		
Growth monitoring	Yes	Yes
Dental care	Yes	Yes
Routine immunizations (BCG, DPT, polio, measles)	Yes	Yes
Standard case management of children with acute respiratory infection—no pneumonia	Yes	Yes
Pneumonia	Yes	Yes
Severe pneumonia	Pre-referral treatment, immediate referral	Treatment and refer if necessary
Acute ear infection	Yes	Yes
Mild fever	Yes	Yes
Severe febrile disease	Pre-referral treatment, refer	Pre-referral treatment, refer
Fever with possible bacterial infection	Yes	Yes

Table 5.2—Continued

Services	PHC Subcenter	PHC Main Center
Fever, bacterial infection unlikely	Yes	Yes
Identification of diarrheal disease dehydration	Yes	Yes
Treatment of mild/moderate diarrheal dehydration	Yes	Yes
Treatment of severe diarrheal dehydration	Treat with ORS and refer	Yes, refer if necessary
Dysentery	Yes	Yes
Measles (uncomplicated or with eye or mouth complications)	Yes	Yes
Malnourished (not very low weight), no anemia	Yes	Yes
Anemia or very low weight	Yes, refer if necessary	Yes, refer if necessary
Eye, mouth, or local skin infection	Yes	Yes
Noncommunicable Disease Control Services		
Screening for hypertension	Refer suspected cases	Yes
Treatment of hypertension	No	Yes, refer severe cases
Diagnosis of heart and cerebrovascular diseases	No	Yes
Treatment of heart and cerebrovascular diseases	No	Refer
Diabetes screening	Refer suspected cases	Yes
Treatment of uncomplicated diabetes cases	(Not specified)	Yes
Diagnosis of arthritis	Refer	Yes
Treatment of arthritis	Symptom relief and refer	Yes, refer if necessary
Urinary tract infection diagnosis	Refer if persistent or refractory	Yes
Treatment of urinary tract infection	Initial management, refer as above	Yes, refer if refractory
Cataract diagnosis	Refer suspected cases	Yes
Glaucoma diagnosis	No	Yes
Mental Health Services		
Case detection	Yes	Yes
Provide psychological first aid (comfort, assess and ensure needs, connect with social support)	Yes	Yes
Identification of psychosis, anxiety disorders, depression	Yes (follow up—mild)	Yes
Follow-up of psychiatric patients	Yes	Yes
Emergency Care Services		
Management of cardiopulmonary emergencies (CPR), hypoglycemia and conscious, allergic emergencies	First aid and refer	Yes, refer if difficult

SOURCE: WHO, 2009.

burden associated with chronic diseases (Fries et al., 1993). Communicating effectively with people about the health risks they face and the ways they can reduce those risks can reduce morbidity and mortality. Another key activity is to make people aware of the health services that are available, since people are unlikely to seek a service that they do not know exists. Moreover, they also must view the services favorably and want to seek them—they must be convinced that the services will meet their needs, in terms of quality, timeliness, and clinician responsiveness.

Referrals and Continuity of Care

Continuity of care requires efficient referral out from and back to a patient's first-level health facility if that facility cannot provide the needed services (e.g., specialized diagnostic, preventive, and care services; see Figure 2.14). Continuity of care means that patient care is not simply episodic—neither patients nor providers should have to start from the beginning with every primary care or specialist visit. There should be no gaps in care due to lost information or failed communication between providers. As the WHO 2008 report clarifies, patients should have a “regular point of entry into the health system, so that it becomes possible to build an enduring relationship of trust between people and their health-care providers” (WHO, 2008b, p. 42). Care should also not be thought of as beginning and ending in the consultation room. Adopting a “consistent and coherent approach to the management of the patient's problem” until the problem is fully addressed or resolved significantly improves outcomes (see Table 5.3) (WHO, 2008b, p. 49).

Effective care depends on continuity not only in general primary care but also in chronic disease management, reproductive health, mental health, and healthy child development. Finally, continuity of care requires minimizing any barriers for patients, such as overly complicated instructions, unnecessarily frequent or expensive consultations, or referral systems that are difficult to navigate.

Quality of Services and Continuous Quality Improvement

IOM defines health care quality as follows: “Quality of care is the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge” (IOM, 1996, p. 47). IOM (2001) identified six desired attributes of quality health care, and a subsequent report (2005) provides definitions, measures, and interventions for each of these six quality attributes or aims:

- *Safety*: Avoiding injuries to patients from the care that is intended to help them
- *Effectiveness*: Providing services based on scientific knowledge (evidence-based) to all who could benefit, and refraining from providing services to those not likely to benefit (minimizing underuse and overuse, respectively)

Table 5.3
Contributions of Continuity of Care to Better Health Service Utilization

Lower all-cause mortality
Better access to care
Less rehospitalization
Fewer consultations with specialists
Less use of emergency services
Better detection of adverse effects of medical interventions

SOURCE: Adapted from WHO, 2008b.

- *Patient-centeredness*: Providing care that is respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values are considered in making clinical decisions
- *Timeliness*: Avoiding waits and sometimes harmful delays for both those who receive care and those who give care
- *Efficiency*: Avoiding waste, including waste of equipment, supplies, ideas, and energy
- *Equity*: Providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status.

WHO persuasively argued that a seventh and equally critical element should be added to the six above:

- *Access*: Health care is available to everyone in the region, not just with appropriately located facilities but with facilities that provide an appropriate scope of services, and with people being aware of what is available, and being physically and financially able to access them (WHO, 2008b).

Whenever practical, measuring *outcomes* (“How did patients do?”) is preferable to measuring *process* (“What was done?”), but the latter is easier. In a practical sense, it is easier to measure and directly improve the process of care, not outcomes. It is worth emphasizing that quantity does not translate directly to quality. Equal access for everyone is essential, but the ideal end point is not equal access to unsatisfactory care; rather, it is both access and quality care for all.

The six specific interventions related to quality improvement that are proposed in this chapter are aligned with these elements of quality care. They are also aligned with the efforts of the KRG and other countries to achieve the MDGs agreed on in 2000 (United Nations General Assembly [UNGA], 2000). Finally, information and communications technology, including planning and concrete steps toward electronic health records and web-based communication, is an essential foundation for quality improvement efforts.

Recommended Specific Interventions to Improve the Organization and Management of Primary Care Services

The specific interventions suggested in this section are designed to strengthen the organization and management of primary health care in Kurdistan in the areas addressed in the three goals:

- Efficient distribution of facilities and services
- Referrals and continuity of care for patients across different care sites/levels and over time
- Quality improvement to make services more comprehensive, efficient, and effective.

The interventions vary from short-term to long-term and in the level of effort and resources required. Many of them reinforce and/or build on one another and should be considered for implementation in that light. Also, it is probably not feasible to implement all these recommendations at once; priorities should be set so that actions can be phased in appropriately.

An essential point to bear in mind is that health care delivery represents a dynamic system. Making the system work well requires coordinating many interacting parts—facilities, services, personnel, and data. A change to any one component will affect several others. Therefore, the interventions suggested in this chapter should be considered in context with one another and also in light of interventions suggested in other chapters. For example, it makes sense that if improved standards and protocols are established for facilities and services, personnel must also be properly trained and motivated to deliver them (as discussed further in Chapter Six). Likewise, many interventions, including the referral system discussed in this chapter, critically depend on relevant data systems (see Chapter Seven), since neither administrators nor health care providers can know how good a job they are doing, let alone what needs improvement, without adequate data. Finally, a key criterion in selecting among and adopting different interventions will be the anticipated future demand for services.

Goal 5.1: Distribute Primary Care Facilities and Services Efficiently

The distribution of primary care facilities and services is intended to achieve accessible, integrated, and efficient primary care-oriented health care delivery that meets the Twenty-First-Century needs of the Kurdistan population. A structured system of ambulatory care facilities and services is the foundation of the overall health care system. Good use of resources and full access to integrated care will support government efficiency and serve patients well. Patient-centered care is a hallmark of modern health care systems—consistent with WHO and IOM recommendations, as well as KRG priorities. Therefore, facilities and services should be distributed, and available resources allocated, in a way that best serves most patient needs. In addition, the system should be sufficiently flexible to reflect different local conditions while still preserving consistency and management efficiency.

Having a system in place to assess and monitor the effectiveness of reforms would also open opportunities to learn from experiences along the way and continually improve the health system. It will be important to establish a culture in which “failures” in system performance can be used as opportunities to learn and improve, rather than a basis for punitive measures. There will be challenges, both in the change process itself and in staffing, equipping, and managing the facilities and services, along with training the workforce. We suggest that self-reporting and systematic supervision be used as tools to help monitor the progress of all these changes, and of everyone’s compliance with the new standards. MISs to help support such monitoring are discussed in Chapter Seven. We offer six specific interventions to help improve the distribution of health care facilities and *services* (labeled “SVC”).

SVC-1: Define the appropriate scope of services to be provided at public sector clinics.

The scope of services refers to those services that should be offered at a given type of facility. Here we refer to services that can be provided at PHCs and hospital outpatient departments. It is important to recognize that providing primary care to remote populations is almost always more expensive per capita than in urban areas. This should be seen as a challenge, but not as a reason to provide inferior care in remote areas, a consensus standard that WHO has continually emphasized.

The KRG primary care system already provides a robust range of recommended traditional services (see below) at some facilities, but it does not yet offer these services consistently across all facilities and at a uniformly high standard. This recommendation is aimed at ensuring that facilities and services are distributed so that all traditional PHC services are delivered universally by all appropriate facilities, and with consistently high quality. The goal is to provide accessible and good-quality care for all residents of Kurdistan.

Specific suggested minimum standards for primary care services are the following:

- Preventive and basic curative services
 - Health assessment and basic clinical decisionmaking and triage
 - Assessment, management, and prevention of common chronic and acute health problems and the drugs needed for these problems
 - Basic reproductive, child, and adolescent care, for example:
 - Child growth monitoring
 - Vaccinations
 - ORT (on-site administration supervised by a trained provider is preferable to providing an oral rehydration salts [ORS] packet to the parent for full treatment at home)
 - Basic first aid (scope to be determined—ideally, at least at about the basic emergency medical technician [EMT-I] level according to U.S. or similar standards)
 - Blood pressure, weight, and temperature measurement/monitoring (e.g., of pregnant women and hypertension patients)
 - Preventive and chronic care education
- Clinical care services
 - Adult and pediatric general medical services that can be provided by a GP, including geriatric and mental health services to the extent enabled by training of facility staff
 - Routine antenatal and obstetrical care that can be provided by a GP, nurse, or midwife
 - Dental care (requires appropriately equipped dental suite)
 - Support services: radiology, laboratory, and pharmacy
 - Basic cardiopulmonary resuscitation
- Specialized or advanced ambulatory care services
 - Care by a qualified GP or specialist care (family medicine, obstetrics/gynecology, internal medicine, and pediatrics), including management of complex chronic conditions
 - Advanced dentistry
 - EKG monitoring
 - More complex/advanced diagnosis, based on appropriate matching of needs with diagnostic technologies that are feasible at Type C main PHCs in district or governorate capital cities (e.g., ultrasounds, selected biopsies, and stress tests).

Some *prenatal services* can be significantly expanded beyond their current scope of delivery. For example, simple pregnancy monitoring (e.g., weight, blood pressure measurement) can be undertaken at PHC subcenters and main PHCs that do not have a specialist physician on staff. This is an important addition to primary care services and will help the KRG address MDG 5—improve maternal health. Regular prenatal care and subsequent delivery by a skilled birth attendant dramatically improve survival for both mother and child. Currently, this care is available only at some health centers, and only from specialized (often only female) physicians. According to WHO, in Lebanon, Libya, and Jordan, over 95 percent of pregnancies receive skilled supervision, and 95 percent of deliveries are also attended by trained personnel. WHO strongly advocates for skilled care at every birth. The goal for the KRG is to ensure that all pregnant women have access to and receive good-quality prenatal care, and that all deliveries be attended by a skilled birth attendant.

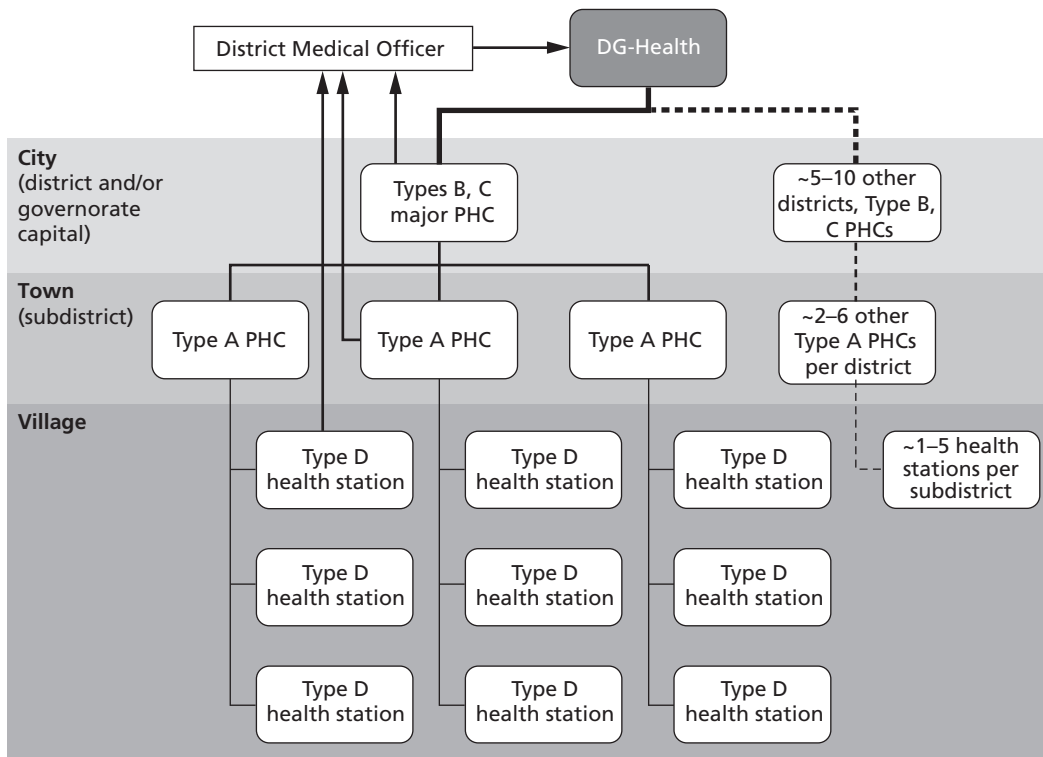
Most *chronic disease* care will need to be monitored by a physician, either by a PHC GP or by a specialist at a PHC main center or referral center, depending on the complexity of the dis-

ease. The suggested goal is that continuity of care take place at the most appropriate local level. For example, patients with hypertension (high blood pressure) who are on a stable medication regimen could have their blood pressure monitored at their local PHC branch, with regular but infrequent visits to a GP at the PHC main center in the area. In contrast, patients with hypertension that is more difficult to control might need repeat visits and monitoring by a specialist at a PHC main center or referral center. The development of clinical management protocols is suggested below (see CQI-1, under Goal 5.3). According to available mortality data, chronic diseases that will likely require the most urgent focus over the next two years include hypertension, ischemic heart disease, diabetes, and, based on worldwide incidence, asthma.

SVC-2: Organize the system of existing and new primary care facilities based on a core three-tier networked system and specified access standards. It will be important to ensure that primary health care services be distributed to reach even the most peripheral elements of the health care system and population. The current ad hoc system is not optimally efficient, accountable, or consistent. Moreover, it is not clear that existing law, which defines the different types of health facilities and criteria for service coverage, is being met. Specific recommended activities are described below.

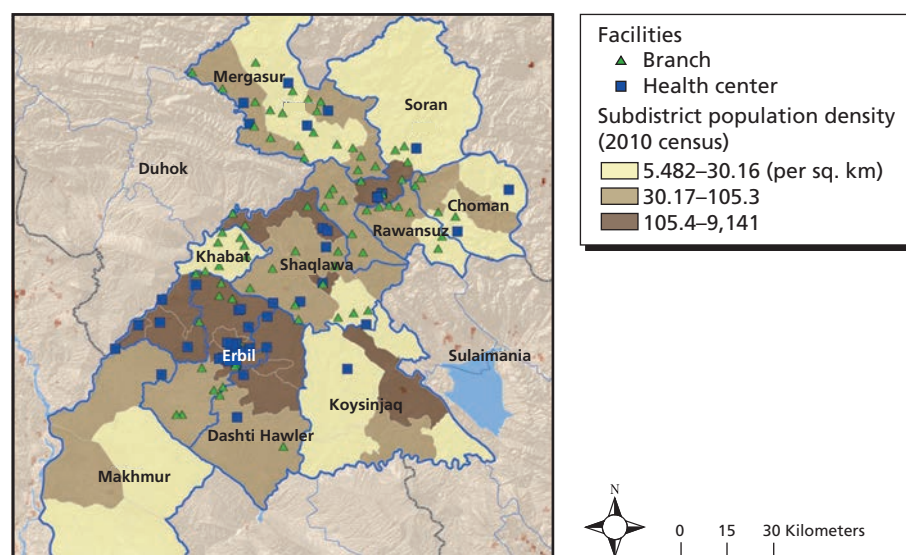
- Base the core system on three main outpatient facility types (see Figure 5.5).
 - PHC subcenters/branches (PHC Type D): serving villages
 - PHC main centers (PHC Type A): serving subdistricts or towns
 - Referral centers (PHC Types B and C): Major centers, generally located in district and governorate capital cities

Figure 5.5
Core Three-Tier Networked Structure for Primary Care Facilities



- Review current population distribution (size, location, and density) and growth projections.
- Inventory the location, population served, and physical building characteristics of all current public sector clinics within each province.
 - The KRG should apply its GIS capabilities to assess the location and population served at existing PHC facilities, as well as key characteristics of these facilities, such as size and staffing. (Figure 5.6 presents an illustrative example of how GIS technology can be used for this purpose.)
 - GIS monitoring of population dynamics and facility locations over time can help with the ongoing management of facility distribution, including facility upgrading (or downgrading) from one level to another.
- Review forecasted needs for facilities over the next five years (see Chapter Three).
- Include access standards in developing the plan for distribution of services. Access is most commonly defined based on either patient travel time or distance. The standards should take into account the criteria defined in law, including consideration of the size and location of the population served and the distance to nearby centers. Potential access standards, by type of facility, are as follows:
 - *PHC Subcenters/Branches* (Type D)—A PHC branch generally serves one or more villages and should be located within realistic travel time (e.g., within 30 minutes for all population centers of at least 50 people and within 60 minutes for everyone in the area). The Iraqi national development plan specifies that one subcenter serve a population of up to 5,000.
 - *PHC Main Centers* (Type A)—A Type A PHC main center generally serves a town (subdistrict level) and should be located within realistic travel time (e.g., within 60–90 minutes for everyone in the area). The Iraqi national standard is that one Type A main center serves a population up to 10,000.

Figure 5.6
GIS Mapping of Erbil Governorate Health Centers and Branches



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- *Referral Centers*—A referral center (Type B or C) is generally located in the district or governorate capital city (e.g., the district hospital outpatient center) and should be located within realistic travel time for everyone in the catchment area.
- Access standards should also be established for specialized facilities, such as 12/24-hour on-call centers and hospitals.
- Assess the projected needs and current facilities to develop a redistribution plan within each province that includes upgrading, downgrading, adding, or closing facilities as needed to align with the standards in the law.
 - Use GIS mapping to determine whether any facilities should be consolidated or closed or whether a new facility of a particular type is needed to serve a given population, based on access standards.
 - Consider upgrading services at a given facility if significant numbers of people must travel longer than the specified access standard. Strategies to upgrade services could include the following:
 - Additional providers and/or hours of service
 - Additional services above the minimum standard for that type of facility
 - Subsidized transport costs and/or dedicated transport to next higher level facility
 - Overnight dormitories or other accommodations for major health centers (if/as needed)
 - Consider alternatives to specialist physicians in the redistribution of prenatal and delivery services.
 - At PHC subcenters, basic blood pressure and weight monitoring can be undertaken and additional clinical monitoring could be undertaken by the GP physician, trained midwife, nurse, or similarly skilled individual at a PHC main center.
 - Following cultural norms, the providers may need to be female, but consideration should be given to the acceptability of trained male health care staff.
 - Only complex cases need be handled by a specialist physician at the district or governorate level.
 - Standards should indicate that pregnant women normally seen at PHC branches should be referred to the PHC main center or referral center in the catchment area for additional or more complex prenatal care.
 - Mobile units might be another alternative for providing routine antenatal care in some areas.
 - Skilled birth attendants should have access to reliable communications and transportation to reach women in childbirth within a reasonable time (for example, two hours or less).
 - Mobile services (e.g., dental, laboratory specimen collection or on-site laboratory testing, visiting specialists, prenatal care and maternal health, and chronic disease care) might be considered in place of or in addition to a fixed facility in some areas, if provided on a regular and sufficiently frequent basis (e.g., every 1–4 weeks).
- Develop a description of management responsibilities and service relationships among PHC branches, PHC main centers, and referral centers within the same catchment area, including referral arrangements (see “referrals” section below).

Key questions will be the appropriate degree to which authority should be decentralized to the health facility or district level and the nature of the relationship between facilities at

different levels within a given catchment area. Depending on local conditions and the preferences and decisions by policymakers at KRG and governorate levels, the administrative structure could have significant local autonomy.

- The DMO, potentially located at the district hospital or a referral center, would have clear administrative responsibility for all facilities within the district, including PHC branches, PHC main centers, referral centers, and the district hospital.
- The referral centers could be linked/networked to the PHC main centers and branches across the district (drawing from catchment areas at the subdistrict and village levels).

Reflecting the latest exemplary practices, the key innovation is that “linked” means that the level above provides a source of referral and potentially also training, support, and problem-solving for their associated facilities.

- Indeed, Type B main PHCs are so designated because they provide training as well as services.
- Referral centers not only provide more-specialized care but can be an additional base to train staff and to act as support and problem solvers for their associated PHC branch and Type A main PHCs.
- It is unclear whether PHC main center staff could play a comparable role in supporting PHC branches within their catchment area or whether branches and main centers alike would draw supervision and support directly from the DMO. However, the staffing model in which each level supports the next level down was used quite successfully in the Islamic Republic of Iran over the last 30 years (WHO, 2008b).
- The administrative structure should probably be tested (in one or more demonstration areas) and adapted to work within the context of health service delivery across the Kurdistan Region.

Approaches to implementing the basic structure might vary somewhat across the three governorates and even within districts. The goal should be to allow maximum local flexibility while still maintaining consistent, efficient, and accountable management. There are predictable challenges to creating a standardized administrative structure since there is an inherent tension between autonomy of local managers and consistency across an entire system. Local managers may resist changes to their status and accustomed way of doing things.

Giving local administrators autonomy to innovate can have many benefits, but only if innovation is married to accountability and efficiency. For example, the relative autonomy that governorate DGs of Health have had led to important innovations in each governorate.

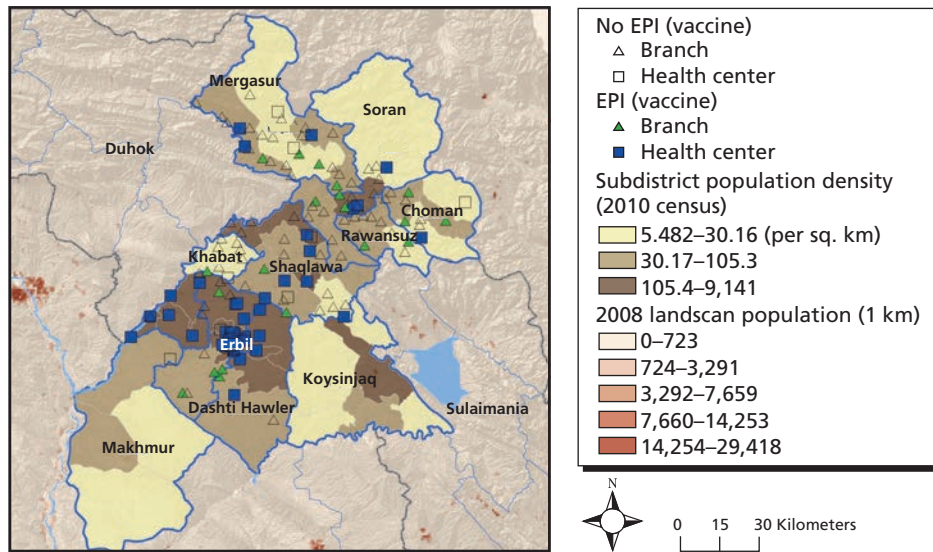
Another example, from outside the region, is Thailand’s “field model development” program, which gave health workers in the field the independence to innovate and test new health care delivery methods within a given set of parameters. This allowed them to adapt care to local conditions, but at the same time the innovations were also required to meet specific performance objectives and were subject to review and integration into district-level administrative plans. The results were significant innovation and adaptation to local needs that remained coordinated with the broader health system’s goals and administrative plan (Thailand Ministry of Health, 2001).

SVC-3: Develop a plan to provide services based on standards appropriate for each type of facility

- Define the specific services to be provided at each type of facility, and any allowable flexibility across the governorates. Examples include the following:
 - Preventive and basic curative services, as described above, to be delivered at PHC branches (Type D) and PHC main centers (Types A, B, and C)
 - General medical, dental, X-ray, and laboratory services to be delivered at PHC main centers (Types A, B, and C)
 - Specialized medical, dental, laboratory, and preventive screening services to be delivered at referral centers (Types B and C)
- Define staffing needs to provide these services. The staffing structure should be tied to the three-tiered network of ambulatory facilities described above (i.e., PHC branches, PHC main centers, and referral centers). For each staff type at each care level, both standard position descriptions and competency standards (for qualifications and performance) should be developed, as discussed further in Chapter Six.
 - Staffing at *PHC branches* should include possibly one level 3–trained nurse and at least one graduate medical assistant with appropriate training (consistent with current training in Kurdistan for this level). Ideally, such staff should be from that area, nominated for training by the local community, and ultimately approved by the community. Their training should prepare them to provide preventive care and simple first aid services.
 - Staffing at *PHC Type A main centers* should consist of at least one general practice physician (most likely a junior rotating physician), at least one nurse trained at level 2 or 3, a trained midwife, a dentist, a pharmacist, laboratory and imaging technicians, and several medical and dental assistants. Consideration should be given to the advantages and disadvantages of utilizing the GP, often a one-year rotating junior physician in training, in the dual role of clinic administrator in some facilities. For example, a sole GP physician may face gender-related cultural impediments; GPs would also need management training before their assignment if their responsibilities are to include clinic management.
 - Staffing at *Types B and C referral centers* should include one or more senior GPs, specialist physicians (e.g., obstetrics/gynecology, internal medicine, and pediatrics), several dentists (including at least one senior dentist), additional nurses (including at least one level 1 or 2 nurse), dedicated health educators, and potentially the DMO and district administration staff (unless the district health office is already in a separate location).
- Define equipment needs to provide these services and standardize procedures for equipment purchasing, training, and maintenance
 - Some PHCs are relatively well equipped. However, in some locations, additional equipment and supplies, such as X-ray units where there are dentists, will be required for centers. The goal is for every facility at a given level to have both the staff and the equipment needed to deliver the appropriate range of services as defined in the proposed service standard.
- Inventory the equipment and services currently provided at all current public sector clinics within each province (use GIS capabilities for initial assessment and follow-up monitoring)

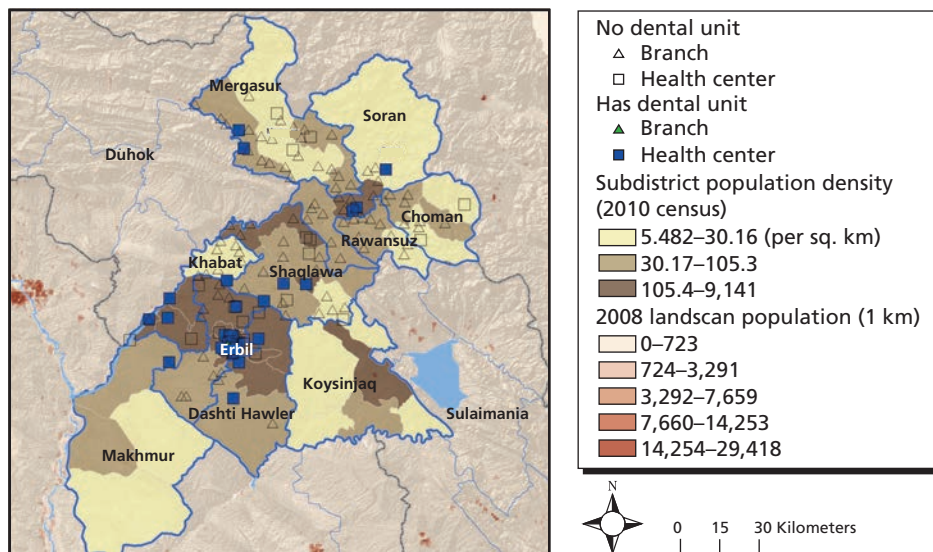
- The KRG can use its GIS capabilities to assess not only the location and population served at existing PHC facilities but also key characteristics of these facilities, such as number of rooms, staffing, services currently provided, and equipment. (See Figures 5.7, 5.8, and 5.9 as illustrative examples of GIS mapping for this purpose in the Erbil governorate.)
- Assess the projected needs and current services provided to develop a targeted plan that will fill gaps in services over the next two years. Priorities may be based on specific

Figure 5.7
GIS Mapping of Vaccination Services at Erbil PHCs



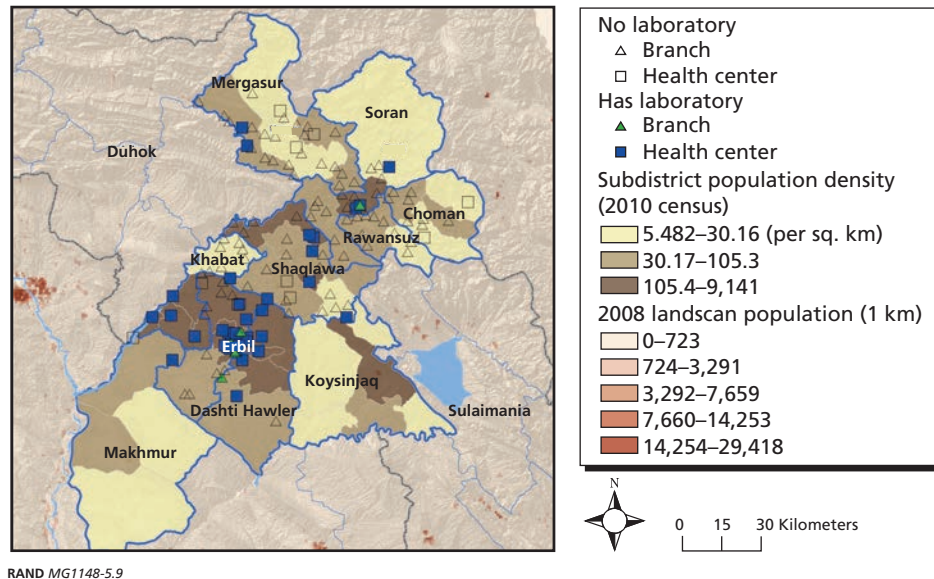
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Figure 5.8
GIS Mapping of Dental Services at Erbil PHCs



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Figure 5.9
GIS Mapping of Laboratory Services at Erbil PHCs



locations, specific facilities, specific levels of care, or other factors important to health managers.

SVC-4: Extend the reach and quality of health services through telemedicine. An essential element to facilitate supervision and problem-solving is good telecommunications. Telecommunications allow health workers to address patient problems locally and immediately, without undue communication or transportation delays. This telecommunication supervision, or telemedicine, model has proven successful in many disparate parts of the world, from Alaska to Fiji (Bice et al., 1996). However, this is ultimately a long-term effort. In the near term, a specific recommended activity is as follows:

- Develop and pilot-test a plan for telemedicine support appropriate for Types B and C, and possibly Type A, facilities, for example, in at least one facility of each type in each governorate.

SVC-5: Expand health education activities in clinics and schools. Significantly expanding activities in health promotion, risk reduction, and preventive medicine is both feasible and desirable within a Twenty-First-Century primary care-oriented health system. Specific interventions should target the highest-priority issues and complement those preventive services already in the current system, such as vaccinations, school health education, and some preventive health screening (e.g., for diabetes). More information must be collected in order to better assess current disease prevalence levels and the population's present knowledge, beliefs, and behaviors regarding these conditions. It can be difficult to get people's attention and have the message rise above the background noise unless one's health message is well crafted and culturally relevant.

Specific recommended activities for the next two years include the following:

- Enhance health education at PHCs. PHCs at all levels can take advantage of their “captive audience” to provide health education. A good start has been made with health education posters placed within PHCs and in specific urban areas; these efforts can be strengthened and expanded. Patients visiting a clinic should be particularly receptive to such health messages, which could be delivered by physicians, nurses, trained volunteers, videos, or written materials, either in the waiting area or during the patient encounter. The topics should probably be similar to those suggested below for school education. Depending on the topics already being covered, the list of messages may not need to be expanded very much. The goal is to reach people in multiple formats and through multiple communication channels, with an aim of getting the health message to stick and to have people adopt and maintain behaviors that reduce their health risks.
- Enhance health education in schools. Enhance ongoing school outreach programs and measure results. The goal is not just to educate schoolchildren but also to reach their families with health messages and to achieve observable risk reduction behaviors. It may be important to repeat topics throughout the schooling years (e.g., at least three times between ages 6 and 14) in the following illustrative areas:
 - Personal hygiene and sanitation (hand-washing, human waste disposal, etc.)
 - Dental hygiene (brushing and flossing teeth, causes of tooth decay)
 - Obesity and healthy diet and exercise habits
 - Injury prevention (RTAs, falls, fire, drowning, etc., as relevant to circumstances in the Kurdistan Region)
 - Tobacco hazards (such as emphysema, heart disease, and cancer)
 - Human reproductive health (to the extent consistent with local culture and norms; could address reproductive system, safe sex, sexually transmitted diseases, pregnancy prevention, etc.)
- Train appropriate staff and provide educational materials for activities in clinics and schools
 - Topics should be taught by trained health educators (such as visiting specialists or the regular teachers or clinic staff who have received health education training)
- Monitor activities and outcomes (e.g., surveys of health risk factors or KAP surveys [Knowledge, Attitudes, and Practices surveys]).

SVC-6: Develop and implement health education campaigns for the public to promote safe and healthy behaviors of greatest relevance to the region

- Design, implement, and measure the impact of health education mass media campaigns
 - Disseminate messages via television, radio, and the Internet using interviews, public service announcements, and endorsements by influential figures
 - Consider creating a series of “Health Months,” such as Road Safety Month and Heart Health Month
 - Conduct research on topics of particular interest for mass media campaigns, such as the following:
 - Road traffic safety
 - Tobacco use

- Diabetes
- Healthy diet and physical exercise
- Safe environments and good personal hygiene.

Goal 5.2: Develop and Implement a System for Referrals and Continuity of Care

A system for referrals and continuity of care aims to ensure that patients receive services at the most appropriate time and in the most appropriate setting and that care is well coordinated across care levels and providers. There should be neither inappropriate delays nor interruptions in their care. Patients referred to specialists and hospitals should return to their home clinic and primary care provider for follow-up or ongoing management. Ideally, this means that a patient should see the same primary care provider, or at least the same team of providers, on each visit, and that referrals out to and back from specialty care should entail smooth transitions in both directions. Such a system is built on a foundation of quality services at each level of care. Also, at a minimum, all providers should have access to the patient's health care record so that they do not miss important findings or waste resources duplicating efforts. Electronic health records greatly facilitate effective systems for referrals and continuity of care, but they are not the only way to achieve this goal. We offer four specific interventions to improve referrals and continuity of care (labeled "REF").

REF-1: Explore the feasibility of designating population catchment areas and a "home clinic" and "primary care provider" for all population members

- This corresponds to a "Medical Home" system as seen in other countries. This means that each catchment area includes a clinic where a person can (and should) regularly seek care when needed. Provision of quality services at each level is a foundation for referrals out and back and hence for continuity of care. (Note that this reflects current international best practice for primary care-oriented health systems.)
 - To the extent feasible, the same primary care team or single primary care provider at the home clinic should see the patient at each visit.
- Develop and test strategies to maintain continuity of care in facilities where physician staffing rotates yearly (e.g., through a primary care team including more permanent nursing staff and ongoing medical record-keeping).
- Monitor patient and provider satisfaction to determine whether they are enhanced by such a system and to identify opportunities for improvement.
- Monitor the efficiency of such a system in terms of financial and medical resources and evaluate the effectiveness in terms of health outcomes.

REF-2: Develop and implement a patient referral system

- Develop a plan for referrals *within* a catchment area
 - from PHC branches to PHC main or referral centers (and back)
 - from PHC main centers to referral centers (and back)
 - from any level clinic to the general hospital in the catchment area (and back)
- Develop standardized documentation (e.g., referral forms or patient booklets) for referrals out and back to the home clinic and primary care provider
 - Consider whether these should be standardized at the governorate level or across governorates.

- Referrals out can include, for example, patient’s name, age, and gender; date of referral; patient’s chief complaint; referring provider’s diagnosis; brief relevant medical history, including diagnostic test results or results of therapy to date (e.g., “blood pressure of 160/100 despite treatment with hydrochlorothiazide”); specific reason for referral or question for referring provider (e.g., “Please perform any necessary diagnostic tests and recommend appropriate medication or other treatment for the patient’s hypertension”).
- A note from the referring provider back to the primary provider on a standardized form should include date seen, results of consultation (e.g., results of additional tests or of treatment provided), diagnosis, recommended further action, and answer to specific question.
- If electronic records are not available, a copy of the patient’s medical record (or appropriate extract) should be attached to the referral so that the specialist knows what has been done.
- Unless the patient requires complex tests or treatment, the specialist should not continue the patient’s care but return responsibility to the home clinic and primary care provider
- Pilot-test a referral system *within* at least one catchment area in each governorate during 2012
- Develop and pilot-test a system for referrals *outside* a catchment area by 2013—from any level clinic to specialist outpatient care outside the catchment area, and from any level clinic to hospital care outside the catchment area
- Modify forms and/or process based on pilot-testing (by 2014)
- Scale up (by 2014).

REF-3: Take initial steps in a transition to electronic health records at all levels across the region to facilitate referrals and continuity of care. Records should ultimately be accessible to all appropriate health service providers. A password-protected web-based system may be most desirable. The following steps should be undertaken in the near term:

- Identify early feasible strategies as a bridge to a more comprehensive system (e.g., laboratory and pharmacy records, web-based referral notes even in the absence of full electronic health records)
- Pilot-test implementation of a more-comprehensive system in the following areas:
 - Perhaps first in general hospitals, referral and PHC main centers, and ultimately PHC subcenters
 - Duhok may be best poised to be the first governorate to pilot-test and ultimately implement electronic health records at all levels.

REF-4: Promote local awareness of available services, appropriate use, and referrals within and beyond the local catchment area. In some cases, local residents may not be aware of the services offered by the local PHC. Lack of awareness is a common problem worldwide, and it was specifically cited as an issue by a Sulaimania clinic director. We were also informed that some people come to the clinic for “social” reasons—women have an opportunity to leave their house and socialize with others—rather than exclusively for medical reasons. In addition, the current undeveloped referral system, which lacks routine communication between GPs and specialists, may encourage inefficient use of specialists. This may be compounded by

a patient's belief that only hospital care is good or by a lack of trust in the local services. The quality of services must be good enough to attract residents to seek services at the most local appropriate level. The goal of this activity is to educate the population regarding available services, and the appropriate place and reasons to seek care.

The specific recommended intervention is to promote public awareness of the services available at each level of PHC and to develop policies to encourage appropriate use of services (i.e., that people seek care at the appropriate facility level in their catchment area and minimize overuse). Approaches that have been successful elsewhere include the following:

- Outreach by PHC staff
 - In schools
 - At community meetings
 - Door to door
- Media outreach
 - Posters/Fliers
 - Newspaper articles
 - Radio reports
 - Informative and entertaining presentations in communities or conveyed via mass media channels, such as television or the Internet
- Creative methods
 - Clinic newsletters
 - Twitter.

Goal 5.3: Develop and Implement a Program for Continuous Quality Improvement

The goal of CQI is to help health systems and professionals consistently improve the quality of health care delivery and outcomes through access to effective knowledge and tools (IOM, 2005). An essential requirement for CQI is establishing clinical practice standards that are uniform and based on best evidence. Specific suggestions for this first step are discussed here and are followed by a system to collect, analyze, and act on the relevant performance data. We offer six specific interventions related to CQI.

CQI-1: Develop and implement evidence-based clinical management protocols for common conditions seen at ambulatory (and hospital) facilities. Uniform practice guidelines for common health conditions that have good evidence for a “best practice” will help ensure consistent and high-quality treatment. Such guidelines would ideally both steer the provider through collecting the necessary information to properly treat that condition and also specify the minimum diagnostic tests and treatments appropriate to that condition. We suggest that they also indicate at what level of facility and by what type of personnel these procedures should be performed. As part of this goal, a detailed flow sheet would be developed for those common conditions with good evidence for a best practice. While this may initially give the impression of “too many forms,” experience has shown that such forms improve clinician efficiency and performance as well as patient outcomes (Dexheimer et al., 2008; Balas et al., 2000). Key diagnostic and treatment activities would be recorded in the patient's record and/or health booklet (which Sulaimania has already implemented for some registry-based conditions and disease-specific care). Detailing the specific guidelines and protocols is beyond the scope of

this report, and guidelines for use in the Kurdistan Region should be developed locally so that they are most relevant. However, good sources that can be consulted include

- Agency for Healthcare Research and Quality (AHRQ) (<http://www.ahrq.gov/clinic/epcix.htm>)—an agency within the U.S. Department of Health and Human Services whose mission is to improve the quality, safety, efficiency, and effectiveness of health care for all Americans by supporting research that helps people make more-informed decisions and improves the quality of health care services; relevant resources include:
 - A menu of reports related to evidence-based practice—evidence reports either in progress or completed that are related to clinical practice, health care services, or research methodology
 - National Guideline Clearinghouse (<http://www.guideline.gov>)—a public resource for evidence-based clinical practice guidelines
- United States Preventive Services Task Force (<http://www.uspreventiveservicestaskforce.org>)—an independent panel of nonfederal experts in prevention and evidence-based medicine (primary care providers in internal medicine, pediatrics, family medicine, obstetrics/gynecology, nursing, and behavioral health) that conducts reviews of scientific evidence related to a broad range of clinical preventive health care services and develops recommendations for primary care physicians and health systems that are published in the form of “Recommendation Statements”
- Cochrane Collaboration (http://www2.cochrane.org/reviews/en/index_list_all_protocols.html)—an international network of more than 28,000 individuals from over 100 countries that aims to help health care providers, policymakers, patients, and their advocates and caretakers make well-informed decisions about health care, based on the best available research evidence, by preparing, updating, and promoting the accessibility of Cochrane Reviews, available through its Library of Systematic Reviews.

Specific recommended near-term activities are as follows:

- Identify and convene relevant Iraqi experts, such as medical, dental, nursing, and pharmacist specialists; university professors; and professional associations as appropriate
- Identify conditions requiring preventive, curative, and ongoing care likely to be seen in ambulatory settings, including rural/remote areas. Suggested specific conditions and protocols to address first are the following (this is only a starting point):
 - Child growth monitoring (including guidance on what indicates abnormal growth, and when and how to investigate further)
 - Vaccination schedule and instructions for administration
 - Oral rehydration therapy (ORT)
 - Primary preventive care visit protocols (by age group)
 - Antenatal care (basic level for midwives or other nonphysician providers, and more advanced level for physician antenatal services)
 - Asthma diagnosis and management
 - Hypertension diagnosis and management
 - Diabetes diagnosis and management
 - Cervical cancer screening

- Identify or develop clinical management protocols for those conditions that are pertinent to the practice of physicians and nurses as well as dentists, pharmacists, and laboratory technicians
 - Consider best practices from Kurdistan, complemented if/as appropriate by best practices from the Iraqi and the broader international community
 - Review and adopt or adapt protocols currently available (e.g., in Erbil and Duhok)
 - Use Iraqi and Kurdistan materials and draw from international materials to adapt, if/as needed
 - Describe the working relationships across the health care team (physicians, nurses, and all others)
 - Require nursing and medical notes for documentation in patient records
- Aim to standardize clinical management protocols across the three governorates, even if they are first developed and implemented separately within governorates.

CQI-2: Consider standardized patient encounter forms (e.g., checklists) to facilitate use of clinical management protocols at PHC facilities at all levels. This is a longer-term activity that will extend beyond the next two years. The goal is to capture key information about each patient. This includes both what is known about the patient's health and what kind of services he or she has received. A structured form will reduce duplicated efforts, improve continuity of care, and make it less likely that essential information will be missed or forgotten. We recommend that forms be developed locally (templates not adopted from other countries) so that they are most relevant. They should be used to record not just patient visits but also referrals to specialists, patient medication lists, radiology reports, and laboratory results. The use of standardized forms will also make data entry and management easier. Implementing standardized paper records could facilitate the transition to electronic-/computer-based records, which is a longer-term goal.

Adopting a “culture of data for action” and a “culture of quality” will mean facing some predictable challenges, including institutional inertia and the need to address varying local conditions. Thus, it will be important to consult with health managers at all levels and to pilot-test the new forms. Initially, using the unfamiliar new forms will be less efficient. Also, some information may still be missed, or information that is not relevant to the patient's specific situation may be captured. Finally, there may be logistical difficulties in distributing the forms to all centers and always keeping them on hand. Specific steps beginning in the near term are as follows:

- Expand and generalize the use of registry-based and disease-specific medical cards or patient health booklets, as already implemented in Sulaimania
- Design and pilot-test new forms for standard services and procedures, such as the following:
 - Primary care patient encounters
 - Patient medication lists
 - List of a patient's chronic and current medical conditions
 - Vaccination record
 - Patient referral form
 - Specialist's consultation reply form
 - Laboratory report form
 - Radiology report form

- Pilot-test and revise the forms in each governorate
- Monitor compliance via spot checks by the DMO or other specific auditing method
- Solicit suggestions for further revisions from users and revise as appropriate
- Implement use of the forms across entire KRG system
- Add other standard forms as the need for them is recognized
- Transition as rapidly as possible to an electronic records system.

CQI-3: Define and expand the safe scope of practice for nurses in ambulatory settings

- Define the roles, responsibilities, and duties for nurses at each level of training and for each relevant level of care
 - Address nursing needs for specific services at PHC branches, PHC main centers, and referral centers
 - Define appropriate roles and responsibilities for each current level of nursing personnel
 - Level 1: university/nursing college level (one college in each governorate; they make up less than 1,000 of the approximately 30,000 KRG nurses; less than 100 are doctorate-level nurses; training takes three, five, and/or nine years)
 - Level 2: nursing school level (completed secondary school plus three years of additional nursing training)
 - Level 3: nursing institute level (institutes in Erbil, Shaqlawa, Suli; three years of secondary school plus two years of nursing training)
 - Level 4: nurse assistants and birth attendants (primary school plus a six-month training course)—Note that training of new staff at this level was phased out in 2010
- Prepare nurses to help sustain a continuous relationship between patients and their home clinic providers
 - This is especially relevant in facilities where junior GP physicians turn over annually
 - More-permanent nursing staff at PHC branches and main centers, if appropriately trained and qualified, can provide this critical institutional continuity.

CQI-4: Identify and test efficiency measures to enhance patient flow

- Conduct patient flow analysis, if appropriate, and develop strategies to minimize patient waiting time and optimize time spent in the clinic (e.g., provide health education) and time spent with providers—for example, develop and implement a system of appointments spread over the PHC morning hours, consistent with local cultural practices
- Consider measures that allow busy physicians serving in PHCs to optimize their patient contact time
 - Consider instituting a system of appointments (taking into account reported cultural norms that limit the hours women are available to visit clinics—between morning and noontime meals, including time needed for shopping and meal preparation)
 - Train and use medical assistants to help document physician encounters in patient records and document referral information
 - Train and use medical assistants and nurses to perform auxiliary tasks, such as recording vital signs, administering medications, and providing health education.
 - Provide rural/remote physicians with real-time access to medical advice and support (e.g., through online and/or on-call medical advice) to help handle difficult or complex medical problems in primary care settings rather than having to refer patients elsewhere

- Develop and pilot-test such interventions as appointments, patient flow analysis, and human or electronic support to clinicians.

CQI-5: Develop and implement carefully focused surveys of client and staff satisfaction on a routine basis at PHC facilities

- KRG physicians feel that client satisfaction should not include judgment of the nature or quality of the medical services, but rather such areas as waiting time, amount of time spent with provider, and quality of personal interactions; however, a broad range of issues should be considered for inclusion in client satisfaction surveys so that policymakers can gain optimal understanding of the views and desires of the populations they serve.
- Staff satisfaction surveys should address areas that are reasonably actionable by the providers themselves, by clinic management, or by health authorities.

CQI-6: Begin to explore the feasibility of a regional and ultimately international accreditation process for ambulatory and hospital inpatient services

- Explore the experiences of other countries in developing their own standards and accreditation, as a step toward international recognition
- Define specific types of facilities or services that might be subject to such a process, and define the priorities for earliest action
- Consider an appropriate timeline for pursuing accreditation for different types of health facilities across the region, and consider pilot-testing this before full-scale implementation.

Priorities for the Next Two Years

The preceding sections describe a large number of recommended interventions, all potentially valuable but many of which will take many years to implement. It is clearly not feasible to implement all of these near-term recommendations immediately. Therefore, it is important to establish priorities for the next two to three years, including early steps toward longer-term achievements. Table 5.4 lists the recommended interventions and qualitative judgment of both the importance (potential impact) and the feasibility (ease of implementation) of each one, within the KRG context. Figure 5.10 is a graphical depiction of the information in the table; it suggests a handful of potential priorities for action during the next two years.

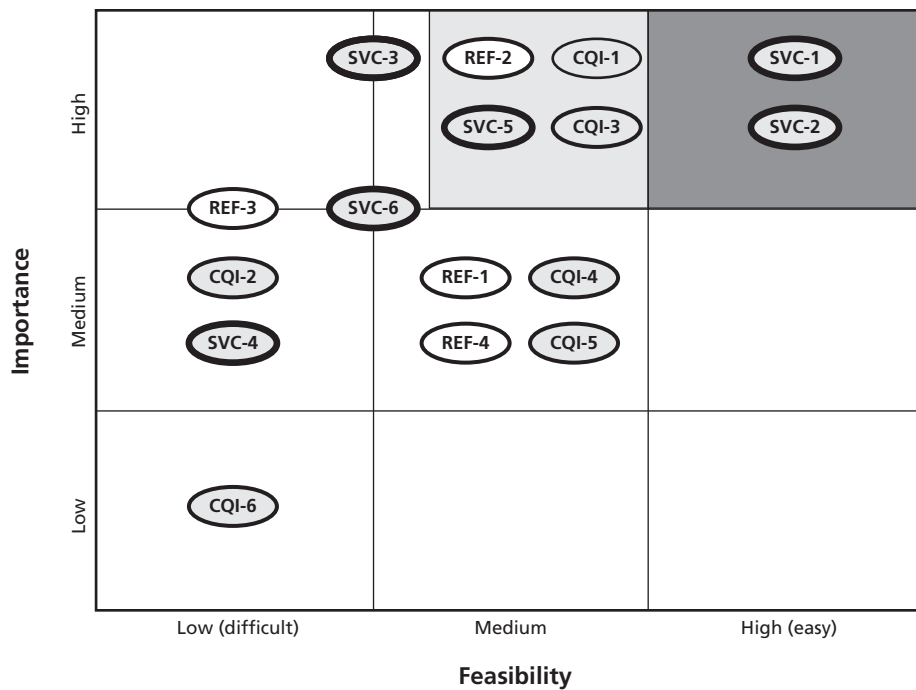
We suggest that priorities for the next two to three years should favor the most important and most feasible interventions. However, as has been discussed, the different parts of the primary care system interact dynamically. One part may depend on another part. So, the sequencing of related interventions must also be taken into account. As suggested by Figure 5.10, the unambiguous top priorities would be the two interventions that are highly important and highly feasible (the top-right, dark-gray shaded box in the figure):

- SVC-1: Define the appropriate scope of services to be provided at public sector clinics (PHCs and hospital outpatient departments)
- SVC-2: Organize the system of existing and new primary care facilities based on a core three-tier networked system and specified access standards.

Table 5.4
Assessment of the Importance and Feasibility of Recommended Interventions: Primary Care Organization and Management

ID	Description	Importance	Feasibility
Goal 5.1: Distribute primary care facilities and services efficiently (SVC)			
SVC-1	Define the appropriate scope of services to be provided at public sector clinics (PHCs and hospital outpatient departments)	High	High
SVC-2	Organize the system of existing and new primary care facilities based on a core three-tier networked system and specified access standards	High	High
SVC-3	Develop a plan to provide services based on standards appropriate for each type of facility	High	Low-medium
SVC-4	Extend the reach and quality of health services through telemedicine	Medium	Low
SVC-5	Expand health education activities in clinics and schools	High	Medium
SVC-6	Develop and implement health education campaigns for the public to promote safe and healthy behaviors of greatest relevance to the region	Medium-high	Low-medium
Goal 5.2: Develop and implement a system for referrals and continuity of care (REF)			
REF-1	Explore the feasibility of designating population catchment areas and a “home clinic” and “primary care provider” for all population members	Medium	Medium
REF-2	Develop and implement a patient referral system	High	Medium
REF-3	Take initial steps in a transition to electronic health records at all levels across the region, to facilitate referrals and continuity of care	Medium-high	Low
REF-4	Promote local awareness of available services, appropriate use, and referrals within and beyond the local catchment area	Medium	Medium
Goal 5.3: Develop and implement a program for continuous quality improvement (CQI)			
CQI-1	Develop and implement evidence-based clinical management protocols for common conditions seen at ambulatory (and hospital) facilities	High	Medium
CQI-2	Consider standardized patient encounter forms (e.g., checklists) to facilitate use of clinical management protocols at PHC facilities at all levels	Medium	Low
CQI-3	Define and expand the safe scope of practice for nurses in ambulatory settings	High	Medium
CQI-4	Identify and test efficiency measures to enhance patient flow	Medium	Medium
CQI-5	Develop and implement carefully focused surveys of client and staff satisfaction on a routine basis at PHC facilities	Medium	Medium
CQI-6	Begin to explore the feasibility of a regional and ultimately international accreditation process for ambulatory and hospital inpatient services	Low	Low

Figure 5.10
Framework for Assessing Priorities Among Recommended Interventions: Organization and Management of Primary Care



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The next set of priorities might be the four that are also of high importance but only medium feasibility (the top-left, lighter-gray shaded box in the figure):

- REF-2: Develop and implement a patient referral system
- SVC-5: Expand health education activities in clinics and schools
- CQI-1: Develop and implement evidence-based clinical management protocols for common conditions seen at ambulatory (and hospital) facilities
- CQI-3: Define and expand the safe scope of practice for nurses in ambulatory settings.

However, decisionmaking may depend more on intuitive judgments and building on policy directions already under way. For example, it might make sense to pursue most of the interventions under the goal to redistribute facilities and services because they are conceptually linked; it might be prudent to pursue interventions to build a systematic referral system and to improve quality of care, even though several of these interventions may be somewhat less important and considerably more difficult than others. Ultimately, KRG policymakers will need to determine priorities for the short, medium, and longer terms to improve the distribution and management of ambulatory care services within the larger context of health system development and regional and national reforms.

Health Workforce

Potential Policy Actions

Education and Training

- Establish a committee to oversee changes in health professional education, training, licensing, and revalidation
- Enhance the profile of family medicine as a foundation for modern medical care and professional education
- Preferentially recruit medical and nursing students from rural areas
- Include primary care in the curricula of medical and nursing schools and in clinical rotations
- Enhance training in practical clinical skills
- Improve the experiences of GP physicians during obligatory primary care service
- Redesign nursing curricula
- Develop/implement mandatory systems of CME, licensing, and recertification for physicians and nurses
- Enhance the profile of and create career tracks for family medicine and preventive medicine

Human Resource Management

- Develop a plan to distribute physicians and nurses across Kurdistan; establish a system of incentives to encourage rural service
- Develop physician qualifications and job descriptions
- Provide supportive supervision
- Use online human resource management forms
- Implement strategies to reduce fraudulent medical practice

Introduction

Many studies have demonstrated that the size and qualifications of a country's health workforce are clearly related to health outcomes. For example, WHO (2009a) has documented a positive correlation between the density of health workers and health outcomes, including maternal, infant, and child survival rates. Inherent to such statistics is the assumption of appropriately trained and qualified professionals. Studies have shown that physician quality (and the quality of physician training) is a critical element in providing quality health care. For example, a recent Cochrane review of 30 trials of physician training found that conducting educational

meetings increased rates of compliance with evidence-based guidelines an average of 6 percent (Forsetlund, Bjorndal, et al., 2009). In the Eastern Mediterranean region, El-Jardali et al. (2007) determined that physician density in both low- and middle-/high-income countries in the region is significantly correlated with all health indicators, including lower mortality rates and higher life expectancy, based on their regression analyses; nurse density correlated with lower maternal mortality in both income groups.

The goal of most health policymakers is to ensure that health care professionals are both well qualified and appropriately distributed. Thailand’s strategic plan for human resources for health includes a more expansive vision: “Human resources for health are available at the right numbers, right skill-mix, equitably distributed, for which they are working with moral principles, satisfied with their job in providing care which is responsive to local and national health needs” (Songkhla, 2009). IOM recommends education that includes practical experiences so that clinicians master five core competencies:

- “provide patient-centered care,
- work in interdisciplinary teams,
- employ evidence-based practice,
- apply quality improvement, and
- utilize informatics.” (IOM, 2005, p. 8)

These principles are consistent with our current understanding of primary care–oriented health systems as described by WHO and IOM (WHO, 2008b; IOM, 1996). We believe they are relevant to the Kurdistan health system as well.

Not all experiences from other countries will be directly applicable to Kurdistan. However, KRG policymakers may wish to consider a number of general lessons drawn from global experiences regarding the distribution of health care professionals, particularly for service in remote/rural areas:

- Policies should aim to maximize “pull” (attracting) factors and minimize or avoid “push” (repelling) factors for physicians and nurses to work in rural/remote areas (such factors are more fully described below under “Background and Justification”).
- Combined interventions are probably more effective than single interventions alone.
- Some policy questions are not yet adequately answered and require further research and evidence (e.g., the effectiveness of policies aimed at improving management and the workplace environment on health worker recruitment and retention). Such policies, if implemented and rigorously evaluated in Kurdistan, could contribute to the national, regional, and global evidence base in this area.

The specific recommendations described in this chapter address (a) the education and training of the health workforce and (b) their distribution and performance.

Current Status in the Kurdistan Region—Iraq

Iraq has a long tradition of excellence in medical services and training. Some of Iraq’s best physicians have migrated to the Kurdistan Region in recent years. Although the KRG health

system experienced significant erosion during Saddam Hussein's time, since 1991 the situation has begun to stabilize. This system has notable strengths; however, it also has some areas for improvement regarding the numbers and qualifications of its health workforce. The health workforce includes physicians, nurses (including midwives), dentists, pharmacists, and allied health professionals (including laboratory technicians and medical and dental assistants, among others).

From the statistical data we collected, our observations from numerous health facility visits, and our discussions with health leaders at the KRG and provincial levels, we understand that the most important workforce gaps involve (1) a shortage in the sustainable supply of qualified generalist physicians and qualified nurses to provide ambulatory care services, and (2) a less than ideal distribution of physicians and nurses, particularly in rural/remote areas (outside the capital cities of Erbil, Duhok, and Sulaimania). These rural areas contain about 61 percent of the overall population, ranging from 54 percent in Erbil to 59 percent in Sulaimania and 73 percent in Duhok, based on population figures from the early 2010 Census Frame (which is not widely available but is the most recent estimate of population distribution down to the district and subdistrict levels and our only source for estimating urban-rural population distribution). Health authorities told us that rural/remote areas generally have poor housing for professionals, limited educational opportunities for their children, a lack of a stimulating social environment, a shortage of nurses, and an inability to support the volume of patients needed for specialist, surgical, and trauma care. Both the distribution and the sustainability of qualified providers are critical to effective modern primary care.

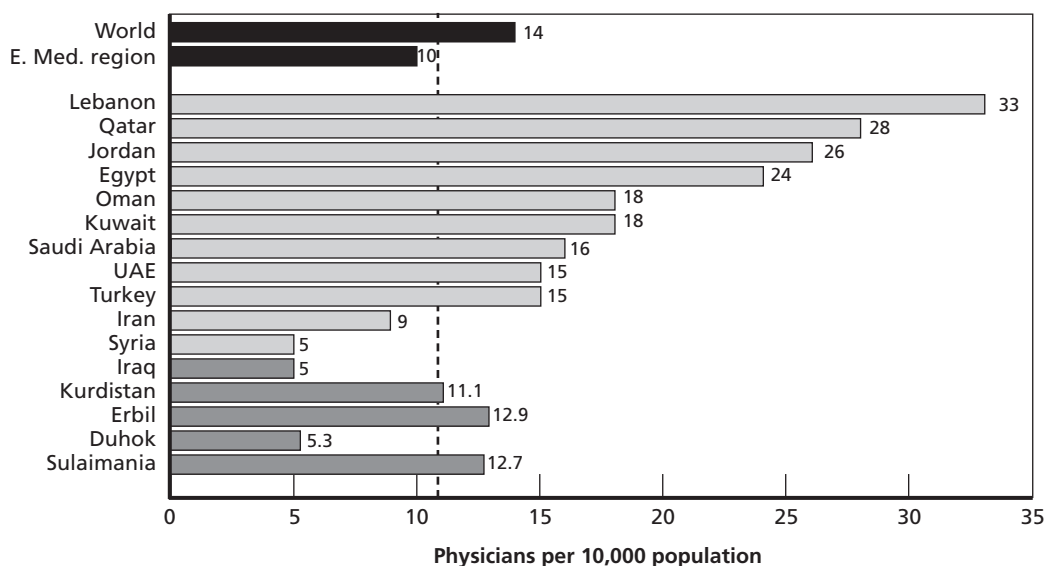
Physicians

Physician shortages in Kurdistan involve training/competencies as well as numbers, distribution, and hours worked. Kurdistan has fewer physicians per capita than many other countries in the region and in the world overall, but slightly more than the WHO Eastern Mediterranean region (Figure 6.1). Erbil and Sulaimania have the most physicians (12.9 and 12.7 per 10,000 population, respectively), and Duhok has the fewest (5.3). WHO statistics for 2004 indicate that Iraq as a whole had 5 physicians per 10,000 population. According to MOH statistics, about 16 percent of all physicians (950 of 5,819) are “specialized”—surgery, general internal medicine, pediatrics, obstetrics/gynecology, or subspecialties within these—and about 84 percent are GPs who have completed two or three years of post-graduate clinical training. Presently about 260 physicians graduate from KRG medical schools each year, which will keep the number of physicians per capita more or less stable as the population grows at current rates, but this level of increase in the number of physicians does not address the shortage as compared to other countries in the region.

Public sector ambulatory care relies almost exclusively on the obligatory one-year service of junior general practice physicians who have completed one or two years of post-graduate clinical (residency) training and return afterward for a final year of residency training in which they can begin to specialize. The most highly qualified among them are able to secure coveted placements in urban clinics, while the others are assigned to health centers in more rural/remote areas where they are often the clinic's only physician.

The actual year of obligatory clinic service between the years of post-graduate training is not itself treated as a year of formal clinical training: During this year, these physicians receive no mentorship, supervision, or other professional development support, and they have limited access to professional resources, such as the Internet or journals. Our observations,

Figure 6.1
Physicians per 10,000 Population in the Kurdistan Region and in Selected Countries



SOURCES: WHO, World Statistics 2010; Kurdistan figures from MOH Annual Report for 2009.

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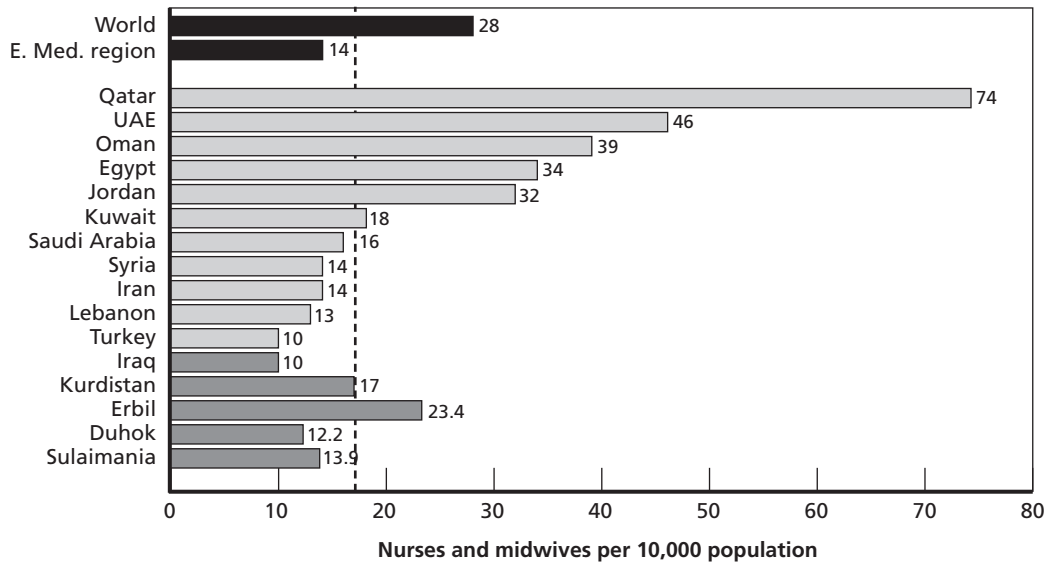
our discussions with several of these physicians, and the comments from government health authorities suggest that these young physicians are not only hard-working but also eager to complete their obligatory service and return to specialty training and urban practice. Virtually all of them provide clinic services in the morning and see private patients in the afternoon. All physicians who complete their clinical training have guaranteed government jobs (and pensions), but they receive relatively meager salaries for public sector work and derive much more substantial income from seeing private patients.

Nurses

According to KRG health authorities and our own observations, problems with the nursing profession are especially critical. The MOH's Annual Report for 2009 indicates that there are 8,860 nurses across the region, or about 17.0 nurses per 10,000 population. It is unclear whether this total reflects the top three (of four) levels of nurse (university, nursing school, and medical institute) or all four levels including assistant nurses and midwives (midwives receive only course level training but are also called nurses). Rates for the combined total of nurses and midwives per 10,000 population in other countries in the region are shown in Figure 6.2. Kurdistan has more nurses per capita than some countries (e.g., Lebanon, Turkey, Iran, and Syria) but fewer than other countries (e.g., Jordan, Egypt, Oman, UAE, and Qatar). According to the Minister of Health, the *number* of nurses in Kurdistan may not be quite as critical a problem as the *distribution, qualifications, and competencies* of nurses across all levels.

The Minister and most other health authorities we consulted are particularly concerned about the inadequacies in nursing training (which is provided by physicians, not nurse educators); an absence of defined nursing competencies; an absence of defined roles, responsibilities, and duties, and therefore the resulting inefficient use of nurses in clinical care, including

Figure 6.2
Nurses and Midwives per 10,000 Population in the Kurdistan Region and in Selected Countries



SOURCES: WHO, World Statistics 2010; Kurdistan figures from MOH Annual Report for 2009.

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ambulatory care. To begin addressing these issues with the nursing profession, a department of nursing has recently been established in each governorate, and job descriptions were expected to be developed by mid-2010. As of February 2011 we were uncertain of the status of these.

Other Health Professionals

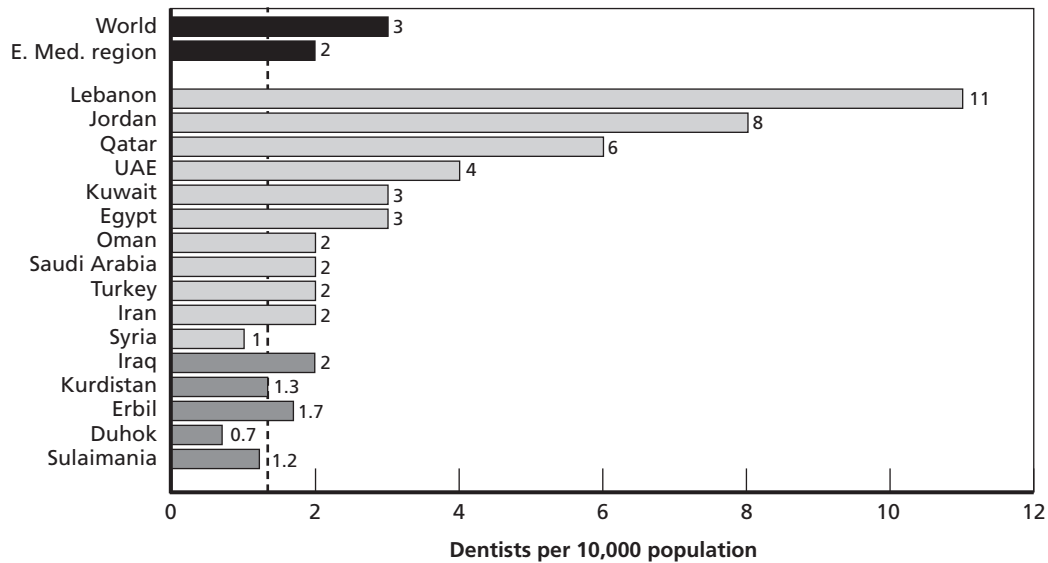
The MOH report also indicates the number and number per capita of dentists and pharmacists. Figures 6.3 and 6.4 compare the number of dentists and pharmacists, respectively, per 10,000 population in the Kurdistan Region with rates in other countries. The figures clearly indicate that the Kurdistan Region and its individual provinces have far fewer dentists and pharmacists than most other countries in the region, the WHO Eastern Mediterranean region, and the world as a whole.

Policy Goals to Improve the Health Workforce

From our analysis of available data, our discussions with health managers and practitioners, and the experience from other countries, we recommend two policy goals to improve the health workforce in Kurdistan:

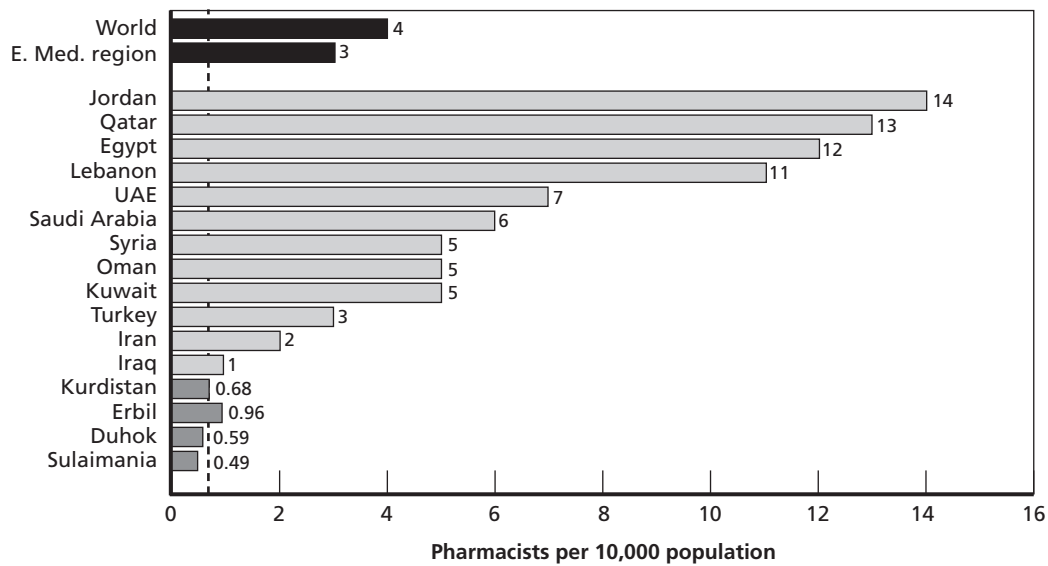
- Goal 6.1: Enhance professional qualifications through education and training—focus initially on physician and nursing professions and then on health professions including dentists, pharmacists, and laboratory personnel
- Goal 6.2: Enhance the distribution and performance of the health workforce through specific human resource management interventions.

Figure 6.3
Dentists per 10,000 Population in the Kurdistan Region and in Selected Countries



SOURCES: WHO, World Statistics 2010; Kurdistan figures from MOH Annual Report for 2009.
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Figure 6.4
Pharmacists per 10,000 Population in the Kurdistan Region and in Selected Countries



SOURCES: WHO, World Statistics 2010; Kurdistan figures from MOH Annual Report for 2009.
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Background and Justification

Developing Qualified Professionals

A trained workforce lies at the center of every health care system. The number and quality of health workers demonstrably affect health outcomes, including such key indicators as immunization coverage; infant, child, and maternal survival; malnutrition; and cardiovascular disease

outcomes (WHO, 2006). In addition, the decisions that health care workers make determine whether resources are used efficiently and effectively, or wastefully and ineffectively. A well-trained workforce makes best use of available resources. Health care workers are also best positioned to identify and implement improvements to the health care system, but only if they are properly trained and motivated.

Workforce issues are so central to effective health care delivery that WHO (2006) devoted its entire 2006 annual world health report to the topic. According to the report, health service providers constitute about two-thirds of the global health workforce of about 59 million workers, while the remaining one-third is composed of health management and support workers. Workforce densities below a minimum level of about 2.2–2.5 health care workers per 1,000 population makes it effectively impossible to achieve desired coverage for essential health interventions, including those meeting the Millennium Development Goals (MDGs). For example, a study led by the Rockefeller Foundation suggests that densities below 2.5 health care professionals (counting only doctors, nurses, and midwives) per 1,000 population failed to achieve an 80-percent coverage rate for deliveries by skilled birth attendants or for measles immunization (Chen et al., 2004). Issues that compound health worker deficits usually include low wages, unsupportive management, insufficient social recognition, and weak career development. Kurdistan exceeds the minimum threshold level, with approximately 28 health workers (doctors, nurses, and midwives) per 10,000 population, or 2.8 per 1,000 population. However, the workforce must be both well trained and appropriately distributed to treat the rising incidence of chronic diseases, such as diabetes and heart disease, across a growing population, while still addressing other traditional primary care health needs, such as vaccinations and infectious diseases.

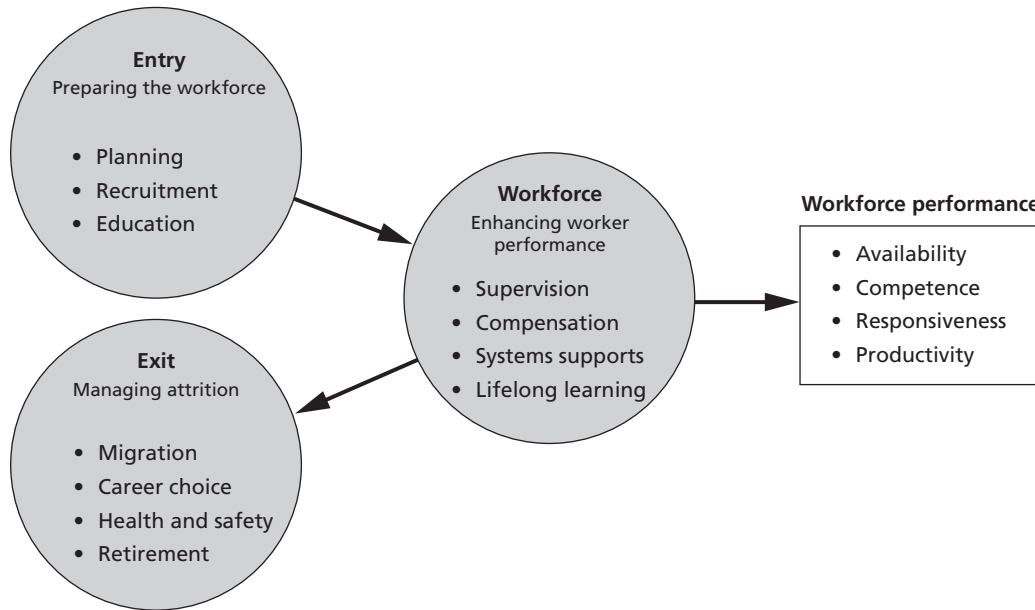
Managing the workforce to “get the right workers with the right skills in the right place doing the right things” (WHO, 2006, p. xx) requires considering the entire personnel lifespan, from entry (planning, recruitment, and education) through exit (e.g., retirement), as shown in Figure 6.5. Preparing the workforce, including doctors, nurses, midlevel health workers, and others, requires both careful planning and strategic investments in education, all designed to address the country’s key health system priorities. Once trained, the workforce must then be properly managed, and their skills monitored, maintained, and updated. Finally, to reduce the waste of this human capital investment, attrition from retirement and migration must be mitigated through appropriate policies.

Key to preparing the workforce is building strong educational and regulatory institutions according to a well-conceived strategic plan. The plan for educational institutions should include not just buildings and instructors but also programs designed to emphasize essential practice areas, such as primary care and rural health. Instructors also require training in effective pedagogical techniques. Beyond that, given the rapid pace of progress in medical knowledge, the focus must not be on “know-all” but rather on “know-how”—instilling life-long learning skills in trainees so that they can stay up to date with medical practice throughout their careers. An effective regulatory structure is therefore a vital component and should emphasize not just adherence to appropriate practice but also the importance of continuing education and of maintaining and updating professional skills.

Distribution of Medical Professionals, Especially to Underserved Areas

Recruiting and retaining health care workers, especially in remote/rural areas, is a problem that is not unique to Kurdistan. Indeed, it is seen worldwide and has been a focus of considerable

Figure 6.5
Health Workforce Strategies over the Working Lifespan



SOURCE: WHO: *World Health Report 2006—Working Together for Health*.

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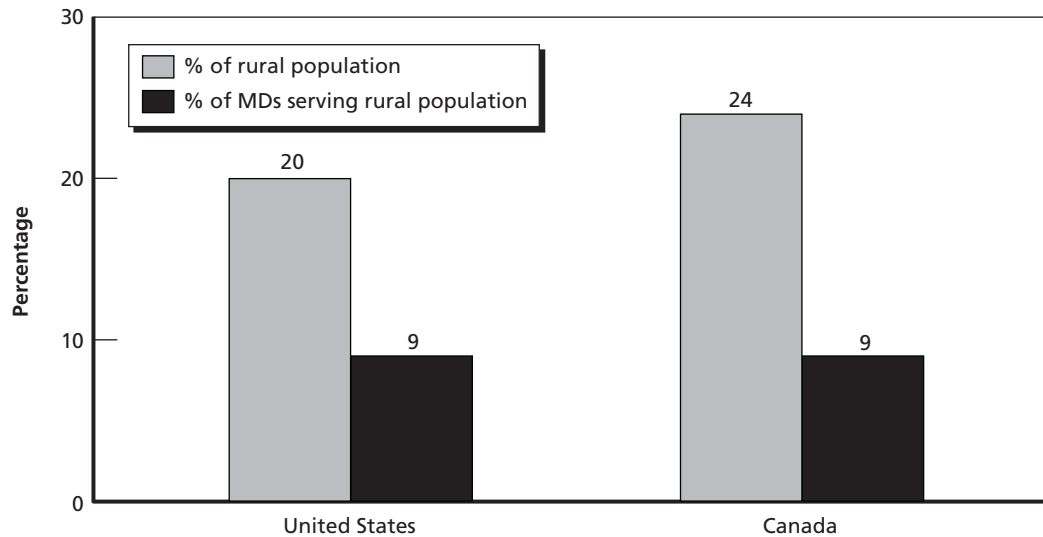
research effort. For example, in the United States, 20 percent of the population lives in rural areas, but only 9 percent of doctors serve such areas. In Canada, 24 percent of the population is rural, but only 9.3 percent of doctors work in rural areas (see Figure 6.6). We could find no comparable statistics for Kurdistan. As noted above, approximately 61 percent of the region’s population lives in areas outside the governorate capital cities; not all such areas are rural, since they include district capital cities as well. We could not find information on the number of doctors working in jurisdictions below the (aggregated) governorate level and thus cannot accurately describe the distribution of physicians or other health personnel at this level.

WHO has documented several factors that influence the choices of doctors, nurses, and midwives to work in rural areas. These are categorized into “pull” factors that attract workers and “push” factors that repel them (Table 6.1).

Studies from Australia and the United States document similar factors, including expectations for higher compensation by physicians serving in rural areas, limited educational opportunities for children of health providers, burnout due to poor call coverage options and/or excessive patient load with no time off, and professional isolation—no peer support, no ability to discuss medical issues with peers or mentors, and no proctoring by subspecialists (Simmons et al., 2002; Williams, Ehrlich, and Prescott, 2001). In the United States, rural communities that are smaller, poorer, and more isolated have particular difficulty in attracting and retaining clinicians because of concerns about isolation, limited health facilities, and a lack of employment and education opportunities for their families (IOM, 2005).

A few key publications were particularly informative regarding interventions to improve health workforce recruitment and retention as well as the strength of the evidence for such interventions. The most rigorous of these was from the Cochrane Collaboration, which conducted an exhaustive search for published evidence and inspected 1,844 titles and abstracts. They found no study that met the inclusion criteria of their systematic review (Grobler et al., 2009).

Figure 6.6
Comparison of Rural Populations and Rural Doctors, United States and Canada



RAND MG1148-6.6

Table 6.1
Factors Attracting Health Workers to and Repelling Them from Rural Service

Attracting ("Pull") Factors	Repelling ("Push") Factors
Better employment opportunities or career prospects (e.g., access to CME and professional development)	Job insecurity
Better income and allowances	Poor socioeconomic environment
Better living and working conditions	Poor working and living conditions
A more stimulating environment for self and family	Poor access to education for worker's children
Better supervision	Inadequate availability of employment for worker's spouse
	Work overload

SOURCE: WHO, 2009a.

Nonetheless, they provided information on approaches that may be promising but have not yet been tested with what they consider sufficient methodological rigor. A second report came from a series of expert meetings sponsored by WHO beginning in February 2009 around the theme "Increasing access to health workers in remote and rural areas through improved retention" (WHO, 2009a). Finally, the 2005 IOM report also offered important insights regarding health care workforce recruitment and retention (IOM, 2005).

The systematic reviews by WHO and the Cochrane Collaboration classified potential health workforce recruitment and retention strategies into four broad categories:

- Education and continuous professional development interventions
- Regulatory interventions
- Financial incentives
- Management, workplace environment, and social support.

The WHO expert panel examined 31 intervention studies from 15 countries. Table 6.2 shows the number of studies that support different workforce retention strategies in the four areas above, categorized by strong, medium, or weak evidence for each strategy.

Table 6.2
Evidence Base for Human Resources for Health Retention Policies

	Strength of Evidence (Number of Studies)		
	Strong	Medium	Weak
Education and professional development policies	4	6	1
Rural recruitment	3	2	0
Exposure to rural medicine in training	1	2	0
Continued education	0	1	1
Civil service/public sector career opportunities	0	1	0
Regulatory policies	1	3	1
Increase workforce supply	1	1	0
Compulsory rural service	0	2	1
Financial incentives	3	0	2
Salary bonus	2	0	1
Scholarship, loan financing	1	0	0
Allowances for housing, education, etc.	0	0	1
Work environment incentives (e.g., living and working conditions)	0	0	3
Multiple policies	1	1	1
Financial, career, and lifestyle incentives	1	1	1

SOURCE: Adapted from Palu, 2009.

The WHO expert panel found relatively strong evidence that health professionals from rural backgrounds were more likely to practice in rural areas. Evidence also suggests that rural clinical rotations influenced medical students' subsequent decisions to work in underserved areas. Updating medical curricula to include rural health issues improves competencies and increases interest. Evidence is meager regarding the role of continuing education in physician retention in rural areas. The WHO expert panel found that regulatory interventions to require rural service yielded inconclusive results regarding effectiveness. Loan repayment schemes, direct financial incentives, and medical-resident programs with rural placements/rotations had the highest service completion rates and physician retention rates. Direct financial incentives to practice in rural areas were promising, particularly in developed countries, but only a few developing countries had positive results (Mali, Zambia, and South Africa). Finally, professional and community support for rural workers is an appealing policy approach, but there is no quantitative evaluation documented to date; such approaches include supportive supervision, Internet access, community involvement projects, and professional networks. Very few countries have implemented and published evaluation results from large-scale interventions in this category (Mali, Thailand, and Zambia are exceptions).

The panel judged that bundled interventions, not single interventions alone, were more effective (WHO, 2009a). For example, Thailand's phased bundle of educational and professional development interventions (rural recruitment, training in rural health facilities, development of community medicine, and improved personnel management), a regulatory inter-

vention (compulsory service), and financial incentives resulted in a significant decrease in rural-urban workforce differences over 30 years (WHO, 2009a). However, this is a very long time frame for policymakers eager for more-rapid change.

From their comprehensive review, the WHO expert panel recommended a number of specific strategies, as shown in Table 6.3. The table organizes specific strategies (or solutions) by broad type of intervention.

An alternative approach is to organize intervention strategies as solutions to specific problems. Table 6.4 shows an example of such an approach, from the U.S. Agency for International Development (USAID). Most of the interventions suggested by both WHO and USAID have been incorporated into the smaller number of recommended interventions presented in the next section of this chapter. Our suggested interventions are organized according to the two policy goals discussed earlier in the section “Policy Goals to Improve the Workforce.”

Studies from individual countries validate and complement the broad WHO review. For example, the greatest positive predictive factors for recruiting rural physicians in the United States appear to be their having grown up in a similar rural environment, having done required experiential learning in a rural environment, attending a medical school emphasizing rural

Table 6.3
Draft Policy Recommendations to Improve Health Workforce Retention

Category of Intervention	Examples
Education and continuous professional development interventions	<ul style="list-style-type: none"> Preferentially recruit students with a rural background, potentially involve the community in selecting students Change curricula to reflect rural health and primary care issues (generalist orientation) Include community experiences and clinical rotations in rural areas during medical, nursing, or health-related studies Provide locally accessible and rurally relevant continuous professional development, including career paths Locate medical and other health professional schools and training centers in rural areas
Regulatory interventions	<ul style="list-style-type: none"> Require service in a rural area, alone or with incentives Recognize/regulate safe scope of practice for each type of health worker Facilitate and regulate limited private practice Provide scholarships in exchange for rural service (bonding) Produce new types of personnel more likely to work in rural areas (task shifting, substitution, midlevel workers)
Financial incentives	<ul style="list-style-type: none"> Provide rural or remoteness allowances, including other indirect financial incentives (housing, transport, children’s schooling) Provide financial support for (young) doctors to open (private) practices in rural areas Institute performance-related pay
Management, workplace environment, social support	<ul style="list-style-type: none"> Improve working environment/conditions—safe, access to technologies, supplies, drugs Improve rural living conditions—access to water, sanitation, housing, cell phone, education for children, working opportunities for family, social/cultural opportunities, community engagement Manage human resources: job descriptions, defined competency levels, supportive supervision and performance appraisals, professional development Reduce the feeling of isolation through professional/specialist networks, rural professional associations, specialist outreach programs, telemedicine, viable career paths Provide social recognition measures

SOURCE: Adapted from WHO, 2009b.

Table 6.4
Illustrative Solutions to Human Resource Problems

Issue	Possible Intervention
Shortages of qualified personnel to carry out tasks	Consider training lower levels of workers and community health workers in less demanding tasks, shift those tasks to them. Eliminate mandatory retirement policy for public sector.
Retention	Offer adequate salary. Establish a payment schedule. Provide extra-duty allowances. Create a good working environment. Expand the benefits program.
Motivation	Improve salary and compensation, ensure that salary is paid on time. Provide effective leadership and management systems. Change existing punitive supervision practices (e.g., reducing incentives, using blame, which causes fear) to supportive supervision. Increase work-related self-efficacy: Workers are trained to do the tasks expected of them, workers are appropriately selected, expectations are clear—job descriptions and standards are clearly communicated, appraisal systems are established, workers receive feedback on their performance. Measure and share results; recognize and reward.
Unequal distribution of health workers and poor coverage in some (usually rural) areas	Provide monetary incentives such as incentive payments for rural hardship postings, special bonuses, loans, vehicles, scholarships, promotions, management responsibilities, retirement benefit packages. Provide nonmonetary incentives such as congratulations and thank-you notes, public recognition programs. Improve intake of medical students from rural areas. Provide training in locations where physicians will later practice.
Lack of skills needed in the workplace among graduates of professional schools	Establish feedback loops and links between the professional schools and the MOH. Place students in facilities for practicums and clerkships using faculty or facility staff as preceptors.
Lack of feedback to employees on their performance	Strengthen supervision: Provide management training for evaluators or supervisors. Define and enforce staff review cycles.
No joint planning and review between employees and supervisors	Introduce a process to conduct: Joint planning based on job descriptions and tied to the organization's mission and goals Periodic employee performance reviews
Punitive or controlling supervision	Train supervisors in supportive supervision techniques. Introduce self-assessment at facilities.
No regular supervision	Use on-site supervisors (in-charges, peers). Train health inspectors in supervision to support on-site supervisors.

SOURCE: Islam, 2007.

practice, having done medical school training in family medicine, having had faculty role models or mentors (e.g., in family or community medicine or rural health), or already planning to enter family medicine (IOM, 2005; Williams, Ehrlich, and Prescott, 2001). The first two factors were also predictive of choosing a rural practice location among Norwegian physicians: More than 50 percent of physicians who were from a rural background, trained in a

rural residency setting, and had a spouse from a rural background chose to practice in a rural area, whereas less than 10 percent of physicians with none of these predicted factors chose rural practice (Kristiansen and Helga, 1992).

IOM (2005) recommended that U.S. recruitment and retention policies address all steps in the workforce pipeline—elementary and high school students, efforts of health professional schools to draw from rural communities and educate/train professionals in such settings, and incentives for trained professionals to seek and retain employment in rural communities. Experiences in Canada, Australia, and the United States suggest that policies providing medical trainees with opportunities for well-mentored clinical rotations produce a positive recruitment and retention effect—it improves the skills and experience of rural doctors and reduces their sense of isolation. Such policies require linkages with academic support, professional development, and information services (Tesson et al., 2005). Moreover, the scope of a given practice in rural areas may either be broader (which may provide unique professional development opportunities and thus be more desirable for some health workers) or more constrained (which some may deem less desirable). Workforce retention policies should thus take scope of practice into account.

Wherever health workers practice—whether in urban or rural settings—they need to keep current on critical knowledge and skills. Approaches include CME, online information and education, and real or simulated opportunities to practice critical skills. Policies must be designed to update skills for less frequently seen conditions and less frequently performed procedures.

The use of physician extenders—nurse practitioners and physician assistants—can ease the need to recruit physicians and can reduce costs. Such practitioners have also been shown to improve system efficiency. The potentially broader range of practice in rural settings might be an inducement for such health professionals, although research shows that they tend to follow similar choice constraints as physicians in selecting practice location (Williams, Ehrlich, and Prescott, 2001). In principle, nursing professionals can serve as physician extenders, but they must be adequately trained, their roles and responsibilities must be well defined, and regulations must be in place to allow for their envisaged scope of practice. According to virtually all the health officials we visited, the nursing profession in Kurdistan is in particular need of major improvement—including, but not limited to, education, training, definition of scope of practice and job descriptions, credentialing, and continuing professional development.

How should the outcomes of these different interventions be assessed? WHO (2009a) suggested numerous measures to track progress for workforce retention:

- Changes over time in the ratio of health worker densities between urban and rural areas
- Percentage of health workers who choose to work in rural/remote areas as a result of intervention(s)
- Duration of service of health workers in urban and rural areas
- Number of outpatient visits in rural areas before and after workforce policy intervention(s)
- Patient satisfaction with care in rural areas, worker satisfaction—both before and after intervention(s)
- Health outcome indicators in urban and rural areas
- Movements of health workers (e.g., over time or across places) via turnover rates, absenteeism, unemployment, or dual employment.

The WHO expert panel also identified several questions for which research has not yet provided clear answers:

- What factors influence where health workers choose to locate and work?
- How should retention interventions be designed and implemented to improve staffing of rural health facilities?
- What regulatory frameworks need to be in place for the design and implementation of retention packages (such as salary increases, producing different types of health workers, or compulsory service requirements)?
- How can the impact of retention strategies be measured and evaluated?

Recommended Specific Interventions to Improve the Health Workforce

The specific interventions described below address the two policy goals—education and training to improve professional qualifications, and human resource management to improve the distribution and performance of staff, especially for underserved areas. These interventions are based on the following guiding principles:

- Build on current strengths of the KRG system, taking advantage of exemplary practices at any level
- Target workforce interventions to both existing personnel (e.g., in-service retraining) and new health professionals (e.g., pre-service education and training, recruiting, and hiring)
- Be consistent with Iraqi and international best practices
- Seek innovation in approaches and methods.

Goal 6.1: Enhance Professional Qualifications Through Education and Training

We offer eleven specific interventions to help improve health worker education and training (labeled “ED”):

ED-1: Establish an executive professional committee to develop and oversee new professional education, training, licensing and recertification standards, recruitment of students across the medical professions, and management of the supply of medical personnel to meet forecasted demand

- Revive or modify the Regional Medical Board
- Members to include, but not necessarily be limited to, the Minister of Planning, the Minister of Higher Education, the Minister of Health, the DGs of Health from the three governorates, professional syndicate directors (medical, nursing, etc.), and deans of medical professional universities/colleges (medicine, nursing, dental, and pharmacy).

ED-2: Enhance the profile of family medicine as a foundation for modern medical care and medical education

- Disseminate to current and prospective medical students and physicians in the early years of their post-graduate training, through reports and other means, information on the need for both family medicine, including preventive and curative services, and the contribution of preventive services to increased life expectancy and quality of care in other countries

- Establish a senior faculty position for family medicine at each medical and nursing school (or at least one in each governorate); the purpose is to oversee training, mentorship, research, and practice of primary care–oriented community medicine
 - Select respected senior (preferably M.D.-Ph.D.) physicians and nurses (doctoral level) with formal training and experience in community medicine, family medicine, or other related medical/nursing specialty areas
 - Provide funding for health services research related to community medicine/nursing practice
 - Use these positions to serve the dual purposes of medical and public health training
 - Appoint family/community faculty in schools of medicine and nursing not only to provide the specific expertise required for rural health education and training but also to enhance the visibility of rural health care and provide a role model for students
- Establish incentives for physicians and nurses to specialize in family or community medicine and nursing: Consider a range of incentives that includes financial bonuses, subsidized housing and child education, subsidized access to medical textbooks and journals, preferential professional development opportunities, and professional recognition (such as special awards)
 - Consider scholarships, continuing professional education, increased pay, or other incentives for physicians and nurses to pursue family practice/community medicine training
- Strengthen family medicine topics in medical and nursing school curricula
- Include the following among the criteria for academic promotion: a faculty member’s provision of CME, publications in professional journals, and quality of mentorship to general practice residents (along with seniority, for example)
- Establish a grant program to support online certificate and potentially also degree training of varying lengths (e.g., 1–36 months) for health staff working in rural areas.

ED-3: Preferentially recruit medical and nursing students from rural areas as a means to attract professionals to more permanent rural service

- Set aside a certain number of noncompetitive/rural-designated slots at each medical and nursing school for students from nonurban/rural areas. First select the majority of students as per present practice—based on secondary school test scores—but select the rural-designated students competitively based on test scores only among those from eligible areas.
- Consider a similar process for female medical students.

ED-4: Include primary care in the curricula of medical and nursing schools

- Strengthen primary care and rural health topics in medical and nursing school curricula
- Include principles of primary care, issues relevant to rural/remote areas, and delivery of primary care—teamwork, referrals, continuity of care, and how to access support in providing care in rural/remote areas
 - Consider partnering with centers of rural health care training excellence in the United States, Canada, Australia, and so forth, to set up and fund a rural health care curriculum for trainee practitioners.

ED-5: Include primary care in the clinical rotations of medical and nursing schools

- Arrange appropriate activities and supervision for primary care rotations during medical and nursing school
 - Include both clinic-based practice and community outreach activities (schools, water quality testing, etc.)
 - Arrange supervision for medical and nursing students by general practice physicians and other mentors who rotate through, visit, and/or are available for consultation to rural health facilities
 - Bring in specialists/experts as visiting consultants and lecturers.

ED-6: Enhance training in practical clinical skills during medical and nursing school training, internship, rotation year, post-rural training, and post-graduate training

- Consider “medical tours” for instructors and/or trainees to observe countries (such as the United States) that currently include practical clinical skills in education and training at all levels.

ED-7: Improve the experience of general practice physicians during their year of obligatory medical service in primary care centers by providing preferential incentives for rural service and professional development opportunities

- Consider a range of current and future incentives for obligatory service in rural settings (e.g., financial bonuses, extra points toward selection for specialty training, preferential opportunities for professional development [such as a conference], and perquisites such as free housing)
- Develop standards for experiences and competencies to be achieved during this year
- Establish expectations of these GP physicians in terms of their work hours, and create incentives as needed to ensure their optimal productivity
- Establish professional development standards and provide professional development opportunities
 - Provide team leadership training and orientation in advance of placement
 - Provide regular clinical mentorship and oversight
 - Encourage use of social media for professional networking, especially for professionals in rural areas
 - Provide a mechanism for ad hoc consultation (e.g., through an on-call consultant hotline from major medical centers and hospitals)
 - Provide online access to medical textbooks and journals and access to an on-call advice hotline or specialist consultation
 - Require and provide CME relevant to community medicine and rural practice
 - Provide online distance-learning opportunities
 - Provide preferential subsidies or opportunities for those serving in rural/remote areas
 - Organize conferences at least twice per year to gather rotating physicians and other medical personnel serving in rural/remote areas—to provide technical presentations and opportunities to share experiences and lessons learned
 - Require completion of a community medicine project and provide mentorship and support as needed; establish a mechanism for peer review of these projects as an incentive to achieve excellence (and be favorably viewed by peers)

- Institute a written examination at the end of the year as a requirement for passage into the next year of clinical training.

ED-8: Complete the redesign of and implement new nursing curriculum and training at each of the KRG's three levels of nursing (university, college, institute)

- Provide professional nurse educators (rather than medical doctors) and focus on nursing roles within the health team
- Include basic sciences and practical experience relevant to each level in the respective curricula
- Create a committee for the enhancement of nurse education (to include, for example, external consultants, Ph.D. nurses, and relevant nursing associations and be co-chaired by the Minister of Health and relevant nurse educator) to design and oversee nursing education reform
- Emphasize the importance of medical documentation (nursing notes, physicians' notes, etc.) and how these are used in both clinical practice and health services research
- Include computer facilities for access to professional resources
- Include English language training (enhances physician respect for nurses and enables access to a broader range of professional literature and online resources).

ED-9: Develop and implement a mandatory continuing education system for medical, nursing, dental, and pharmacy professionals

- Specify requirements in designated categories such as data (both individual clinical records and population-based data), policy, preventive medicine, clinic management, emergency medicine, and specialty areas of choice, as well as more-flexible ways to attain total required medical education hours/points
- Develop a plan to provide sufficient continuing education to facilitate achievement of these requirements
 - Consider plan content, providers, timing, and modality of education
 - Include on-site and online opportunities
 - Explore information resources available via mobile phone technology
 - Provide free or subsidized Internet access (potentially provide government-issued laptop computer)
 - Provide access to professional journals
 - Bring in high-profile regional or national specialists to provide continuing education at organized conferences or other continuing education events
 - Incorporate mobile health units into the professional development strategies for physicians, nurses, and other health professionals serving in primary care centers, especially in rural/remote areas
 - Establish mechanisms for such units to facilitate or provide continuing education for health professionals serving outside major cities
 - Schedule patient appointments so that general practice physicians/residents can jointly see patients together with visiting specialists/experts and thereby both enhance professional development and reduce the need for referral of certain problems elsewhere
 - Include policies that allow professional time off and funding support for continuing education activities

- Establish CME requirements and provide CME for rotating GP physicians during their obligatory year of service
- Include continuing education requirements in the criteria for license renewal and specialty recertification (see below)
- Support short-term study tours and longer-term international experiences for medical professionals including physicians, nurses, dentists, pharmacists, and laboratorians (syndicates can potentially help facilitate and coordinate such experiences)
 - Consider concrete outputs that could result from such study tours, such as requiring all those who participate to develop an analytic paper or concrete plan for the Kurdistan Region (or governorate) based on their overseas experiences and observations; participants could be required to complete this before receiving final financial payment or some other desirable incentive.

ED-10: Develop and implement a system for licensing and revalidation for medical professionals

- Involve the Ministry of Higher Education, MOH, and the professional syndicates (i.e., medical, nursing)
- Establish priorities for sequentially instituting such requirements among the different medical professions: physicians, nurses, dentists, and pharmacists
- Establish, implement, and enforce professional competencies for physicians and nurses (and also dentists, pharmacists, and laboratory personnel) for each personnel category at each level of training and each relevant level of care
 - Require licensing/certification of physicians and nurses based on these competencies
 - Require periodic revalidation
 - Provide (and require) continuing medical and nursing education relevant to these competencies
- Consider requiring a written exam two or three years post-graduation (i.e., either before or after the obligatory service year for physicians)
 - Standardize the exam across individual governorates or across the region as a whole (i.e., not varying from one hospital to another)
- Develop and disseminate requirements for licensing, including licensing for nurses at different levels
- Develop and issue physical licenses (in both wallet and wall sizes)
- Develop, disseminate, and implement requirements for license renewal (e.g., hours and location of public sector service, productivity in public sector service, and required hours of continuing education [see above]).

ED-11: Enhance training and create a strong career track for preventive medicine specialists

- Establish incentives to pursue preventive medicine, including income prospects more or less comparable to practicing clinicians (along with the possibility of their own clinical practice)

- Ensure a strong curriculum and training in the key public health sciences: epidemiology, statistics, and community medicine
 - Address all elements in KRG Preventive Medicine departments: borders and food safety (education, laboratory, and sampling), water quality, health education (media, training), school health (eyes, teeth, and hygiene/environmental health), antenatal care and maternal and child health, communicable diseases, and noncommunicable diseases
- Explore opportunities to utilize the obligatory rotation year as a practicum for future preventive medicine specialists (e.g., include continuing education opportunities and specific projects such as analysis of local surveillance data)
- Offer advanced training in epidemiological research and applied epidemiology as part of the proposed preventive medicine specialty training
 - Eventually could create a KRG Master’s in Public Health (MPH) degree program to train the health policymakers of the future, including rotations in rural locations
- Place preventive medicine specialists in MOH, governorate health offices, and ultimately even district medical offices and establish job descriptions for them
 - Functions could include analysis of surveillance data, management of outbreak investigations, and epidemiological study of specific health problems to inform targeted policies and interventions for such problems as cancers, cardiovascular disease, diabetes, asthma, and road traffic injuries
 - Encourage publication of papers in professional journals.

Goal 6.2: Enhance the Distribution and Performance of the Health Workforce Through Specific Human Resource Management Interventions

We offer six specific interventions to help improve health workforce *management* (labeled “MGT”):

MGT-1: Develop a plan to distribute staff based on standards defined in law for each type of facility

- Review the number, qualifications, and locations of current physicians, nurses, laboratorians, and pharmacists within each province (use GIS capabilities for initial assessment and follow-up monitoring)
- Review the forecasted needs for staffing over the next five years
- Review forecasts of professionals in training and factor this into planning for the distribution of staff to PHC branches and main centers in particular
- Develop a target plan for redistributing current and future staff within each province to meet staffing needs at PHC branches and main centers in particular.

MGT-2: Develop, implement, and monitor required qualifications and job descriptions for professional staff at all relevant levels

- Physicians, nurses (all levels), dentists, pharmacists, laboratorians, and assistants at each level of ambulatory facility
- Managers at each level of facility (PHC branches, PHC main centers, and referral centers)
- DMOs, including both their clinical and management roles and responsibilities (e.g., for oversight and supervision of ambulatory clinics).

MGT-3: Define and implement systematic and supportive supervision for physicians, nurses, and other health professionals serving in primary health care centers, especially in rural/remote areas

- Consider the appropriate roles for facility managers and DMOs in rural/remote areas
 - Consider preferential hiring from the area to be served (enhances retention)
 - Provide certificate level training in management, leadership, and applied epidemiology
 - Provide access to professional resources (e.g., online, on-call medical advice)
 - Provide training and equipment to supervisors to bolster development of a “culture of data for action” throughout the health system—use surveillance and management data at each level for monitoring and management purposes
- Develop and provide formal training for supervisors (e.g., DMOs, facility managers) in supervision strategies and techniques for supervising physicians, nurses, and other health professionals—to include monitoring/measuring performance, providing feedback, being accessible to help solve problems, and so forth
- Base system on professional competencies for each personnel category and level, with all parties aware of expected competencies and standards
- Consider the appropriate roles for senior/specialized professionals in major centers/cities to provide supervision, mentorship, and consultation, especially for professionals serving in rural/remote areas
- Identify ways to reward good performance, including monetary bonuses and professional recognition (e.g., awards), especially for those serving in rural/remote areas
- Establish schedule and modalities for providing supervision (e.g., onsite visits, phone calls).

MGT-4: Institute appropriate incentives to attract medical and nursing staff to serve (and remain) in rural/remote areas

- Consider such monetary and nonmonetary incentives as financial bonuses, subsidized housing and child education, preferential or subsidized access to professional textbooks and journals, and professional development activities (continuing education, study abroad, etc.)
 - Combine financial incentives with interventions to provide a positive working environment and professional development opportunities
- Set a standard pay scale for staff that takes location of service into account
 - Create a rural hardship allowance (rural pay differential) for physicians, nurses, dentists, and so forth
 - Consider a financial bonus for a two-year service commitment in rural/remote areas
 - Establish differential incentives based on such factors as degree of remoteness and length of service commitment
- Assess the desirability, feasibility, and effectiveness of different incentives through surveys, interviews, and/or pilot-testing
- Preferentially hire workers from local/rural areas
 - When hiring expatriate personnel, preferentially seek those with rural backgrounds and/or training

- Provide a professionally satisfying work environment for health professionals in rural/remote areas, for example:
 - Provide modern medical equipment appropriate to the level of care, professional mentorship, supportive supervision and/or participatory management, access to information and communication technologies (ICT) and telemedicine, support networks of rural providers, viable career paths for those who practice in rural areas, social recognition measures, and so forth
- Provide attractive living conditions for health professionals serving in rural/remote areas, including both those posted long-term and more-specialized personnel who may rotate through rural areas for a few days, weeks, or months at a time (e.g., housing, an attractive environment for spouses, educational opportunities for children, and ICT for videoconferencing)
 - Provide free or subsidized housing of adequate quality for rotating and potentially permanent medical and nursing staff in such areas (Shaqlawah district model, for medical specialists)
- Reward quality
 - Develop professional recognition awards based on patient satisfaction surveys (Soran Hospital model) and/or documented performance measures (e.g., doctor and nurse of the month at clinic, district, or governorate level); consider attaching tangible benefit to such awards (e.g., a bonus payment)
 - Recognize well-performing centers and their team (DG-Duhok model)
 - Institute performance-based pay or bonuses (MOH priority), including development of performance criteria and measures that would be used to implement such a system
 - Consider differential awards for high-quality performance and productivity in rural/remoteness allowances—could include, for example, more opportunities and financial coverage for required CME/CNE (continuing nursing education) activities
- Facilitate professional networking to minimize feelings of isolation for physicians and nurses serving in rural/remote areas
- Ensure viable career paths for those serving in rural/remote or otherwise medically underserved areas.

MGT-5: Increase the use of online human resource management forms, including applications for study, training, placement, licensure, continuing education, and related documentation

- Consider adopting/adapting the DG-Erbil model for this more broadly across the Kurdistan Region.

MGT-6: Develop and implement strategies to reduce fraudulent private medical practice by unauthorized personnel (e.g., medical assistants advertising themselves as and providing services of physicians)

- Consider prominent display of physician licenses and certificates of completed training
- Convene executive medical professional committee, together with representatives of governors' offices (who have the authority to act), to identify range of potential strategies
- Enforce policies better to minimize such practices
- Pilot-test or widely implement new strategies.

Priorities for the Next Two Years

The preceding section describes a large number of recommended interventions, all potentially relevant. However, it will be important to establish a set of focused priorities that could be reasonably achieved in the next two years and thereafter. Table 6.5 lists all the recommended interventions and judges both their importance (potential impact) and their feasibility (ease of implementation) within the KRG context. These ratings were based on judgments from multiple members of the RAND team and, in several instances, also on discussions with one or more KRG health officials. The selection of priorities for the next two years might be those interventions that are high priority and the most feasible. Figure 6.7 is a graphical depiction of the information in Table 6.5, suggesting a handful of potential priorities for action during the next two years.

Judging solely from the assessment of importance and feasibility, interventions that are both highly important and highly feasible (i.e., those falling within the top-right dark-gray shaded box in Figure 6.7) might be the highest priorities for action over the next two years. These include:

- ED-1: Establish an executive professional committee to develop and oversee new professional education, training, licensing and recertification standards, recruitment of students across the medical professions, and management of the supply of medical personnel to meet forecasted demand
- ED-3: Preferentially recruit medical and nursing students from rural areas as a means to attract professionals to more permanent rural service
- ED-4: Include primary care in the curricula of medical and nursing schools
- ED-7: Improve the experience of general practice physicians during their year of obligatory medical service in primary care centers by providing preferential incentives for rural service and professional development opportunities
- MGT-2: Develop, implement, and monitor required qualifications and job descriptions for professional staff at all relevant levels.

The next-highest priorities might be those of highest importance, even though of medium feasibility (top-middle, lighter-gray shaded box in Figure 6.7):

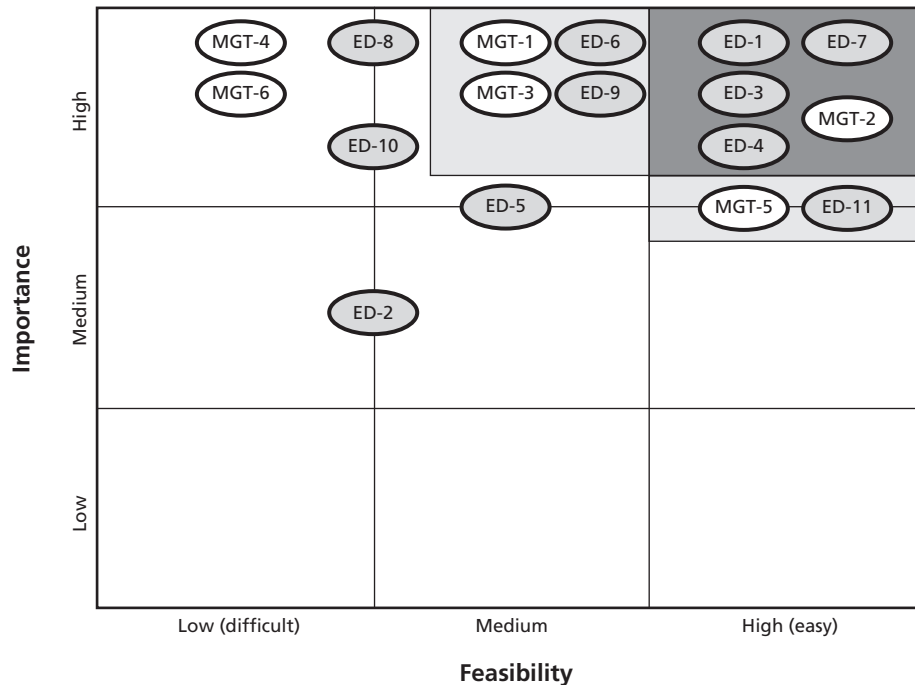
- MGT-1: Develop a plan to distribute staff based on standards defined in law for each type of facility
- MGT-3: Define and implement systematic and supportive supervision for physicians, nurses, and other health professionals serving in PHCs, especially in rural/remote areas
- ED-6: Enhance training in practical clinical skills during medical and nursing school training, internship, rotation year, post-rural training, and post-graduate training
- ED-9: Develop and implement a mandatory continuing education system for medical, nursing, dental, and pharmacy professionals.

On the other hand, the second set of priorities might also be those that are second most feasible, even though of only medium to high importance (within lighter-gray shaded box at right middle of Figure 6.7):

Table 6.5
Potential Policies and Assessment of Their Impact and Feasibility: Workforce

ID	Description	Importance	Feasibility
Goal 6.1: Enhance professional qualifications through education and training (ED)			
ED-1	Establish an executive professional committee to develop and oversee new professional education, training, licensing and recertification standards, recruitment of students across the medical professions, and management of the supply of medical personnel to meet forecasted demand	High	High
ED-2	Enhance the profile of family medicine as a foundation for modern medical care and medical education	Medium	Low-medium
ED-3	Preferentially recruit medical and nursing students from rural areas as a means to attract professionals to more permanent rural service	High	Medium
ED-4	Include primary care in the curricula of medical and nursing schools	High	High
ED-5	Include primary care in the clinical rotations of medical and nursing schools	Medium-high	Medium
ED-6	Enhance training in practical clinical skills during medical and nursing school training, internship, rotation year, post-rural training and post-graduate training	High	Medium
ED-7	Improve the experience of general practice physicians during their year of obligatory medical service in primary care centers by providing preferential incentives for rural service and professional development opportunities	High	High
ED-8	Complete the redesign of and implement new nursing curriculum and training at each of KRG's three levels of nursing (university, college, institute)	High	Low-medium
ED-9	Develop and implement a mandatory continuing education system for medical, nursing, dental, and pharmacy professionals	High	Medium
ED-10	Develop and implement a system for licensing and revalidation for medical professionals	High	Low
ED-11	Enhance training and create a strong career track for preventive medicine specialists	Medium-high	Medium-high
Goal 6.2: Enhance the distribution and performance of the health workforce through specific human resource management interventions (MGT)			
MGT-1	Develop a plan to distribute staff based on standards defined in law for each type of facility	High	Medium
MGT-2	Develop, implement, and monitor required qualifications and job descriptions for professional staff at all relevant levels	High	High
MGT-3	Define and implement systematic and supportive supervision for physicians, nurses, and other health professionals serving in primary health care centers, especially in rural/remote areas	High	Medium
MGT-4	Institute appropriate incentives to attract medical and nursing staff to serve (and remain) in rural/remote areas	High	Low
MGT-5	Increase the use of online human resource management forms, including applications for study, training, placement, licensure, continuing education, and related documentation	Medium-high	High
MGT-6	Develop and implement strategies to reduce fraudulent private medical practice by unauthorized personnel (e.g., medical assistants advertising themselves as and providing services of physicians)	High	Low

Figure 6.7
Framework for Assessing Priorities Among Recommended Interventions



RAND MG1148-6.7

- MGT-5: Increase the use of online human resource management forms, including applications for study, training, placement, licensure, continuing education, and related documentation
- ED-11: Enhance training and create a strong career track for preventive medicine specialists.

We believe that the proposed executive committee is critical to the planning and management of interventions to improve the qualifications and distribution of the medical workforce. Then, packaging the interventions by professional category, we suggest a small number of initial actions to improve the GP physician workforce and initial actions to improve the nurse workforce.

Physicians

1. ED-3, ED-4: Preferentially recruit medical students from rural areas, and include primary care in medical school curricula
2. MGT-1, MGT-2: Develop a plan for distribution of physicians; develop, implement, and monitor required qualifications and job descriptions for physicians at all levels
3. ED-7, MGT-3: Improve the experience of general practice physicians during their year of obligatory primary care service, especially those serving in rural/remote areas, and implement systematic and supportive supervision for them
4. ED-6: Improve training of practical clinical skills during medical school rotations and all levels of post-graduate training
5. ED-9: Develop and implement mandatory systems of CME.

Nurses

1. ED-3: Preferentially recruit nursing students from rural areas
2. ED-4, ED-5, ED-6, ED-8: Begin to redesign nursing curricula at all three levels (university, college, institute): include preventive medicine, primary care, and rural health issues in nursing curricula and relevant clinical rotations; improve practical nursing skills during school and in all levels of post-graduate training
3. MGT-2: Develop, implement, and monitor required qualifications (including professional competencies) and job descriptions for nurses at all levels
4. MGT-3: Define and implement systematic and supportive supervision for nurses serving in PHCs, especially in rural/remote areas
5. ED-9: Develop and implement mandatory systems of continuing nursing education (CNE)
6. MGT-1: Develop a plan to distribute nurses across the Kurdistan Region.

Ultimately, KRG policymakers will determine priorities for near-term action to improve the education, training, distribution, and performance of clinical professionals across the Kurdistan Region, with particular emphasis on physicians and nurses in urban and especially rural ambulatory care settings, where most of the population receives medical care.

Monitoring Progress

Educating, training, recruiting, and retaining a qualified health workforce are all aimed to enable good performance and thereby produce good health outcomes. This concept is illustrated in Figure 6.8. Managing for performance also entails measurement. USAID indicators related to the health workforce are presented in Appendix B.

Figure 6.8
Managing for Performance



SOURCE: Adapted from Joint Learning Initiative 2004, as cited by Islam, 2007.

Health Information Systems

Potential Policy Actions

Management Information Systems

- Monitor clinic resources and services
- Monitor clinic utilization

Surveillance and Response Systems

- Systematically assess current surveillance system from local to regional levels
- Hire and/or train personnel
- Standardize diseases and conditions to be reported, sources of information, data collection forms, and analyses for routine surveillance (indicator-based surveillance)
- Streamline data processing
- Establish a system for immediate alerts (event-based surveillance)
- Standardize protocols for responding to events warranting timely investigation
- Monitor health risk factors

Overview

A health care system depends on data to inform wise investments in policies and programs and to monitor their implementation. Ideally, data are processed into information of sufficient scope, detail, quality, and timeliness to confidently manage health care services at all levels. It is clear that KRG policymakers wish to have such data, but it is equally clear that a “culture of data for action”—where data collection, processing, analysis, presentation, and use are routine and relatively easy—remains undeveloped.

In this chapter we describe two broad types of health information systems, both of which primarily serve managers at the regional, governorate, and district levels and are critical; improvements are highly feasible in the near term because the important foundations are already in place. A third type of data system—patient clinical record-keeping—primarily serves clinical providers and patients and is also critically important to primary care, but the foundations are not yet in place for this. Efforts to lay such foundations should be a near-term priority. The two information systems described in this chapter would support health care services in the Kurdistan Region and are consistent with interventions described elsewhere throughout this report:

- *Management information systems (MISs)*—to monitor health system resources, performance, and financing as well as clinical management systems
- *Surveillance and response systems*—to monitor mortality, morbidity, and risk and respond to events when needed.

For both of these broad systems, we provide background and highlight some of the policy and management questions that the proposed data could help answer. We then suggest specific interventions to improve current surveillance systems and MISs. For both recommended systems we describe activities related to establishing data needs and protocols to collect, process, analyze, disseminate, and use the data. We suggest potential data sources and provide illustrative examples of data collection forms and data presentation in the form of tables and graphs.

The focus of this report is mostly on primary care, which one normally associates with clinics, but in this chapter we specifically include surveillance systems addressing all levels of health facilities. The two proposed MISs (to monitor clinic resources and services and to monitor clinic utilization) focus here on outpatient services but can be adapted relatively easily to monitor higher levels of care. We believe that these systems should be implemented across the entire health care system—including both clinics and hospitals in the public and private sectors—since primary care is the anchor for the entire health care sector and not simply an isolated element within it. We assume that the ultimate goal is a set of comprehensive, reliable, high-quality information systems in web-based electronic format. Purposeful steps can be taken in the near term toward that longer-term end. The chapter concludes with suggested early priorities for action.

Current Status in the Kurdistan Region—Iraq

A substantial amount of health data from various sources is available in the Kurdistan Region. However, the efficiency of data collection and analysis is significantly hampered, and the routine use of “data for action” across the region is limited. We observed numerous problems that we understand policymakers wish to address:

- Routine data collection is not yet standardized across the governorates.
- Data are generally collected on paper rather than electronically.
- Clinical (patient) records typically do not exist in PHCs.
- Most data are aggregated (i.e., very few useful data are available down to the district or subdistrict level).
- Raw (original, nonaggregated) data are not available in one place for analysis purposes.
- Data that are collected are not readily available.
- Data that are available are not necessarily in a format well suited for analysis or management.

With regard to data relevant to resource management, the DGs of Health in both Erbil and Duhok gave us reports containing some useful information about the general locations of and the specific services provided in each PHC in their respective governorates, but we did not find similar information in Sulaimania. It is not clear whether the central MOH has this information. We did not find the full range of useful clinic-specific information in any

location—the name, classification, code number, staffing pattern, services provided, and clinic utilization by service (e.g., growth monitoring, vaccination, oral rehydration therapy, prenatal care, dental care, acute clinical care, and clinical follow-up)—and there is virtually no patient record-keeping.

Clinic-based surveillance data are generally reported electronically in Duhok but are extracted from individual logbooks in Erbil and Sulaimania. Clinics throughout Duhok are equipped with computers, which we assume are used to report monthly surveillance and other data; while we observed that many clinics in Erbil and Sulaimania have computers, we were told that the computers were generally not used for management or reporting purposes. Moreover, trained staff to enter, process, and analyze data are in short supply in all governorates and centrally at the KRG MOH. With few exceptions, data are not reviewed/audited or used for management purposes. Therefore, data quality is another recurrent concern.

The scope of data reported or available is also limited, and data are neither standardized across the three governorates nor consistent from one report to another. Mortality data presented in the KRG MOH Annual Report for 2009 included the leading causes of death for age groups under five years of age and over five years of age, with no numbers or rates of death by cause, and no disaggregation by location, gender, or narrower age groups. The MOH Annual Report for 2009 provides numbers of cases and disease rates at the governorate level for selected communicable diseases, and hospitalization rates at the governorate level for five selected chronic conditions. Morbidity data are apparently routinely reported, but despite our trying, we could not readily discern if or how such data are used locally or centrally by MOH.

Policy Goals to Improve Health Information Systems

From our assessment of the status of current data collection and use across the Kurdistan Region and our recommendations for modernizing the health care system through a primary care-oriented model, we recommend the development and implementation of the two types of health information systems mentioned previously. Each should be as streamlined as possible—efficient collection and processing of data and routine use of data at all relevant levels of management. The systems can be in paper or electronic format initially and gradually evolve into a real-time web-based format. We recommend two goals:

- Goal 7.1: Develop and implement health MISs
- Goal 7.2: Enhance surveillance and response systems.

Background and Justification

The two goals address a minimum package of information needed to inform health care policy development, target programs, and manage health system resources (including financing) and service implementation. They are consistent with international best practices.

WHO (2008a) organized a Health Metrics Network (HMN) partnership that has developed standards to help strengthen and harmonize health information systems in countries around the world. We believe that the HMN offers relevant insights toward strengthening health information systems in Kurdistan. The underlying rationale for the HMN is the

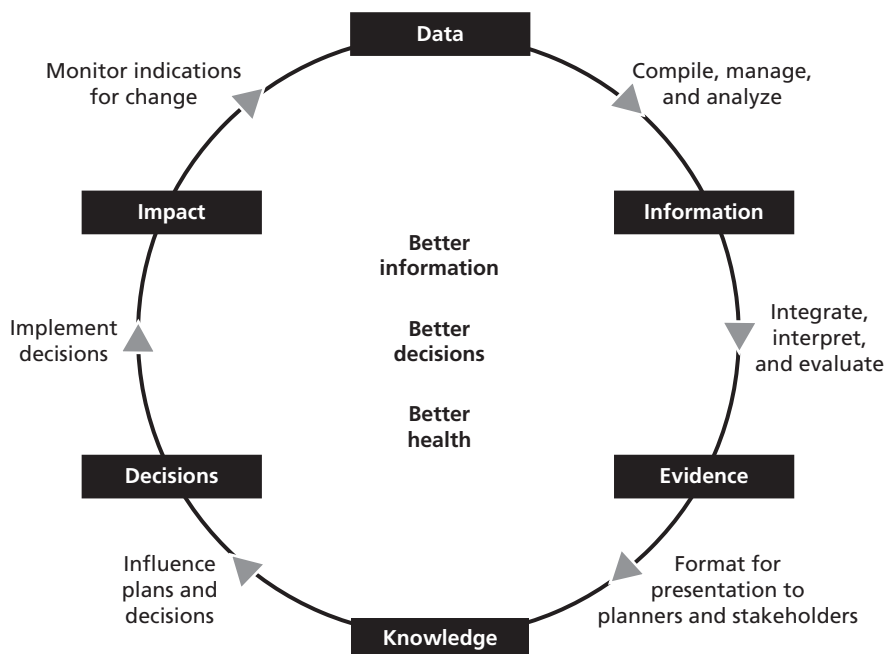
need to share information about health to help prevent the spread of disease and improve the health of individuals. WHO outlines several guiding principles for health information system development:

- Country leadership and ownership
- Responding to country needs and demands
- Building on existing initiatives and systems
- Building broad-based consensus and stakeholder involvement
- Gradual and incremental process with a long-term vision.

Within this context, WHO depicts the data-to-impact cycle—the process of transforming data into information and evidence that are used to facilitate decisions and impact (Figure 7.1). The HMN framework includes six key components of health information systems, organized within three categories (Table 7.1).

The WHO HMN also summarizes the usual sources of data for key principal indicators—health determinants, health systems, and health status (Table 7.2). As shown in the table, determinants of health (i.e., socioeconomic and demographic factors, environmental and behavioral risk factors) can be assessed from census, civil registration, population surveys, and individual records. Health system inputs and outputs (i.e., resources and immediate products) can be assessed from census, population surveys, and records of individuals, services, and resources. Health outcomes (i.e., service coverage and utilization) can be assessed from population surveys, individual records, and service records. Finally, according to the HMN, health status (i.e., mortality, morbidity, and disability, and risk factors) can be assessed via census, civil registra-

Figure 7.1
Transforming Data into Information for Decisions and Impact



SOURCE: WHO, 2008a (Health Metrics Network).

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Table 7.1
Components of Health Information Systems Based on the WHO HMN Framework

Category	Components and Description
Inputs	<p>Resources for health information systems: physical and structural Ability to lead and coordinate the process Existence of enabling laws and policies Financial resources Skilled personnel Physical infrastructure (e.g., office space, desks, computers)</p>
Processes	<p>Indicators—a set of measures showing changes in the country’s health profile Domains of measurement: Determinants of health: (1) socioeconomic and demographic factors, (2) environmental and behavioral risk factors Health system: (1) inputs—policy, financing, human resources, organization and management, (2) outputs—information, service availability and quality, (3) outcomes—service coverage, utilization Health status: (1) mortality, (2) morbidity and disability, (3) well-being Indicators must be valid, reliable, specific, sensitive, and feasible to measure See also WHO core indicators in annual <i>World Health Statistics</i> reports</p> <p>Data sources—a variety of sources within an integrated health information system Population-based sources (e.g., surveys, civil registration, census) Institution-based sources (e.g., individual or aggregated individual records, service records, resource records)</p> <p>Data management—to enable easy access to relevant information for those who need it, while protecting the privacy of individual patients A “minimum dataset” simplifies collection and improves data quality An “integrated data repository” collects and manages data from different sources and enables wide data distribution</p>
Outputs	<p>Information products—collated from a range of sources and synthesized into usable statistics that can be analyzed and compared Cycle including compilation, analysis, interpretation, presentation, influence, and implementation</p> <p>Dissemination and use—of health information system products, providing direct benefit to all who participate in the system and an incentive for users to continue to strengthen and use the system Core part of day-to-day management of health systems</p>

SOURCE: WHO, 2008a (Health Metrics Network).

Table 7.2
Sources of Data for Health Indicators, by Domain

Source	Domain			
	Determinants of Health	Health Systems		
		Inputs and Outputs	Outcomes (Coverage and Use)	Health Status
Census	X	X		X
Civil registration	X			X
Population surveys	X	X	X	X
Individual records	X	X	X	X
Service records		X	X	X
Resource records		X		

SOURCE: WHO, 2008a (Health Metrics Network).

tion, population surveys, individual records, and service records. Of note, the HMN does not specifically allude to payment records or insurance data as sources of relevant information on health determinants, systems, or status, but these are also valuable sources of such information.

Management Information Systems

Health MISs are not well defined in the literature but can be considered to include data on health resources (e.g., facilities, staffing, equipment, supplies, and medications) and services provided, as well as health service utilization (number of clients served by each service provided). We believe that some of these MISs are underappreciated and underused in many parts of the world, although their utility and impact have been demonstrated (see, for example, Moore, 1989; Higgins et al., 1991; and Valdiserri et al., 1993). The large sheet maintained by the DG of Health in Duhok depicts information on each clinic and is a good local example of MIS for monitoring facilities and services.

MISs support management of health resources and services and can help ensure service coverage, performance, and efficiency. Questions that MIS indicators can answer for policy-makers and managers at all levels include the following:

- What proportion of the population has access to health services within a reasonable time or distance in a specified subdistrict, district, or governorate or across the Kurdistan Region? Is the distribution of health facilities/services adequate to provide universal access?
- Which services can be delivered at specified health facilities?
- Is the workforce sufficient in number and qualifications to provide these services?
- Do facilities have the needed equipment and supplies to provide preventive, diagnostic, and treatment services?
- What is the utilization of health services in the facility, subdistrict, district, governorate, and/or across the Kurdistan Region? What percentage of the target population is covered by each type of service?
- Are health facility staff (e.g., doctors, nurses, laboratorians, pharmacists, assistants, and administrators) used efficiently?
- Do preventive services reach the intended population?
- Does patient record-keeping facilitate referral and continuity of care across different levels and providers of health services? (Note the importance of individual patient records in Table 7.2)

Surveillance and Response

Public health surveillance has been defined as “the ongoing systematic collection, analysis, interpretation and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve health” (Thacker, 2000, p. 3), or more simply: systematic information for public health action. The importance of both the *information* and the *action* (response) must be emphasized.

Using guidance from the U.S. Centers for Disease Control and Prevention (CDC) for evaluating public health surveillance systems (CDC, 2001, 2004), Moore et al. (2008) developed a conceptual framework to capture and organize potential strategies to improve global influenza surveillance. This framework is applicable beyond influenza—it specifies a streamlined set of attributes of a surveillance system and can serve as a basis for identifying strate-

gies to improve surveillance. The authors also noted the importance of matching surveillance design to specified goals.

Three proposed *surveillance goals* for the KRG, which can underpin the design of its surveillance systems, are the following:

- *Effective monitoring of trends* in health outcomes and health risk factors
- *Timely detection* of unusual health events wherever they may occur
- *Appropriate action* to respond to anomalous events or trends.

Three *surveillance system attributes* are important to attain these goals. These three desirable attributes and some strategies to achieve them are as follows:

- *Broad and representative coverage*—includes a broad range of reporting sources and the range of information reported. Strategies to ensure broad surveillance coverage include increasing the number of traditional reporting sites (e.g., PHCs and hospitals, public and private sector), adding new types of sites (e.g., EDs, private clinics, and private practitioners), adding new data sources (e.g., ad hoc surveys), and ensuring reporting compliance from all sources.
- *High quality*—requires accurate information based on standardized case definitions, trained personnel, and quality-assured laboratory testing for relevant conditions. Strategies to ensure surveillance quality can include ensuring adequate clinical, laboratory, and epidemiology capacity and data auditing.
- *Timeliness*—includes rapid detection methods, data flow, analysis, and dissemination to trigger a timely investigation and response to unusual health events. Strategies to ensure surveillance timeliness can include expedited transport of specimens that cannot be tested at the point of care, streamlined data notification and analysis, implementation of active surveillance when appropriate (health system contacts hospitals or clinics rather than waiting for their routine reports), and wide deployment of accurate rapid diagnostic tests as needed.

Achievement of the *action* goal will require the following:

- *Actionable information*—information collection designed to be actionable
- *Adequate workforce numbers and analytic capabilities*—particularly in the areas of applied epidemiology and statistics
- *Established response mechanisms and procedures*—especially for epidemiological investigation of outbreaks, implementation of appropriate control measures, and/or design of further research.

These attributes are consistent with those described by other agencies. For example, USAID notes the following attributes in its guidelines for health system assessment (Islam, 2007):

- Completeness (coverage)
 - Percentage of all captured cases or events (surveillance systems)
 - The extent to which the system captures all of the relevant information necessary for informed and effective decisionmaking and resource allocation
- Timeliness

- Integration and management of information (linkages between subsystems, such as surveys to surveillance)
- Use for decisionmaking.

In similar fashion, the International Monetary Fund (IMF) includes six criteria to assess the quality of health data (IMF, 2006):

- Timeliness
- Periodicity (frequency with which an indicator is measured)
- Consistency and transparency of revisions
- Representation (extent to which data adequately represent the population and relevant subpopulations)
- Disaggregation (the availability of statistics stratified by sex, age, socioeconomic status, major geographic or administrative region, and ethnicity, as appropriate)
- Confidentiality, data security, and data access (the extent to which practices are in accordance with guidelines and standards for storage, backup, transport of information, and retrieval).

Typically, public health surveillance includes mortality, morbidity, and risk factors, as described below. Design of a surveillance system entails many choices. It is important to keep in mind that some choices will necessarily limit the usefulness of surveillance data. For example, unusual clusters of acute or chronic disease will not be detected by the surveillance system (and thus will not be actionable) if the disease is not included on the surveillance form or if reported data that do include the disease are too aggregated to discern a specific population group or location. Thus, systems should be designed with the goals and expected uses of the data in mind.

Mortality and Morbidity Surveillance. Traditional public health surveillance includes data on both mortality (deaths) and morbidity (diseases and conditions). Typically, health care facilities and selected practitioners report morbidity and mortality data. Mortality data also come from vital records—death certificates—which tend to be more standardized than hospital records but include only basic information related to cause of death. To be most effective, the KRG mortality and morbidity surveillance system should reflect the three attributes above: broad and representative coverage, high quality and timeliness, and data that are actionable—adequate to trigger and target response actions.

Mortality and morbidity data are generally analyzed using the principles of epidemiology—describing events in terms of person, place, and time. Such analyses should be available to and used by policymakers as well as managers at all levels—from health care facilities to district, governorate, and central administrative health offices. Mortality and morbidity surveillance data can help answer questions like the following:

- What are the most important causes of disease and death in the health facility, subdistrict, district, governorate, and/or the Kurdistan Region? What are the trends over time? Are there any unusual events or patterns?
- Where, when, and in whom are these problems occurring? What are the trends over time? Are there any unusual events or patterns?
- Are policy/program/health service interventions making an impact on health outcomes? Is the impact in all locations and for all persons targeted by the interventions?

Risk Factor Surveillance. In recent decades, individual countries and WHO have begun to collect data on risk factors to complement traditional morbidity and mortality surveillance. For example, in 1984, the United States implemented the Behavioral Risk Factor Surveillance System (BRFSS), which CDC (2010) describes as “the world’s largest, on-going telephone health survey system, tracking health conditions and risk behaviors in the United States yearly.” The 2010 BRFSS questionnaire addresses the core and optional areas shown in Table 7.3 (CDC, 2009). The U.S. questionnaire could be consulted and adapted as appropriate for use in the Kurdistan Region.

Table 7.3
Content Areas for U.S. Health Risk Factor Surveillance System (BRFSS)

#	Description	#	Description
Core Sections of BRFSS			
1	Health Status	12	Demographics
2	Healthy Days—Health-Related Quality of Life	13	Alcohol Consumption
3	Health Care Access	14	Immunization
4	Sleep	15	Falls
5	Exercise	16	Seatbelt Use
6	Diabetes	17	Drinking and Driving
7	Oral Health	18	Women’s Health
8	Cardiovascular Disease Prevalence	19	Prostate Cancer Screening
9	Asthma	20	Colorectal Cancer Screening
10	Disability	21	HIV/AIDS
11	Tobacco Use	22	Emotional Support and Life Satisfaction
Optional BRFSS Modules			
1	Pre-diabetes	14	Cancer Survivorship
2	Diabetes	15	Caregiver
3	Healthy Days (Symptoms)	16	Reactions to Race
4	Visual Impairment and Access to Eye Care	17	Anxiety and Depression
5	Excess Sun Exposure	18	Cognitive Impairment
6	Inadequate Sleep	19	Social Context
7	Family Planning	20	General Preparedness
8	Adult Asthma History	21	Veterans' Health
9	Arthritis Burden	22	Adverse Childhood Experience
10	High Risk/Health Care Worker	23	Random Child Selection
11	Shingles (Zostavax or ZOS)	24	Childhood Asthma Prevalence
12	Tetanus Diphtheria (Adults)	25	Childhood Immunization
13	Adult Human Papilloma Virus (HPV)	26	Child Human Papilloma Virus (HPV)

SOURCE: CDC, 2010.

At the global level, WHO routinely publishes selected risk factor data in its statistical reports, several of which are used to monitor progress toward the MDGs. WHO (2010) also provides specific definitions for these risk factors:

- Population with access to improved drinking water sources (MDG 7)
- Population using improved sanitation (MDG 7)
- Population using solid fuels
- Low birth weight for a newborn (<2,500 grams)
- Infants exclusively breast-fed for the first six months of life
- Children aged <5 years who are stunted
- Children aged <5 years who are underweight (MDG 1)
- Children aged <5 who are overweight
- Adults aged ≥ 15 years who are obese
- Alcohol consumption among adults aged ≥ 15 years
- Prevalence of smoking any tobacco product among adults aged ≥ 15 years
- Prevalence of current tobacco use among adolescents aged 13–15 years
- Prevalence of condom use by adults aged 15–49 years at last high-risk sex (MDG 6)
- Population aged 15–24 years with comprehensive correct knowledge of HIV/AIDS (MDG 6).

Risk factor surveillance data are also analyzed using the principles of epidemiology. These analyses answer important questions that policymakers and health administrators at all levels need in order to design and deliver health services to their populations. Some of these questions are as follows:

- What are the most important risk factors for the population of the health facility, sub-district, district, governorate, and/or Kurdistan Region? What are the trends over time?
- Where, when, and in whom are these risk factors? What are the trends over time? Are there any unusual patterns in terms of location, time, or person?
- Are policy/program/health service interventions making an impact on risk factors? Is the impact evenly distributed across locations and persons targeted?

Response Mechanisms and Procedures. Information is only useful if it is used. A well-designed surveillance system can detect acute outbreaks and longer-term anomalous trends, both of which warrant investigation and appropriate intervention measures. The basis for such action is strong, applied epidemiology capability. The governorate health departments respond to cases and events to investigate their causes, but it is unclear whether they might benefit from more rigorous and systematic training in applied epidemiology.

For example, CDC has a long-standing applied epidemiology training program—the Epidemic Intelligence Service (EIS)—which, since 1951, has trained over 3,000 epidemiologists who have subsequently served in federal, state, and local health departments; many foreign professionals have also been trained and have likewise served in important positions in the ministry of health in their own countries. Since 1980, CDC has helped establish Field Epidemiology Training Programs, modeled after its own EIS program, that are now operating independently in 37 countries, and it continues to support 15 programs covering 29 countries. In all, approximately 2,100 field epidemiologists have graduated from these programs, many

of whom have assumed leadership positions in their health ministries. In 1997, the Training Programs in Epidemiology and Public Health Interventions Network was organized as a professional network of epidemiology training programs. All of these programs offer competency-based training with classroom instruction in epidemiology and mentored on-the-job training of one to two years that includes practical field experiences. For example, CDC (2006) published *Field Epidemiology Training Program Standard Core Curriculum*, which also presents the competencies to be achieved by the end of training. If the KRG were to develop such a program, it could adopt or adapt the core and supporting competencies that CDC uses.

Core competency: Use science to improve public health

Supporting competencies

- Epidemiological methods
 1. Use epidemiology practices to conduct studies that improve public health program delivery
 2. Respond to outbreaks
- Biostatistics
 3. Analyze epidemiological data using appropriate statistical methods
- Public health surveillance
 4. Manage a public health surveillance system
- Laboratory and biosafety
 5. Use laboratory resources to support epidemiological activities
- Communication
 6. Develop written public health communications
 7. Develop and deliver oral public health communications
- Computer technology
 8. Use computers for specific applications relevant to public health practices
- Management and leadership
 9. Manage a field project
 10. Manage staff and resources
 11. Be an effective team leader and member
 12. Manage personal responsibilities
- Prevention effectiveness
 13. Apply simple tools for economic analysis
- Teaching and mentoring
 14. Train public health professionals
 15. Mentor public health professionals
- Epidemiology of priority diseases and injuries
 16. Evaluate and prioritize the importance of diseases or conditions of national public health concern.

Health Information System Indicators

USAID has developed a set of indicators to assess and monitor the health information system processes and health status, as presented in Table 7.4 (Islam, 2007). We believe that these are relevant to Kurdistan to monitor improvements to the surveillance systems and MISs described in more detail in the following sections.

Table 7.4
Selected Health Information System Process Indicators

Indicator	Comment
Resources, Policies, and Regulation	
Health information system is included within budgets at central, regional, and/or district level	The level of support the government provides to information system functioning is a determinant of its quality and sustainability.
Policies, laws, and regulations mandate reporting of selected indicators by public and private health facilities and/or providers	A regulatory framework for generation and use of health information enables the mechanisms to ensure data availability from relevant providers.
Clear evidence is shown that health information is used in planning and resource allocation	Examples include use of such information in planning, reforms, program management, and program design.
Indicators are reviewed systematically for their utility in planning, management, and evaluation and modified as needed	Indicators should be viewed as dynamic within information systems that must continue to meet current needs.
Data Collection and Quality	
Percentage of districts represented in reported information	Number of reports received at a given level (e.g., central, provincial) received from the districts over past six months / total number of expected reports Should be at least 95% Incomplete data do not permit adequate decisionmaking and would thus reflect a weakness in the information system.
Percentage of private health facility data included in reported data	Inclusion of private facilities in the health information systems is important if the private sector provides a considerable amount of services.
Availability of clear standards and guidelines for data collection and reporting procedures	Clear instructions contribute to increased data quality.
Number of reports a typical health facility submits monthly, quarterly, or annually	Health workers may be overburdened with data collection and reporting requirements, which can negatively affect the quality of the health information system; a higher number of required reports may place considerable burden on staff.
Procedures for verifying data quality (accuracy, completeness, timeliness)	Can include data accuracy checklists prior to report acceptance, internal data quality audit visits.
Availability of national summary report, which contains information, analysis, and interpretation	Such reports offer an opportunity to bring together results of different information subsystems and integrate their analysis and interpretation.
Data Analysis	
Availability at each level of a sufficient number of qualified personnel and infrastructure to compile and analyze information	Consider percentage of designated posts that are filled and the qualifications of those filling these posts. Identify the type of personnel performing the different tasks for the analysis as well as their skill level. Note the amount of time devoted to data analysis.
Evidence of ongoing training activities related to information system data collection and analysis	Training is essential to maintain analytical skills of personnel.
Presence of written guidelines specifying the methods and products of data analysis	Clear instructions are essential for data analysis.

Table 7.4—Continued

Indicator	Comment
Data derived from different health programs are grouped together for reporting purposes, and these documents are widely available	Integrated information systems are less expensive to maintain and they allow and encourage analysts and decisions makers to explore links between indicators in various programs (e.g., measles cases and measles vaccination). Flow charts of various information system elements can demonstrate where data can be integrated and grouped.
Availability of appropriate denominators for analysis	Examples include population by age groups, by facility catchment area, by sex, by number of pregnant women. Accurate denominators are critical for data analysis.
Availability of timely data analysis, as defined by stakeholders and users	This applies to district, provincial, and central levels.
Use of Information for Management, Policy, and Accountability	
Use of data for planning, budgeting, or fund-raising activities in the past year	Indicator gives an idea of the level of commitment of the government as well as an indication of the mechanisms in place to use the data produced by the health information system.
Data or results of analyses are fed back to data providers to inform them of program performance	Feedback (written or oral) is the simplest form of data use, which is indicative of information management practices at various levels.

SOURCE: Adapted from Islam, 2007.

Recommended Specific Interventions

The interventions below describe steps to improve surveillance systems and management information systems (MISs). Several *overarching principles* apply to both types of systems:

- Collect only data that will be used, and use all data that are collected.
- Standardize routine data collection across the three governorates.
- Streamline data processes to the extent possible, ultimately aiming for electronic collection, transmission, processing, and analysis.
- Minimize the reporting of aggregated data to the extent possible, thereby enabling more-robust analyses of health outcomes and health service data for management and response at all levels.
- Ensure adequate numbers of staff with the required competencies (e.g., for entering, processing, or analyzing the data).
- Use internationally accepted classification schemes (e.g., International Classification of Diseases-10 [ICD-10] diagnostic coding—note that the Kurdistan Regional Statistics Office’s (KRSO’s) planned transition to ICD-10 coding is already under way), indicators (e.g., WHO indicators), and benchmarks (e.g., standards from WHO, IOM, International Standards Organization, and Joint Commission International) to the extent relevant to the KRG setting.
- Phase in new technologies over time and pilot-test interventions before scaling up (“demonstration projects” before full implementation across the KRG).
- Take advantage of specific exemplary practices already in place in individual governorates and districts, and consider ways to extend these more broadly.

The activities described below for both surveillance systems and MISs encompass five main conceptual steps:

- Review and finalize specific data needs
 - For example, describe the goals, basic design, and data elements for a given data system
- Develop and implement protocols for data collection and reporting
 - For example: sources of information; specific information to be reported, including raw or aggregated data; frequency and destination of reporting; and training or hiring of staff for data collection or entry
- Develop and implement protocols for data processing, analysis, and presentation
 - For example: where and how raw or aggregated data will be processed; how and by whom data will be analyzed at each relevant level (facility, district, governorate, or central KRG); how data will be presented; and training or hiring staff for data processing, analysis, and presentation
- Develop and implement protocols for timely data dissemination
 - For example: determination of best format/presentation, modality, and frequency for sharing analyses with relevant stakeholders (e.g., at central, governorate, district, and facility levels); regular error checking and auditing beginning at the most local level; and provision of constructive feedback to those reporting data to enable them to better manage at their respective level of responsibility (e.g., facility, district)
- Use information for response, management, and policy purposes
 - For example: to trigger an epidemiological response to an acute outbreak or an investigation of a longer-term anomaly and to determine priorities for interventions targeting specific health conditions, locations, or population subgroups.

The sections below describe the proposed interventions.

Organize the Coordination and Oversight of Data Initiatives

Because some of the proposed systems or system elements will be different or even completely new to many managers across the Kurdistan Region, it will be important to draw from experience and reach consensus in developing the systems and also to oversee their implementation. To this end, we recommend one general intervention (labeled “GEN”):

GEN-1: Establish a health data committee to oversee development and implementation of the proposed information systems

- The health data committee could be the same executive medical committee proposed in ED-1, a subcommittee of the committee, or an entirely different group. The group should include relevant authorities from the central level (e.g., KRSO, MOH-Planning), DGs of Health from all three governorates, and perhaps at least one DMO per governorate, along with representation from statistical and any epidemiology office directors at regional and governorate levels.
- The group would be responsible for the following:
 - Reaching consensus on development of content, format, frequency, and other parameters related to the surveillance systems and MISs described below
 - Overseeing implementation of these systems and monitoring progress
 - Recommending adjustments to the system as needed

- The group could meet quarterly and include a review of data for high-level auditing purposes.

In the following sections, we suggest detailed activities to meet the two proposed goals—to enhance surveillance and response systems and to develop and implement MISs. We also provide illustrative examples of data collection forms and data tables and graphs.

Goal 7.1: Develop and Implement Management Information Systems

The two MISs described below (labeled “MIS”) will enable managers at facility/clinic, district, governorate, and central KRG levels to understand and manage the health resources and services at their respective levels:

- Clinic resources and services
- Clinic utilization.

MIS-1: Monitor clinic resources and services

- Review and finalize data needs related to individual clinics
 - Identifying information
 - Date of report; name of clinic; category (e.g., PHC branch, PHC main center, major center, or on-call); location—GPS coordinates; catchment area (e.g., name of village, town, or city); and size (number) of the population served
 - Staffing
 - Number of each type of key staff, for example, doctors, dentists, nurses (by level), pharmacists, laboratory technicians, and medical and dental assistants
 - Equipment, including current operational status
 - X-ray (for dental and medical services)
 - Laboratory equipment (e.g., microscope, centrifuge)
 - Services provided
 - Preventive: child growth monitoring, vaccination, ORS (both treatment on-site and treatment not on-site but packet given to parent), and any others as relevant to the KRG
 - Prenatal
 - Medical: basic first aid, acute illnesses, injuries, and chronic illness management
 - Dental
 - Laboratory
- Develop and implement a protocol for data collection and reporting
 - Standardize data collection forms (see Figure 7.2 for sample reporting form)
 - Data to be completed either by the DMO during a supervisory visit or by the clinic manager (with review by the DMO)
 - DMOs to oversee data collection from all public sector clinics in the district and report to governorate health directorate
 - Data to be collected immediately for all clinics (e.g., as of January 2011) and updated each quarter, semester (six months), or year as determined by KRG authorities

Figure 7.2
Sample MIS Form for Monitoring Clinic Resources and Services

Date of report:	Name of person submitting report:		
Name of clinic:	Clinic ID/code #:		
Location of clinic: Governorate:	District:	Sub-district:	
GPS coordinates:			
Population in catchment area (size of the population served):			
Type of clinic: ___ PHC branch ___ PHC center ___ Major health center			
___ Hospital OPD ___ Other (Specify: _____)			
<u>Staffing: Total # = _____</u>			
- # Doctors – Total: _____ (# permanent: _____ # rotating: _____)			
# GP: ___ # Ob/Gyn: ___ # Int Med: ___ # Ped: ___ # Surgeon: ___ # Other: _____			
- # Dentists: _____			
- # Nurses – Total: ___ # Level 1: ___ # Level 2: ___ # Level 3: ___ # Level 4: _____			
- # Midwives: _____			
- # Pharmacists: _____			
- # Laboratorians: _____			
- # Medical and dental assistants: _____			
- # Managerial and other staff not included above: _____			
<u>Equipment (“X” for all that apply)</u>			
Dental suite (chair, drill, etc.) _____	Currently operational? Yes No		
X-ray (dental) _____	Currently operational? Yes No		
X-ray (medical) _____	Currently operational? Yes No		
Microscope _____	Currently operational? Yes No		
Other lab equipment (specify): _____	Currently operational? Yes No		
<u>Services provided (“X” for all that apply)</u>			
- Preventive: Child growth monitoring _____	Vaccination _____	Health educ _____	
ORS treatment on site _____	ORS – take home only _____		
- Prenatal: Uncomplicated antenatal care _____	Complicated antenatal care _____		
Maternity (birth) services _____			
- Medical Minor injuries – cuts/abrasions _____	Minor injuries – fractures, sprains _____		
Acute illnesses _____	Chronic disease management _____		
- Dental : Basic dental services Yes No	Complex dental services Yes No		
- Laboratory : Clinic has lab? Yes No (<i>If yes: Check all tests performed on site</i>)			
Blood: ___ Hgb/Hct ___ WBC ___ ESR ___ Glucose ___ Malaria smear			
Urine: ___ WBC ___ Pregnancy			
Stool: ___ Ova/parasites	Water: ___ Fecal coliforms		

- Develop and implement a protocol for data processing, analysis, and presentation
 - Explore mechanisms to capture data efficiently (e.g., optical scanner, web-based data entry)
 - Update as needed to reflect changes
 - Display raw data in a simple line listing (e.g., in Excel or Access format; see Figure 7.3 for an illustrative example)
 - Use tables, graphs, and/or maps for specific data elements (see Figures 7.4–7.8 for illustrative examples)
- Develop and implement a protocol for timely dissemination and use of data
 - DMOs to review clinic characteristics and standards for each level of facility, looking to answer questions such as, “Is each clinic staffed and able to provide the services it is supposed to provide?”
 - Updated reports to be sent to Governorate General Directorate for Health and on to KRG MOH at least twice yearly, and included in annual reports from governorate and central KRG MOH.

Figure 7.3
Illustrative Line Listing of Clinic Resources and Services

Distribution of Health Facilities and PHC Services in Kurdistan, by Governorate, District, and Subdistrict

Governorate, District and Subdistrict	Population (Census Frame 2010)	SMC's and PHC's (health centers and branches)																	
		Identification and location		Avg # visits / day	Staffing					Services offered / available									
		Type	Name		# doctors	# nurses	# dentists	# pham	# total	ANC	Grth mon	EPI (vax)	ORS	Lab	Rad	Dental			
ERBIL (MOH-GD)	1,713,461	PHC: 93 main (health centers) + 147 branch = 244 total PHC																	
1 Erbil Center	1,471,242	# PHCs: 51 (28 HC, 23 Br)																	
Erbil city center	678,261	HC	Azadi PHC										X	X	X	X	X	X	X
		HC	Tairawa PHC										X	X	X	X	X	X	X
		HC	Dr. Mohamad Shikho PHC										X	X	X	X	X	X	X
		HC	Zhian PHC										X	X	X	X	X	X	X
		HC	Sarwaran PHC										X	X	X	X	X	X	X
		HC	Sultan Muzaffar PHC										X	X	X	X	X	X	X
		HC	Shahid Mohamad Bajalan PHC										X	X	X	X	X	X	X
		HC	Shahid Nafee Akraee PHC										X	X	X	X	X	X	X
		HC	Shahid Najdi Haidar PHC										X	X	X	X	X	X	X
		HC	Shahidan PHC										X	X	X	X	X	X	X
		HC	Shahid Nazdar Bamarni PHC										X	X	X	X	X	X	X
		HC	Kurdistan PHC										X	X	X	X	X	X	X
		HC	Mala Afandi PHC										X	X	X	X	X	X	X
		HC	Nawroz PHC										X	X	X	X	X	X	X
		Br	Asaish PHC																X
		Br	Kawa PHC																X
		Br	Hawkary PHC																X
Ainkawa	22,021	HC	Ainkawa PHC										X	X	X	X	X	X	X
Bahirka	45,083	HC	Komalgai Bahirka PHC										X	X	X	X	X	X	X
		HC	Baranaty Bahirka PHC										X	X	X	X	X	X	X
		Br	Jazhnikan PHC										X	X	X	X	X	X	X
		HC	Shakholan PHC										X	X	X	X	X	X	X
		Br	Jazhnikan Afandi PHC										X	X	X	X	X	X	X
		HC	Shahid Khasraw Gaznaee PHC										X	X	X	X	X	X	X
		Br	Daraban PHC										X	X	X	X	X	X	X
		Br	Qalachoghhan PHC										X	X	X	X	X	X	X
Shamamik	47,616	HC	Shamamik PHC										X	X	X	X	X	X	X
		HC	Tarjan PHC										X	X	X	X	X	X	X
		Br	Girdazaban PHC										X	X	X	X	X	X	X
		Br	Timar PHC										X	X	X	X	X	X	X
		Br	Quritani Jukii PHC										X	X	X	X	X	X	X
		Br	Arab Kand PHC										X	X	X	X	X	X	X
		Br	Shekhan PHC										X	X	X	X	X	X	X
		HC	Sarkarez PHC										X	X	X	X	X	X	X
		Br?	Toraq PHC										X	X	X	X	X	X	X

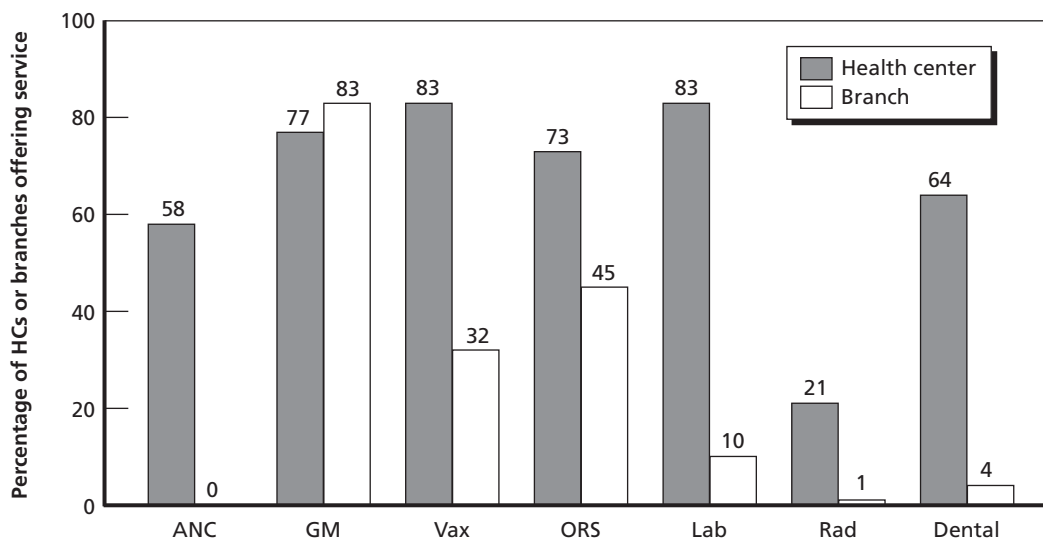
Figure 7.4
Illustrative MIS Table: PHC Distribution and Population Coverage

Indicator	Kurdistan	Erbil	Duhok	Sulaimania
Total # PHCs (2009)*	767	244	128	399**
Population per PHC	6,116	7,022	9,193	4,513
# Health centers (HC)	233	93	63	43
# Branches / dispensaries	522	147	65	164
% of PHCs = HC	31%	38%	49%	20%
# sub-districts	136	35***	29	61
# sub-districts w/ ≥ 1 HC	?	26	?	?
% sub-districts w/ ≥ 1 HC	?	74%	?	?

* Different sources provide different figures for 2009, with variability mostly due to differences for Sulaimania
 -MOH DG for Planning, from May 2010: Total 767, Erbil 240, Sulaimania 399, Duhok 128
 - KRSO/DIM profile, page 19: Total 520, Erbil 244, Sulaimania 146, Duhok 130
 ** Total is MOH DG for Planning figure, but breakdown of HC and Branches is from earlier report
 *** Excludes 11 sub-districts in Koya and Makhmour

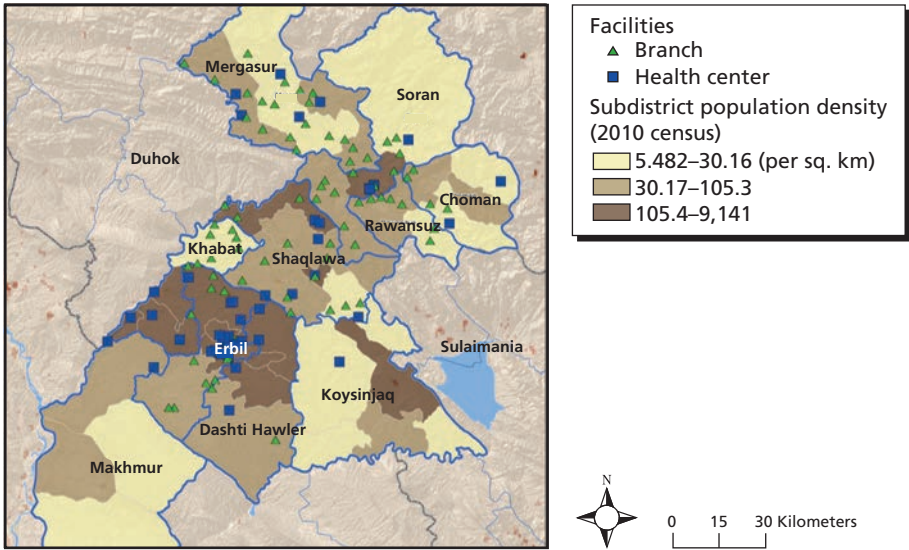
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Figure 7.5
Illustrative MIS Graph: PHC Services Offered



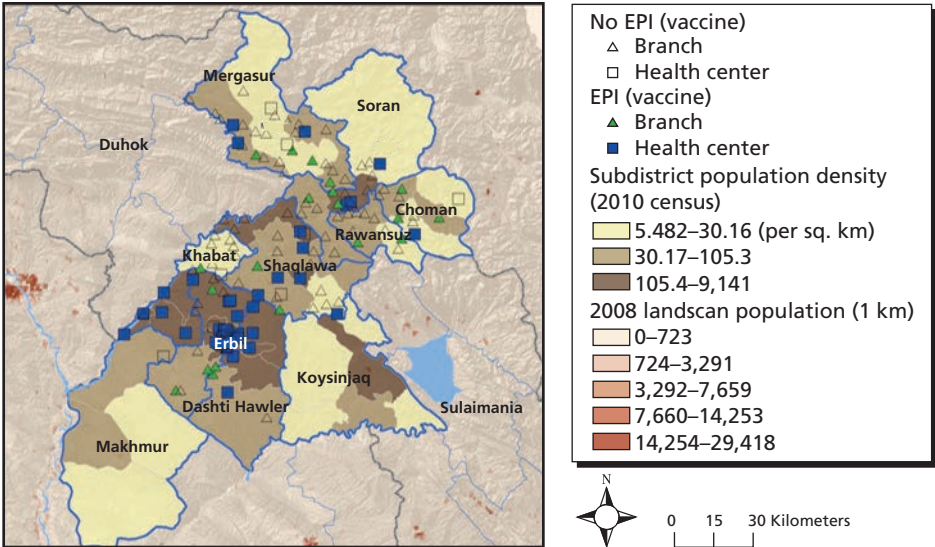
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Figure 7.6
Illustrative MIS Map: Location of Erbil PHCs



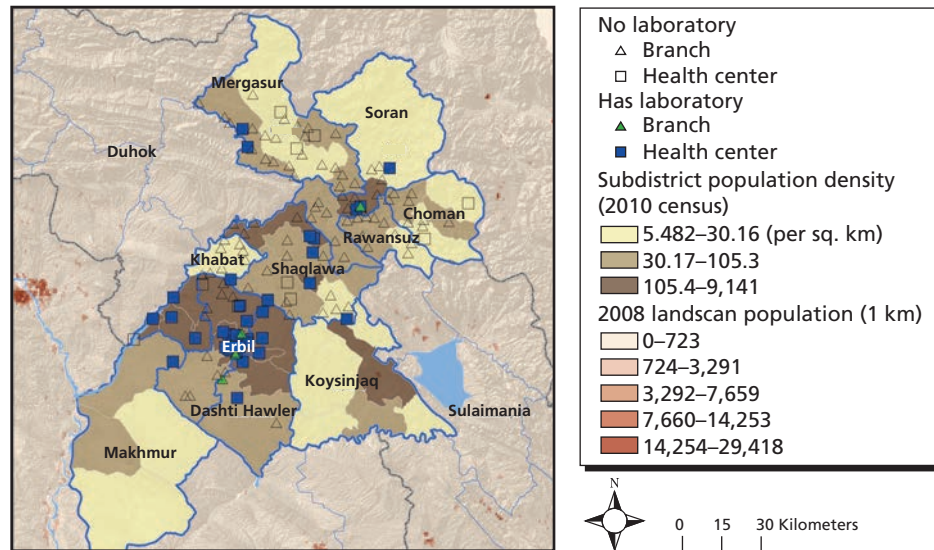
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Figure 7.7
Illustrative MIS Map: Location of Erbil PHCs Providing Vaccinations



RAND MG1148-7.7

Figure 7.8
Illustrative MIS Map: Location of Erbil PHCs with Laboratory



RAND MG1148-7.8

MIS-2: Monitor clinic utilization

- Review and finalize data needs for each clinic
 - Number of client visits per week (or month) for each specific service above
 - Number of medical referrals (including diagnosis/reason, where referred, and number returning for follow-up to referral care)
 - Number of dental referrals (including diagnosis/reason, where referred, and number returning for follow-up to referral care)
- Develop and implement a protocol for data collection and reporting
 - Standardize data collection forms (see Figure 7.9 for illustrative reporting form)
 - Data to be completed by clinic manager or other designated clinic staff
 - DMOs to review (audit) data weekly and (a) provide feedback as needed to clinics and/or (b) alert governorate health authorities as needed if any unusual patterns are detected at one or more facilities (e.g., unusual numbers of visits)
 - Utilization reporting to begin immediately for all clinics—branches, main centers, and major centers (e.g., as of January 2011)
 - Suggested reporting frequency: weekly from clinic to district medical office, and monthly from district medical office to the office of the DG of Health of each governorate and to the KRG
- Develop and implement a protocol for data processing, analysis, and presentation
 - Clinic utilization data to be processed and analyzed weekly or monthly based on reporting frequency (see Table 7.5 for illustrative report format); data can also be charted on a graph by week, month, quarter, and/or year for individual facilities, district totals, governorate totals, and totals across the Kurdistan Region (see Figure 7.10 for an illustrative example)

Figure 7.9
Sample MIS Form for Clinic Utilization

Clinic name:	Gov: E – D - S	District name:		
Type of facility: PHC ctr – PHC branch – [etc.]	Reporting for period (DD/MM/YY) to (DD/MM/YY)			
Name of person submitting report:	Date report submitted:			
Service	Provide this service?		Number of visits/encounters	
	Yes	No	Current period	Cumulative year to date
Preventive Services				
Child growth monitoring				
Vaccination				
ORS – on site				
ORS – take home only				
Health education				
Clinical Services				
Prenatal care				
Acute medical care				
Chronic medical disease management				
Dental care				
Referrals OUT TO specialty care				
- Medical				
- Dental				
Laboratory Services				
Stool examinations				
Urine examinations				
- WBC				
- Pregnancy				
Blood examinations				
- Hgb/Hct				
- WBC				
- ESR				
- Glucose				
- Malaria smears				
Water samples tested				
Radiology Services				
Dental				
Medical				

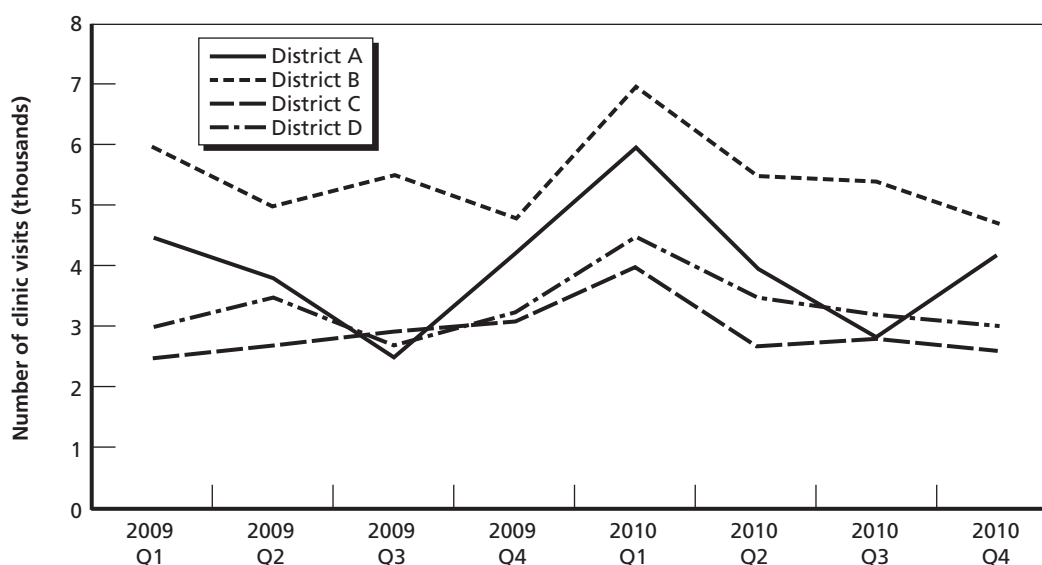
RAND MG1148-7.9

- Develop and implement a protocol for timely dissemination and use of data
 - DMOs to review clinic utilization and pharmacy management reports and compare against clinic characteristics and standards for each level of facility, looking to answer such questions as the following:
 - Is each clinic providing all the services it is supposed to provide?
 - Is drug usage consistent with the medical conditions reported?
 - If the answer to either question above is no, what remedial actions should be taken?

Table 7.5
Sample MIS Table for Clinic Utilization

	Kurdistan	Erbil	Duhok	Sulaimania
Population (RAND estimate 2008)	4,470,090	1,639,138	1,096,435	1,734,516
Outpatient Service Utilization (Source: Unpublished data from MOH, 2008)				
PHC visits	7,268,004	2,195,865	2,698,181	2,373,958
Public health clinic visits	1,058,913	258,150	181,323	619,440
Health insurance clinic visits	117,359	40,761	34,265	42,333
Specialty clinic visits	144,131	44,598	34,212	65,321
Primary outpatient visits (total)	8,444,276	2,494,776	2,913,769	3,035,731
Specialty outpatient visits (total)	144,131	44,598	34,212	65,321

Figure 7.10
Sample MIS Graph for Clinic Utilization



RAND MG1148-7.10

Goal 7.2: Enhance Surveillance and Response Systems

The proposed surveillance systems aim to monitor mortality and morbidity outcomes and selected health risk factors. We offer eleven specific proposed interventions to enhance surveillance and response systems (labeled “SURV”):

SURV-1: Conduct a systematic assessment of current surveillance systems across the Kurdistan Region, from the local level to the regional level

- Use or adapt an established framework for assessing surveillance systems, such as that from CDC (2001, 2004)
 - Describe the purpose and goals of the system, content, sources of data, data flow, and timing and assess the system against specified attributes

- CDC’s attributes: simplicity, flexibility, data quality, acceptability, sensitivity, predictive value positive, representativeness, timeliness, and stability
- Moore et al. (2008) simplified to the following attributes: coverage (includes representativeness and sensitivity), quality (includes data quality and sensitivity), and timeliness
- Assess the number, relevant capabilities/competencies, and potential hiring and training needs of staff—at district, governorate, and central levels, as appropriate—for entering, processing, and analyzing surveillance data.

SURV-2: Hire and/or train personnel who will be responsible for specific surveillance functions

- Address needs at all appropriate levels within the KRG (central, governorate, district)
- Train or retrain existing staff to meet the needs identified in the assessment, likely in the following areas:
 - Data collection and entry, data reporting
 - Data processing
 - Data analysis, interpretation, and presentation
 - Epidemiological investigation
- Ensure sufficient staff numbers with the needed relevant skills and hire new staff as needed to fill gaps
- Establish a new administrative track for health statistics and incorporate curriculum into administrative college(s)
 - Establish different levels of training and certification (e.g., from data entry to data processing, analysis, presentation, and use)
 - Such personnel would support surveillance data functions at all levels of a comprehensive health information infrastructure/system.

SURV-3: Standardize the diseases and conditions to be included in routine surveillance

- Examples include notifiable infectious diseases, selected chronic diseases, RTAs, and other emergency conditions
- Draw on diseases and conditions within the current surveillance systems and standardize them according to the consensus process
- Review and finalize mortality data needs
 - We assume that *mortality* reporting will be comprehensive—that is, all deaths are reported
 - Review information recorded on death certificates and work with authorities responsible for vital records to revise if/as needed (e.g., to include sufficient details or to standardize across governorates)
 - Mortality data to be processed into the following indicators (see Table 7.6): crude death rate, life expectancy at birth, healthy life expectancy at birth, neonatal mortality, infant mortality, child mortality (0–4 years), maternal mortality, adult mortality, and cause-specific mortality (for selected causes or all causes; preferably by appropriately grouped ICD codes)

Table 7.6
Summary of Suggested Surveillance Indicators for Mortality

Data Item/Concept	Source	Frequency	Current Int'l Indicator		
			MDG	WHO	Other
Crude death rate	Vital records, census	Annual			x
Life expectancy at birth (male, female, total)	Vital records, household surveys, census			x	
Healthy life expectancy at birth (male, female, total)	Special studies			x	
Neonatal mortality (0–28 days)	Vital records, health service records, household surveys, census	Annual		x	
Infant mortality (0–11 months)			MDG-4	x	
Child mortality (0–4 years)			MDG-4	x	
Maternal mortality			MDG-5		
Adult mortality				x	
Age-standardized mortality by broad group				x	
Cause-specific mortality		Monthly to Annual	MDG-6 (TB, malaria)	x (<5 yrs. only)	

- Review and finalize notifiable disease data needs
 - Notifiable disease reporting means that all cases are to be reported—from all clinical providers. This includes both morbidity and mortality.
 - This list comprises selected diseases and conditions (e.g., in the United States the Council for State and Territorial Epidemiologists has agreed on 62 nationally notifiable communicable diseases and 5 nationally notifiable noncommunicable diseases or conditions for 2010—these are reviewed at least annually and updated as needed) (http://www.cdc.gov/ncphi/diss/nndss/phs/files/NNDSS_event_code_list_January_2010.pdf).
 - The KRG list should be consistent with notifiable disease requirements of the Baghdad government.
 - The KRG list should also include all reportable diseases specified in the WHO International Health Regulations of 2005: smallpox, poliomyelitis due to wild-type poliovirus, human influenza caused by a new subtype, and severe acute respiratory syndrome (SARS).
- Review and finalize other inpatient and outpatient morbidity data needs
 - Determine which acute and chronic conditions and injuries in outpatients should be reported (all or only selected conditions? If selected conditions, which ones?)
 - Morbidity indicators from the RAND Data Project spreadsheet (Table 7.7)
 - Incidence of infectious diseases: tuberculosis, diarrheal diseases, lower respiratory tract infections, measles, tetanus, pertussis, diphtheria, leishmaniasis, meningitis, and malaria

Table 7.7
Summary of Suggested Surveillance Indicators for Morbidity

Data Item/Concept	Source	Frequency	Current Int'l Indicator		
			MDG	WHO	Other
Incidence rates (new cases in inpatients or outpatients)					
HIV/AIDS prevalence	Special surveys	Annual	MDG-6	x	
TB prevalence		Annual	MDG-6	x	
	Health facilities (clinics and hospital outpatient departments)	Weekly			
TB incidence			MDG-6	x	
Diarrhoeal diseases					
Upper respiratory tract infections (including otitis)					
Lower respiratory tract infections					
Measles				x	
Tetanus				x	
Pertussis				x	
Diphtheria				x	
Leishmaniasis					
Meningitis				x	
Malaria				x	
Asthma in adults ≥ 18 yrs.					
	Health facilities (clinics and hospital outpatient departments)	Monthly			
Asthma in children < 18 yrs.					
Diabetes					
Hypertension					
Minor injuries: cuts, abrasions					
Minor injuries: fractures, sprains					
Incidence based on hospitalizations (new cases in inpatients)					
	Hospitals (including emergency centers and emergency departments)	Monthly			
Acute myocardial infarction					
Cerebrovascular accident (stroke)					
Congestive heart failure					
Asthma in adults ≥ 18 yrs.					
Asthma in children < 18 yrs.					
Diabetes					
Cancers (each specific type)					
Injuries: RTAs, poisoning, falls, fires, drowning, other, violence					

- In addition, for outpatient morbidity reporting: acute upper respiratory tract infections (including otitis)
- Incidence of noncommunicable diseases—for hospitalized patients: acute myocardial infarction, cerebrovascular accident (stroke), congestive heart failure, asthma (adults ≥ 18 years of age, children < 18 years of age), diabetes, and cancers (by specific type)
- Incidence of injuries—for hospitalized patients: RTAs, poisoning, falls, fires, drowning, other unintentional injuries, and intentional injuries (e.g., from violence)
- Incidence of noncommunicable diseases—for outpatients: asthma (adults ≥ 18 years of age, children < 18 years of age), diabetes, and hypertension
- Incidence of injuries—for outpatients: minor fractures or sprains, minor cuts or abrasions, poisoning, falls, fires, other unintentional injuries, and intentional injuries (e.g., from violence)
- Develop and disseminate case definitions to be used for each reportable disease or condition to enhance efficiency as well as comparability across locations and over time
 - Decide on degree of detail for diagnostic reporting and coding scheme to be used for inpatient morbidity reporting (e.g., whether to include all individual ICD-10 codes and aggregation of these codes, or just selected [but not all] clinical diagnoses for hospitalized patients)
 - Establish case definitions for outpatient morbidity reporting that are based on the clinician's discharge diagnosis (and not on the patient's chief presenting complaint)
 - Consider whether case definitions should be the same for all outpatient morbidity reporting (including PHCs) or whether they should be different for hospital outpatient departments
 - Determine appropriate coding scheme to be used for reporting purposes. ICD-10 coding may or may not be feasible for hospital outpatient departments, and it is almost surely not practical for clinics.

SURV-4: Standardize the sources of surveillance information

- Ambulatory clinics and hospital inpatients are traditional sources of surveillance information
- Newer sources used in other countries can also be considered (e.g., EDs, schools [absenteeism], and prisons)
- Determine what will be reported and whether it will be reported from all centers or from just a sample of centers (if current reporting is from all centers and it is feasible, this should be retained—it exceeds the reach of surveillance in other countries such as the United States, where surveillance is based on limited sampling)
- Determine the most appropriate original sources of mortality data (e.g., governorate health directorates, each of which certifies deaths but in ways that vary across the region), for example, from both hospitals and emergency centers as well as death certificates
 - Potentially separate analyses from both sources, since deaths reported from clinical facilities will be a subset (i.e., duplications) of deaths reflected on death certificates, assuming that a death certificate is issued for all deaths
- Note that for notifiable diseases, all clinical facilities and providers must report all cases

- For inpatient morbidity reporting, we suggest that all hospitals be included (rather than only a sample of hospitals), beginning with reporting from public hospitals and then adding reporting from private hospitals
- For outpatient morbidity reporting, sequencing of implementation may be desirable, for example, based on feasibility and desirability of data
 - Begin with hospital outpatient departments
 - Follow with PHCs—potentially phasing in main health centers first and then branches
 - Follow with private sector facilities and practitioners to the extent desired for public policy and management purposes.

SURV-5: Standardize data collection forms (for indicator-based surveillance)

- Draw on current information collected at district, governorate, and regional levels to determine the most appropriate set of standardized data to be collected through surveillance
- Data collection may be paper-based initially for some governorates or facilities
 - All data should be entered electronically at the hospital level and reported to the governorate DG's office in electronic format
 - All data should eventually be entered electronically at the clinic level
 - Ultimately seek to capture clinical information electronically as patient is being seen (i.e., an entirely electronic patient record), perhaps initially for hospital inpatients and outpatients and eventually for all PHCs
- Determine whether all cases seen at a facility should be included in reports (we recommend that all cases be included, even if some are reported as having “other” diagnoses)
- Develop standardized data collection forms
 - Develop separate forms for ambulatory and hospitalized patients and for any new data sources as appropriate
 - For both inpatients and outpatients, decide on characteristics to be reported and degree of aggregation, which may be equally as detailed or less detailed for inpatients and outpatients
- Design data collection forms with potential action in mind
 - Consider information for epidemiological investigation purposes—age, gender, address (at least to subdistrict level), date of onset, date seen, first or follow-up visit for the problem, and discharge diagnosis
 - Determine case-specific characteristics to be reported for notifiable diseases, for which reporting is typically the most detailed (e.g., age, gender, date of onset, residential address, clinical signs, diagnostic test results, and classification into suspected or confirmed case)
 - Consider information that can be used for quality management purposes: add diagnostic tests, treatments provided or prescribed, and discharge status
- Determine appropriate data aggregation or disaggregation for reporting purposes (e.g., aggregation by gender, defined age groups, subdistrict, or date [by week, month, etc.]), but specific diseases to be reported separately
 - Notifiable disease information is typically quite detailed for each individual case (i.e., not collected or reported in aggregate fashion).
 - Decide on characteristics to be reported and degree of aggregation for routine outpatient reporting, which is typically less detailed than inpatient or notifiable disease

- reporting, but must be sufficient for action and management purposes at all levels, from facility to central KRG.
- For example, Duhok hospitals report detailed diagnoses by gender for five specified age groups. Note that the lack of detailed geographical data (beyond the facility reporting the data) and limited documentation of residential addresses hinder the ability to detect and investigate geographic clusters of acute or chronic diseases; specification of village of residence may be all that is practically available over the near term and would be sufficient for public health purposes.
 - KRG health policymakers should decide whether the level of aggregation from hospital outpatient departments should be the same as for PHCs and other free-standing clinics.
 - Disseminate forms and train staff to use them.

SURV-6: Standardize reporting processes from the local level to the regional level

- Hire and/or train personnel who will be responsible for sending and receiving surveillance reports at all levels—data entry including appropriate coding of diagnoses, data reporting format, and where and when to send reports
- Seek fully web-based reporting within a specified number of years (e.g., within two to five years)
- Determine appropriate frequency for reporting and where reports should be sent
 - Can be different for different diseases (e.g., acute, chronic) and/or for different types of facilities or services (e.g., inpatient, outpatient, hospital versus free-standing outpatient facility)
 - Some notifiable diseases must be reported immediately rather than at the frequency of routine reports
 - Potential requirements for reporting frequency:
 - Hospital inpatient and outpatient morbidity to be reported *either weekly or monthly* to the DG of Health
 - Clinic morbidity (from PHCs and other clinics) to be reported *weekly* from clinics to district medical office
 - District morbidity, compiled from clinic reports, to be reported *monthly* to governorate
 - Governorate reports, compiled from district reports, to be reported to central KRG level *monthly, within one week after receipt by governorate*
 - Sufficiently unusual events should be reported more frequently by outpatient facility to the DMO or governorate, as appropriate, without waiting for routine reports
- Hospitals throughout the Kurdistan Region are already transitioning to use of standardized diagnostic categories, based on case definitions (KRSO's planned transition from ICD-9 to ICD-10 coding system); when feasible (e.g., within five years), phase in use of standardized coding for patients seen at ambulatory centers
- Monitor reporting compliance and quality—develop processes for auditing and feedback at appropriate levels (e.g., by DMO from clinics and by General Health Directorates in the three governorates) for reporting from districts.

SURV-7: Streamline data processing at governorate and regional levels

- Hire and/or train personnel who will be responsible for processing at all levels, including compilation of data from different reporting sites
- Use electronic or web-based processing at the most peripheral level possible and target full electronic/web processing at district level within six years (e.g., the KRG reported it was about to institute web-based reporting of management information, at least from Duhok, in late 2010)
- Establish protocols for data entry at hospital level: As soon as possible, phase out any remaining paper reports extracted from paper records and enter data electronically at desired level of detail and disaggregation for specified reporting period (e.g., week or month). Potential timetable:
 - Use electronic format beginning *immediately* (2011) for entering or transmitting all hospital reports from district to governorate
 - Use electronic format beginning *immediately* (2011) for entering or transmitting all hospital reporting from governorate to the KRG
 - Use electronic format beginning *within two years* (by 2013) for all hospital inpatient reporting
- Establish protocols for data entry at outpatient facility level (hospital outpatient departments, PHCs): As soon as possible, phase out paper reports extracted from clinic log books (which tend to get reported in overly aggregated form) and enter data electronically at desired level of detail and disaggregation for specified reporting period (e.g., week or month). Potential timetable:
 - Use electronic format beginning *immediately* (2011) for all ambulatory care reports from district to governorate
 - Use electronic format beginning *immediately* (2011) for all ambulatory care reports from governorate to the KRG
 - Use electronic format beginning *within two years* (by 2013) for all hospital outpatient reporting
 - Use electronic format beginning *within four years* (by 2015) for all PHCs
 - Use electronic format beginning *within six years* (by 2017) for all PHC branches
- Both mortality and morbidity reports should be compiled by and analyzed at the governorate level and transmitted to the central KRG MOH. DGs of Health in the governorates should provide selected relevant data to DMOs and hospital authorities regarding observed anomalies that might warrant investigation or quality improvement
- Develop standardized databases for compiling data from district to governorate and regional levels—use appropriate software (or program existing software as needed) to compile the following for each reporting period:
 - Mortality surveillance data
 - Notifiable disease surveillance data (note that public health actions may be taken on immediate notification of such diseases)
 - Inpatient morbidity surveillance data (note that since ICD-10 coding schemes are recommended for hospital inpatient morbidity, such analyses will almost surely be different from morbidity reporting from hospital outpatient departments and/or clinics)
 - Outpatient morbidity surveillance

- Develop and implement methods to error-check (audit) mortality and morbidity data reported from hospitals and clinics
 - For notifiable diseases: DMO to communicate immediately with the responsible manager or clinician at the facility reporting the case
 - For inpatient morbidity data: Governorate health directorate to communicate with the responsible manager or clinicians at hospital with regard to any unusual data patterns (which may be either real or due to reporting errors)
 - For outpatient morbidity data from hospital outpatient departments and PHCs: Governorate health directorate to communicate with the responsible manager or clinician at hospital with regard to any unusual data patterns (which may be either real or due to reporting errors), and either the DMO or governorate level to do likewise for PHCs and other clinics
 - Examine, adapt, and expand to other governorates the experiences from Duhok in data auditing and constructive feedback—in this instance, from governorate health directorate to hospital manager.

SURV-8: Develop and disseminate standardized analyses for surveillance information at all appropriate levels (district, governorate, region)

- Hire and/or train personnel who will be responsible for data analysis, including creation and interpretation of data tables and graphs, and epidemiological and statistical analyses
 - Qualifications include applied epidemiological methods specific to surveillance and presentation of data
- Assign specific staff to analyze and interpret surveillance reports to detect any unusual patterns/events and monitor trends over time
 - Draw from the expertise of specialists trained in preventive medicine or applied epidemiology
- Develop standardized tables and graphs for routine surveillance reports
 - Can be comparable for facility, district, governorate, and KRG levels—same data “rolled up” from facility to each higher level
- Complete the data tables and graphs for each reporting period
- Develop a monthly epidemiological bulletin with data and relevant news—consider a monthly epidemiological bulletin to be published by KRG MOH and distributed to governorates, districts, and facilities
 - The U.S. *Morbidity and Mortality Weekly Report* and the WHO *Weekly Epidemiologic Record* are two examples of many such bulletins for dissemination to the public. These contain the following information:
 - Standard tables with the most recent data (including cumulative totals to date for the year) for all notifiable diseases, as well as reports on timely information about diseases and conditions
 - Updates on ongoing outbreaks (e.g., during influenza season) or recent outbreak investigations
 - Occasional special reports of selected morbidity data from hospital inpatients and/or ambulatory patients, as warranted by events or analyses

- Regular annual reports of mortality data, with occasional special reports as warranted by events or analyses
- Special announcements (new recommendations for vaccination, clinical management, etc.).

SURV-9: Develop and implement a system for immediate alerts (event-based surveillance)

- Hire and/or train personnel who will be responsible for receiving and processing immediate surveillance alerts at all levels
- Identify conditions for which immediate alerts are desired (including some specified notifiable diseases, such as acute flaccid paralysis or viral hemorrhagic fevers, and for any suspected intentionally caused event that warrants immediate investigation)
- Develop mechanisms for such reporting (e.g., hotline number, online alert to district, governorate, and/or regional health authorities)
- Develop ways to incorporate such “unstructured data” into routine surveillance
- Develop procedures so that data trigger response actions when warranted.

SURV-10: Develop and implement standardized protocols for responding to events warranting timely investigation

- Hire and/or train personnel who will be responsible for epidemiological investigation at all appropriate levels—ensure that responsible staff are appropriately trained
 - Short-course applied epidemiology training for outbreak investigation for all appropriate staff at the central, governorate, and district levels
 - Short-course clinical epidemiology training for selected hospital staff responsible for hospital infection control or clinical epidemiology within the hospital
 - Consider longer-term formal epidemiology training for selected professionals in appropriate government positions at the central and governorate levels, and eventually at the district level
- Train managers at all relevant levels (governorate, central KRG and district, and hospital as needed) to use surveillance data of all kinds for their own management purposes.
 - The DMO examines clinic morbidity surveillance data, along with clinic utilization and pharmacy reports (see below), to determine whether any unusual events or patterns are present in the district, in order to take the next appropriate steps (to investigate the problem, report it to the DG of Health in the governorate, or to KRG MOH)
 - The Office of the DG of Health reviews all district reports, asks similar questions, and transmits the reports to the KRG MOH with any questions or comments that might be important to clarify the reported data.
- Ensure appropriate range of expertise on investigation teams (e.g., epidemiology, laboratory, environmental health, and veterinary medicine)
- Conduct epidemiological investigation of acute outbreaks when warranted, for purposes of identifying source and targeting control measures to interrupt transmission
- Conduct periodic analyses of surveillance data for chronic diseases and injuries to identify unusual patterns, inform targeted policies and programs, and monitor progress in such interventions.

SURV-11: Monitor health risk factors

- Hire and/or train personnel who will be responsible for health risk factor surveillance, including data design; data collection; data processing; and data analysis, interpretation, and presentation
- Review and finalize health risk factor data needs
 - Base these on high-prevalence conditions across the Kurdistan Region (RTAs, diabetes, smoking, etc.)
 - Utilize health risk factor indicators such as those illustrated in Table 7.8
 - Calculate point prevalence rates (i.e., the number of persons in a specified jurisdiction with a given disease or condition at a specific point in time, divided by the total population in the same jurisdiction, then multiplied by 1,000) for the following: access to improved water source, access to improved sanitation, low birth weight, exclusive breast-feeding for the first six months, nutritional status in children under five years (stunted, underweight, overweight), adult obesity, smoking, hypertension, and heavy alcohol use (to the extent feasible and desired by health authorities)
- Develop and implement a protocol for collecting and reporting health risk factor data
 - Identify data sources for risk factor surveillance, for example:
 - Link to other surveys that may be conducted (for other purposes)
 - Specific risk factor survey to be conducted by phone or in person, in a representative sample of the entire population at specified intervals (e.g., annually or every five years)

Table 7.8
Summary of Suggested Surveillance Indicators for Health Risk Factors

Data Item/Concept	Source	Frequency	Current Int'l Indicator		
			MDG	WHO	Other
Health Risk Factors (Point prevalence—proportion of the population with factor at specified point in time)					
Access to improved water source (rural, urban, total)	Household surveys, census	Annual	MDG-7	x	
Access to improved sanitation (rural, urban, total)	Household surveys, census		MDG-7	x	
Low birthweight	Household surveys, vital records, health facilities			x	
Exclusive breast-feeding first 6 months	Household surveys			x	
Children <5 stunted (low height for age)				x	
Children <5 underweight (low weight for age)				x	
Children <5 obese (high weight for age)				x	
Adult obesity				x	
Smoking				x	
Heavy alcohol use					

- Potentially, more-frequent risk factor surveys among selected groups (e.g., school-aged children or other samples of convenience that represent groups of greatest interest for specific risk factors)
 - Note that surveys could target different groups for different risk factors
- Develop and implement a protocol for health risk factor data processing, analysis, and presentation of risk factor surveillance data
 - Develop software programs or use appropriate existing software programs to compile and analyze risk factor survey data
 - Develop templates for standard data tables and graphs and use these to present survey data
 - Since risk factor surveillance is likely new across the Kurdistan Region, staff must be trained or hired (and trained, as needed) in the epidemiological and behavioral analysis methods needed to analyze and interpret risk factor surveillance data
- Develop and implement a protocol for timely dissemination and use of health risk factor data
 - Train managers at all relevant levels (especially the governorate and central KRG levels but also the district and facility levels) how to use risk factor surveillance data for their own management purposes
 - Develop and disseminate special reports for risk factor surveillance, and include short routine or special reports as appropriate within the monthly epidemiological bulletin described above.

Priorities for the Next Two Years

All of the surveillance systems and management information systems (MISs) described above will be important to KRG policymakers and health managers at all levels. All should be implemented within the next six years. Practically, however, it will be important to establish priorities for the next two years. As described in previous chapters, the selection of early priorities might be those interventions that represent low-hanging fruit—the most important and the most feasible. Table 7.9 lists the proposed interventions and judges both their importance (potential impact) and their feasibility (ease of implementation) within the KRG context. These data are presented graphically in Figure 7.11, which offers insights into potential priorities for the next two years.

If choices must be made and priorities set for what information systems to pursue first, attention during the next two years should potentially focus on those activities that fall within the two shaded boxes in Figure 7.11. The five interventions in the dark-gray shaded box at the top right of the figure seem to be particularly important and feasible:

- GEN-1: Establish a health data committee to oversee development and implementation of the proposed information systems
- MIS-1: Monitor clinic resources and services
- SURV-3: Standardize the diseases and conditions to be included in routine surveillance
- SURV-4: Standardize the sources of surveillance information
- SURV-5: Standardize data collection forms (for indicator-based surveillance).

Table 7.9
Importance and Feasibility of Recommended Interventions: Health Information Systems

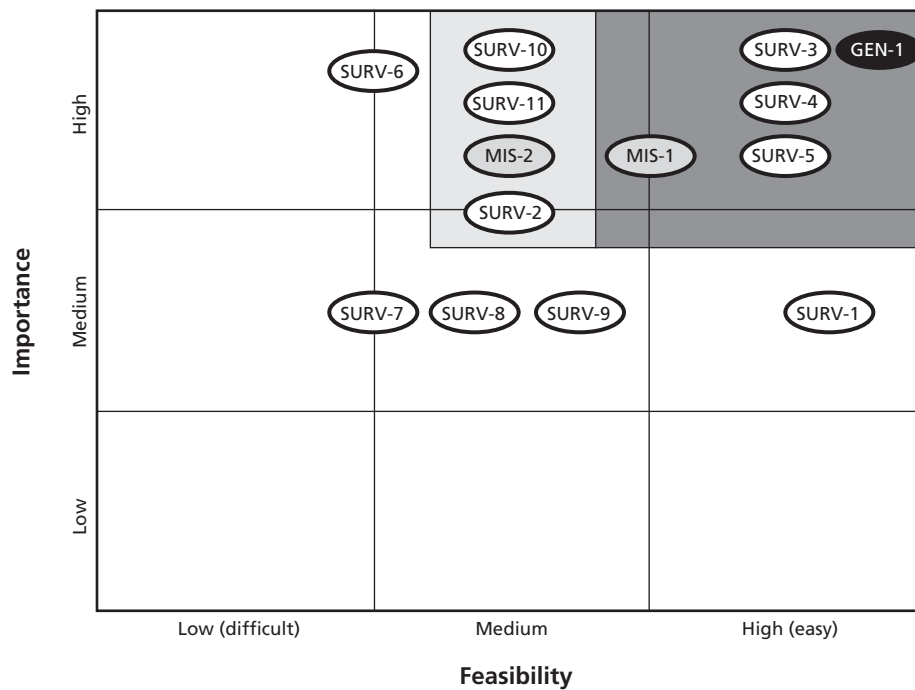
ID	Description	Importance	Feasibility
Organize the coordination and oversight of data initiatives (GEN)			
GEN-1	Establish a health data committee to oversee development and implementation of the proposed information systems	High	High
Goal 7.1: Develop and implement management information systems (MIS)			
MIS-1	Monitor clinic resources and services	High	Medium-high
MIS-2	Monitor clinic utilization	High	Medium
Goal 7.2: Enhance surveillance and response systems (SURV)			
SURV-1	Conduct a systematic assessment of the current surveillance system across the Kurdistan Region, from the local level to the regional level	Medium	High
SURV-2	Hire and/or train personnel who will be responsible for specific surveillance functions	Medium-high	Medium
SURV-3	Standardize the diseases and conditions to be included in routine surveillance	High	High
SURV-4	Standardize the sources of surveillance information	High	High
SURV-5	Standardize data collection forms (for indicator-based surveillance)	High	High
SURV-6	Standardize reporting processes from the local level to the regional level	High	Low-medium
SURV-7	Streamline data processing at governorate and regional levels	Medium	Low-medium
SURV-8	Develop and disseminate standardized analyses for surveillance information at all appropriate levels (district, governorate, region)	Medium	Medium
SURV-9	Develop and implement a system for immediate alerts (event-based surveillance)	High	Medium-high
SURV-10	Develop and implement standardized protocols for responding to events warranting timely investigation	High	Medium
SURV-11	Monitor health risk factors	High	Medium

Four other interventions (in the top-left, lighter-gray shaded box in the figure) are also important—three of them highly important—and of medium feasibility:

- MIS-2: Monitor clinic utilization
- SURV-10: Develop and implement standardized protocols for responding to events warranting timely investigation
- SURV-11: Monitor health risk factors
- SURV-2: Hire and/or train personnel who will be responsible for specific surveillance functions.

Of course, priorities are not set solely on the basis of this decision matrix. And, indeed, interventions outside the shaded boxes are also of significant importance and feasibility. Other

Figure 7.11
Framework for Assessing Priorities Among Recommended Interventions: Health Information Systems



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ways to think about next steps might be to set priorities for data to be collected first (and then subsequently) and/or pilot-testing new data collection before scaling up across Kurdistan. Also, to reduce the possible burden associated with a large number of data items for which more-frequent information is not essential (e.g., risk factors), a subset of information could be collected on a rotating basis. Thus, all factors must be taken into account by KRG policymakers to determine the highest priorities for health information systems within the next two years.

Conclusions

Health information systems provide a solid basis for planning and managing health care systems and monitoring outcomes. The foundations for management information and surveillance systems are in place, and specific improvements are feasible. Clinical record-keeping in ambulatory care centers is another critical priority but much more difficult to build quickly or easily, since the foundations are not yet in place. Nonetheless, steps to lay such foundations—for example, through pilot demonstrations—are important to consider for near-term action.

Management information systems (MISs) are highly feasible but underappreciated management tools for all levels of managers, from health care facility to the central MOH. Using MISs to identify problems and manage health resources improves the efficiency and accountability of the health care system. The proposed MIS interventions represent a systematic approach to develop and implement such systems. Using such information to identify management challenges in their early stages facilitates corrective action that is both easier and less

costly than when that same challenge reaches crisis proportions—whether those challenges relate to services provided, the health workforce, or other health resources such as medications.

Surveillance is considered the cornerstone of public health—it represents “information for action.” Surveillance monitoring of mortality, morbidity, and risk factors helps identify emerging problems, informs targeting of services, and tracks outcomes over time. The proposed surveillance and response interventions represent a systematic approach to enhancing both the surveillance and response systems themselves and the staff skills needed to run them.

Summary and Conclusions

RAND spent the past year analyzing the Kurdistan health system, with special attention to primary care. Our first objective was to make recommendations that would enable policymakers to improve the quality, access, and efficiency of primary care. Another objective was to model demand for health services. At the request of the Minister of Planning, RAND also reviewed the basic principles of health care finance and the research needed to address financing reform. This report describes our modeling effort (in Chapter Three) and our overview of financing issues (in Chapter Four), but it focuses in particular on the first objective (Chapters Five–Seven).

To study these issues, we conducted an extensive literature review, collected all the relevant data we could find, and interviewed a wide array of policy leaders, health care providers, health educators, managers, and patients. Utilizing the limited data available, we modeled present and future demand for health care services. We also laid out the general principles of health care financing and the questions that the KRG would need to address analytically as a first step toward reform.

After completing our intake of data and information, we conducted a detailed policy analysis of the primary health care sector, assessed the data available for decisionmaking, and made numerous specific recommendations for improving primary care in the Kurdistan Region. To make the recommendations more useful, we rated them by feasibility and importance and culled out a much smaller set of recommendations that might be considered as early priorities based on these criteria. We reviewed the ratings with key health care policy officials and revised them on the basis of input from these leaders. We believe these criteria (importance and feasibility) and this iterative process give policymakers a useful template for identifying priority activities they can pursue in the next few years.

After years of persecution and stagnation under Saddam Hussein, the KRG has made significant improvements in the health care sector. Better primary, emergency, and hospital care as well as significant improvements in immunization rates and economic development have reversed past trends, reducing child mortality rates and increasing life expectancy.

The current health care system in the Kurdistan Region has many strengths, including the following:

- Universal access to a basic package of health care services provided in public health care facilities
- An infrastructure that includes a network of hospitals, emergency hospitals, and PHCs that are available to most of the population and offer basic services (each governorate has at least one general hospital, an emergency hospital, and a maternal and child care hospital, as well as numerous PHCs)

- Dedicated staff and medical professionals, including a recent influx of some of Iraq’s best physicians from the south
- Leadership that recognizes the importance of health in achieving the KRG’s overall national goals.

We also found that the Kurdistan Region’s health system faces a number of important challenges—particularly as relates to primary care—that are inhibiting the KRG’s ability to achieve fully modern, effective, and efficient delivery of care. The challenges include the following:

- There is no strategic plan for primary care.
- Primary care facilities and services are not yet systematically organized, managed, staffed, or monitored. They also lack well-defined referral patterns and feedback from the tertiary care sector.
- Staffing levels, organization, and quality present major barriers to improving the health care system. There is a shortage of doctors per capita compared with neighboring countries, nurses are underutilized and are said to have lost self-respect and the pursuit of quality, GPs working in PHCs during their year of public clinic duty are not mentored, job descriptions and performance standards are not in place, and there are few trained health care managers.
- Important gaps exist in medical education (especially nursing), training, licensing, and on-the-job management, resulting in problems in recruiting, retaining, and using doctors and nurses efficiently.
- Health data are either not available or not sufficiently standardized or collected to support ambulatory patient record-keeping, surveillance, management, or decisionmaking.
- A clear focus on patient-centered care, patient safety, and quality of care is lacking.
- The health care system’s budget-based financing lacks incentives for efficiency or performance and provides uncertain funding that seems to underfund health care compared to neighboring countries.
- A patient/quality focus is not prevalent.
- There is no clear policy to guide development of private sector health care.

Modeling Future Demand

To understand the resources the Kurdistan Region will need in the future to meet the demands of this growing and economically developing area, we modeled future demand for service under a number of possible scenarios. First we modeled a *base case*, which projected demand in 2015 and 2020 resulting solely from population growth at a rate similar to that experienced in the last five years in Kurdistan. These models assumed a pattern of utilization (e.g., physician visits per capita, hospitalizations per capita) identical to Kurdistan’s current utilization pattern.

We also modeled three feasible scenarios to see how these might affect future demand when added to normal population growth: (1) rapid population growth resulting from a surge in economic activity caused by a boom in the oil and gas industry, (2) enhanced primary care, and (3) rapid growth in the private health care sector.

In all of the cases modeled, we found that the KRG would need to make a significant investment to meet projected future demand. We note that the current numbers of health professionals and hospital beds per capita are lower than in neighboring countries—and much lower than in most developing and developed countries. Although health care utilization rates are, on average, higher than in Iraq, we anticipate that as the KRG develops and the population continues to grow, the use of and need for medical care will also grow, as has been the case in almost all countries. Meeting international standards in the context of expected economic development will require significant investments in health care resources.

Financing

A fundamental pillar in any health care system is the way that health care and public health are financed. The availability of resources, the incentives embedded in payment for services, and pay for staffing are fundamental to an efficiently operating health care system. Many health care policymakers and providers feel that today's budget-based financing system is inadequate to address future needs because it has not been able to mobilize sufficient funding, establish proper incentives, or facilitate the development of the private health care system. To establish a context for policy discussion in this area, we lay out the basic principles of health financing, detail key policy questions that must be addressed before reform proceeds, and specify a five-step process that could facilitate policy evaluation in this area.

Primary Care

Primary care is the heart of a modern health care system. Primary care provides an ongoing patient-clinician connection and a pathway to and from other services. In the Kurdistan Region, public sector primary care is key to the entire health care system. The primary health care system already possesses key strengths but also significant challenges to improving health care delivery and health outcomes. Most of our analyses focused on primary care and ways that it could be improved. Our analysis of these challenges and ways to address them is summarized below, organized in three areas—organization and management, workforce, and information systems.

Organization and Management of Primary Care Facilities and Services

We found that there are not enough main PHCs (staffed by at least one physician) per 10,000 population to meet international standards, and main PHCs and PHC branches (staffed by paramedical personnel) are not systematically organized with defined services, staffing, management, or referral patterns. However, we did find that PHCs offer the type of primary care services recommended by WHO, but not all PHCs provide the full range of appropriate services.

These organization and management hurdles could be overcome by efficiently distributing and systematically managing facilities and services, standardizing services, expanding health education in clinics and schools, conducting public education campaigns to promote relevant safe and healthy behaviors, and, eventually, increasing the use of telemedicine. We

recommend a core three-tiered primary health care system design. We lay out the most important/feasible policy changes that could be undertaken in the next two years:

- Systematically organize PHC services by defining a three-tiered system (branches, main centers, and referral centers) with standards of service and ensuring that the organization of facilities meets these requirements. This would involve locating or upgrading PHCs so that they meet population catchment requirements.
- Enhance the distribution of the health workforce by defining and distributing PHC staff on the basis of national standards.
- Define the appropriate range of services delivered by PHCs at the three recommended levels (branches, main, and specialty/referral level), as shown in Table 5.2.
 - All main and branch PHCs should offer a package of primary health services, including, for example, the following:
 - Child growth monitoring
 - Immunizations
 - ORT
 - First aid
 - Basic drugs
 - Health education
 - Main PHCs should also offer the following:
 - Basic curative and chronic disease management
 - Dental care
 - Laboratory services
 - Imaging services
 - Pharmacy services
 - The highest-level PHCs, which are generally located in district capital cities, should offer the following:
 - Advanced specialty medical care
 - Obstetric and newborn care
 - Specialty dental care
 - Advanced laboratory services
 - Broader pharmacy services.

Health Care Workforce

Although the Kurdistan Region has almost twice as many physicians per capita as the Iraqi average, Kurdistan has fewer physicians per capita than many other countries in the region. Physician shortages involve training/competencies as well as numbers, distribution, and hours worked. The education and training of primary care physicians could be improved by including primary care in medical school curricula and clinical rotations, increasing the number of and enhancing the profile of primary care specialties (such as family medicine), and improving training in practical clinical skills. Preferential incentives could improve the experience of general practice physicians during their year of obligatory medical service in PHCs. More nurses need to be trained, and training at all levels should be enhanced. Continuing education, licensure, and revalidation will improve the performance of all medical professionals.

In our judgment, the most important and feasible policy changes that could be undertaken in the next two years to enhance professional education and training are the following:

- Preferentially recruit medical and nursing students from rural areas
- Include primary care in medical and nursing school curricula
- Improve the experience of GP physicians during their mandatory year of service at a PHC
- Develop required qualifications and job descriptions for professional staff at all levels.

Health Information Systems

Modern health information systems are essential to improving quality and efficiency. Improving surveillance and response systems can help monitor mortality, morbidity, and health risk factors. In the Kurdistan governorates, we found that health data are either not available or not sufficiently defined, standardized, disaggregated, electronically reported, analyzed, or used to enable good management and policy. Improving information systems will require hiring and/or training key personnel and standardizing data collection processing, analysis, and presentation. Improved surveillance will reflect ongoing problems and the impact of disease prevention and control programs; improved management information systems will make it possible to monitor health resources, services, and clinic utilization to ensure effectiveness and efficiency of these services; and patient record-keeping at ambulatory centers will provide an important basis for the patient referrals and continuity of care that are central to a primary care-oriented health care system.

In our judgment, the most important and feasible specific interventions for improving data systems in the next two years are the following:

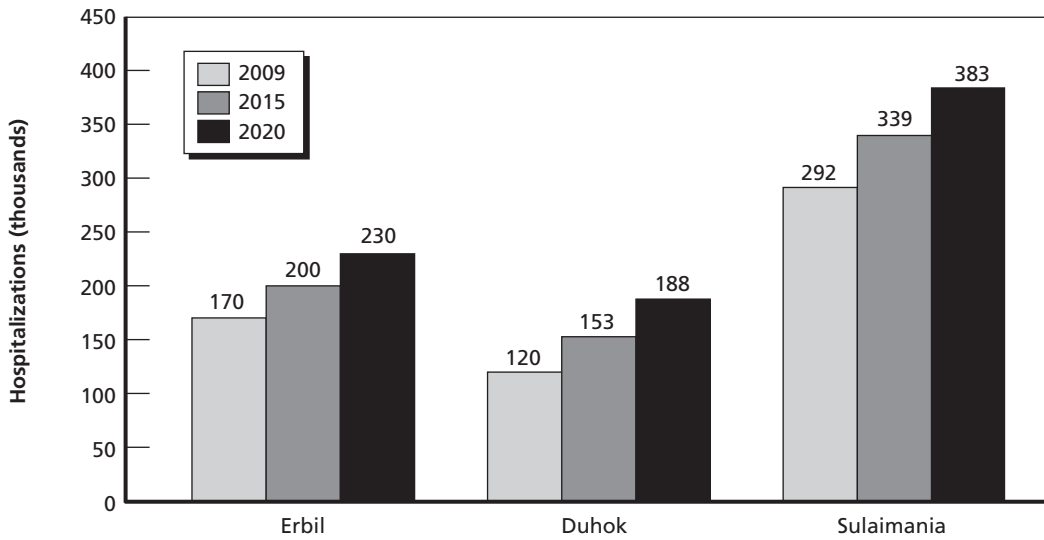
- Enhance surveillance and response systems by standardizing the following:
 - The diseases and conditions included in routine surveillance
 - The sources of surveillance information
 - Data collection forms
- Develop management information systems to monitor clinic resources and services and manage clinical (patient) records
- Use the collection and publication process of the MOH's Annual Report for 2010 to implement the changes recommended.

Conclusion

The KRG has made significant progress in improving the health care services of the region and the resulting health of the people. It is also clear that more can be done to improve the health care system's quality, efficiency, organization, management, workforce, and data systems, which will be important as Kurdistan continues on its trajectory of modernization and integrates more closely with the rest of the world.

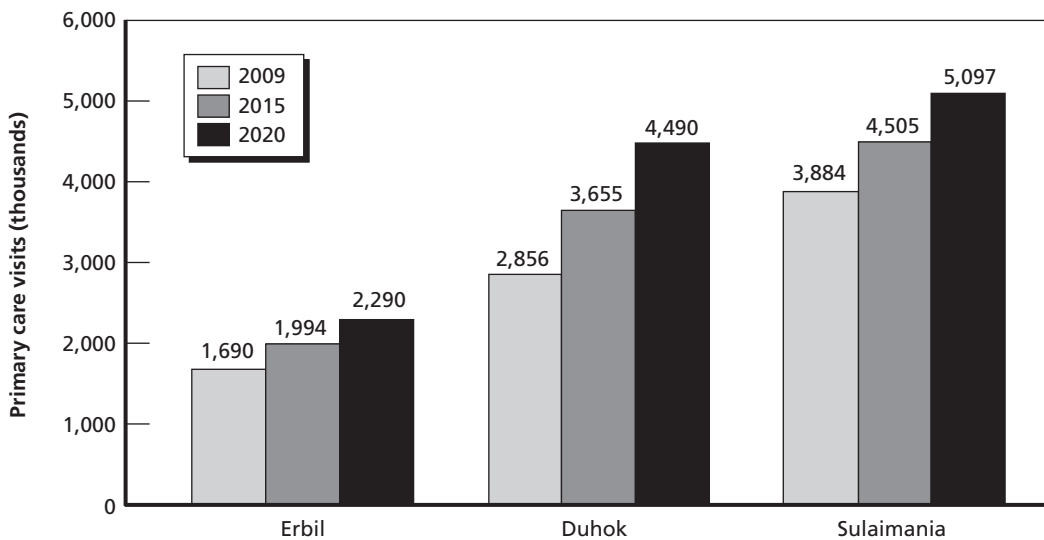
Graphs of Modeling Results from Chapter Three

Figure A.1
Projected Hospitalizations by Governorate



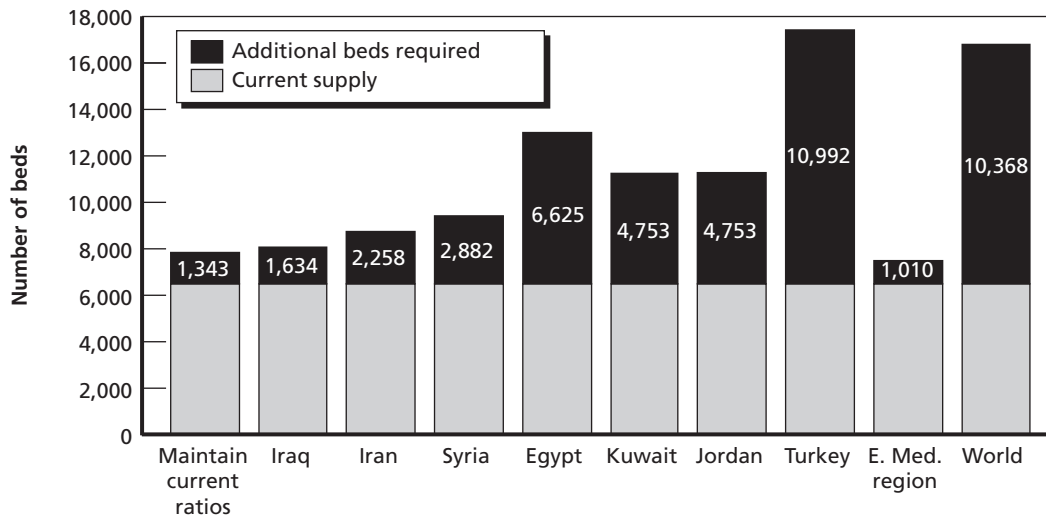
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Figure A.2
Projected Outpatient Visits by Governorate



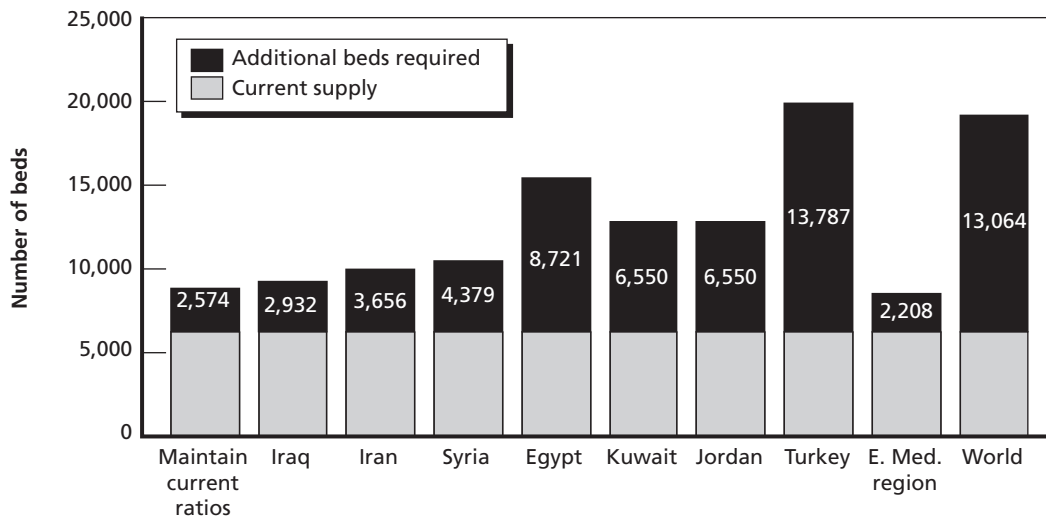
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Figure A.3
Projected Number of Beds Needed in 2015 for the KRG, if Kurdistan Has Utilization Patterns Similar to the Countries Listed



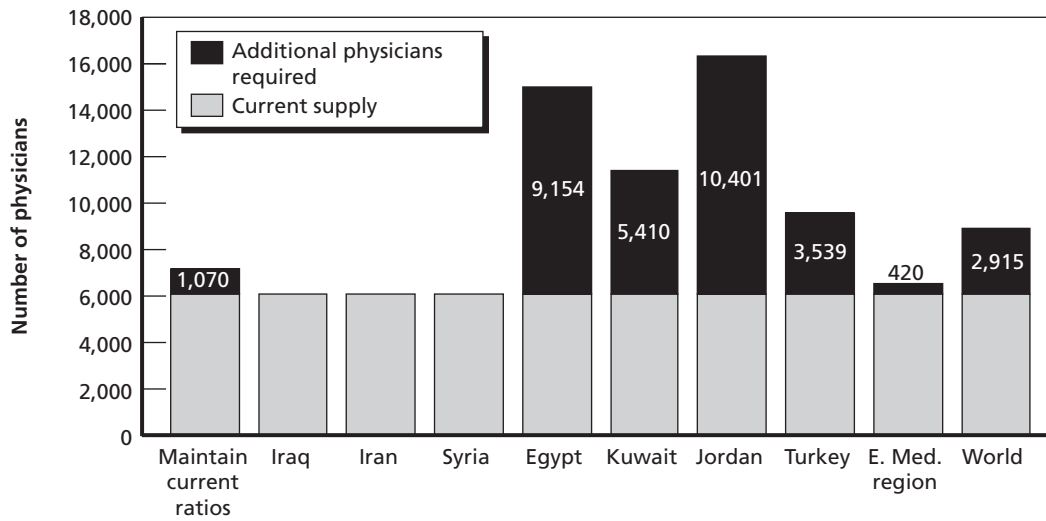
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Figure A.4
Projected Number of Beds Needed in 2020 for the KRG, if Kurdistan Has Utilization Patterns Similar to the Countries Listed



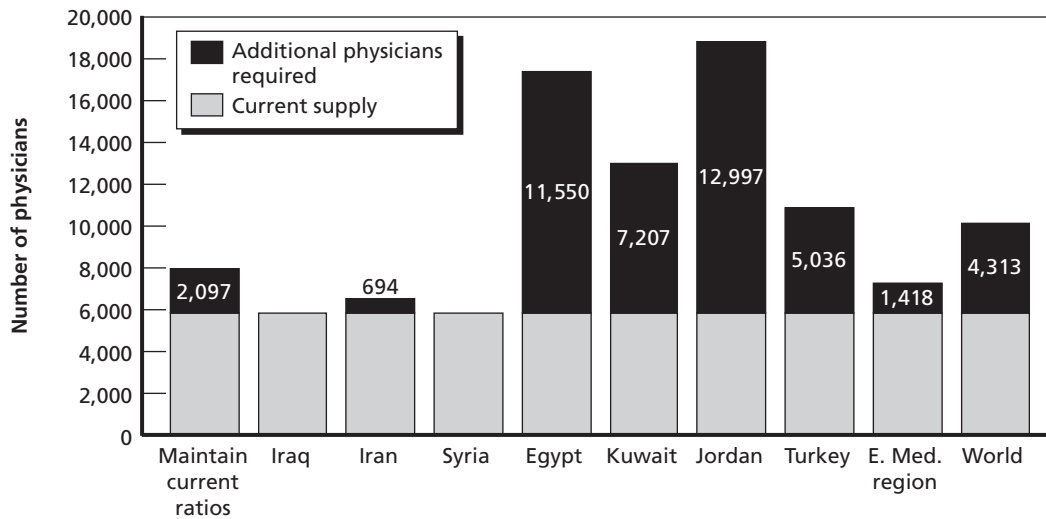
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Figure A.5
Projected Physician Requirements in 2015 for the KRG, if Kurdistan Has Utilization Patterns Similar to the Countries Listed



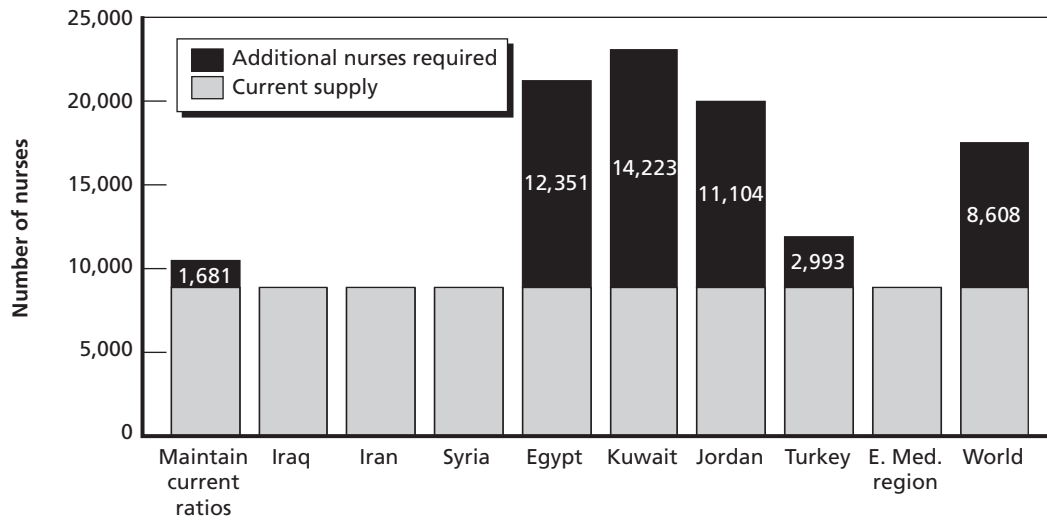
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Figure A.6
Projected Physician Requirements in 2020 for the KRG, if Kurdistan Has Utilization Patterns Similar to the Countries Listed



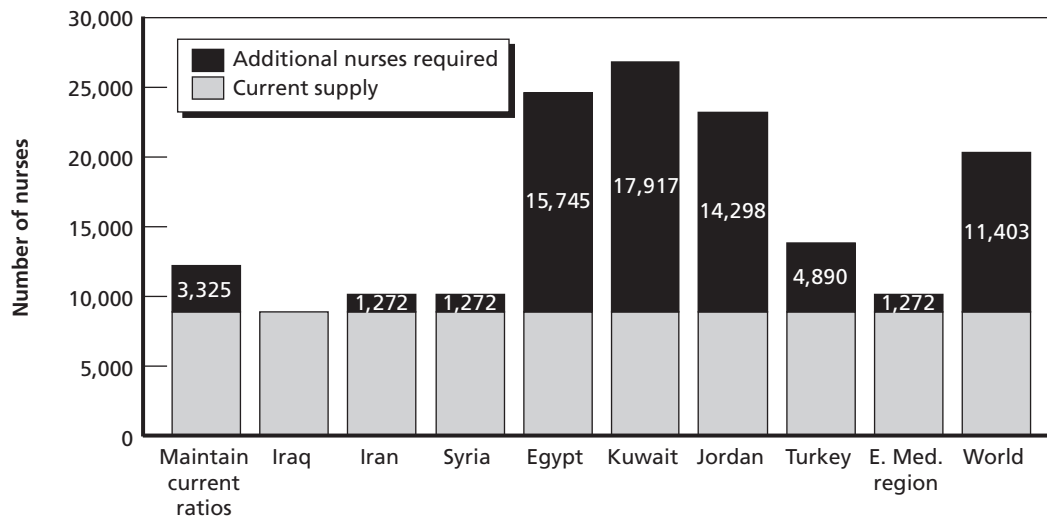
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Figure A.7
Projected Nurse Requirements in 2015 for the KRG, if Kurdistan Has Utilization Patterns Similar to the Countries Listed



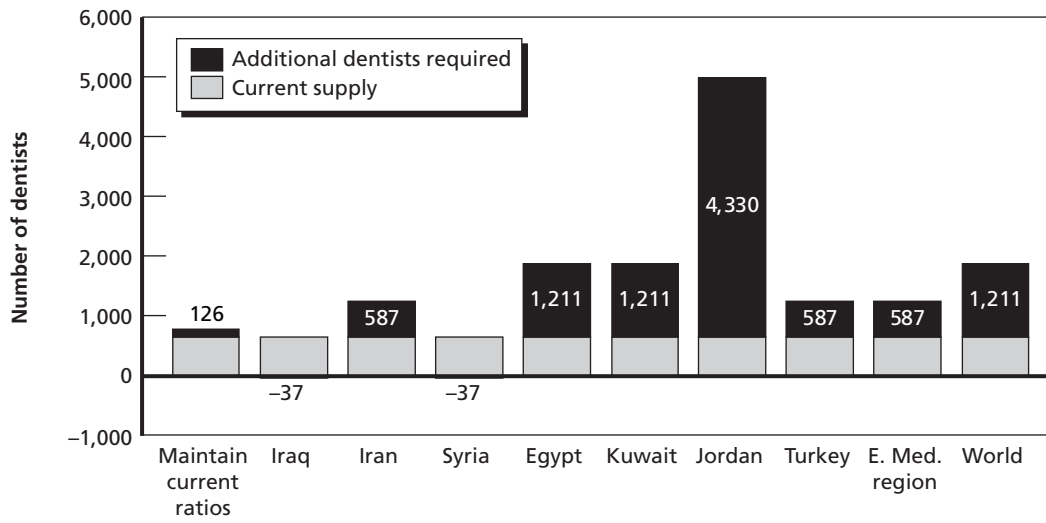
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Figure A.8
Projected Nurse Requirements in 2020 for the KRG, if Kurdistan Has Utilization Patterns Similar to the Countries Listed



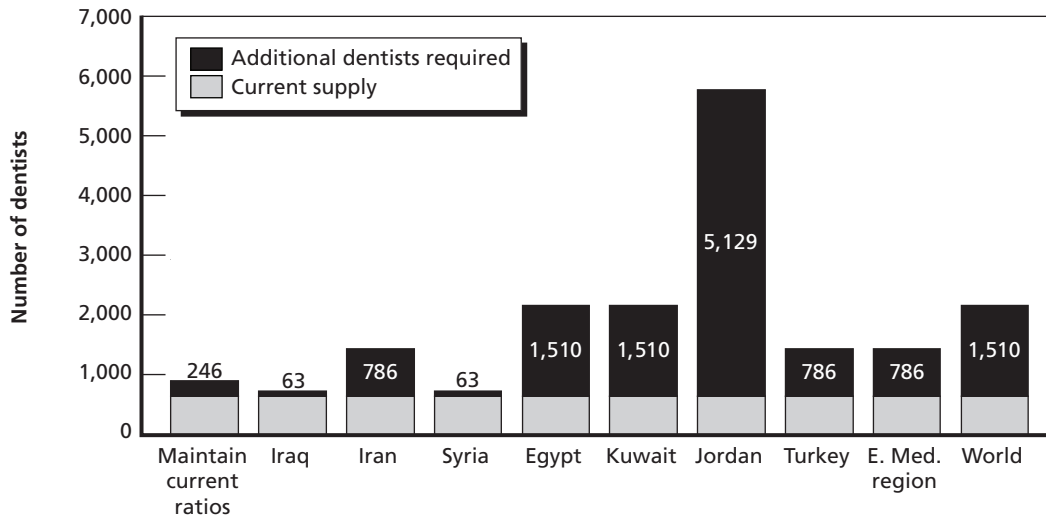
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Figure A.9
Projected Dentist Requirements in 2015 for the KRG, if Kurdistan Has Utilization Patterns Similar to the Countries Listed



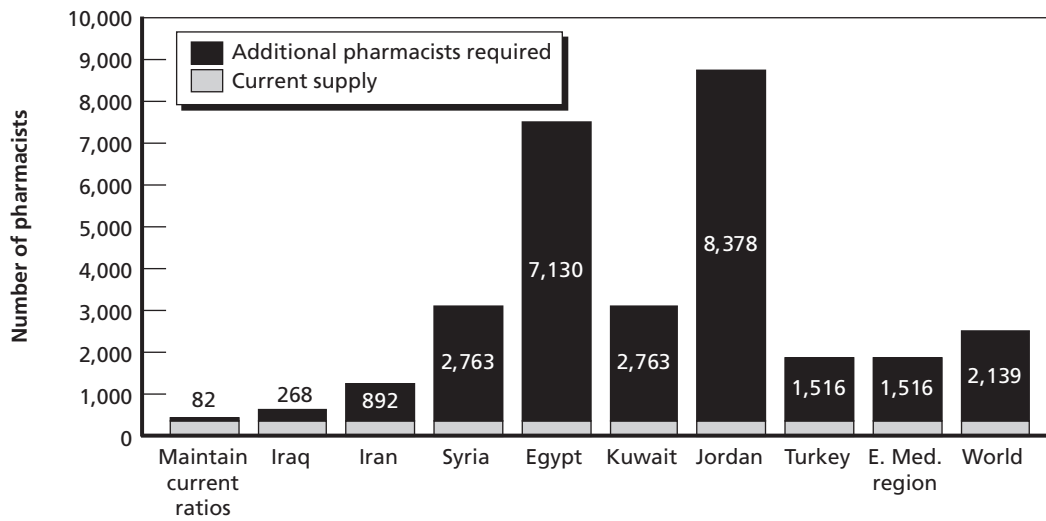
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Figure A.10
Projected Dentist Requirements in 2020 for the KRG, if Kurdistan Has Utilization Patterns Similar to the Countries Listed



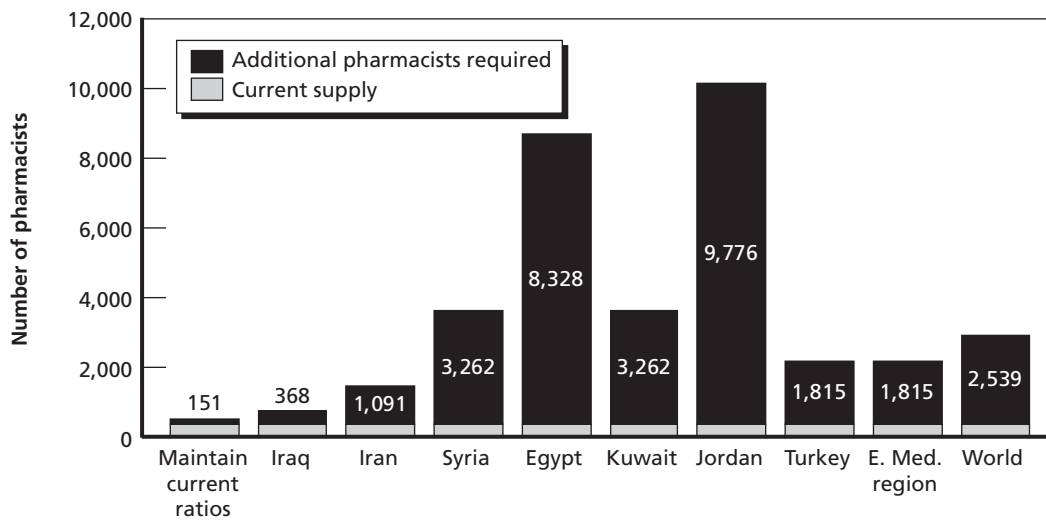
RAND MG1148-A.10

Figure A.11
Projected Pharmacist Requirements in 2015 for the KRG, if Kurdistan Has Utilization Patterns Similar to the Countries Listed



RAND MG1148-A.11

Figure A.12
Projected Pharmacist Requirements in 2020 for the KRG, if Kurdistan Has Utilization Patterns Similar to the Countries Listed



RAND MG1148-A.12

Monitoring Progress in Health Service Delivery

USAID has developed indicators to assess and monitor health service delivery, and a set of strategies to address common problems in this area (Islam, 2007). The specific interventions described in Chapter Five incorporate many of USAID's strategies, and we believe that the indicators designed for initial assessment are also relevant for monitoring services in Kurdistan over time. Table B.1 presents 30 indicators in the USAID guidelines, and Table B.2 presents USAID's health service delivery strategies. These strategies both validate and add further detail to the potential interventions described above.

Table B.1
Health Service Delivery Indicators

Indicator	Definition
Availability of Service Delivery	
Hospital beds per 10,000 population (number)	Total number of beds in hospitals of all levels/ population \times 10,000
Number of primary care facilities in health system per 10,000 population	Simple count of primary health centers, health posts, and dispensaries in country / total population \times 10,000
Percentage of primary care facilities that are adequately equipped	Number of adequately equipped facilities / total number of facilities (Note: This is based on standards/criteria for facility equipment that should be in place)
Ratio of health care professionals to the population	Ratio of doctors, nurses, midwives, pharmacists, and laboratory technicians, each per 10,000 population
Availability of updated clinical standards for MOH priority areas, high burden disease areas, and/or areas responsible for high morbidity and mortality	Number of clinical areas that have national guidelines updated within the last 3 years / total number of clinical priority areas
Service Delivery Access, Coverage, and Utilization	
Percentage of people living within [specified number] km of a health facility	Number of people living within this radius of health facilities / total population (measure of geographic access)
Financial access (select best indicator for this— e.g., share of household spending on health, household spending as share of all health expenditures)	Numerator includes direct household outlays for health services and products
User fee exemptions and waivers	User fee protection for vulnerable groups, usually in the form of fee exemptions, waivers, or both (absence of such protection may pose financial barrier to access)

Table B.1—Continued

Indicator	Definition
Primary care or outpatient visits per person to health facilities per year	Number of primary care or outpatient visits in a year/ total population
Births attended by skilled health personnel per year (%)	Number of women aged 15–49 attended during childbirth by skilled health personnel / total number of women aged 15–49 surveyed with a birth in previous year
DPT3 immunization coverage: 1-year-olds immunized with 3 doses of diphtheria, tetanus toxoid, and pertussis vaccine (%)	Number of 12–23-month-old children receiving DPT3 before first birthday / total number of children (12–23 months old) surveyed
Contraceptive prevalence (% in women aged 15–49)	Percentage of women aged 15–49 who are practicing, or whose sexual partners are practicing, any form of contraception
Pregnant women who received 1+ antenatal care visits (%)	Proportion of women who had one or more antenatal care contacts during their last pregnancy in the 5 years before the survey, and proportion who had 4 or more visits
Private-sector service delivery	Proportion of hospitalizations (or number of hospital days) in the private sector / total number of inpatient stays or days across all facilities
Organization of Service Delivery	
Daily availability of full range of key primary health care services	Fraction of designated services that are available at primary care facilities 5 days a week (e.g., immunization, TB, prenatal care, family planning, malaria, malnutrition)—measure is a proxy for integration of services
Number of vertical programs	Number of MOH vertical programs (i.e., that focus on specific diseases or interventions)—often supported by external donor organizations and thus less sustainable by host country
Level of informational continuity of care	Identified with the longitudinal or chronological dimension of continuity (refers to ability of the health system to identify, store and retrieve medical information on any particular patient over time)
Level of vertical continuity of care	Continuity of care across different levels of care: Communication—percentage of PHC facilities with reliable access to phone or radio communication to the referral facility Transportation—percentage of health centers with transportation to first referral level care Referral systems—existence of referral system data at the district level
Quality Assurance of Care	
Existence of national policies for promoting quality of care	Response: yes or no Indicator reflects, at a basic level, the degree to which quality of care is formally recognized as a government priority
Existence of adaptation of clinical standards into a practical form that can be used at local level	Response: yes or no Indicator reflects policy level priority attached to clinical service quality and are a first step to improve quality of care
Existence of clinical supervision by district level supervisor	Response: yes or no Indicator reflects most basic way to monitor quality of care

Table B.1—Continued

Indicator	Definition
Percentage of supervision visits to health centers planned that were actually conducted	Number of supervision visits conducted past year / number of planned visits
Existence of other processes assuring quality of care besides supervision	Response: yes or no Examples: formal or informal accreditation, continuous quality improvement teams, periodic health audits followed by improvement efforts, periodic client satisfaction surveys or suggestion boxes
Community Participation in Service Delivery	
Presence of official mechanisms to ensure the active engagement of civil society and the community in management of the health system	Response: yes or no Examples: local health committee, community health promoters, community representation in health center management, inclusion of traditional health practitioners in health management, community association participation in decisionmaking
Presence of official mechanisms to ensure the active engagement of civil society and the community in service delivery	Response: yes or no Examples: any community role in provision of health care
Existence of official mechanism for eliciting population priorities, perceptions of quality, and barriers to seeking care	Response: yes or no Examples: periodic client satisfaction surveys at facilities, meetings in the community or with community associations
Service Delivery Outcomes	
Life expectancy at birth	Number of years a newborn would live if prevailing patterns of mortality at the time of birth were to stay the same throughout his or her lifetime (measures overall health status of the population and the quality of life)
Mortality rate, infant (per 1,000 live births)	Number of infants who die before reaching 1 year of age, per 1,000 live births in a given year
Maternal mortality ratio (per 100,000 live births)	Number of maternal deaths that occur during pregnancy and childbirth per 100,000 live births (a measure of the likelihood that a pregnant woman will die from maternal causes)
Prevalence of HIV, total (% population aged 15–49)	Percentage of adults who are infected with HIV

SOURCE: Adapted from Islam, 2007.

Table B.2
Strategies for Strengthening the Health Service Delivery Sector

Example Strategies	Health Service Delivery Areas Addressed			
	Organization	Community Participation	Quality Assurance of Care	Outputs and Outcomes
Develop strategies that increase access to services in remote areas, such as: Organizing community transportation Rotating community clinics Coordinating and sharing clinical responsibilities with community midwives, traditional healers, and community health workers Planning and budgeting Advocating for construction Fully staffing health posts, health centers, and hospitals Seeking private sector partnerships	X	X		
Collaborate with local governments, associations, local NGOs, etc., to participate in seeking solutions for improving health services to the community		X		
Strengthen and integrate supervision capacity at the intermediate (district) level by introducing supportive supervision	X		X	X
Improve quality (i.e., adherence to clinical standards) in a selected clinical domain using facility-level quality improvement teams working as a collaborative			X	X
Institute a formal or informal accreditation system that gives recognition or other incentives for a minimum level of quality of services	X			X
Institute a “pay for performance” incentive system that rewards facilities for improved quality of services	X			X
Engage the private sector by informing or educating private providers about new approaches, such as IMCI or health improvement measures; training private providers in health service provision or business skills; training public sector staff to improve their skills to manage and negotiate with the private sector	X			X
Engage the private sector by providing incentives such as subsidies, tax breaks, or nonfinancial incentives to the private sector for specific health services; establish alliances with private providers or employers on behalf of specific health services (such as immunization)	X			X

SOURCE: Adapted from Islam, 2007.

Human Resource Indicators

Indicator	Definition
Human Resources Data	
Ratio of five types of health professional (physician, nurse, midwife, pharmacist, laboratory technician) per 1,000 population (or per 10,000 population—WHO)	Ratio of each type of health professional per 1,000 (or 10,000) population Indicator is a necessary but not sufficient measure of coverage
Planning	
Distribution of health care professionals in urban and rural areas	Number of health professionals employed in urban areas, per 10,000 population Indicator relates to access to care
Presence of human resources (HR) data system	Response: yes or no Indicator measures presence of an HR database, preferably computerized
Presence of HR planning system	Response: yes or no Indicator captures evidence of an HR plan or planning system and processes to address staff development and training, recruitment and retention policies, deployment, and staff evaluation and promotion processes
Presence of dedicated HR budget	Response: yes or no Indicator captures presence (or absence) of a budget allocation for HR staff and related functions
Policies	
Presence of a job classification system	Response: yes or no Indicator captures presence (or absence) of a system of classifying and grouping jobs for all staff
Compensation and benefits system that is used in a consistent manner to determine salary upgrades and merit awards	Response: yes or no Indicator looks for a policy that governs compensation and benefits
Formal process for recruitment, hiring, transfer, promotion	Response: yes or no Indicator looks for formal process for these, based on established criteria
Employee conditions of service documentation (e.g., policy manual)	Response: yes or no Indicator looks for written documentation of the conditions of employment—the rules and regulations that govern employees' conditions of service, benefits, and related policies and procedures

Indicator	Definition
Presence of a formal relationship with unions (if applicable)	Response: yes or no Indicator looks for presence of such a relationship (if applicable), or the number of strikes, labor disputes, and collective grievances
Registration, certification, or licensing is required for categories of staff in order to practice	Response: yes or no Indicator captures whether policies are in place requiring registration, licensure, or certification for cadres of staff such as doctors, nurses, midwives, pharmacists, laboratory technicians, and other personnel
Salary	Salaries are paid on time regularly, paid in full, and represent a viable living wage
Performance Management	
Job descriptions are present	Response: yes or no Indicator captures whether or not these are present; job descriptions define what employees are expected to do and how they should be prepared for their job
Supervision	Response: yes or no Indicator determines whether supervision takes place according to a formal process (e.g., by whom, frequency, method/approach, use of supervision tool)
Percentage of supervision visits to health centers planned that were actually conducted	Number of supervision visits conducted in the past year / number planned for the same year Indicator measures frequency of supervision visits—how many planned visits actually occur
Presence of formal mechanism for individual performance planning and review	Response: yes or no Indicator looks for formal mechanism for performance planning (performance expectations) and review (performance appraisal); the latter also serves as a basis for promotion, disciplinary action, and staff development
Monetary and nonmonetary incentives	Response: yes or no Indicator captures whether there are formal or informal methods used to influence or encourage employees to work in rural or underserved areas
Training and Education	
Presence of formal in-service training component for all levels of staff	Response: yes or no Indicator looks for presence of such training and degree of systematic organization—assessment of needs, use of various approaches, facilitated access
Presence of management and leadership program	Response: yes or no Indicator captures whether or not such a system is in place (such a program prepares employees to advance and provides incentives for good performance)
Presence of feedback loops between the organization and preservice training institutions	Response: yes or no Indicator looks for formal links (to tie needs assessment of skills needed in the workplace to preservice education and training)

SOURCE: Islam, 2007.



HEALTH

Health Care Financing: Looking Towards Kurdistan's Future

**Presentation for
International Congress on Reform and Development
of Health Care in Kurdistan Region**

**C. Ross Anthony, Ph.D.
2-4 February 2011
Erbil**

Outline

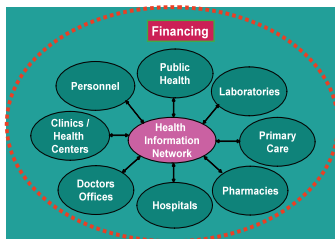
1. Introduction

- Background
- KRG Financing System

2. Financing Policy Questions the KRG Must Address as it Faces the Future

3. Planning for the Future

2



A Good Financing System Is Key to Achieving All Health Care Goals

What Is Health Care Financing?

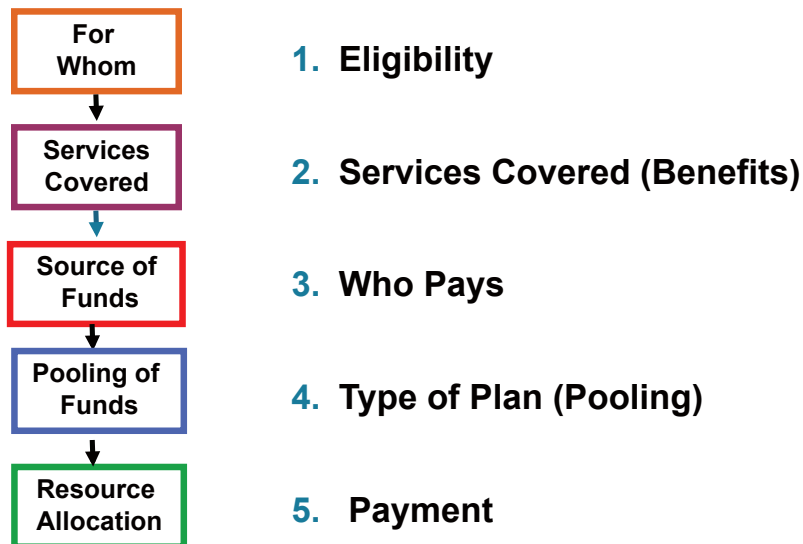
- WHO defines health financing as:

“The **function** of a health system that is concerned with mobilization, accumulation, and allocation of money to cover the health needs of the people, individually and collectively.”

- WHO further states

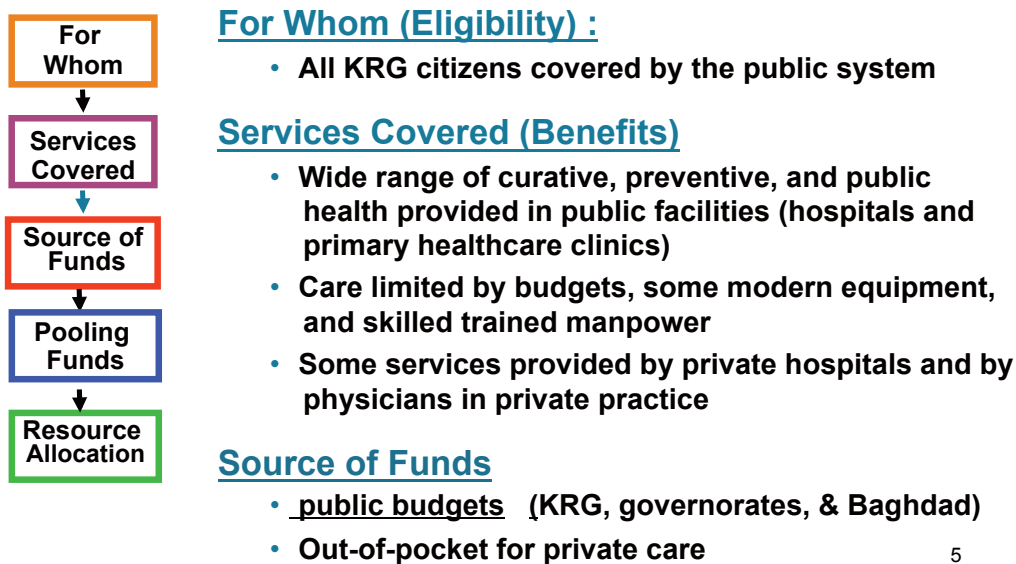
“The **purpose** of health financing is to make funding available, as well as to set the right financial incentives to providers, to ensure that all individuals have access to effective public health and personal health.”

Basic Financing Questions Will Guide Discussion: For Who? For What? Who pay? How Much? How?



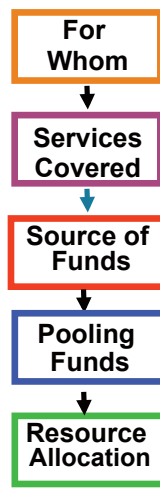
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Present KRG Health Care Financing System Is Primarily a Public Budget System



5

KRG Health Care Financing System: Continued



Pooling

- Government budgets
- Private physician and hospital services are paid for by individuals with little insurance (ie no pooling)
- Methods limited by administrative expertise and data availability

Payment

- Public budgets pay for public services
- In theory both the public and private sectors are regulated by the government.
- Co pays are very low.
- Care abroad payments by the KRG and political parties is large and growing
- Costs are rising.
- Few incentives for efficiency, quality, or cost control.

6

KRG Health Financing Data (in Millions of Iraqi Dinars)

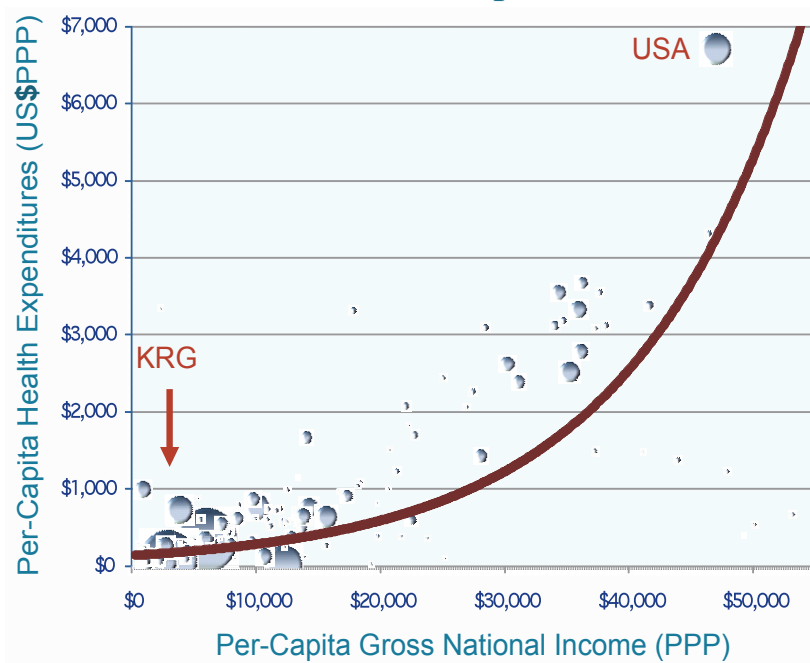
FY2010 Tentative Budget

• Operational Budget	531,424
• Investment Budget	<u>98,288</u>
Total	629,712
• Health Care % of KRG Budget	5.2%
• Employment	39,500

PHC Co-payments

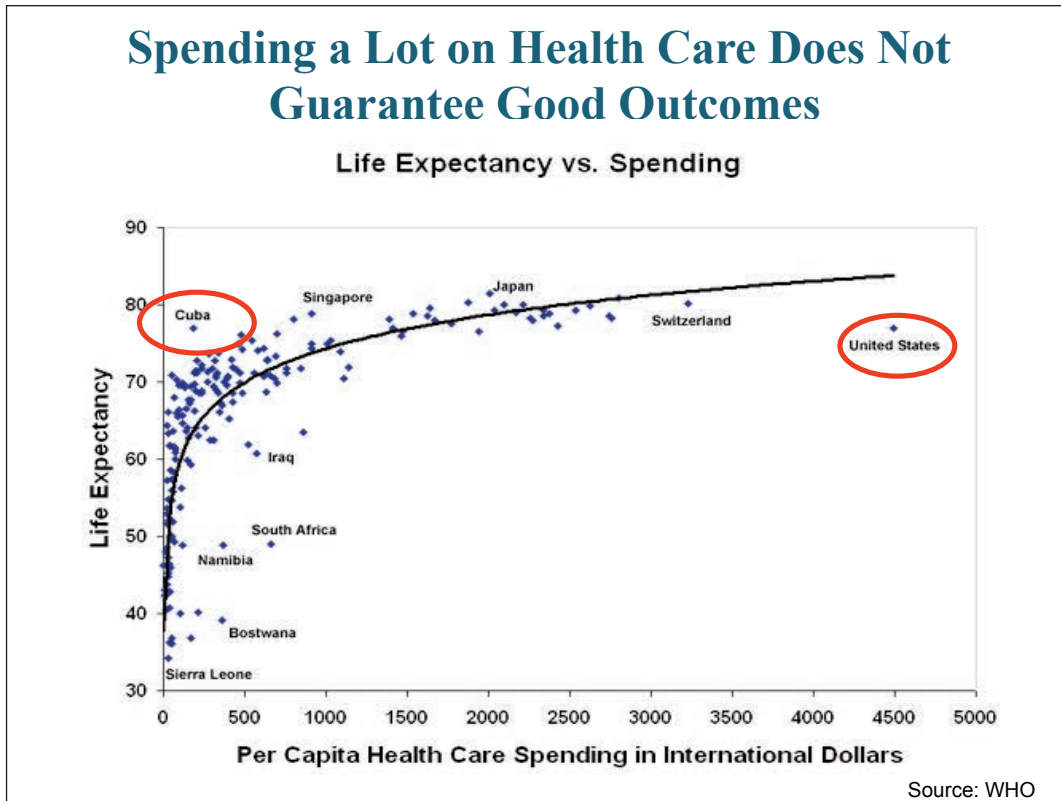
• Ticket	250 dinars
• Pharmacy Ticket	500 dinars

Rich Countries Spend Exponentially More on Health Care than do Less Developed Countries



Economically Developed Countries Have A Greater Capacity to Implement Advanced Financing Systems

- **More reliable data and IT systems**
- **More sophisticated tax collection systems**
- **Better Administration and trained personnel**
- **Higher income populations and fewer poor**
- **Functioning private insurance companies**
- **Shift from infectious to chronic diseases**
- **Increased concern for quality and cost control**

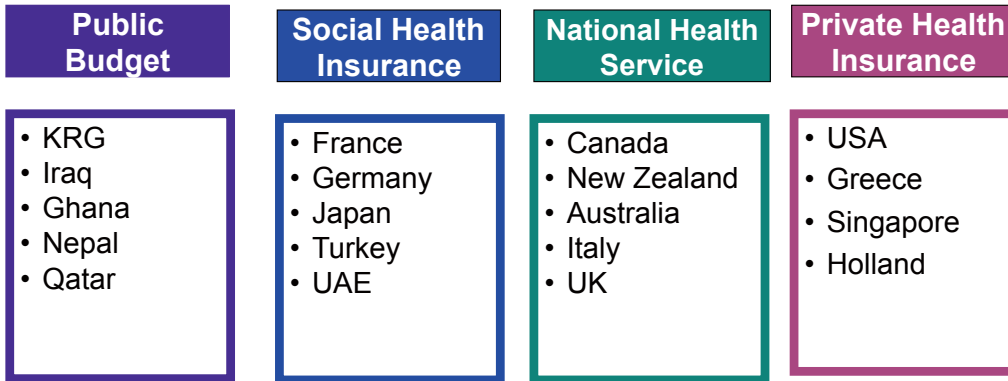


All Common Health Financing Models Have Pros and Cons

Public Budget	Social Health Insurance	National Health Service	Private Health Insurance
<p>Main revenue type: taxes, oil, AID</p> <p>Pooling: By govt.</p> <p>Purchasing: By govt. - collective and selective contracts</p>	<p>Main revenue type: Payroll tax, govt. budget</p> <p>Pooling: Pools by job or income</p> <p>Purchasing: Collective and selective contracts</p>	<p>Main revenue type: General taxes</p> <p>Pooling: National pool</p> <p>Purchasing: National or regional direct purchase of services it provides</p>	<p>Main revenue type: Indiv. & employer payments</p> <p>Pooling: Privately managed ins. pools</p> <p>Purchasing: Selective contracts</p>

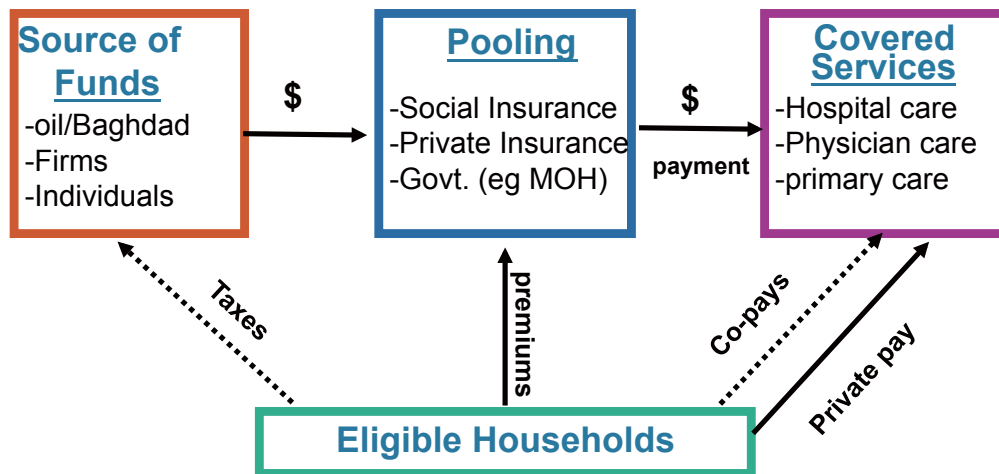
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Health Financing Systems Around the World



12

Financing Systems Are Very Complex and Need to Be Designed with Care (Money Flows)



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Outline

1. Introduction

- Background
- KRG Financing System

2. Financing Policy Questions the KRG Must Address

3. Planning for the Future

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Key Policy Questions KRG Must Answer

For Whom

- Will non-KRG non-Iraqi citizens receive KRG health care benefits and if so for how much?
- How will the KRG administer and verify eligibility? (e.g. Issue insurance ID cards or what)?

Services Covered

- Which services will be covered and not covered?
- What process will the KRG use to decide this?
- How will the list be updated for new technologies?
- Care abroad: how will treatment for services not available in the KRG be financed?

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Key Policy Questions (2)

Source of Funds

- What share of national income will go to health?
- Who will bear the burden of providing resources, i.e. the government (KRG or governorate), individual, and/or companies?
- What will the size of co-payments and deductibles be and will they vary by type of service?
- How will the poor be treated?
- How much will non-KRG residents pay for treatment?

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Key Policy Questions (3)

Pooling of Funds

- Will the KRG continue to utilize the national budget to pool resources or move towards some form of insurance?
- If the KRG pursues an insurance system will it be public or private, and will it be voluntary or compulsory?
- How will the KRG and Baghdad rationalize and coordinate systems?

Resource Allocation

- What mechanism(s) will be set up to pay for services and staff? Will there be incentives for quality and efficiency?
- What will the payment rates for services be?
- Will a prospective or retrospective payment system be used?
- Should payment be linked to performance or level of effort for providers, hospitals, PHCs etc?

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Outline

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Next Steps

Step 1: Analyze Current System and Feasible Options

Step 2: Establish a Vision for the Future

- Convene political, medical, and public leaders to establish a vision for the future
- Share vision with the public to help establish reasonable expectations

Step 3: Planning: Develop A Detailed Research and Strategic Financing Plan

- Define critical questions that must be answered and lay out a research plan.
- Collect the data necessary to manage, evaluate, and regulate the system
- Analyze and establish mechanisms to provide incentives for cost control, quality, & efficiency.
- Develop strategic financing plan.

Next Steps Continued

Step 4: Implement Plan

- Lay out prerequisites needed to implement vision, e.g.
 - tax collection system,
 - IT infrastructure,
 - Private insurance system
 - Ability to set prices and pay for performance etc
- Sequence changes to achieve objectives
- Decide on and establish a nationwide medical information system.
- Design systems to promote health, good outcomes, efficiency, equity, and to account for increased needs in facilities, manpower, and resources.
- Establish a health policy leadership academy

Summary & Conclusions

- Deciding on and establishing financing systems is very complex and demanding.
- Present resources are not sufficient to fund projected health care needs in the next 20 years.
- To make good policy decisions, the KRG needs to begin a systematic review of all policy options and choices, including:
 - What data are required to manage any system?
 - What can be done now to improve efficiency, control costs?
 - What incentives should be embedded in the system?
- The KRG needs to develop a strategic health care financing plan and research agenda to fulfill it
- Financing system will be key to health of the medical care system as well as the health of the people and development of Kurdistan.



HEALTH

**Primary Care: A Model for Modernizing
Kurdistan's Health System**

**Melinda Moore, MD MPH
RAND Corporation**

Erbil, February 2011

Outline

1. Introduction

2. What is primary care?

3. What actions might the KRG take to strengthen its primary health care system?

4. Summary and conclusions

Many of the Ministry of Health's (MOH) Strategic Goals Are Related to Primary Care

Some of the strategic goals in MOH Annual Report for 2009:

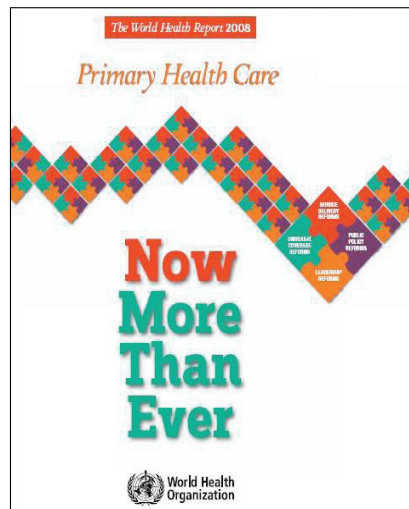
- Offer preventive and treatment services to all citizens.
- Control and prevent spread of communicable diseases.
- Provide medicines and upgrade diagnostic, therapeutic and laboratory services to ensure safe and standardized care.
- Build and develop main and sub-health centers.
- Develop administrative systems and upgrade the organizational structure and job descriptions.
- Support and develop nursing care to ensure a high level of competence, activity, effectiveness, and safety.
- Develop and expand information technology infrastructure at all levels across the Ministry and expand/upgrade the base of statistical information.

The Current Health Care System Has Important Challenges

- **Primary care facilities and services are not yet systematically organized, managed, or monitored.**
- **There are important gaps in medical and especially nursing education, training, licensing and on-the-job management, resulting in problems in recruiting, retaining, and using doctors and nurses efficiently.**
- **Health surveillance and management-related data are not standardized and not optimally used.**

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A Primary Care-Oriented System Is a Modern Approach to Address these Challenges



KRG health policy - Feb 2011 -5

Outline

1. Introduction

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The Definition of Primary Care Establishes an Important Framework

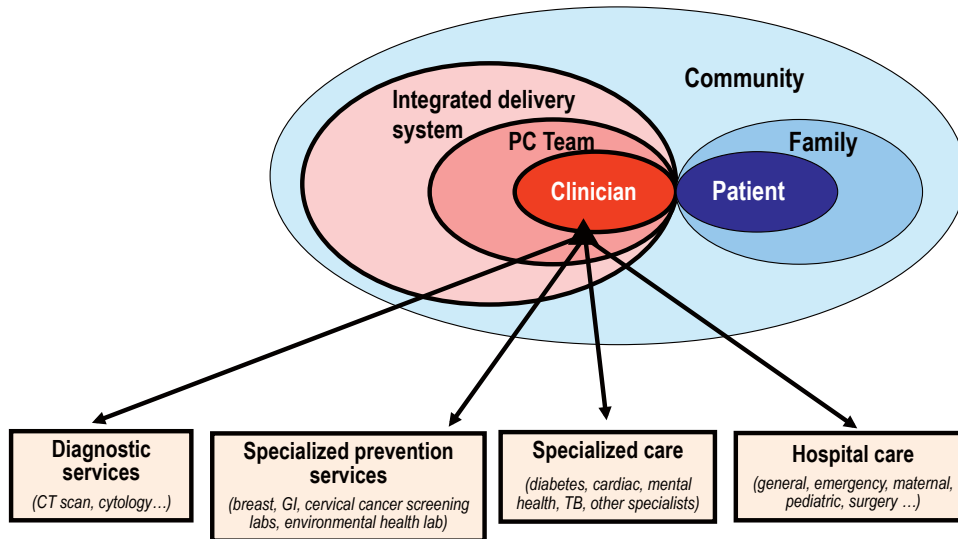
“Primary care is the provision of **integrated, accessible health care services** by clinicians who are **accountable** for addressing a **large majority of personal health care needs**, developing a **sustained partnership with patients**, and practicing in the context of family and community.”

- **Integrated** – comprehensive, coordinated, continuous
- **Accessible** – patient can easily access the clinician
- **Health care services** – to promote, maintain or restore health
- **Accountable** – for quality of services, patient satisfaction, efficient use of resources, and ethical behavior
- **Majority of personal health care needs** – provide most services and refer when needed
- **Sustained partnership** – between patient and clinician/team

Source: U.S. Institute of Medicine (1996): *Primary care: America's health in a new era*

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Primary Care Provides an Ongoing Patient-Clinician Connection & Pathway for Referrals to Other Services



Adapted from WHO 2008, IOM 1996

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Outline

1. Introduction
2. What is primary care?
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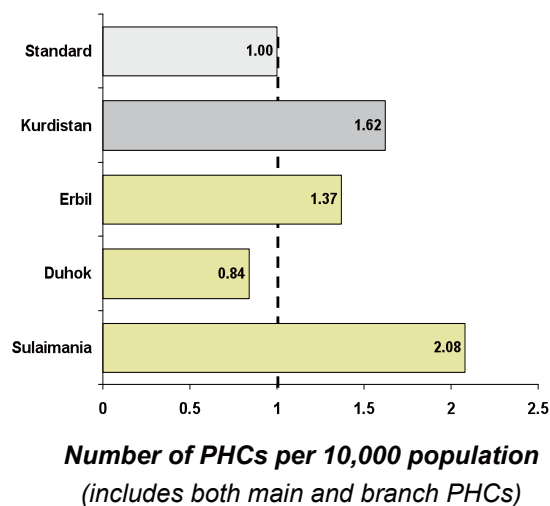
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Interventions in Three Key Areas May Help Strengthen Primary Care in Kurdistan

- **Organization & management of primary care services**
 - Efficient distribution and management of facilities & services
 - Referrals and continuity of care
 - Continuous quality improvement
- **Health care workforce** (*especially primary care physicians, nurses*)
 - Education and training to improve qualifications
 - Management interventions to enhance distribution and performance
- **Data**
 - Surveillance and response systems
 - Management information systems

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Organization (1): Ensure the Right Number and Right Mix of Main Centers and Branches

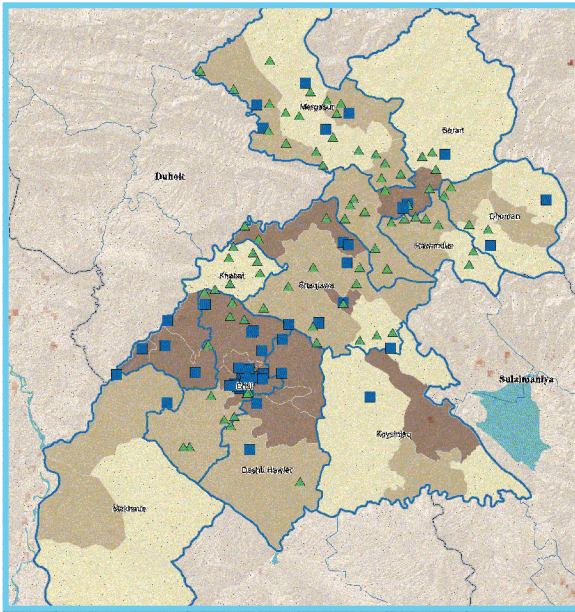


Kurdistan has enough PHCs overall (the number of main centers and branches combined exceeds the WHO standard), but:

- They should be standardized and categorized in the same way across provinces
- The size of the population served (catchment area) for branches and main centers should be more systematic and standardized

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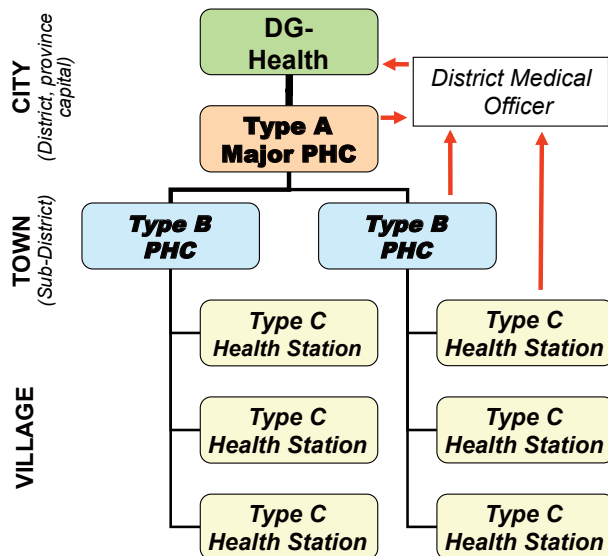
Organization (2): Distribute Facilities Efficiently



- Distribute PHCs (main centers and branches) systematically: Locate them to cover defined catchment areas that meet the Iraqi national standards
 - 1 main center per 10,000 population
 - 1 subsidiary center (branch) per 5,000 people

Source of standards: Iraq National Development Plan for 2010-2014

Organization (3): Organize PHC Facilities Systematically



- Distribute primary care centers (PHCs) based mainly on a three-tier networked system
 - Types A, B and C clinics are linked / networked for advice and some referrals
 - All levels report to District Medical Officer (DMO)
 - DMO reports to Director-General for Health in Province
- Define the scope of services for clinics (PHCs) at each level

Services (1): All PHCs (Branch and Main) Should Offer Basic Primary Health Care Services



- **Child growth monitoring**
- **Immunizations**
- **Oral rehydration therapy**
- **First aid**
- **Basic drugs**
- **Health education**

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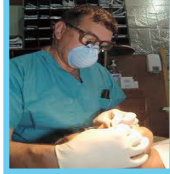
Services (2): Main PHCs Should Also Offer Basic Medical and Diagnostic Services



- **Basic curative & chronic disease management**
- **Dental**
- **Laboratory**
- **X-Ray**
- **Pharmacy**

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Services (3): The Highest Level Centers Should Offer More Advanced Services



- Specialty medical care
- Obstetrics and newborn care
- Specialty dental care
- Advanced laboratory
- Larger pharmacy

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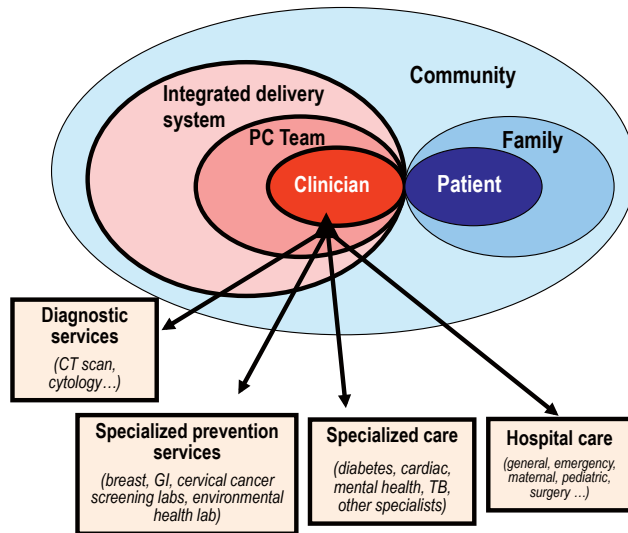
Management (1): Take Other Actions to Improve Medical Services and Promote Health



- Increase the use of telemedicine
- Expand health education in clinics and schools, and develop public education campaigns to promote relevant safe and healthy behaviors

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Management (2): Incorporate Core Elements of Primary Care into System Design

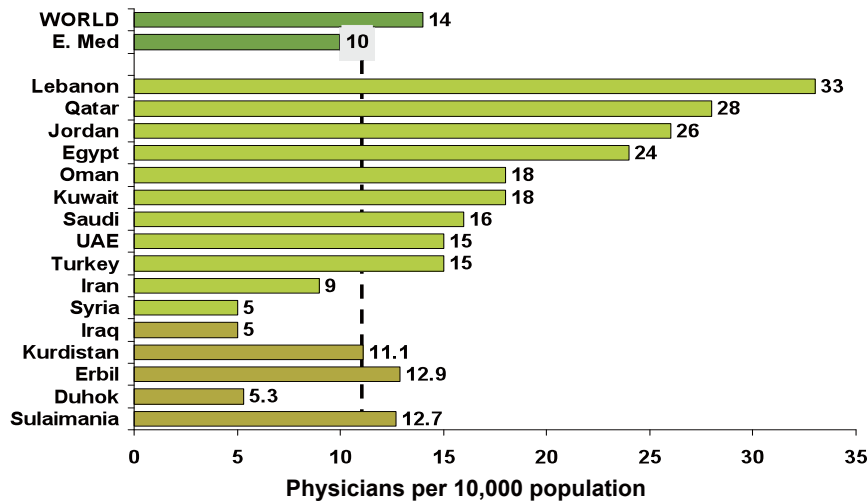


- Adopt concept of the PHC as the “first/main primary care provider” for everyone within a PHC catchment area
- Develop and implement a patient referral system, to enhance continuity of care (as part of this, transition eventually to fully electronic health records)
- Promote local awareness of available services

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Workforce (1): Train More Doctors

Kurdistan Has Significantly Fewer Doctors than Other Countries (but More than Iraq as a Whole)



Sources: WHO, World Statistics 2010; Kurdistan figures from MOH Annual Report for 2009

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Workforce (2): Target Improvements in the Education and Training of Doctors

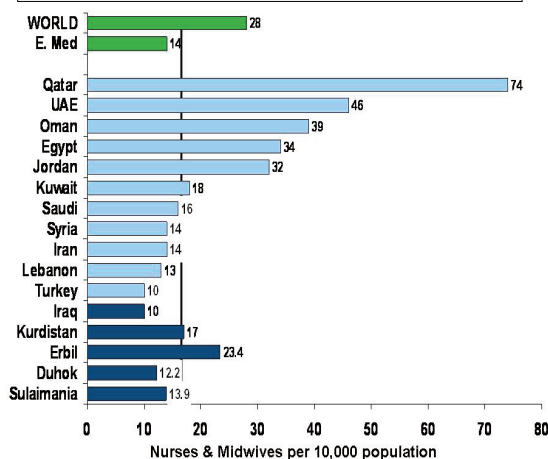


- **Train medical students in primary care: Include primary care in medical school curricula and clinical rotations**
- **Train more primary care specialists and enhance the reputation of such specialties (e.g., family medicine)** -- as a foundation for modern medical care
- **Enhance training in practical clinical skills** – from medical school and continuing through residency and postgraduate training years
- **Improve the experience of general practice physicians during their year of obligatory medical service in PHCs** (provide incentives for rural service; provide professional development opportunities, e.g., preferential opportunities for conferences; develop and test key primary care competencies)

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Workforce (3): Improve the Training, Qualifications, and Utilization of Nurses

Kurdistan has more nurses than Iraq as a whole and more than some countries in the region, but fewer than several other countries.



Sources: WHO, World Statistics 2010; Kurdistan figures from MOH Annual Report for 2009

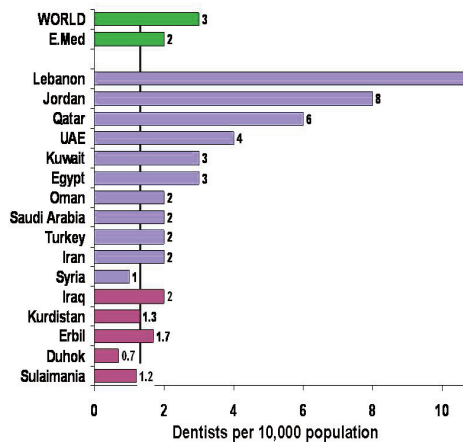
- **Train more nurses**
- **Redesign and implement new nursing curriculum and training at all levels**
- **Train more nurses in primary care: Include primary care in nursing school curricula and clinical rotations**
- **Enhance training in relevant clinical skills for nurses throughout their education and training**
- **Utilize nurses at PHCs**

KRG health policy - Feb 2011 -21

Workforce (4): Train More Dentists and Pharmacists to Meet Current & Future Needs

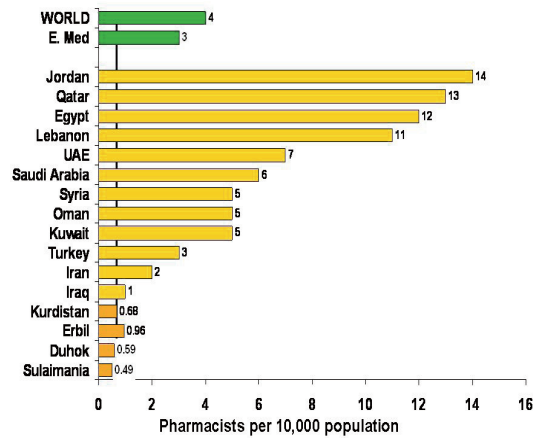
Kurdistan Has Fewer than Iraq as a Whole and Fewer than Most Other Countries in the Region

Dentists per 10,000 Population



Sources: WHO, World Statistics 2010; Kurdistan figures from MOH Annual Report for 2009

Pharmacists per 10,000 Population



Sources: WHO, World Statistics 2010; Kurdistan figures from MOH Annual Report for 2009

KRG health policy - Feb 2011 -22

Workforce (5): Establish Continuing Education, Licensure, Recertification to Improve Quality



- **Develop continuing education systems for medical professionals** (e.g., for doctors, nurses, etc.)
- **Develop licensure and recertification systems for medical professionals** -- including requirements for testing of knowledge and practical core competencies (e.g., for doctors, nurses, etc.)

KRG health policy - Feb 2011 -23

Workforce (6): Take Management Actions to Improve the Quality and Efficiency of Services



- **Develop required qualifications and job descriptions**
- **Distribute staff based on standards** – especially doctors and nurses
- **Develop a supportive supervision system** – especially for rural/remote areas
- **Institute appropriate incentives** -- to attract doctors and nurses to serve (and remain) in rural/remote areas
- **Use online human resource management forms** -- such as reference documents and applications for study, training, placement, etc.

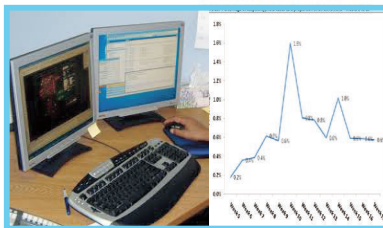
KRG health policy - Feb 2011 -24

Data (1): Establish Modern Data Systems, Which Are Also Essential to Improving Services

Replace paper records



.... With computerized records, reporting, analysis



- **Improve surveillance and response systems** - hire or train key personnel; standardize data collection, processing, analysis, and presentation; use surveillance data to monitor programs & target policies
 - **Mortality**
 - **Morbidity**
 - **Risk factors**
- **Improve management information systems**
 - **Systematically monitor health resources and services**
 - **Systematically monitor clinic utilization**

KRG health policy - Feb 2011 -25

Outline

1. Introduction
2. What is primary care?
3. What actions might the KRG take to strengthen its primary health care system?
4. Summary and conclusions

Most Important & Feasible Interventions to Improve Primary Care in Kurdistan (1)

Organize services more systematically

- Define the appropriate range of services delivered by PHCs
- Distribute PHCs within a three-tiered system, based on population catchment areas meeting national standards

Enhance professional education, training, management

- Recruit medical and nursing students from rural areas
- Include primary care in medical & nursing school curricula
- Improve the experience of GP physicians during mandatory year of service
- Develop required qualifications and job descriptions for professional staff at all levels
- Distribute PHC staff based on national standards

Most Important & Feasible Interventions to Improve Primary Care in Kurdistan (2)

DATA

Enhance surveillance and response systems

- Standardize the diseases and conditions included in routine surveillance
- Standardize the sources of surveillance information
- Standardize data collection forms

Enhance management information systems

- Monitor clinic resources and services in a systematic and standardized way

KRG health policy - Feb 2011 -28

Conclusions: Primary Care Is an Appropriate Foundation for Modernizing Kurdistan's Health Care System



- Consistent with international best practices
- People-centered, comprehensive, integrated, accessible, accountable
- Good investment: Value for money in terms of efficiency, effectiveness
- Builds upon Kurdistan's tradition of medical excellence, while expanding, upgrading & modernizing health services
- Opportunities for improvement address:
 - Organization and management of services
 - Health workforce
 - Health information systems

KRG health policy - Feb 2011 -29



HEALTH

The work described here was carried out by the RAND Corporation, in collaboration with the KRG Ministry of Planning and Ministry of Health

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Dr. Ross Anthony (Ross_Anthony@rand.org)

KRG Health Care Congress Presentation: Quality

The Case For A Focus on Patient Safety In Advancing Care in the Kurdistan Region

Lee H. Hilborne, MD, MPH, DLM(ASCP)
Global Health, RAND Corporation
Professor of Pathology and Laboratory Medicine, UCLA
Southern California Medical Director, Quest Diagnostics



***Development and Reform of Health Care System in
Kurdistan Region-Iraq***
Erbil, Kurdistan Region, Iraq
February 2011

Kurdistan Leadership Recognizes The Important Role Health Plays in Improving the Region



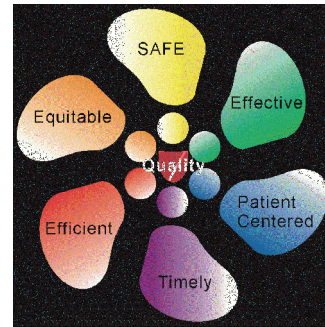
When Improving Health, The Underlying Value Comes From A Quality System

- For healthcare, the Institute of Medicine (IOM) identified six key domains of quality
 - Safe
 - Effective
 - Patient-centered
 - Timely
 - Efficient
 - Equitable



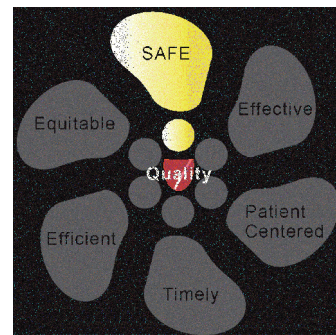
Let's Briefly Explore The Domains Then Focus On Safety

- **Effective**
 - Evidence-based decision making guides the service use and selection
- **Patient Centered**
 - Services reflect patient preferences, needs, and values
 - Services, facilities, information, and resources designed with the primary focus on the patient, not the provider
- **Timely**
 - Services reach patients and providers when they are needed
- **Efficient**
 - Waste of resources (e.g., repeat testing, redundant services, ineffective use of technology) does not exist
- **Equitable**
 - All patients have equal access to appropriate and necessary laboratory services
- **Safe**



Let's Focus On Safety Since We Have Just A Few Minutes Now

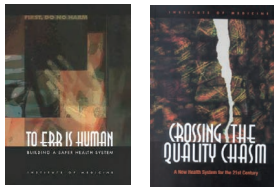
Avoiding injuries to patients from the care that is intended to help them.



The Last Decade Has Seen The Dawning Of The Patient Safety Era Internationally



- Two landmark reports from the **Committee of the Quality of Health Care In America**
 - *To Err Is Human: Building a Safer Health System* (Sept 1999)
 - *Crossing the Quality Chasm: A New Health System for the 21st Century* (Mar 2001)
- Suggested America's hospitals were quite dangerous
- Hospital risk of death from avoidable injury
 - 2,917 per 1,000,000
- “If true, the healthcare system is a public health menace of epidemic proportions”
JAMA, July 25, 2001
- The Challenge: Reduce errors by 50% over the next five years



Ten Years Later, There Has Been Progress, But Not To The Degree the IOM Envisioned

- Progress has come in the form of problem recognition and strategies to engage providers

Hospital care fatal for some Medicare patients

Updated 11/19/2010 1:36 PM | Comments 223 | Recommend 22 | E-mail | Save | Print | Reprints & Permissions | **RS**



Enlarge PhotoDisc

A study of “adverse events” in hospitals turned up “alarming” results, according to the Agency for Healthcare Research and Quality.

By Rita Rubin, USA TODAY

An estimated 15,000 Medicare patients die each month in part because of care they receive in the hospital, says a government study released today.

The study is the first of its kind aimed at understanding “adverse events” in hospitals — essentially, any medical care that causes harm to a patient, according to the Department of Health and Human Services’ Office of Inspector General.

Patients in the study, a nationally representative sample that focused on 700 Medicare patients discharged from hospitals in October 2008, suffered such problems as bed sores, infections and excessive bleeding from blood-thinning drugs, the report found. The federal Agency for Healthcare Research and Quality called the results “alarming.”

- The mortality number is even bigger than originally estimated

Patient Safety Is The Key Pillar Of Healthcare Quality



- Quality Improvement (QI) and Patient Safety (PS) are Intertwined
 - QI Practice: a process of providing care that has an **evidence base** demonstrating that it improves outcomes of care
 - PS Practice: a process of providing care that has an **evidence base** demonstrating that it reduces the likelihood of harm due to the systems, processes or environments of care
- The IOM refocused the healthcare quality discussion on patient safety
 - This is really what matters to people

And The Issue Is An International Priority As Important To People In Kurdistan



... break this cycle of inaction. The status quo is not acceptable... Despite the cost pressures, liability constraints, resistance to change and other insurmountable barriers, **it is simply not acceptable for patients to be harmed by the same healthcare system that is supposed to offer healing and comfort...**(IOM, 2000)

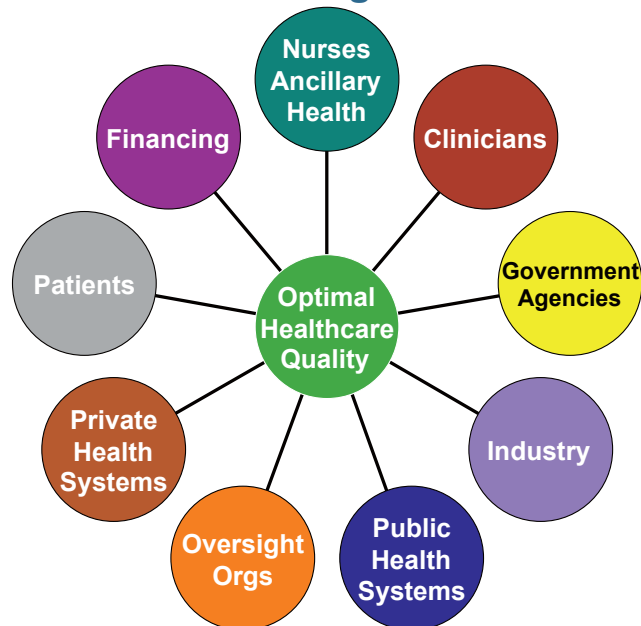


United Daily News
2 December 2002

Setting A Course For The Future of Healthcare in the Kurdistan Region

- **Begin with a vision for quality and safety**
 - **Maximize the healthcare system’s contribution to optimal healthcare quality for the people of the Region**
- **Engage the entire community and decide priorities**

The Greatest Impact Comes When The Entire Team Works Together



The Team Should Really Decide The Priorities

Reduce healthcare acquired infections

Always assure patient identification

Focus on interdisciplinary communication

Ensure safe medication practices

Begin To Build A Culture of Safety

And Make Sure That They Help Reach The Vision

Reduce healthcare acquired infections

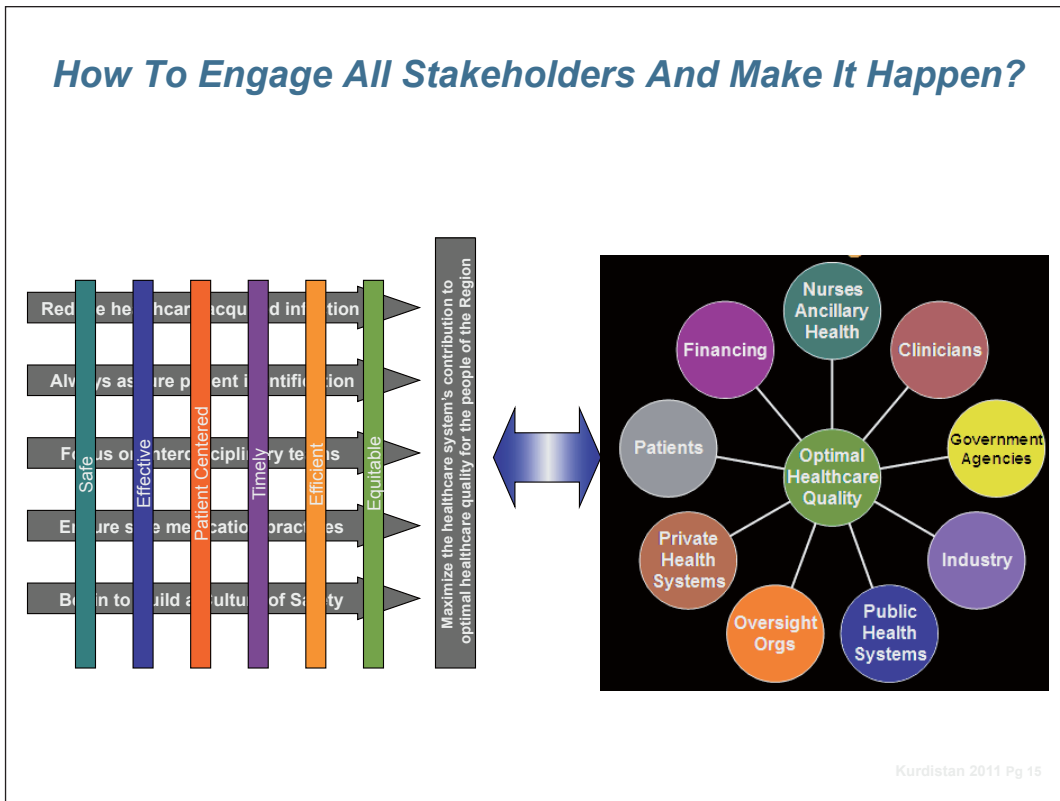
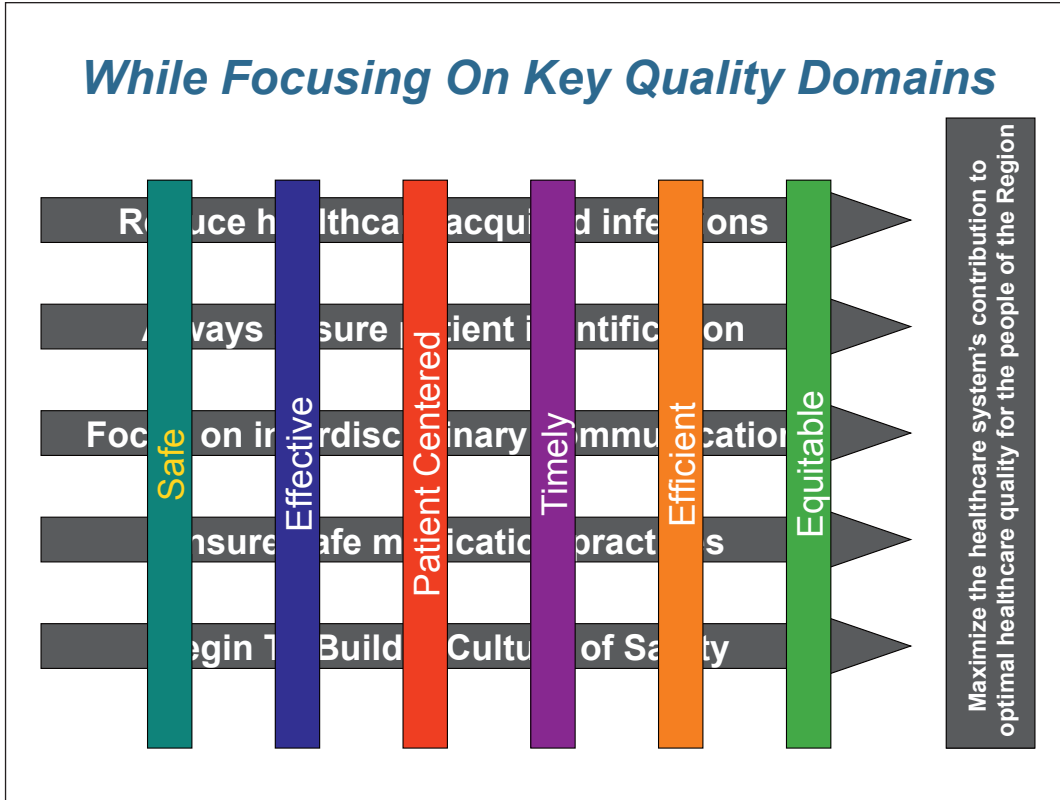
Always assure patient identification

Focus on interdisciplinary communication

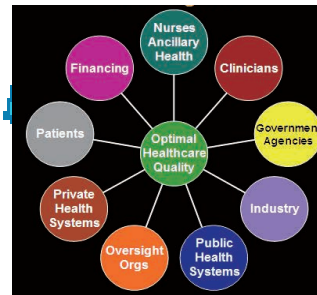
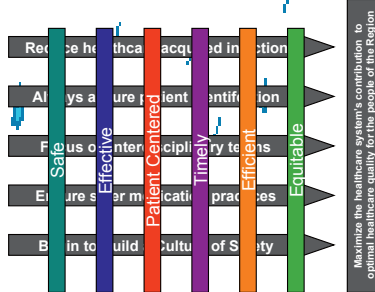
Ensure safe medication practices

Begin To Build A Culture of Safety

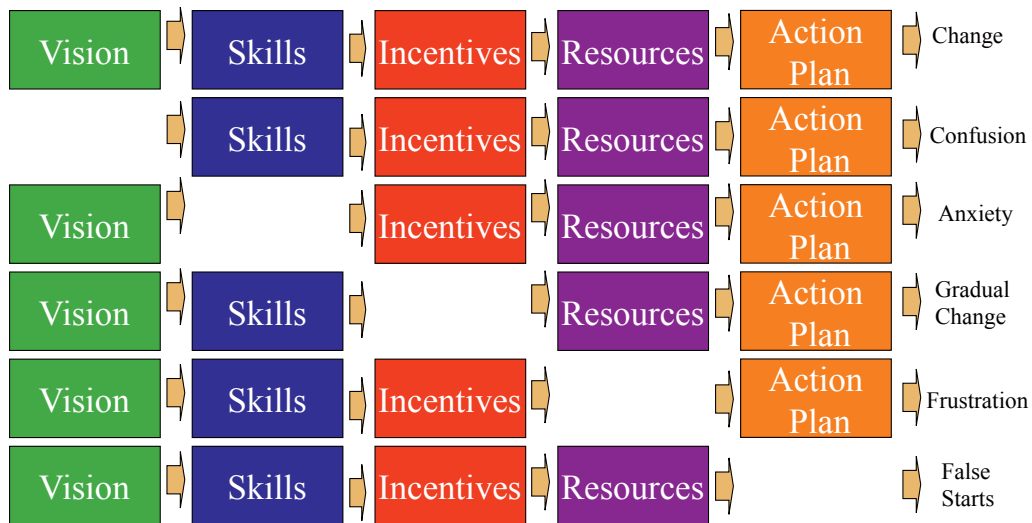
Maximize the healthcare system's contribution to optimal healthcare quality for the people of the Region



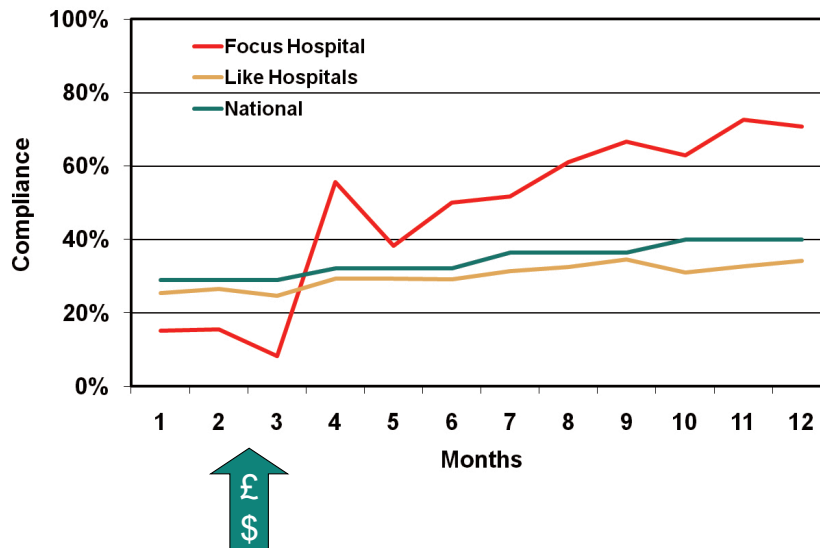
Leadership Is Needed To Facilitate and Engage Stakeholders



What Does It Take To Achieve The Goal?

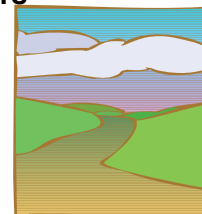
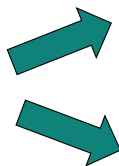


**Here's An Example of What Happened In One Of Our Hospitals
When Incentives and Resources Were Added**



Some Initial Next Steps

- **Confirm the vision**
 - Engage the entire team
- **Determine the direction**
 - It's got to be the first step
 - Assess where the Region is and identify the biggest gaps and opportunities
 - Set priorities, identify biggest opportunities
 - Work together to fill those gaps
- **Share the vision and strategy with all stakeholders**



References

- Agency for Healthcare Research and Quality (AHRQ), “Evidence-based Practice”:
<http://www.ahrq.gov/clinic/epcix.htm>
- Balas, E. A., S. Weingarten, C. T. Garb, D. Blumenthal, S. Austin Boren, and G. D. Brown, “Improving Preventive Care by Prompting Physicians,” *Archives of Internal Medicine*, Vol. 160, No. 3, 2000, pp. 301–308.
- Bice, S., G. Dever, L. Mukaida, S. Norton, and J. Samisone, “Telemedicine and Telehealth in the Pacific Islands Region: A Survey of Experiments, Applications, and Issues,” *Proceedings of the Pacific Telecommunications Conference 1996*, pp. 574–581.
- Bindman, A. B., A. Chattopadhyay, et al., “The Impact of Medicaid Managed Care on Hospitalizations for Ambulatory Care Sensitive Conditions,” *Health Services Research*, Vol. 40, No. 1, 2005, pp. 19–38.
- Buchmueller, Thomas C., and Agnes Couffinhal, “Private Health Insurance in France,” OECD Health Working Papers, No. 12, Paris: Organisation for Economic Co-operation and Development, Directorate for Employment, Labour and Social Affairs, 2004.
- CDC—See Centers for Disease Control and Prevention.
- Centers for Disease Control and Prevention, “Updated Guidelines for Evaluating Public Health Surveillance Systems: Recommendations from the Guidelines Working Group,” *Morbidity and Mortality Weekly Report*, Vol. 20, No. RR-13, 2001.
- , “Framework for Evaluating Public Health Surveillance Systems for Early Detection of Outbreaks: Recommendations from the CDC Working Group,” *Morbidity and Mortality Weekly Report*, Vol. 53, No. RR-5, 2004.
- , *Field Epidemiology Training Program Standard Core Curriculum*, 2006. As of November 22, 2010:
http://www.cdc.gov/globalhealth/fetp/pdf/FETP_standard_core_curriculum_508.pdf
- , *BRFSS 2010—Behavioral Risk Factor Surveillance System Questionnaire*, 2009. As of October 14, 2010:
<http://www.cdc.gov/brfss/questionnaires/pdf-ques/2010brfss.pdf>
- , *Behavioral Risk Factor Surveillance System—Turning Information into Health*, 2010. As of October 14, 2010:
<http://www.cdc.gov/brfss>
- Chen, L., T. Evans, S. Anand, J. I. Boufford, H. Brown, M. Chowdhury, et al., “Human Resources for Health: Overcoming the Crisis,” *The Lancet*, Vol. 364, 2004, pp. 1984–1990.
- Counsell, S. R., C. M. Callahan, et al., “Geriatric Care Management for Low-Income Seniors: A Randomized Controlled Trial,” *JAMA*, Vol. 298, No. 22, 2007, pp. 2623–2633.
- Dexheimer, J. W., D. L. Sanders, S. T. Rosenbloom, and D. Aronsky, “Prompting Clinicians About Preventive Care Measures: A Systematic Review of Randomized Controlled Trials,” *Journal of the American Medical Informatics Association*, Vol. 15, No. 3, 2008, pp. 311–320.
- Dorr, D. A., A. Wilcox, et al., “Implementing a Multidisease Chronic Care Model in Primary Care Using People and Technology,” *Disease Management*, Vol. 9, No. 1, 2006, pp. 1–15.
- El-Jardali, Fadi, D. Jamal, A. Abdallah, and K. Kassak, “Human Resources for Health Planning and Management in the Eastern Mediterranean Region: Facts, Gaps and Forward Thinking for Research and Policy,” *Human Resources for Health*, Vol. 5, No. 9, 2007.

- Fiedler, John, “The Privatization of Health Care in Three Latin American Social Security Systems,” *Health Policy and Planning*, Vol. 11, No. 4, 1996, pp. 406–417.
- Forsetlund, L., A. Bjorndal, et al., “Continuing Education Meetings and Workshops: Effects on Professional Practice and Health Care Outcomes,” *Cochrane Database of Systematic Reviews*, No. 2, 2009.
- Frenk, Julio, Jaime Sepúlveda, Octavio Gómez-Dantés, and Felicia Knaul, “Evidence-Based Health Policy: Three Generations of Reform in Mexico,” *The Lancet*, Vol. 362(9396), 2003, pp. 1667–1671.
- Fries, J. F., et al., “Reducing Health Care Costs by Reducing the Need and Demand for Medical Services,” *New England Journal of Medicine*, Vol. 329, No. 5, 1993, pp. 321–325.
- Fujisawa, R., and G. Lafortune, “The Remuneration of General Practitioners and Specialists in 14 OECD Countries: What Are the Factors Influencing Variations Across Countries?,” OECD Health Working Papers, No. 41, Paris: OECD Publishing, 2008.
- Gadomski, A., P. Jenkins, et al., “Impact of a Medicaid Primary Care Provider and Preventive Care on Pediatric Hospitalization,” *Pediatrics*, Vol. 101, No. 3, 1998, p. E1.
- Gottret, Pablo, and George Schieber, *Health Financing: A Practitioner’s Guide*, Washington, D.C.: World Bank, 2006.
- Gottret, Pablo, George Schieber, and Hugh R. Waters, eds., *Good Practices in Low and Middle-Income Countries*, Washington, D.C.: World Bank, 2008.
- Grobler, L., B. J. Marais, S. A. Mabunda, et al., “Interventions for Increasing the Proportion of Health Professionals Practicing in Rural and Other Underserved Areas,” *Cochrane Database of Systematic Reviews*, No. 1, 2009.
- Higgins, D. L., C. Galavotti, K. R. O’Reilly, D. J. Schnell, M. Moore, D. L. Rugg, and R. Johnson, “Evidence for the Effects of HIV Antibody Counseling and Testing on Risk Behaviors,” *JAMA*, Vol. 266, No. 17, 1991, pp. 2419–2429.
- IMF—See International Monetary Fund.
- Institute of Medicine, *Primary Care: America’s Health in a New Era*, M. S. Donaldson, K. D. Yordy, K. N. Lohr, and N. A. Vanselow, eds., Washington, D.C., National Academy Press, 1996.
- , *Crossing the Quality Chasm: A New Health System for the 21st Century*, Washington, D.C.: National Academy Press, 2001.
- , *Quality Through Collaboration—The Future of Rural Health*, Washington, D.C.: National Academy Press, 2005.
- International Monetary Fund, *Data Quality Assessment Framework*, Washington, D.C., 2006. As of October 12, 2006: <http://dsbb.imf.org>
- IOM—See Institute of Medicine.
- Islam, M., ed., *Health Systems Assessment Approach: A How-To Manual*, submitted to the U.S. Agency for International Development in collaboration with Health Systems 20/20, Partners for Health Reform plus, Quality Assurance Project, and Rational Pharmaceutical Management Plus, Arlington, VA: Management Sciences for Health, 2007.
- KRG MOH—See Kurdistan Regional Government Ministry of Health.
- Kristiansen, I., and O. Helga, “Medical Specialists’ Choice of Location: The Role of Geographic Attachment in Norway,” *Social Science & Medicine*, Vol. 34, No. 1, 1992, pp. 57–62.
- Kurdistan Regional Government Ministry of Health, “MOH 2009 Annual Report,” Chapter 2, Table 6, p. 27.
- Lim, M. K., “Shifting the Burden of Health Care Finance: A Case Study of Public-Private Partnership in Singapore,” *Health Policy*, Vol. 69, No. 1, 2004, pp. 83–92.
- Massoud, R., K. Askov, J. Reinke, L. M. France, T. Bornstein, E. Knebel, and C. MacAulay, *A Modern Paradigm for Improving Healthcare Quality*, Bethesda, MD: U.S. Agency for International Development, Quality Assurance Project, 2001. As of September 20, 2006: <http://qaproject.org/pubs/PDFs/improhq601bk.pdf>

- McGinnis, J. M., and W. H. Foege, "Actual Causes of Death in the United States," *JAMA*, Vol. 270, No. 18, 1993, pp. 2207–2212.
- Moore, M., E. Chan, N. Lurie, A. G. Schaefer, D. V. Varda, J. A. Zambrano, "Strategies to Improve Global Influenza Surveillance: A Decision Tool for Policymakers," *BioMed Central Public Health*, Vol. 8, No. 186, May 28, 2008.
- Moore, M., F. Davachi, L. Bongo, H. Seruvugo, K. Mushiya, J. A. Roy, and Mambu-ma-Disu, "New Parameters for Evaluating Oral Rehydration Therapy: One Year's Experience in a Major Urban Hospital in Zaire," *Journal of Tropical Pediatrics*, Vol. 35, No. 4, 1989, pp. 179–184.
- Morlock, Laura, Hugh Waters, Alan Lyles, Haluk Özsari, and Göksenin Aktulay, "Health Care Reform in Turkey—Charting the Way Forward," final report submitted to the Turkish Industrialists' and Businessmen's Association / Turk Sanayici ve Isadamlari Dernegi (TÜSIAD), 2004.
- Moscovice, I. and R. Rosenblatt, "Quality of Care Challenges for Rural Health," *The Journal of Rural Health*, Vol. 16, No. 2, 2000, pp. 168–176.
- OECD—See Organisation for Economic Co-operation and Development.
- Organisation for Economic Co-operation and Development, "Health Data 2011—Frequently Requested Data": http://www.oecd.org/document/16/0,3343,en_2649_34631_2085200_1_1_1_1,00.html.
- , "OECD Reviews of Health Systems, Mexico," ISBN 92-64-00892-6, Paris, 2005.
- Palu, Toomas, "Human Resources in Health in East Asia and Pacific: Summary of HRH Studies," Hanoi, November 2009. As of April 22, 2010: www.aaahrh.org/4th_conf_2009/04%20Toomas.ppt
- Petersen, L. A., H. R. Burstin, et al., "Nonurgent Emergency Department Visits: The Effect of Having a Regular Doctor," *Medical Care*, Vol. 36, No. 8, 1998, pp. 1249–1255.
- Reid, R. J., K. Coleman, et al., "The Group Health Medical Home at Year Two: Cost Savings, Higher Patient Satisfaction, and Less Burnout for Providers," *Health Affairs*, Vol. 29, No. 5, 2010, pp. 835–843.
- Republic of Iraq Ministry of Planning, "National Development Plan for the Years 2010–2014," Baghdad, 2010.
- Savedoff, William D., and Pablo Gottret, *Governing Mandatory Health Insurance: Learning from Experience*, Washington, D.C.: World Bank, 2008.
- Simmons, D., L. E. Bolitho, G. J. Phelps, R. Differ, G. J. Dasher, "Dispelling the Myths About Rural Consultant Physicians Practice: The Victoria Physician Survey," *Medical Journal of Australia*, Vol. 176, No. 10, 2002, pp. 477–481.
- Songkhla, Mongkol Na, "The Strategic Plan for the Decade of National HRH Development 2007–2016," Hanoi: WHO, November 2009. As of April 22, 2010: http://www.aaahrh.org/4th_conf_2009/conf_doc.php
- Sphere Project, "Humanitarian Charter and Minimum Standards in Disaster Response," ISBN: 92-9139-097-6, United Kingdom, 2004.
- Taylor, Rob, and Simon Blair, "Financing Health Care—Singapore's Innovative Approach," Public Policy for the Private Sector series, Washington, D.C.: World Bank, 2003.
- Tesson, G., V. Curran, R. Pong, and R. Stressed, "Advances in Rural Medical Education in Three Countries: Canada, the United States and Australia," *Education for Health*, Vol. 18, No. 3, 2005, pp. 405–415.
- Thacker, S. B., "Historical Development," in S. T. Teutsch and R. E. Churchill, eds., *Principles and Practice of Public Health Surveillance*, New York: Oxford University Press, 2000, pp. 1–16.
- Thailand Ministry of Health, *Thailand's Health Care Reform Project, 1996–2001: Final Report*, Bangkok: Ministry of Health, Thailand Office of Health Care Reform, 2001.
- UNGA—See United Nations General Assembly.
- UNICEF—See United Nations Children's Fund.

United Nations Children's Fund, World Health Organization, and United Nations Population Fund, "Guidelines for Monitoring the Availability and Use of Obstetric Services," 2nd ed., ISBN: 92-806-3198-5, New York, August 1997.

United Nations General Assembly, "United Nations Millennium Declaration," UNGA A/Res/55/2, September 18, 2000.

Valdiserri, R., M. Moore, A. Gerber, C. Campbell, B. Dillon, and G. West, "A Study of Clients Returning for Counseling After HIV Testing: Implications for Improving Rates of Return," *Public Health Reports*, Vol. 108, No. 1, 1993, pp. 12–18.

Waitzkin, H., R. Jasso-Aguilar, and C. Iriart, "Privatization of Health Services in Less Developed Countries: An Empirical Response to the Proposals of the World Bank and Wharton School," *International Journal of Health Services*, Vol. 37, No. 2, 2007, pp. 205–227.

Wasson, J., C. Gaudette, et al., "Telephone Care as a Substitute for Routine Clinic Follow-Up," *JAMA*, Vol. 267, No. 13, 1992, pp. 1788–1793.

WHO—See World Health Organization.

Williams, J., P. Ehrlich, and J. Prescott, "Emergency Medical Care in Rural America," *Annals of Emergency Medicine*, Vol. 38, No. 3, 2001, pp. 323–327.

World Bank, *World Development Indicators 2010*, Washington, D.C., 2010.

World Health Organization, *The World Health Report 2000. Health Systems: Improving Performance*, Geneva, 2000.

———, "International Conference on Primary Health Care, Alma-Ata: Twenty-Fifth Anniversary," World Health Assembly report A56/27, Geneva, April 24, 2003.

———, *The World Health Report 2006: Working Together for Health*, Geneva, 2006.

———, "Health Metrics Network—Framework and Standards for Country Health Information Systems," 2nd ed., Geneva, 2008a.

———, *The World Health Report 2008: Primary Health Care: Now More Than Ever*, Geneva, 2008b.

———, "Increasing Access to Health Workers in Remote and Rural Areas Through Improved Retention: Background Paper for the First Expert Meeting to Develop Evidence-Based Recommendations to Increase Access to Health Workers in Remote and Rural Areas Through Improved Retention," Geneva, February 2–4, 2009a. As of April 22, 2010:

http://www.who.int/hrh/migration/background_paper.pdf

———, "Conference Summaries," Joint WHO-AAAH conference, Hanoi, November 2009b. As of April 21, 2010:

http://www.aaahrh.org/4th_conf_2009/conf_doc.php

———, "World Health Statistics 2010," Geneva, 2010:

http://www.who.int/whosis/whostat/EN_WHS10_Full.pdf

World Health Organization and Iraq Ministry of Health, "A Basic Health Services Package for Iraq," 2009. As of March 1, 2011:

http://www.emro.who.int/iraq/pdf/basic_health_service_package_en.pdf

World Health Organization Inter-Agency Standing Committee for Global Health Cluster, "Health Cluster Guide," Geneva, 2009.



OBJECTIVE ANALYSIS.
EFFECTIVE SOLUTIONS.



Kurdistan Regional Government
Ministry of Planning • Ministry of Health

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At the request of the Kurdistan Regional Government (KRG), RAND researchers undertook a yearlong analysis of the health care system in the Kurdistan Region of Iraq, with a focus on primary care. RAND staff reviewed available literature on the Kurdistan Region and information relevant to primary care; interviewed a wide range of policy leaders, health practitioners, patients, and government officials to gather information and understand their priorities; collected and studied all available data related to health resources, services, and conditions; and projected future supply and demand for health services in the Kurdistan Region; and laid out the health financing challenges and questions. In this volume, the authors describe the strengths of the health care system in the Kurdistan Region as well as the challenges it faces. The authors suggest that a primary care-oriented health care system could help the KRG address many of these challenges. The authors discuss how such a system might be implemented and financed, and they make recommendations for better utilizing resources to improve the quality, access, effectiveness, and efficiency of primary care.

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